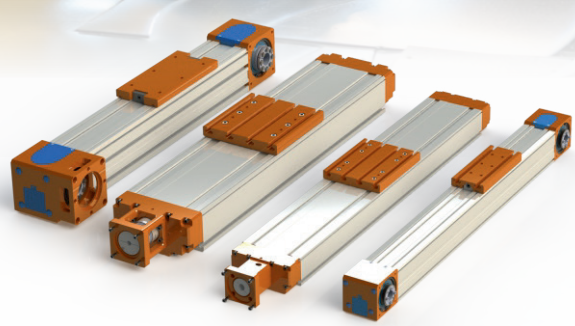
endo
endüstriyel donanım ve otomasyon sistemleri







Endüstriyel Donanım ve Lineer Hareket Sistemleri

2A

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Linear Systems

SCHAEFFLER GROUP INDUSTRIAL

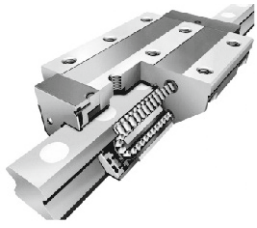
INA

FAG LUK

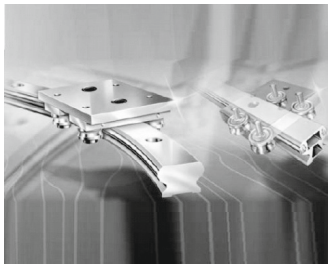
Ball Bearing Linear Guide



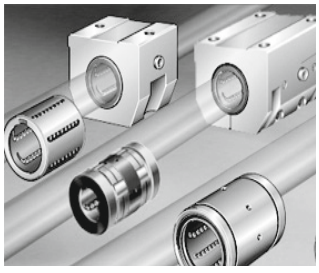
Roller Bearing Linear Guide



Track Roller Guidance Systems



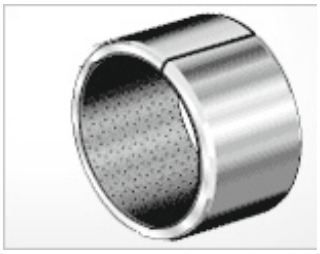
Linear Bearings & Housings



FAG Bearings



Nuts



Special coatings

Applications

Components coated with Corrotect® are particularly suitable where corrosion resistance is the most important factor.

The coating is also used very successfully to prevent adhesion of weld spray.

Available products

The following products in the field of linear motion are available with the Corrotect® coating:

- linear recirculating roller bearing and guideway assemblies RUE..-E (-L-KT)
- linear recirculating ball bearing and guideway assemblies KUVE..-B (-KT)
- shafts W
- hollow shafts WH
- guideways LFSR
- profiled track rollers LFR
- linear ball bearings KB, KS, KH.

Suffix

Components coated with Corrotect® have the suffix RRF; see Ordering designation.

Ordering designation

The ordering designation for a Corrotect®-coated recirculating ball guidance system KUVE25-B with two carriages, accuracy G3 and preload class V1 is:

- KUVE25-B-W2-G3-V1-RRF/

Technical/physical data for Corrotect®

The table shows technical/physical data for the special coating Corrotect®.

Corrotect® data

	Data
Suffix	RRF
Colour	Black
Thickness[1)]	0,5 µm – 3 µm
Number of layers	1
Composition	Zinc alloyed with iron and cobalt
Hardness	300 HV
Anti-corrosion protection[2)]	96 h
Anti-wear protection	–
Maximum single-piece length	3 500 mm
Free from Cr(VI)[3)]	No Yes, by agreement only

1) Thickness in functional area.

2) Salt spray test to DIN 50 021.

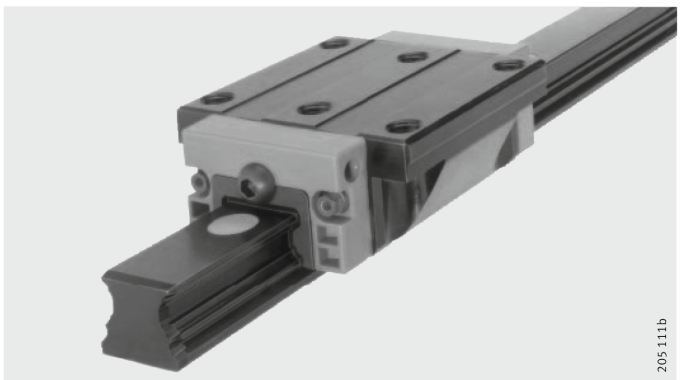
3) Parts containing Cr(VI) are not suitable for the food industry.

Corrotect® special coating

Anti-corrosion protection

Corrotect® is a surface coating applied by electroplating, *Figure 1*. It is an extremely thin anti-corrosion coating with cathodic protection and black chromate passivation. Under load, it is compacted into the surface roughness profile and partially worn away.

In parts coated with Corrotect®, running-in occurs in the area of the seal and an optically bright area develops as a result. Due to the remote cathodic protection mechanism, formation of rust in this area can also be prevented.



KUVE..-B-RRF

Figure 1
Special coating Corrotect®

Advantages

The special coating Corrotect®:

- is resistant to moisture, salt spray mist, contaminated water and weak alkaline or weak acidic cleaning agents
- does not impair the load carrying capacity, in contrast to the use of corrosion-resistant steels
- is extremely resistant to corrosion
- offers protection against rust on all surfaces
- ensures rust protection of smaller bright spots due to its cathodic protection effect
- gives protection against EP additives
- has good thermal conductivity
- is available as Corrotect® free from Cr(VI) by agreement.

Special coatings

Applications

Protect A does not contain Cr(VI). Components with this coating are therefore particularly suitable for use in the food industry, medical equipment and similar areas.

The coating is recommended for use under particularly small stroke lengths and vibration while stationary.

Available products

The following products in the field of linear motion are available coated with Protect A:

- linear recirculating roller bearing and guideway assemblies RUE..-E (-L-KT)
- linear recirculating ball bearing and guideway assemblies KUVE..-B (-KT).

Other products in the shaft and track roller range are available by agreement with the Protect A coating.

Suffix

Components coated with Protect A have the suffix KD; see Ordering designation.

Ordering designation

The ordering designation for a Protect A-coated recirculating ball guidance system KUVE25-B with two carriages, accuracy G3 and preload class V1 is:

- KUVE25-B-W2-G3-V1-KD/

Technical/physical data for Protect A

The table shows technical/physical data for the special coating Protect A.

Protect A data

	Data
Suffix	KD
Colour	Matt grey
Thickness[1)]	0,5 µm – 4 µm
Number of layers	1
Composition	Pure chromium layer with pearly surface
Hardness	900 HV – 1 300 HV
Anti-corrosion protection[2)]	8 h
Anti-wear protection	Under mixed friction
Maximum single-piece length	4 000 mm
Free from Cr(VI)[3)]	Yes

1) Thickness in functional area.

2) Salt spray test to DIN 50 021.

3) Parts free from Cr(VI) are suitable for the food industry.

Attention!

When using Protect A, coated carriages and coated guideways must always be combined. If coated carriages are used with uncoated guideways, for example, this will lead to a reduction in preload.

Protect A

Anti-wear and anti-corrosion protection

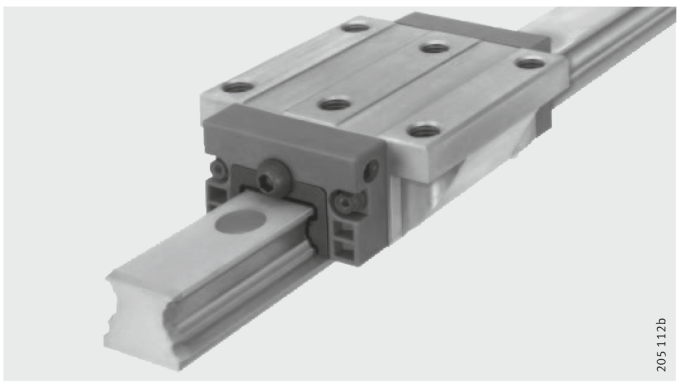
Protect A is a pure chromium layer with a columnar surface structure, *Figure 2*.

The coating is applied by electroplating. The parts to be coated are heated to approx. +50 °C. Since no structural changes occur, the parts retain full dimensional stability.

The matt grey chromium layer retains a certain amount of lubricant between the pearls. As a result, effective anti-wear protection is achieved even under mixed friction or slippage conditions.

Operating temperature

The temperature range of the guidance system is between –10 °C and +100 °C.



KUVE..-B-KD

Figure 2
Thin film chromium plating Protect A

Advantages

The coating:

- is resistant to various chlorides, various oils, sulphur compounds, chlorine compounds and weak acidic media
- does not influence the load carrying capacity and operating life of the coated products
- has higher wear resistance due to its high hardness
- ensures effective anti-wear protection even under mixed friction conditions
- offers good protection against EP additives
- has good thermal conductivity
- is moderately resistant to corrosion
- prevents false brinelling under vibration while stationary
- is free from Cr(VI).

Special coatings

Applications

Where high requirements for anti-corrosion protection are present and continuous lubrication cannot be ensured, Protect B is the suitable coating.

Available products

The following products in the field of linear motion are available coated with Protect B:

- linear recirculating roller bearing and guideway assemblies RUE..-E (-L-KT)
- linear recirculating ball bearing and guideway assemblies KUVE..-B (-KT).

Other products in the shaft and track roller range are available by agreement.

Suffix

Components coated with Protect B have the suffix KDC; see Ordering designation.

Ordering designation

The ordering designation for a Protect B-coated recirculating ball guidance system KUVE25-B with two carriages, accuracy G3 and preload class V1 is:

- KUVE25-B-W2-G3-V1-KDC/

Technical/physical data for Protect B

The table shows technical/physical data for the special coating Protect B.

Protect B data

	Data
Suffix	KDC
Colour	Black
Thickness[1)]	0,5 µm – 5 µm
Number of layers	2
Composition	Thin film chromium plating (Protect A) with coating of chromium mixed oxide
Hardness	950 HV
Anti-corrosion protection[2)]	96 h
Anti-wear protection	Under inadequate lubrication
Maximum single-piece length	4 000 mm
Free from Cr(VI)[3)]	No

1) Thickness in functional area.

2) Salt spray test to DIN 50 021.

3) Parts containing Cr(VI) are not suitable for the food industry.

Attention!

When using Protect B, coated carriages and coated guideways must always be combined. If coated carriages are used with uncoated guideways, for example, this will lead to a reduction in preload.

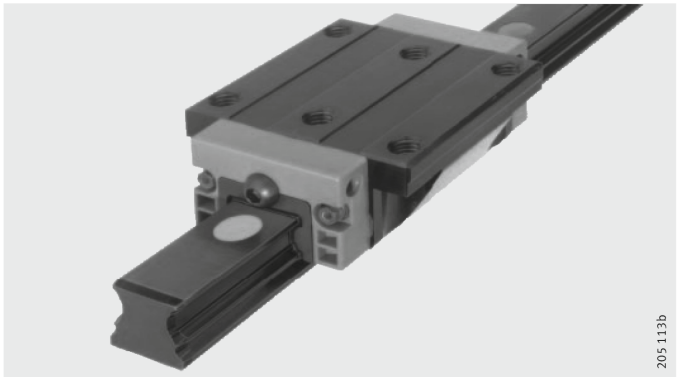
Protect B

High anti-corrosion and anti-wear protection

Protect B comprises two layers:
a thin film chromium plating (Protect A) is covered by chromium mixed oxide, *Figure 3*.

The corrosion resistance is provided by the chromium mixed oxide layer. This layer acts in a supportive capacity to the lubricant when used in aggressive atmospheres and at high temperatures.

The temperature range of the guidance system is between –10 °C and +100 °C.



KUVE..-B-KDC

Figure 3
Thin film chromium plating Protect B

Advantages

The coating:

- is resistant to various chlorides, various oils, sulphur compounds, chlorine compounds and weak acidic media
- does not influence the load carrying capacity and operating life of the coated products
- improves the running-in behaviour
- offers effective anti-wear protection under inadequate lubrication
- offers good protection against EP additives
- acts in a supportive capacity to the lubricant by mean of the second layer in aggressive atmospheres and at high temperatures
- has good thermal conductivity
- offers high anti-wear protection together with high anti-corrosion protection
- prevents false brinelling under vibration while stationary.

Special materials

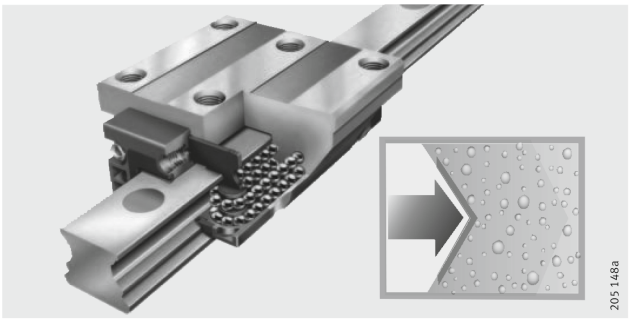
Materials for KUVE

For four-row linear recirculating ball bearing and guideway assemblies KUVE, there are not only special coatings but also special materials:

- corrosion-resistant steel
- amagnetic steel
- end pieces made from metal
- ceramic rolling elements.

Corrosion-resistant steel

All metal parts in KUVE..-B-RB are made from corrosion-resistant martensitic steel, *Figure 1*. Due to the special quench and tempering process as well as surface treatment, this material has high corrosion resistance. It is therefore also suitable for use in aqueous media, heavily diluted acids, alkalines or salt solutions.



KUVE..-B-RB

Figure 1
Corrosion-resistant steel

Advantages

These guidance systems have the following advantages:

- they achieve basic load ratings equivalent to 70% of the standard values
- they are available in all accuracy and preload classes
- corrosion-resistant carriages can be used in any combination with the standard guideways, allowing replacement without any restrictions
- the existing range of accessories can be used to its full extent
- the complete sealing arrangement is already integrated.

Applications

The guidance systems are suitable for clean rooms and applications in electronic component manufacture as well as in the pharmaceutical and food industries.

Suffix

The suffix is RB; see Ordering designation.

Ordering designation

The ordering designation for the guidance system KUVE25-B with two carriages, accuracy G3, preload class V1 and guideway length 1300 mm is:

- KUVE25-B-W2-G3-V1-RB/1300

Available sizes

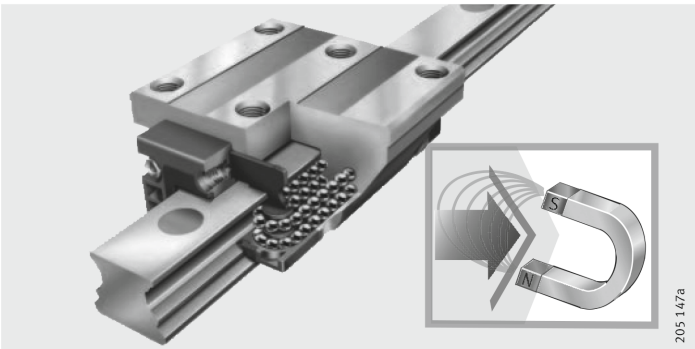
KUVE15-B and KUVE25-B; other sizes available by agreement.

Web: www.endo.com.tr Mail: satis@endo.com.tr Tel: +90 232 433 85 15

Special materials

Amagnetic steel

KUVE..-B-AM is made from corrosion-resistant amagnetic steel, *Figure 2*. Due to the special hardening process, the material achieves a hardness suitable for use in rolling bearings without developing a material structure that creates magnetic properties.



KUVE..-B-AM

Figure 2
Amagnetic steel

Advantages

Amagnetic guidance systems have the following advantages:

- all metal parts are made from corrosion-resistant steel
- they achieve basic load ratings equivalent to 60% of the values for the standard guidance system
- the magnetic permeability is very low ($\mu_r < 1{,}02$)
- they are available in all accuracy and preload classes
- they can be used in any combination with the standard guideways, allowing replacement without any restrictions (standard guideway, corrosion-resistant or amagnetic guideway)
- the existing range of accessories can be used to its full extent
- the complete sealing arrangement is already integrated.

Applications

Since no additional anti-corrosion coating is necessary, the guidance systems are highly suitable for use in clean rooms and the manufacture of electronic components, medical equipment and the food industry.

Suffix

The suffix is AM; see Ordering designation.

Ordering designation

The ordering designation for the amagnetic guidance system KUVE25-B with two carriages, accuracy G3, preload class V1 and guideway length 500 mm is:

- KUVE25-B-W2-G3-V1-AM/500

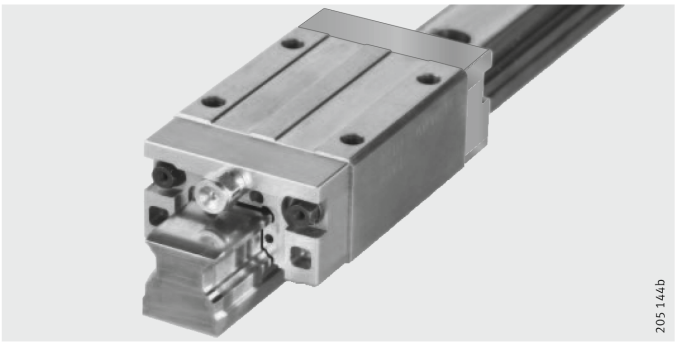
The maximum single-piece length of the guideways is 750 mm.

Amagnetic guidance systems are available by agreement.

Special materials

Metal end piece

KUVE..-B-MKS has an end piece made from corrosion-resistant steel, *Figure 3*.



KUVE..-B-MKS

Figure 3
End pieces made from metal

Advantages

The metal end pieces:

- can be combined with amagnetic guidance systems
- can be used, due to their high strength compared to plastic designs, in applications where a particularly robust construction is required
- are resistant to gamma radiation
- are resistant to temperatures up to +150 °C
- are suitable for use in vacuum and clean rooms
- are available for all accuracy and preload classes
- are unsealed in the standard design
- are supplied as part of a guidance system with preservative only. Special lubricants can be used by agreement
- can be used with an integrated complete sealing arrangement and the range of accessories depending on the operating conditions (for example, temperature).

Applications

Due to the increased strength of the end piece, the guidance system is particularly suitable for extreme applications, for example at high temperatures or under radiation.

Suffix

The suffix is MKS; see Ordering designation.

Ordering designation

The ordering designation for the guidance system KUVE25-B with metal end piece, one carriage, accuracy G2, preload class V1 and guideway length 1500 mm is:

- KUVE25-B-W1-G2-V1-MKS/1500

Available sizes

KUVE15-B and KUVE25-B; other sizes available by agreement.

Web: www.endo.com.tr Mail: satis@endo.com.tr Tel: +90 232 433 85 15

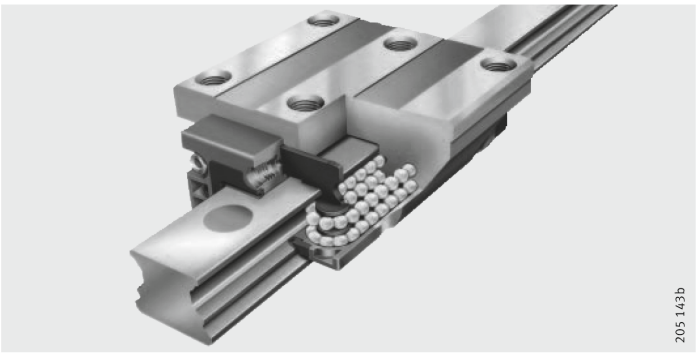
Special materials

Ceramic rolling elements

In combination with coatings or special materials, ceramic rolling elements can be used in hybrid bearings.

Ceramic is light, has a long operating life and offers significant advantages in many applications. Ceramic balls are characterised by their high hardness, rust resistance and electrical insulation.

KUVE..-B-HCB has ceramic rolling elements, *Figure 4*.



KUVE..-B-HCB

Figure 4
Ceramic rolling elements

Advantages

The guidance systems with ceramic rolling elements:

- have a longer rating life, depending on the application
- achieve basic load ratings equivalent to 70% of the standard values
- have lower bearing temperatures
- require less lubricant
- can be used to achieve corrosion-resistant guidance systems in combination with corrosion-resistant or coated saddle plates and guideways
- do not induce any magnetism between the rolling elements
- do not conduct electrical current
- allow higher speeds when used in combination with appropriate guidance system components
- can be fitted with the existing accessories and are interchangeable with the standard range.

Applications

Due to their amagnetic characteristics, linear recirculating ball bearing and guideway assemblies with ceramic rolling elements are used in many applications in medical equipment, laboratories and clean rooms as well as in the manufacture of electronic components.

Suffix

The suffix is HCB; see Ordering designation.

Ordering designation

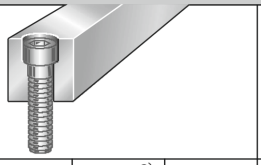
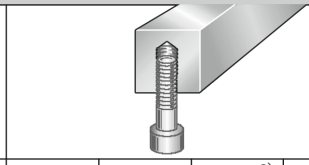
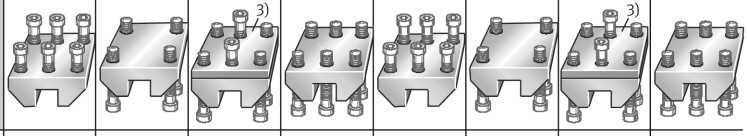
The ordering designation for the guidance system KUVE25-B with two carriages, accuracy G3, preload class V1 and guideway length 250 mm is:

- KUVE25-B-W2-G3-V1-HCB/250

Fitting variants

Fitting work

The following table shows the fitting work as a function of the adjacent construction.

Ratio of table length to guide-way length	Design of adjacent construction[1]		Location of guideway and carriage[2]							
										
L > 2X or L ≦ X	Datum side	Adjustment side	 3)						3)	
L > 2X			□	□	□	○	□	□	□	○
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			□	□	□	○	□	□	□	○
			■	■	■	◎	■	■	■	◎
			◑	◑	◑	◉	◑	◑	◑	◉
L ≦ X			●	●	●	△	□	□	□	○
			●	●	●	△	□	□	□	○
			●	●	●	△	□	□	□	○
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1) For other designs of adjacent construction, please contact us.

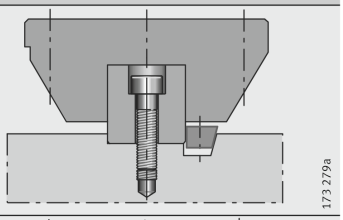
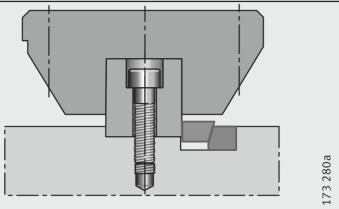
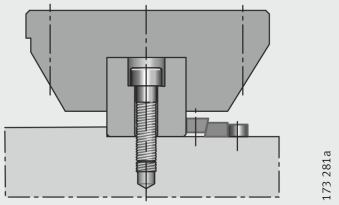
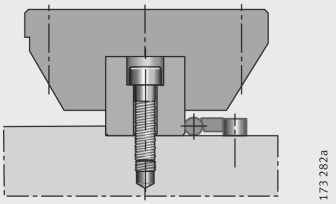
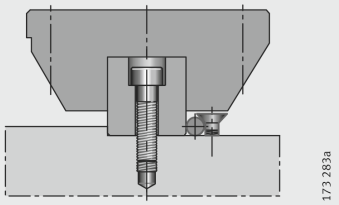
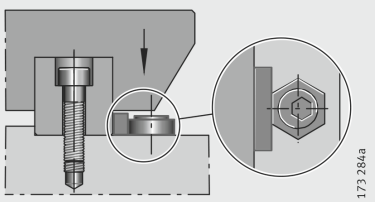
2) In series KUE, the carriage do not have central fixing holes.

3) The intermediate plate can be used for any fitting variant.

Alignment elements

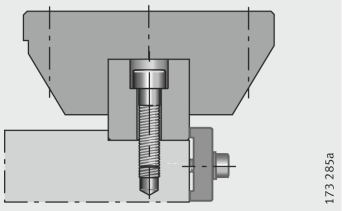
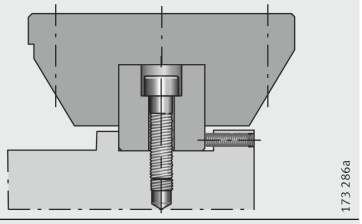
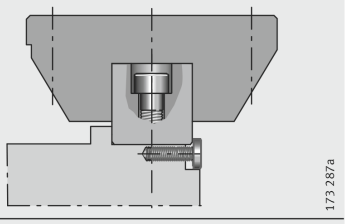
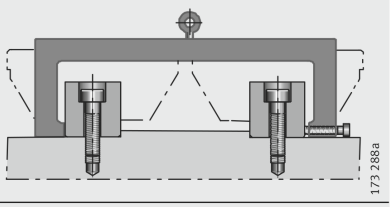
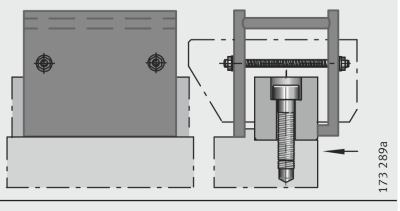
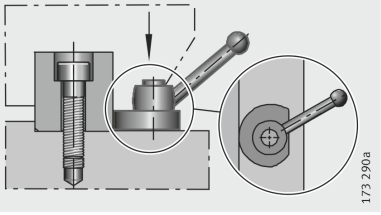
The tables show different alignment methods for guideways.

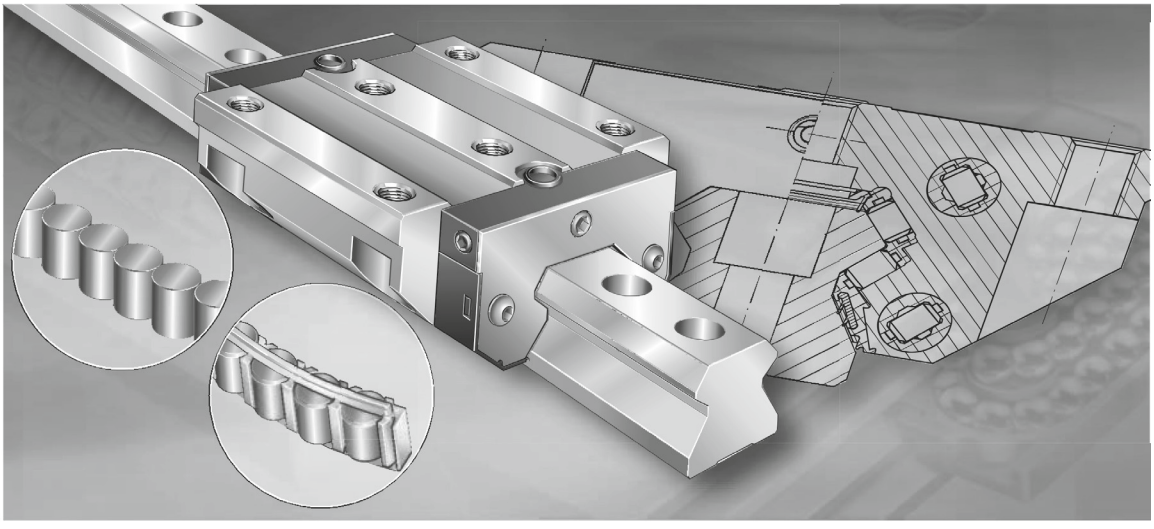
Alignment method

Element	
Vee ledge, integrated in a slot in the machine bed	 173 279a
Double vee ledge, in a slot in the machine bed	 173 280a
Double vee ledge screw mounted to the machine bed	 173 281a
Vee ledge with integral shaft, screw mounted to the machine bed	 173 282a
Shaft, screw mounted to the machine bed	 173 283a
Square section rail, adjusted using eccentric screw	 173 284a

Fitting variants

Alignment methods
continued

Element	
Clamping strip	 173 285a
Adjusting screws	 173 286a
Locking screws	 173 287a
Fixing bracket with adjusting screws	 173 288a
Fixing bracket with threaded rod	 173 289a
Eccentric hand lever	 173 290a

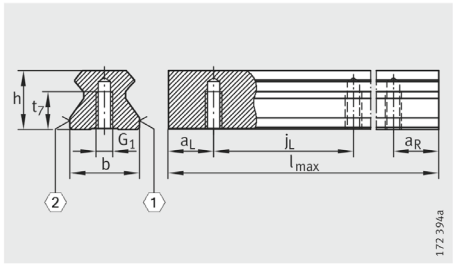


Linear recirculating roller bearing and guideway assemblies

Full complement
With chain guide

Linear recirculating roller bearing and guideway assemblies

Full complement
Standard and L carriages



TSX..-E
1, 2 6)

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions								
	l_{max} 1)	H	B	L 2)	A_1	J_B	b −0,005 −0,035	L_1	J_L	J_{LZ}	j_L	a_L, a_R 3) min.	a_L, a_R 3) max.
RUE25-D-FE 4)	1 980	36	70	91	23,5	57	23	65,6	45	40	30	20	23
RUE25-D-OE 5)													
RUE25-D-L-FE 4)				107				82,2					
RUE25-D-L-OE 5)													
RUE35-E	2 960	48	100	122,9	33	82	34	85,2	62	52	40	20	31
RUE35-E-L				148,7				111					
RUE45-E	2 940	60	120	145,9	37,5	100	45	104,2	80	60	52,5	20	41
RUE45-E-L				178,3				136,6					
RUE55-E	2 520	70	140	172,7	43,5	116	53	127	95	70	60	20	47
RUE55-E-L				210,7				165					
RUE65-E	2 520	90	170	195,5	53,5	142	63	141,2	110	82	75	20	61
RUE65-E-L				261,9				207,6					
RUE100-E-L	2 730	120	250	372,2	75	200	100	306,5	230	–	105	20	83

For further table values, see page 118 and page 119.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 112.
Maximum single-piece guideway length of 6 m available by agreement.

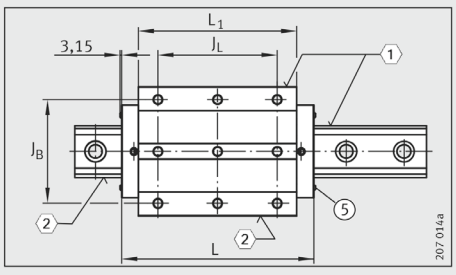
2) Minimum covered length for sealing the lubrication connectors.

3) a_L and a_R are dependent on the guideway length.

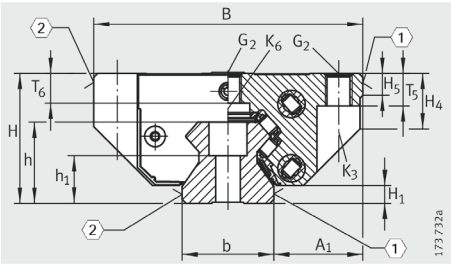
4) Grease lubrication.

5) Oil lubrication.

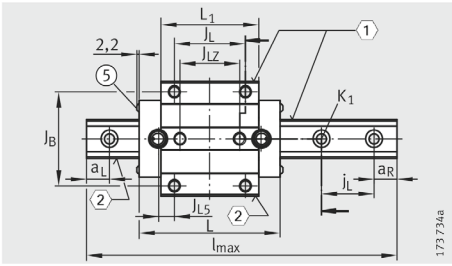
6) 1 Locating face
2 Marking
3 Screw plug, M_A = 2,5 Nm
4 Fixing screw, M_A = 2,5 Nm
5 Fixing screw



RUE100-E-L
1, 2, 5 6)

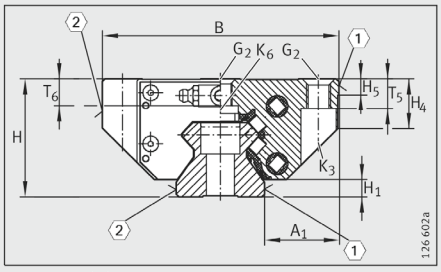


RUE..-E (-L)
1, 2 6)

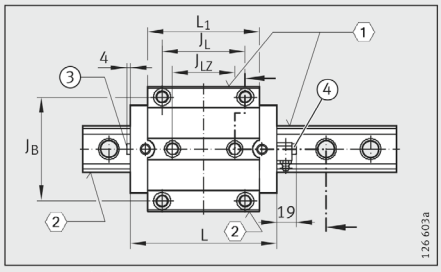


RUE..-E (-L) · View rotated 90°
1, 2, 5 6)

								Fixing screws									
H_1	H_5	H_4	T_5	T_6	t_7	h	h_1	G_1		G_2		K_1		K_3		K_6	
								DIN ISO 4 762-12.9								DIN 7 984-8.8	
							±0,5		M_A Nm		M_A Nm		M_A Nm		M_A Nm		M_A Nm
6,5	7,5	17,5	10	8,65	12,5	22,3	14,3	M6	17	M8	24	M6	17	M6	17	M6	10
6,5	8	20,5	12	10,9	15	30	17,5	M8	41	M10	41	M8	41	M8	41	M8	24
8,5	8	26	15	13,2	20	38	19,5	M12	140	M12	83	M12	140	M10	83	M10	48
11	12	32	18	14,8	22	45	22,5	M14	220	M14	140	M14	220	M12	140	M12	83
11,5	15	39,2	23,3	23,3	25	53,8	28,8	M16	340	M16	220	M16	340	M14	220	M14	130
15	25	51,3	29	26,6	–	80	48	–	–	M20	470	M24	1100	M16	340	M16	220



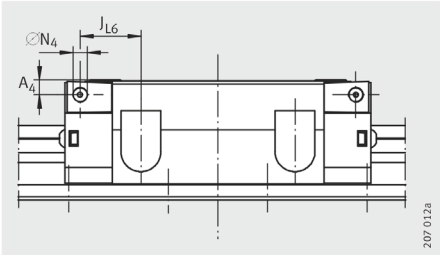
RUE25-D (-L)
1, 2 6)



RUE25-D (-L) · View rotated 90°
1, 2, 3, 4 6)

Linear recirculating roller bearing and guideway assemblies

Full complement
Standard and L carriages

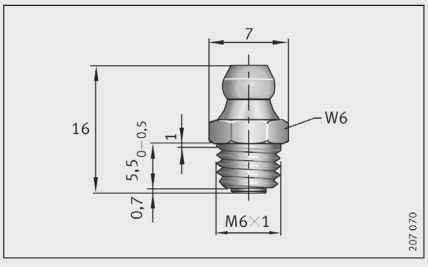


Lubrication connector on lateral face

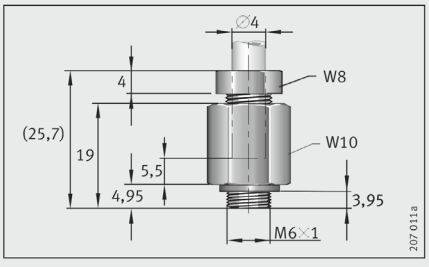
Dimension table (continued) · Dimensions in mm

Designation	Carriage		Guideway					Dimensioning of lubrication connectors		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug	Covering strip		A_3	N_3 [3]	A_4
						Adhesive bonded	Clip fit			
RUE25-D-FE	RWU25-D-FE	0,7	TSX25-D(-U)	3,3	KA11-TN	ADB13	ADB13-K	7,5	M6	–
RUE25-D-OE	RWU25-D-OE									
RUE25-D-L-FE	RWU25-D-L-FE	0,9								
RUE25-D-L-OE	RWU25-D-L-OE									
RUE35-E	RWU35-E	1,75	TSX35-E(-U)	5,9	KA15-TN	ADB18	ADB18-K	6,6	M6	5,6
RUE35-E-L	RWU35-E-L	2,29								
RUE45-E	RWU45-E	3,07	TSX45-E(-U)	9,4	KA20-TN	ADB23	ADB23-K	6,6	M6	6,6
RUE45-E-L	RWU45-E-L	4,05								
RUE55-E	RWU55-E	5,24	TSX55-E(-U)	13,1	KA24-TN	ADB27	ADB27-K	8,1	M6	8,1
RUE55-E-L	RWU55-E-L	6,83								
RUE65-E	RWU65-E	9,32	TSX65-E(-U)	21,5	KA26-TN	ADB29	ADB29-K	19,6	M6	19,6
RUE65-E-L	RWU65-E-L	13,8								
RUE100-E-L	RWU100-E-L	36,4	TSX100-E	45,3	KA40-M	–	–	10,6	M6	10,6

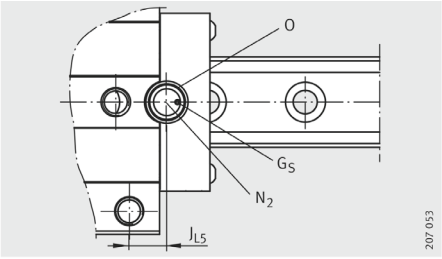
1) Maximum diameter of lubrication hole in adjacent construction.
2) Position of lubrication hole in adjacent construction.
3) Maximum screw depth 6 mm.



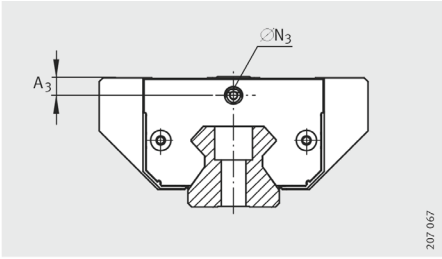
Lubrication nipple according to DIN 71412-A-M6,
Width across flats W = 6 mm



Connector with union nut,
width across flats W1 = 8 mm, W2 = 10 mm

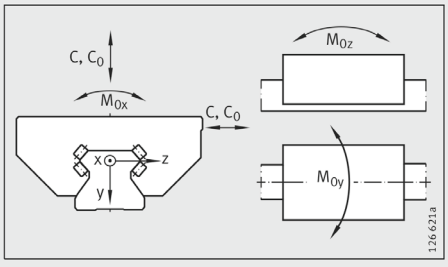


Lubrication connector in top face



Dimensioning of lubrication connector in end face

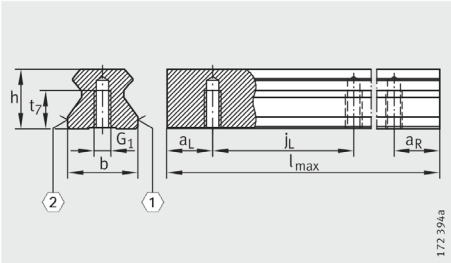
							Load carrying capacity				
							Basic load ratings		Moment ratings		
N_4	J_{L6}	N_2 [1]	J_{L5} [2]	G_S		O	C	C_0	M_{0x}	M_{0y}	M_{0z}
				DIN EN ISO 4 026	DIN EN ISO 4 027	DIN 3 771	N	N	Nm	Nm	Nm
–	–	3	14,5	–	–	10X1,5	28 000	65 000	350	760	680
			23				33 500	82 000	440	1 200	1 080
M6	24,4	6	14,3	M2,5X3	–	10X1,5	59 000	140 000	1 200	2 150	1 950
	37,4		27,2				70 000	175 000	1 500	3 350	3 000
M6	27	6	15,7	M2,5X3	–	10X1,5	92 000	215 000	1 899	4 255	3 821
	43,2		31,9				114 000	285 000	2 503	7 263	6 536
M6	32,9	6	21,6	–	M4X4	10X1,5	136 000	320 000	3 287	7 404	6 667
	51,9		40,6				167 000	415 000	4 226	12 214	11 010
M6	34,8	6	15,6	–	M4X4	18X1,5	200 000	435 000	5 450	12 100	10 900
	68,1		48,8				270 000	640 000	7 600	24 000	21 500
∅5,6	65,1	6	47,15	–	M4X4	10X1,5	630 000	1 490 000	33 780	80 250	72 280



Load directions

Linear recirculating roller bearing and guideway assemblies

Full complement
H and HL carriages



TSX..-E-U
1, 2 6)

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions								
	l_{max} 1)	H	B	L 2)	A_1	J_B	b $^{-0,005}_{-0,035}$	L_1	J_L	j_L	a_L, a_R 3) min.	a_L, a_R 3) max.	
RUE25-D-H-FE 4)	1 980	40	48	90,6	12,5	35	23	65,6	35	30	20	23	
RUE25-D-H-OE 5)													
RUE25-D-HL-FE 4)				107				82,2	50				
RUE25-D-HL-OE 5)													
RUE35-E-H	2 960	55	70	122,9	18	50	34	85,2	50	40	20	31	
RUE35-E-HL				148,7				111	72				
RUE45-E-H	2 940	70	86	145,9	20,5	60	45	104,2	60	52,5	20	41	
RUE45-E-HL				178,3				136,6	80				
RUE55-E-H	2 520	80	100	172,7	23,5	75	53	127	75	60	20	47	
RUE55-E-HL				210,7				165	95				
RUE65-E-H	2 520	100	126	195,5	31,5	76	63	141,2	70	75	20	61	
RUE65-E-HL				261,9				207,6	120				

For further table values, see page 122 and page 123.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 112.
Maximum single-piece guideway length of 6 mm available by agreement.

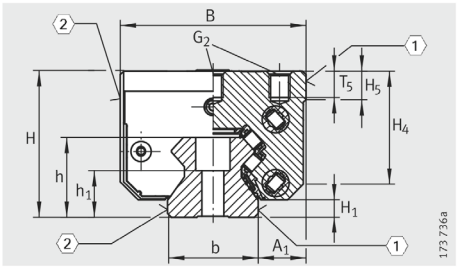
2) Minimum covered length for sealing the lubrication connectors.

3) a_L and a_R are dependent on the guideway length.

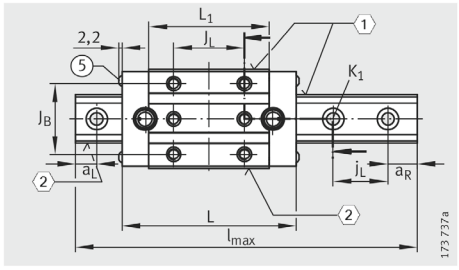
4) Grease lubrication.

5) Oil lubrication.

6) 1 Locating face
2 Marking
3 Screw plug, M_A = 2,5 Nm
4 Fixing screw, M_A = 2,5 Nm
5 Fixing screw

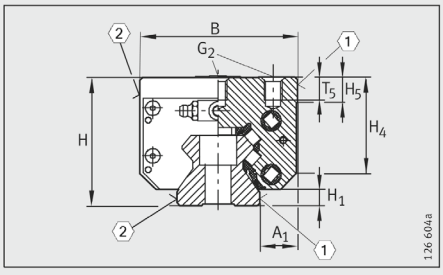


RUE..-E-H (-HL)
1, 2 6)

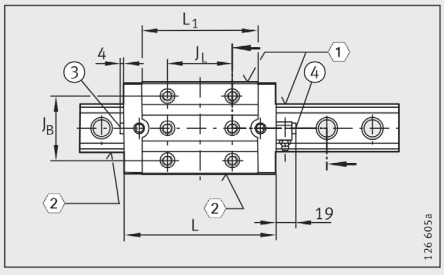


RUE..-E-H (-HL) · View rotated 90°
1, 2, 5 6)

							Fixing screws					
H_1	H_5	H_4	T_5	t_7	h	h_1	G_1 DIN ISO 4762-12.9		G_2		K_1	
						±0,5		M_ANm		M_ANm		M_ANm
6,5	7,5	32,5	7,5	12,5	22,3	11,8	M6	17	M6	17	M6	17
6,5	10,8	41,9	10	15	30	17,5	M8	41	M8	41	M8	41
8,5	13,7	52,4	12,5	20	38	19,5	M12	140	M10	83	M12	140
11	16	61,4	15	22	45	22,5	M14	220	M12	140	M14	220
11,5	15	71,2	20	25	53,8	28,8	M16	340	M14	220	M16	340



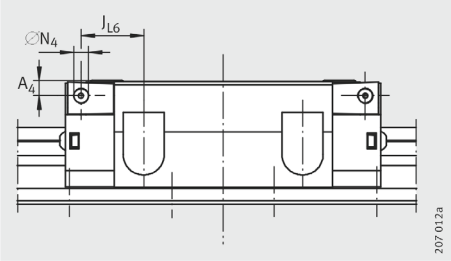
RUE25-D-H (-HL)
1, 2 6)



RUE25-D-H (-HL) · View rotated 90°
1, 2, 3, 4 6)

Linear recirculating roller bearing and guideway assemblies

Full complement
H and HL carriages

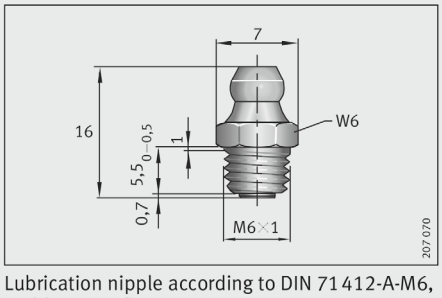


Lubrication connector on lateral face

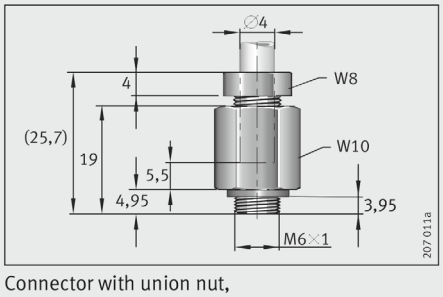
Dimension table (continued) · Dimensions in mm

Designation	Carriage		Guideway					Dimensioning of lubrication connectors		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug	Covering strip		A_3	N_3 [3]	A_4
						Adhesive bonded	Clip fit			
RUE25-D-H-FE	RWU25-D-H	0,6	TSX25-D(-U)	3,3	KA11-TN	ADB13	ADB13-K	11,5	M6	–
RUE25-D-H-OE										
RUE25-D-HL-FE	RWU25-D-HL	0,8								
RUE25-D-HL-OE										
RUE35-E-H	RWU35-E-H	1,67	TSX35-E(-U)	5,9	KA15-TN	ADB18	ADB18-K	13,6	M6	12,6
RUE35-E-HL	RWU35-E-HL	2,14								
RUE45-E-H	RWU45-E-H	3,05	TSX45-E(-U)	9,4	KA20-TN	ADB23	ADB23-K	16,6	M6	16,6
RUE45-E-HL	RWU45-E-HL	3,95								
RUE55-E-H	RWU55-E-H	4,94	TSX55-E(-U)	13,1	KA24-TN	ADB27	ADB27-K	18,1	M6	18,1
RUE55-E-HL	RWU55-E-HL	6,34								
RUE65-E-H	RWU65-E-H	8,9	TSX65-E(-U)	21,5	KA26-TN	ADB29	ADB29-K	29,6	M6	29,6
RUE65-E-HL	RWU65-E-HL	12,89								

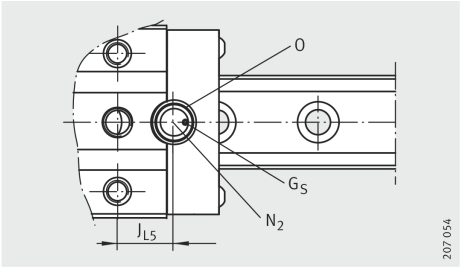
1) Maximum diameter of lubrication hole in adjacent construction.
2) Position of lubrication hole in adjacent construction.
3) Maximum screw depth 6 mm.



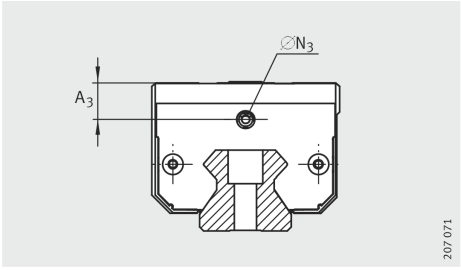
Lubrication nipple according to DIN 71412-A-M6,
Width across flats W = 6 mm



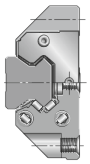
Connector with union nut,
width across flats W1 = 8 mm, W2 = 10 mm



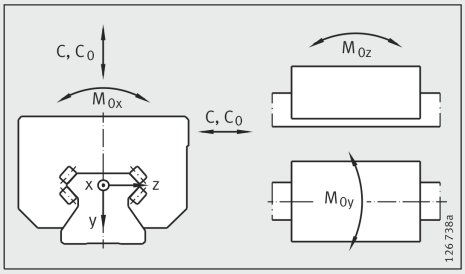
Lubrication connector in top face



Dimensioning of lubrication connector in end face



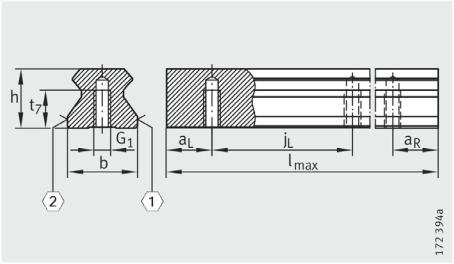
							Load carrying capacity				
N_4	J_{L6}	N_2 [1]	J_{L5} [2]	G_S		O	Basic load ratings		Moment ratings		
				DIN EN ISO 4 026	DIN EN ISO 4 027	DIN 3 771	C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
–	–	3	19,5	–	–	10X1,5	28 000	65 000	350	760	680
			20,3				3 500	82 000	440	1 200	1 080
M6	30,4	6	20,3	M2,5X3	–	10X1,5	59 000	140 000	1 200	2 150	1 950
	32,4		22,2				70 000	175 000	1 500	3 350	3 000
M6	37	6	25,7	M2,5X3	–	10X1,5	92 000	215 000	1 899	4 255	3 821
	43,2		31,9				114 000	285 000	2 503	7 263	6 536
M6	42,9	6	31,6	–	M4X4	10X1,5	136 000	320 000	3 287	7 404	6 667
	51,9		40,6				167 000	415 000	4 226	12 214	11 010
M6	54,8	6	35,6	–	M4X4	18X1,5	200 000	435 000	5 450	12 100	10 900
	63,1		43,8				270 000	640 000	7 600	24 000	21 500



Load directions

Linear recirculating roller bearing and guideway assemblies

With chain guide
L and HL carriages



TSX..-E-U
(1), (2) 4)

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions								
	l_{max} 1)	H	B	L 2)	A_1	J_B	b $^{-0,005}_{-0,035}$	L_1	J_L	J_{LZ}	j_L	a_L, a_R 3) min.	a_L, a_R 3) max.
RUE35-E-KT-L	2 960	48	100	148,7	33	82	34	111	62	52	40	20	31
RUE35-E-KT-HL		55	70		18	50			72	–			
RUE45-E-KT-L	2 940	60	120	178,3	37,5	100	45	136,6	80	60	52,5	20	41
RUE45-E-KT-HL		70	86		20,5	60				–			
RUE55-E-KT-L	2 520	70	140	210,7	43,5	116	53	165	95	70	60	20	47
RUE55-E-KT-HL		80	100		23,5	75				–			

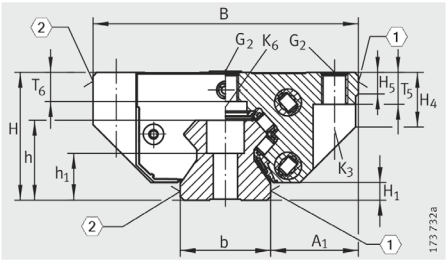
For further table values, see page 126 and page 127.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 112.
Maximum single-piece guideway length of 6 m available by agreement.

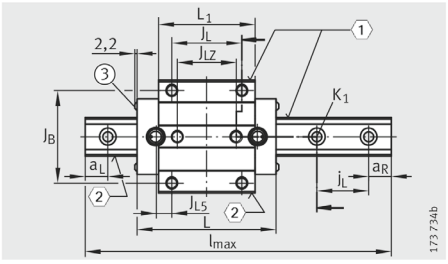
2) Minimum covered length for sealing the lubrication connectors.

3) a_L and a_R are dependent on the guideway length.

4) (1) Locating face
(2) Marking
(3) Fixing screw

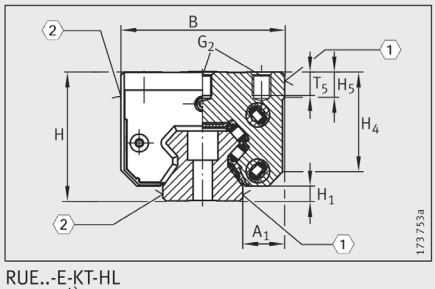


RUE..-E-KT-L
⟨1⟩, ⟨2⟩ 4)

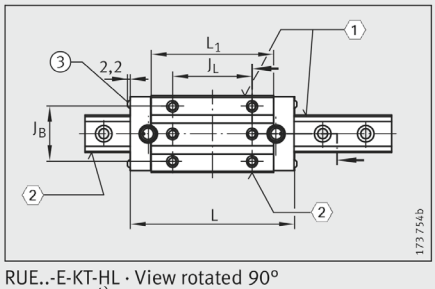


RUE..-E-KT-L · View rotated 90°
⟨1⟩, ⟨2⟩, ⟨3⟩ 4)

								Fixing screws									
H_1	H_5	H_4	T_5	T_6	t_7	h	h_1	G1		G2		K1		K3		K6	
								DIN ISO 4 762-12.9								DIN 7 984-8.8	
							±0,5		M_A Nm		M_A Nm		M_A Nm		M_A Nm		M_A Nm
6,5	8	20,5	12	10,9	15	30	17,5	M8	41	M10	41	M8	41	M8	41	M8	24
	10,8	41,9	10	–						M8				–	–	–	–
8,5	8	26	15	13,2	20	38	19,5	M12	140	M12	83	M12	140	M10	83	M10	48
	13,7	52,4	12,5	–						M10				–	–	–	–
11	12	32	18	14,8	22	45	22,5	M14	220	M14	140	M14	220	M12	140	M12	83
	16	61,4	15	–						M12				–	–	–	–



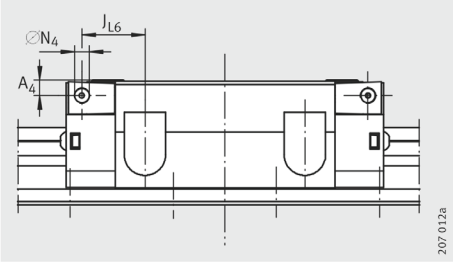
RUE..-E-KT-HL
⟨1⟩, ⟨2⟩ 4)



RUE..-E-KT-HL · View rotated 90°
⟨1⟩, ⟨2⟩, ⟨3⟩ 4)

Linear recirculating roller bearing and guideway assemblies

With chain guide
L and HL carriages

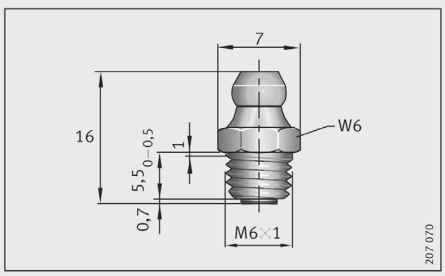


Lubrication connector on lateral face

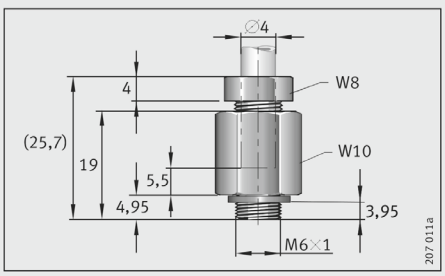
Dimension table (continued) · Dimensions in mm

Designation	Carriage		Guideway					Dimensioning of lubrication connectors		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug	Covering strip: Adhesive bonded	Covering strip: Clip fit	A_3	N_3 [3]	A_4
RUE35-E-KT-L	RWU35-E-KT-L	2,28	TSX35-E(-U)	5,9	KA15-TN	ADB18	ADB18-K	6,6	M6	5,6
RUE35-E-KT-HL	RWU35-E-KT-HL	2,14						13,6		12,6
RUE45-E-KT-L	RWU45-E-KT-L	3,97	TSX45-E(-U)	9,4	KA20-TN	ADB23	ADB23-K	6,6	M6	6,6
RUE45-E-KT-HL	RWU45-E-KT-HL	3,99						16,6		16,6
RUE55-E-KT-L	RWU55-E-KT-L	6,72	TSX55-E(-U)	13,1	KA24-TN	ADB27	ADB27-K	8,1	M6	8,1
RUE55-E-KT-HL	RWU55-E-KT-HL	6,23						18,1		18,1

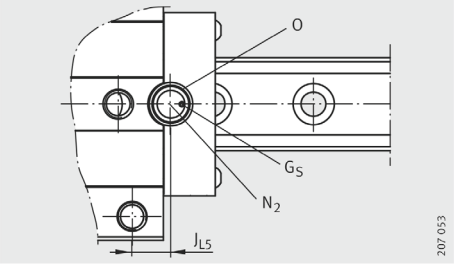
[1] Maximum diameter of lubrication hole in adjacent construction.
[2] Position of lubrication hole in adjacent construction.
[3] Maximum screw depth 6 mm.



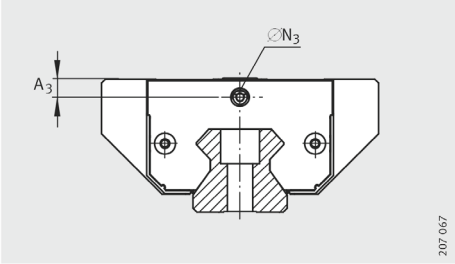
Lubrication nipple according to DIN 71412-A-M6,
Width across flats W = 6 mm



Connector with union nut,
width across flats W1 = 8 mm, W2 = 10 mm

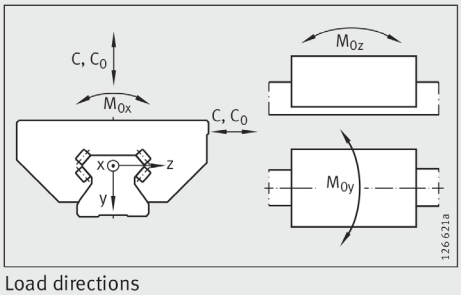


Lubrication connector in top face



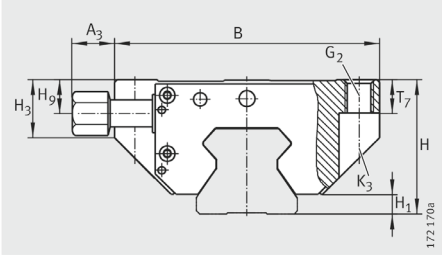
Dimensioning of lubrication connector in end face

							Load carrying capacity				
N_4	J_{L6}	N_2 [1)]	J_{L5} [2)]	G_S		O	Basic load ratings		Moment ratings		
				DIN EN ISO 4 026	DIN EN ISO 4 027	DIN 3 771	C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
M6	37,4 32,4	6	27,2 22,2	M2,5X3	–	10X1,5	54 000	126 000	1 100	2 500	2 250
M6	43,2 43,2	6	31,9	M2,5X3	–	10X1,5	92 000	214 000	1 833	4 528	4 077
M6	51,9 51,9	6	40,6	–	M4X4	10X1,5	138 000	325 000	3 279	9 447	8 497



Load directions

Clamping element



RUKS..-D-A

Dimension table · Dimensions in mm

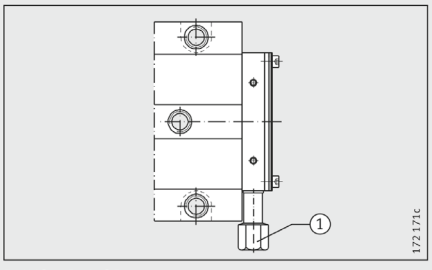
Designation	Mass	Dimensions			Mounting dimensions					
	m	B	H	L	J_B	A_3	L_1	J_{L1}	J_{L2}	J_{L5}
	≈kg									
RUKS35-D-A-SR[1]	2,8	98	48	133,7	82	24,5	113	62	52	32
RUKS35-D-A-SO[2]						–				
RUKS35-D-A-H-SR[1]		68	55		50	39,5		50	–	38
RUKS35-D-A-H-SO[2]						–				
RUKS45-D-A-SR[1]	4,5	118	60	156	100	22	134	80	60	33,5
RUKS45-D-A-SO[2]						–				
RUKS45-D-A-H-SR[1]		84	70		60	39		60	–	43,5
RUKS45-D-A-H-SO[2]						–				
RUKS55-D-A-SR[1]	7,6	138	70	186	116	18,5	163	95	70	40,5
RUKS55-D-A-SO[2]						–				
RUKS55-D-A-H-SR[1]		98	80		75	38,5		75	–	50,5
RUKS55-D-A-H-SO[2]						–				

RUKS65-D-A available by agreement.

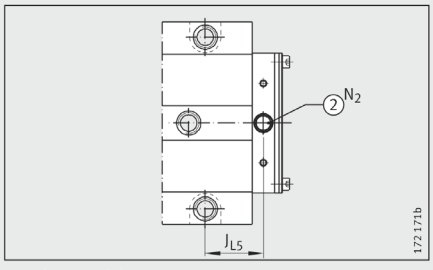
1) Oil connector on side: suffix SR.

2) Oil feed from above: suffix SO.

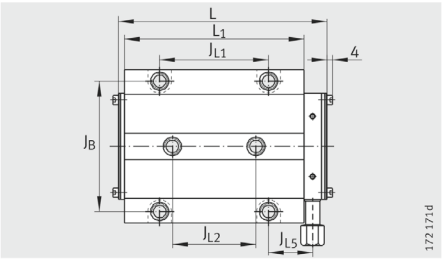
3) ① Oil connector on side
② Oil feed from above



RUKS..-D-A-SR
① 3)



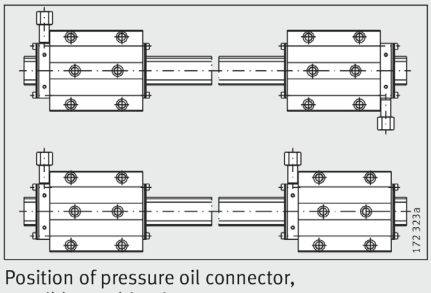
RUKS..-D-A-SO
② 3)



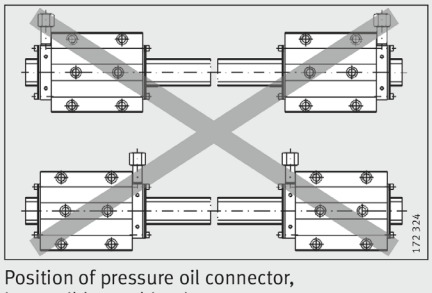
RUKS..-D-A · View rotated 90°



N_2 max.	H_1	H_3	T_7	H_9	Suitable for guideway	Fixing screws DIN ISO 4762-12.9 G2		K3	
							M_A Nm		M_A Nm
6	6,8	21	12	13,2	TSX35-E	M10	41	M8	41
				–					
		42	10	20,2		M8		–	–
				–					
6	8,7	27	15	15,6	TSX45-E	M12	83	M10	83
				–					
		58,3	12,5	25,6		M10		–	–
				–					
6	11	32	18	18,8	TSX55-E	M14	140	M12	140
				–					
		62	15	28,8		M12		–	–
				–					

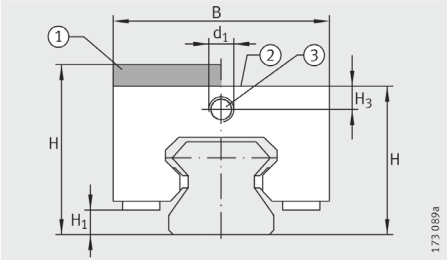


Position of pressure oil connector, possible combinations



Position of pressure oil connector, impossible combinations

Braking and clamping element



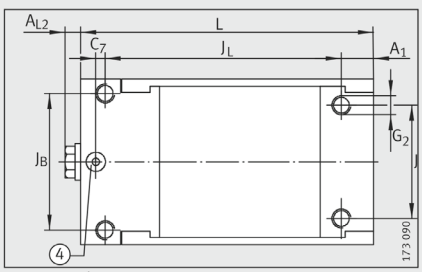
BKE.TSX..-D
①, ②, ③ 2)

Dimension table · Dimensions in mm

Designation	Clamping force N	Dimensions H Without adapter plate	H With adapter plate	B	L	J_B	J_C	A_1	J_L	C_7	H_1	H_3	A_{L2}	d_1	G_2
BKE.TSX25-D	1 000	36	–	47	91	38	34	10	75	–	6,5	6	5	M6X1	M6
BKE.TSX25-D-SO										0					
BKE.TSX25-D-H		–	40							–					
BKE.TSX25-D H-SO										0					
BKE.TSX35-D	2 800	48	–	69	120	58	48	13,5	100	–	7,9	8,1	5	M8X1	M8
BKE.TSX35-D-SO										0					
BKE.TSX35-D-H		–	55							–					
BKE.TSX35-D-H-SO										0					
BKE.TSX45-D	4 300	60	–	85	141	70	60	15	113	–	13	10	5	M8X1	M10
BKE.TSX45-D-SO										5					
BKE.TSX45-D-H		–	70							–					
BKE.TSX45-D-H-SO										5					
BKE.TSX55-D	5 100	70	–	99	170	80	72	18	138	–	17,3	11,75	6	M10X1	M12
BKE.TSX55-D-SO										6					
BKE.TSX55-D-H		–	80							–					
BKE.TSX55-D-H-SO										6					
BKE.TSX65-D	11 000	90	–	125	186	96	96	22	150	–	20	17,5	7,5	M16X1,5	M14
BKE.TSX65-D-SO										0					
BKE.TSX65-D-H		–	100							–					
BKE.TSX65-D-H-SO										0					

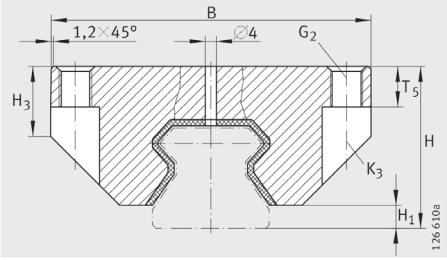
1) The maximum diameter of the oil feed hole is:
for sizes 25 to 55 = 6 mm
for size 65 = 15 mm.

2) ① With adapter plate
② Without adapter plate
③ Hydraulic connector
④ Hydraulic connector in top face (suffix SO)1)



Top view1)
④ 2)

Damping carriage



RUDS..-D

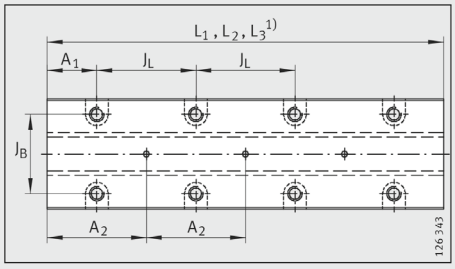
Dimension table · Dimensions in mm

Designation	Mass m ≈kg/ 100 mm	Dimensions[1] B	H	Mounting dimensions H_1	T_5	H_3	J_B	A_1	A_2, J_L	G_2[2]	K_3[3]	Suitable for linear recirculating roller bearing and guideway assembly	
RUDS25-D	1,1	68	36	7,2	10	18	57	37,5	75	M8	M6	RUE25-D	RUE25-D-L
RUDS25-D-H	1	47	40		9	29,5	35			M6	–	RUE25-D-H	RUE25-D-LH
RUDS35-D	2,1	98	48	6,8	12	20	82	37,5	75	M10	M8	RUE35-E	RUE35-E-L (-KT)
RUDS35-D-H	1,8	68	55			41	50			M8	–	RUE35-E-H	RUE35-E-HL (-KT)
RUDS45-D	3,6	118	60	8,7	15	26	100	37,5	75	M12	M10	RUE45-E	RUE45-E-L (-KT)
RUDS45-D-H	3	84	70		12	53	60			M10	–	RUE45-E-H	RUE45-E-HL (-KT)
RUDS55-D	4,4	138	70	11	18	31	116	37,5	75	M14	M12	RUE55-E	RUE55-E-L (-KT)
RUDS55-D-H	3,7	98	80			61	75			M12	–	RUE55-E-H	RUE55-E-HL (-KT)
RUDS65-D	5	168	90	11,5	23	39	142	37,5	75	M16	M14	RUE65-E	RUE65-E-L
RUDS65-D-H	4,6	124	100			71	76			M14	–	RUE65-E-H	RUE65-E-HL (-KT)

[1] Standard lengths:
L_1 = 150 mm, not for RUDS65-D
L_2 = 225 mm, not for RUDS65-D
L_3 = 300 mm, not for RUDS25-D.

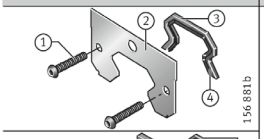
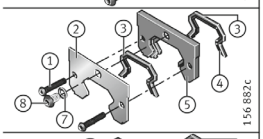
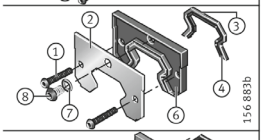
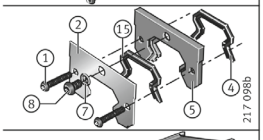
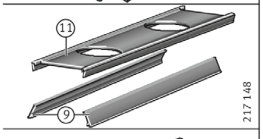
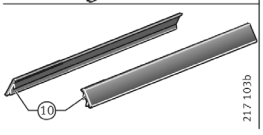
[2] For screws DIN ISO 4 762-12.9. Thread length for RUDS..D-H at least 1,25 · G_2

[3] G_2 as through hole for screws DIN ISO 4 762-12.9.



RUDS..-D · View rotated 90°

Accessories

Sealing elements KIT[1]			①	②	End wipers, contact		
					③	④	⑮
KIT	Description	Designation and KIT end number KIT.RWU..-E[10]	Fixing screws K_1 (2 pieces)	End plate, non-contact	Single lip, green	Double lip, black	Single lip, red
 156 881b	① Fixing screws K_1 ② End plate, non-contact ③ End wiper, single lip, green ④ End wiper, double lip, black ⑤ Carrier plate for end wiper ⑥ Additional wiper, single lip ⑦ Sealing ring ⑧ Screw plug K_2 ⑨ Lower sealing strips, single lip ⑩ Lower sealing strips, double lip ⑪ Upper sealing strips, single lip ⑮ End wiper, single lip, red	100[10]	1	1	1	–	–
		103[10]					
		120[7]			–	1	
		123[9]					
 156 882c		130[8][9]	1	1	1	1	–
		133[8][9]					
		140[8][9]			2	–	
		143[8][9]					
 156 883b		300[8][9]	1	1	1	–	–
		303[8][9]					
		340[8]			–	1	
		343[8]					
 217 098b		350[8]	1	1	–	1	1[6]
		353[8]					
 217 148		900	–	–	–	–	–
		910					
 217 103b		920[7]	–	–	–	–	–
		930					

Attention! The table is only a guide.
The specific application conditions must be taken into consideration when selecting the elements.

The sealing elements can be used in various combinations.
However, not every combination is possible or advisable.
For recommended and possible combinations, see page 164.

[1] The KITs are available for the series RUE..-E (-KT).

[2] Ordering example for KIT100 for RUE35-E: KIT.RWU35-E-OS-100.

[3] See figure bottom right.

[4] For definition see page 150.

[5] Material NBR.

[6] Material FPM, for protection against aggressive media (for example acids, alkalis).

[7] Standard for RUE-E and RUE-E-KT.

[8] If relubrication is carried out from the end face a lubrication adapter S31 is required, see page 152.

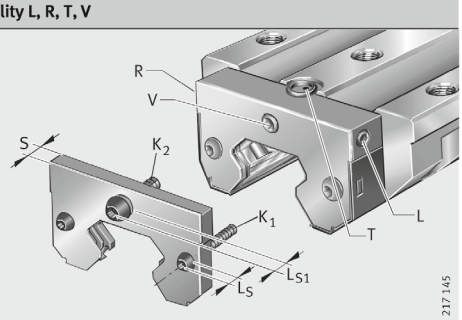
[9] Not available for size 65.

[10] Available by agreement for size RUE25-D.

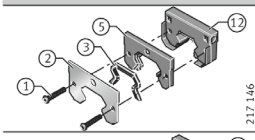
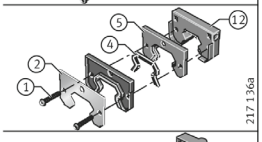
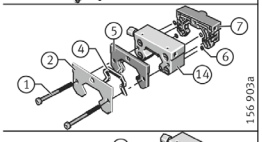
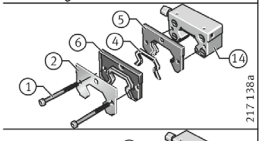
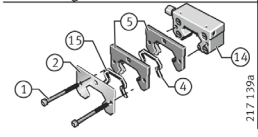
⑤ Carrier plate	⑥ Additional wiper, single lip	⑦ Sealing ring	⑧ Screw plug K_2	Sealing strips			Relubrication facility[3]	Fitting of KIT		Width S in mm[3]	Contamination[4]			
				Lower		Upper								
				⑨ Single lip	⑩ Double lip	⑪ Single lip		Retrofittable[2]	Factory fit		Very slight	Slight	Moderate	Heavy
–	–	–	–	–	–	–	L, R, T, V	■	■	–	■	■	–	–
							L, R, V	–	■					
							L, R, T, V	■	■		■	■		
							L/R/V	–	■					
1	–	1	1	–	–	–	L, R, T, V	■	■	5,8	–	■	■	–
							L, R, V	–	■					
							L, R, T, V	■	■					
							L, R, V	–	■					
–	1[5]	1	1	–	–	–	L, R, T, V	■	■	5,4	–	–	■	■
							L, R, V	–	■					
							L, R, T, V	■	■					
							L, R, V	–	■					
1	–	1	1	–	–	–	L, R, T, V	■	■	5,8	–	–	■	■
							L, R, V	–	■					
–	–	–	–	1	–	–	–	–	■	–	■	–	–	–
				–	1						–	■		
–	–	–	–	1	–	1	–	–	■	–	–	■	–	–
				–	1	–						–	■	■

Fixing screws and screw plugs K_1, K_2, width S, relubrication facility L, R, T, V

RUE size	KIT end number	Fixing screw K_1		Screw plug K_2	
			L_s mm		L_{s1} mm
35 **45**	120	M4	2,2	–	–
	130, 140, 300, 340, 350		2,2	M6	4,3
55 **65**	120	M5	2,75	–	–
	130, 140, 300, 340, 350			M6	4,3



Accessories

Lubrication elements KIT[1]			①	②	End wipers, contact		
					③	④	⑮
KIT	Description	Designation and KIT end number KIT.RWU..-E[13]	Fixing screws K_1 (2 pieces)	End plate, non-contact	Single lip, green	Double lip, black	Single lip, red
	① Fixing screws K_1 ② End plate ③ End wiper, single lip, green ④ End wiper, double lip, black ⑤ Carrier plate ⑥ Additional wiper ⑫ Long term lubrication unit ⑭ Minimal lubricant quantity-metering unit ⑮ End wiper, single lip, red	410[7]	1	1	–	1	–
		413[7][8]					
		420[7]	1	1	–	1	–
		423[7][8]					
		510	1	1	–	1	–
		511					
		530	1	1	–	1	–
		531					
		550	1	1	–	–	1[6]
		551					
		560[12]	1	1	–	1	–
		561[12]					

Attention! The table is only a guide.
The specific application conditions must be taken into consideration when selecting the elements.

The lubrication elements can be used in various combinations.
However, not every combination is possible or advisable.
For recommended and possible combinations, see page 164.

[1] The KITs are available for the series RUE-E (-KT) .

[2] Ordering example for KIT410 for RUE35-E: KIT.RWU35-E-OS-410.

[3] See figure bottom right.

[4] For definition see page 150.

[5] Material NBR.

[6] Material FPM, for protection against aggressive media (for example acids, alkalis).

[7] KIT.RWU..-E-4 must always be fitted to both sides of the carriage.

[8] In the case of KIT.RWU..-413 (-423) the upper relubrication hole is additionally closed off.

[9] Valid for sizes 35 to 45.

[10] Valid for size 55.

[11] Valid for size 65.

[12] Not available for size 65.

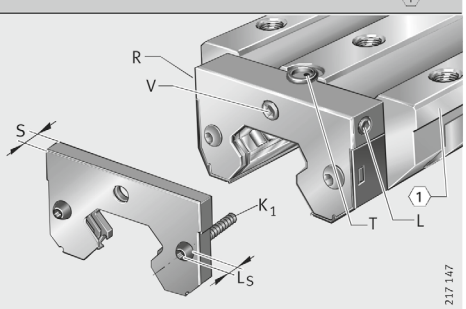
[13] Available by agreement for size RUE25-D.

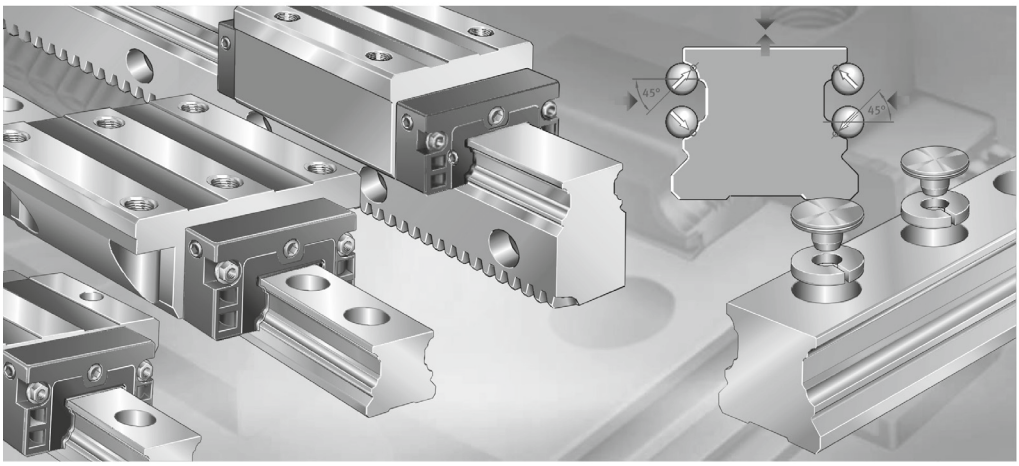
[14] ① Locating face

⑤ Carrier plate	⑥ Additional wiper, contact, single lip, black	⑫ Long term lubrication unit	Minimal lubricant quantity metering unit Connector ⑭ On right side	Minimal lubricant quantity metering unit Connector ⑭ On left side	Relubrication facility[3]	Fitting of KIT Retrofittable[2]	Fitting of KIT Factory fit	Width S in mm[3]	Contamination[4] Very slight	Slight	Moderate	Heavy
1	–	1	–	–	L, R	■	■	17,5[9] 22,5[10] 23,4[11]	–	■	■	–
						–	■					
1	1[5]	1	–	–	L, R	■	■	22,5[9] 23,2[9] 23,4[10]	–	–	■	■
						–	■					
1	–	–	■	–	R	–	■	31,8	–	■	■	–
			–	■	L							
1	1[5]	–	■	–	R	–	■	36,8	–	–	■	■
			–	■	L							
2	–	–	■	–	R	–	■	37,2	–	–	■	■
			–	■	L							
2	–	–	■	–	R					■		–
			–	■	L							

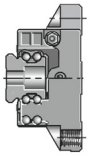
Fixing screws K_1, width S and relubrication facility L, R, T, V ① 14)

RUE size	KIT end number	Fixing screw K_1	L_S mm
35 **45**	410, 420	M4	2,8
	510, 530, 550, 560		4
55 **65**	400, 430	M5	2,7
	510, 530, 550, 560		5

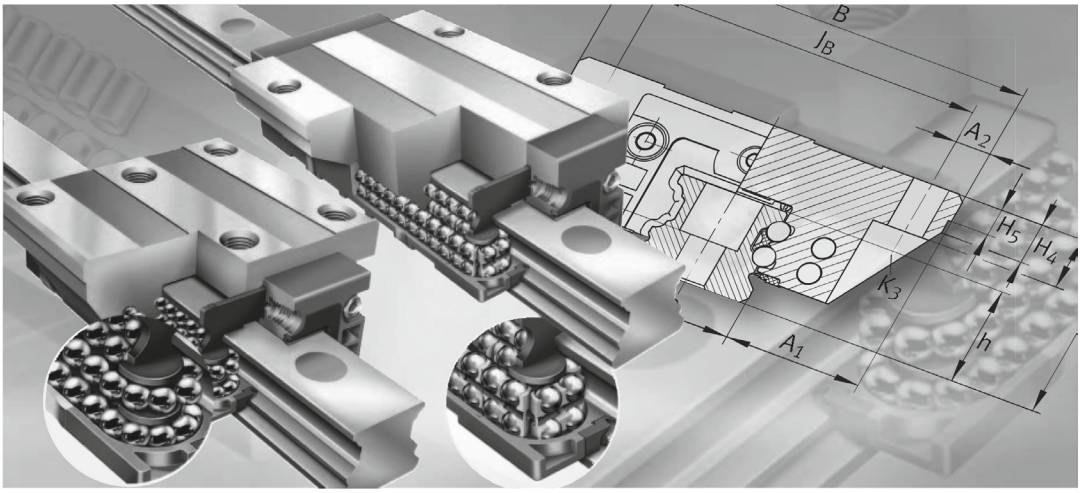




Four-row linear recirculating ball bearing and guideway assemblies



Full complement
With Quad-Spacers
With toothed guideway
With integral measuring system
Accessories



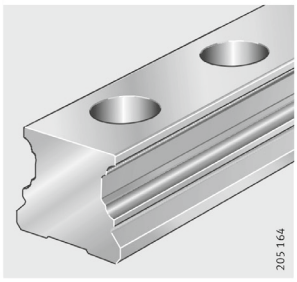
Four-row linear recirculating ball bearing and guideway assemblies

Full complement
With Quad-Spacers

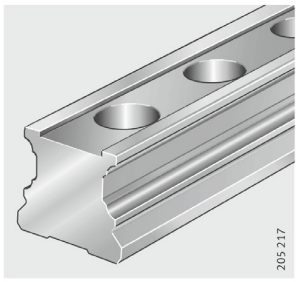
Guideways

Standard
or
with slot for covering strip

TKVD

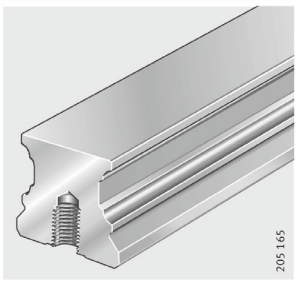


TKVD..-ADB, TKVD..-ADB+K

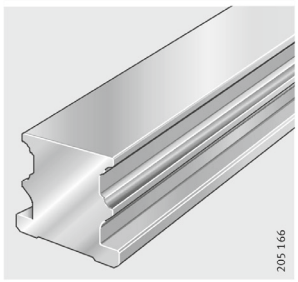


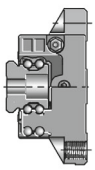
For screw mounting from below
With slots for clamping lugs

TKVD..-U



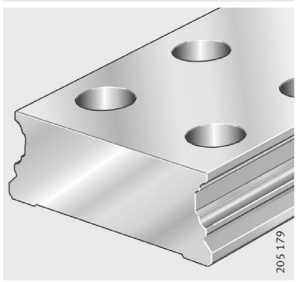
TKVD..-K





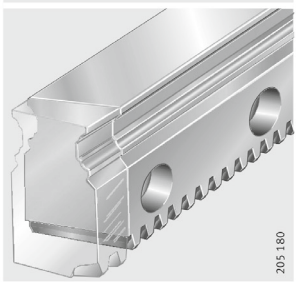
Wide guideway

TKVD..-W

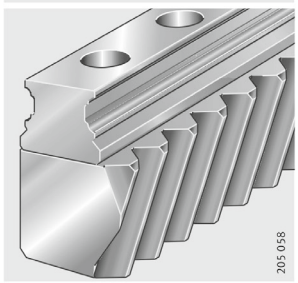


With helical teeth

TKVD..-ZHP



TKVD..-ZHST+SVS



Sealing

Elastic end wipers are fitted to the end pieces of the carriages on both sides to retain the lubricant within the system.

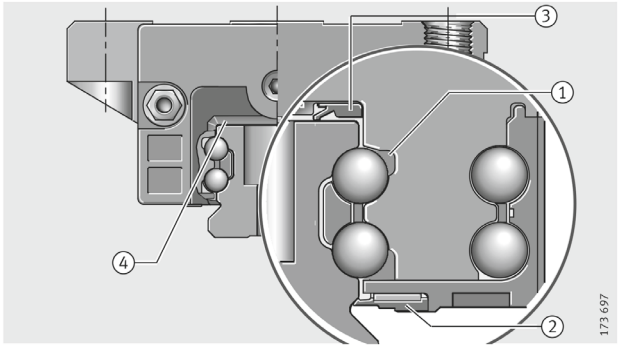
Standard sealing strips as well as additional optional upper sealing strips ensure reliable sealing and protect the rolling element system against contamination, even in demanding environmental conditions, *Figure 3*.

Attention! If the contamination conditions are exceptionally severe, please contact us.

Lubrication

Linear recirculating ball bearing and guideway assemblies KUVE..-B and KUVE..-B-KT are suitable for oil and grease lubrication and the systems are supplied with initial greasing. They are lubricated via the lubrication nipple in the end piece (on the end face or from the side). The end face lubrication nipple is included in the delivery. Lubrication nipples for relubrication from the side are available by agreement.

Due to the integral lubricant reservoir in the carriages, the units have extended relubrication intervals, *Figure 3*. Depending on the application, they may also give maintenance-free operation.



① Integral lubricant pockets with grease reservoir
② Standard sealing strip
③ Optional sealing strip
④ Elastic wipers on end faces

Figure 3
Lubricant reservoir and sealing

Operating temperature

Four-row linear recirculating ball bearing and guideway assemblies can be used at operating temperatures from –10 °C to +100 °C.

Four-row linear recirculating ball bearing and guideway assemblies

Design and safety guidelines

Preload

Four-row linear recirculating ball bearing and guideway assemblies are available in preload classes V1 and V2, see table.

Preload classes

Preload class[1]	Preload setting	Suitable for
V1[2]	0,04 · C	☐ Moderate load ☐ High rigidity requirements ☐ Moment load
V2	0,1 · C	☐ High alternating load ☐ Particularly high rigidity requirements ☐ Moment load

1) Other preload classes available by agreement.

2) Standard preload class.

Influence of preload on the linear guidance system

Increasing the preload increases the rigidity.
However, preload also influences the displacement resistance and operating life of linear guidance systems.

Friction

The coefficient of friction is dependent on the ratio C/P, see table.

Coefficient of friction

Load C/P	Coefficient of friction μ_{KUVE}
4 to 20	0,0007 to 0,0015

Rigidity

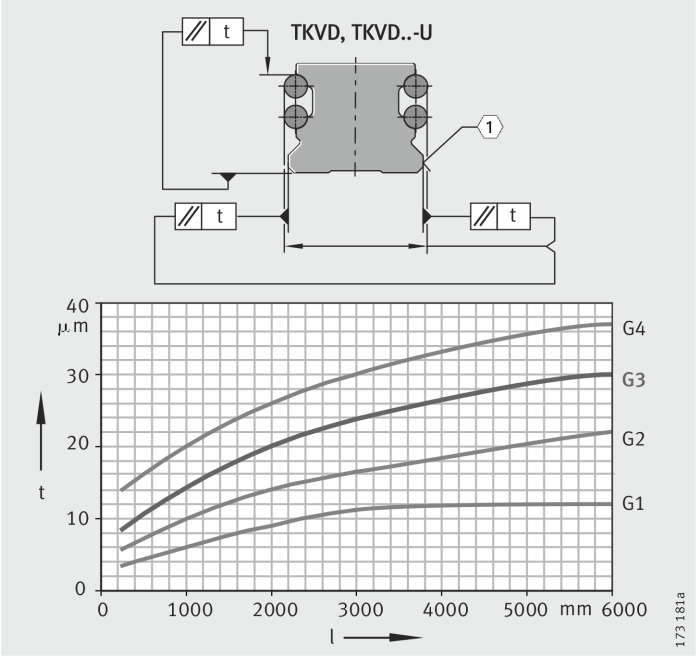
The spring curves show the deformation of linear recirculating ball bearing and guideway assemblies including the deformation of the screw connections to the adjacent construction, *Figure 4*, page 241 to *Figure 21*, page 249.

Four-row linear recirculating ball bearing and guideway assemblies

Accuracy

Accuracy classes

Four-row linear recirculating ball bearing and guideway assemblies are available in accuracy classes G1 to G4, *Figure 26*.
The standard is class G3.



t = parallelism tolerance with differential measurement
l = total guideway length
1 Locating face

Figure 26
Accuracy classes and parallelism tolerances of guideways

Parallelism of raceways to locating surfaces

The parallelism tolerances of guideways are shown in *Figure 26*.
In systems with Corrotect® coating, there may be deviations in tolerances compared with uncoated units.

Tolerances

Tolerances: see table Accuracy class tolerances, reference dimensions for accuracy: see *Figure 27*.

The tolerances are arithmetic mean values. They relate to the centre point of the screw mounting or locating surfaces of the carriage.

The dimensions H and A_1 (table Accuracy class tolerances) should always remain within the tolerance irrespective of the position of the carriage on the guideway.

Accuracy class tolerances

Tolerance		Accuracy			
		G1 µm	G2 µm	G3[1] µm	G4 µm
Tolerance for height	H	±10	±20	±25	±80
Height difference[2]	ΔH	5	10	15	20
Tolerance for spacing	A_1	±10	±15	±20	±80
Spacing difference[2]	ΔA_1	7	15	22	30

1) Standard accuracy class.

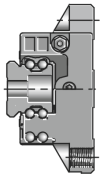
2) Difference between several carriages on one guideway, measured at the same point on the guideway.

Units with coating

For these units, the values for the appropriate accuracy class must be increased by the values (dependent on the coating); for values see table.

Tolerances for coated parts

Tolerance		With Corrotect® coating		With Protect A coating	With Protect B coating
		RRF[1] µm	RRFT[2] µm	KD µm	KDC µm
Tolerance for height	H	+6	+3	+6	+6
Height difference[3]	ΔH	+3	0	+3	+3
Tolerance for spacing	A_1	+3	+3	+3	+3
Spacing difference[3]	ΔA_1	+3	0	+3	+3



1) Displacement in tolerance zone (guideway and carriage coated).

2) Displacement in tolerance zone (guideway only coated).

3) Difference between several carriages on one guideway, measured at the same point on the guideway.

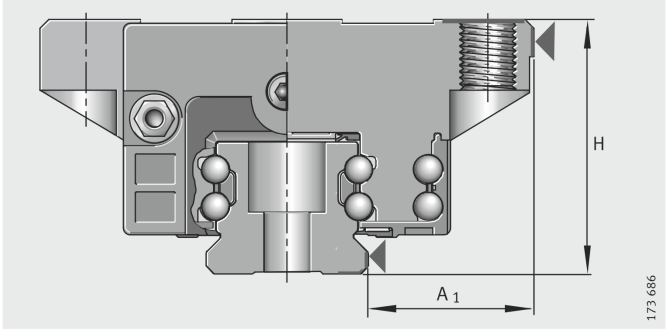
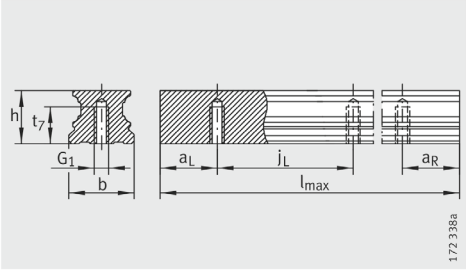


Figure 27
Datum dimensions for accuracy

NOTES:

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
Standard, L, N and NL carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions											
	l_{max} [1]	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	J_{LZ}	j_L	a_L, a_R [2] min.	a_L, a_R [2] max.	H_1	H_4
KUVE15-B	1 200	24	47	59,6	16	38	15	4,5	39,8	30	26	60	20	53	4,3	7,6
KUVE20-B	2 960	30	63	69,8	21,5	53	20	5	50,4	40	35	60	20	53	4,5	11
KUVE20-B-L				87,3					67,9							
KUVE20-B-N		27		69,8					50,4							8,6
KUVE20-B-NL				87,3					67,9							
KUVE25-B	2 960	36	70	81,7	23,5	57	23	6,5	60,7	45	40	60	20	53	5,1	10,9
KUVE25-B-L				107,5					86,5							
KUVE25-B-N		31		81,7					60,7							9,3
KUVE25-B-NL				107,5					86,5							
KUVE30-B	2 960	42	90	97,4	31	72	28	9	72	52	44	80	20	71	5,9	13,8
KUVE30-B-L				125,4					100							
KUVE30-B-N		38		97,4					72							9,8
KUVE30-B-NL				125,4					100							
KUVE35-B	2 960	48	100	110,4	33	82	34	9	80	62	52	80	20	71	6,7	14,3
KUVE35-B-L				143,4					113							
KUVE35-B-N		44		110,4					80							10,3
KUVE35-B-NL				143,4					113							
KUVE45-B	2 940	60	120	139	37,5	100	45	10	102,5	80	60	105	20	94	9,7	19,9
KUVE45-B-L				171,1					134,6							
KUVE45-B-N		52		139					102,5							17,2
KUVE45-B-NL				171,1					134,6							
KUVE55-B	2 520	70	140	172	43,5	116	53	12	132	95	70	120	20	107	13,5	22,7
KUVE55-B-L				210					170							

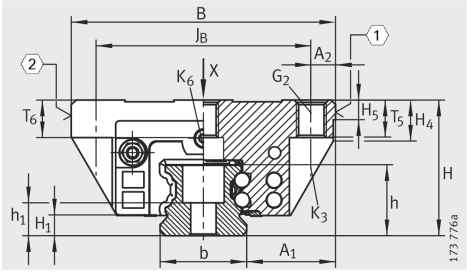
For further table values, see page 266 and page 267.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259.
Maximum single-piece guideway length of 6 m available by agreement.

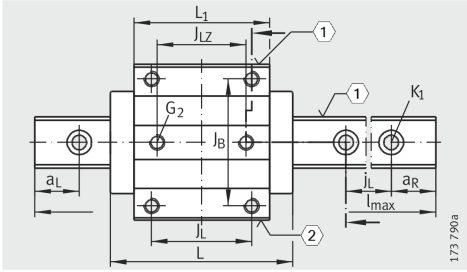
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking

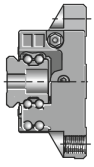


KUVE..-B (-L, -N, -NL)
①, ② [4]



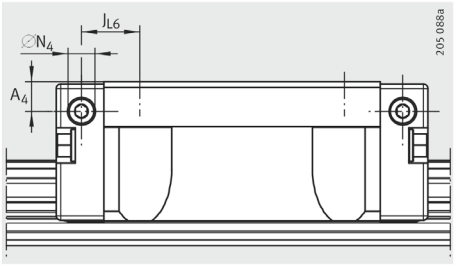
KUVE..-B (-L, -N, -NL) · View rotated 90°
①, ② [4]

						Fixing screws[3]											
H_5	T_5	T_6	t_7	h	h_1	G_1 DIN ISO 4762-12.9		G_2		K_1		K_3		K_6		K_6 DIN 7984-8.8	
							M_A Nm		M_A Nm		M_A Nm		M_A Nm		M_A Nm		M_A Nm
4,75	7	5,8	8	15	8,15	M5	10	M5	5,8	M4	5	M4	5	–	–	M4	2
5,25	10	7,5	10	17	9,1	M6	17	M6	10	M5	10	M5	10	M5	10	–	–
	8	6										M5	10	–	–	M5	4
5,25	10	10	12	18,7	8,7	M6	17	M8	24	M6	17	M6	17	M6	17	–	–
		8												–	–	M6	8
6,25	12	11,5	15	23,5	11,5	M8	41	M10	41	M8	41	M8	41	M8	41	–	–
		9												–	–	M8	12
6,75	13	12,3	15	27	15	M8	41	M10	41	M8	41	M8	41	M8	41	–	–
		8,3												–	–	M8	12
9,25	15	15	20	34,2	16,2	M12	140	M12	83	M12	140	M10	83	M10	83	–	–
		11												–	–	M10	35
11,25	21	18	22	41,5	19,5	M14	220	M14	140	M14	220	M12	140	M12	140	–	–



Four-row linear recirculating ball bearing and guideway assemblies

Full complement
Standard, L, N and NL carriages



Lubrication connector on lateral face

Dimension table (continued) · Dimensions in mm

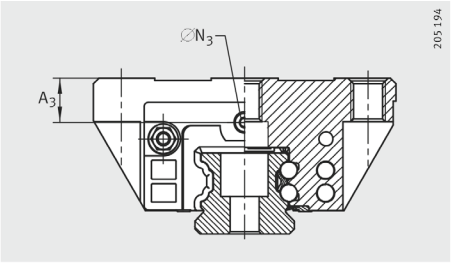
Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE15-B	KWVE15-B	0,2	TKVD15-B (-U)[2]	1,44	KA07-TN/A
KUVE20-B	KWVE20-B	0,44	TKVD20 (-U)	2,2	KA10-TN/A
KUVE20-B-L	KWVE20-B-L	0,59			
KUVE20-B-N	KWVE20-B-N	0,37			
KUVE20-B-NL	KWVE20-B-NL	0,51			
KUVE25-B	KWVE25-B	0,68	TKVD25(-U)	2,7	KA11-TN/A
KUVE25-B-L	KWVE25-B-L	1			
KUVE25-B-N	KWVE25-B-N	0,56			
KUVE25-B-NL	KWVE25-B-NL	0,82			
KUVE30-B	KWVE30-B	1,2	TKVD30(-U)	4,3	KA15-TN/A
KUVE30-B-L	KWVE30-B-L	1,7			
KUVE30-B-N	KWVE30-B-N	1			
KUVE30-B-NL	KWVE30-B-NL	1,5			
KUVE35-B	KWVE35-B	1,75	TKVD35(-U)	5,7	KA15-TN/A
KUVE35-B-L	KWVE35-B-L	2,52			
KUVE35-B-N	KWVE35-B-N	1,56			
KUVE35-B-NL	KWVE35-B-NL	2,23			
KUVE45-B	KWVE45-B	3,3	TKVD45(-U)	9,2	KA20-TN/A
KUVE45-B-L	KWVE45-B-L	4,3			
KUVE45-B-N	KWVE45-B-N	2,72			
KUVE45-B-NL	KWVE45-B-NL	3,38			
KUVE55-B	KWVE55-B	5,5	TKVD55-B(-U)	14	KA24-TN/A
KUVE55-B-L	KWVE55-B-L	6,6			

1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

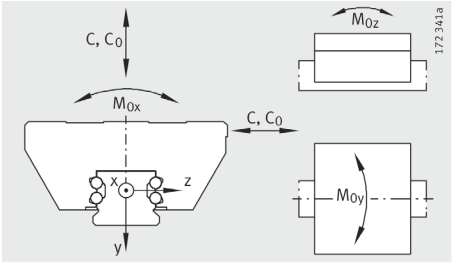
2) The new carriages cannot be used on the previous guideways TKVD15(-U).

3) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

4) Maximum permissible screw depth for lubrication connectors.

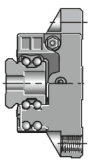


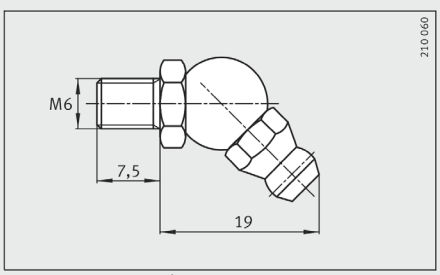
Lubrication connector on end face



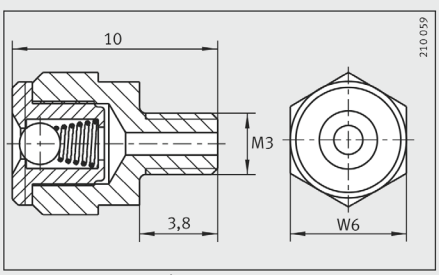
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[4]	A_4	$\varnothing N_4$	[4]	J_{L6}	Basic load ratings		Moment ratings		
							C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
4,3	2,57	5,5	3,2	2,57	5,5	9,1	7 200	14 500	150	100	100
7,7	4,5	7	4,6	4,5	5,5	9,4	13 100	27 000	332	240	240
						18,9	16 200	36 500	452	430	430
4,7			3,3	2,57		9,4	13 100	27 000	332	240	240
						18,9	16 200	36 500	452	430	430
11	5,5	7	6,5	5,6	7	12,85	17 900	37 000	510	395	395
						25,75	23 400	54 000	745	825	825
6			4	2,57	6	12,05	17 900	37 000	510	395	395
						24,95	23 400	54 000	745	825	825
11,5	5,5	7	7	5,5	7	15,5	27 500	55 000	970	660	660
						29,5	34 500	74 000	1 320	1 180	1 180
7,5			4,95	4,5		15,1	27 500	55 000	970	700	700
						29,1	34 500	74 000	1 310	1 240	1 240
12,3	5,5	7	11	5,5	7	16	38 000	72 000	1 465	1 020	1 020
						32,5	47 500	100 000	2 625	1 890	1 890
8,3			7			16	38 000	72 000	1 465	1 020	1 020
						32,5	47 500	100 000	2 025	1 890	1 890
16,5	5,5	7	16,5	5,5	7	19,25	69 000	141 000	3 610	2 485	2 485
						35,3	82 000	181 000	4 635	4 000	4 000
8,5			8,5			19,25	69 000	141 000	3 610	2 485	2 485
						35,5	82 000	181 000	5 635	4 000	4 000
15	5,5	7	15	5,5	7	30,5	104 000	213 000	5 600	2 730	2 730
						49,5	127 000	285 000	7 500	4 725	4 800





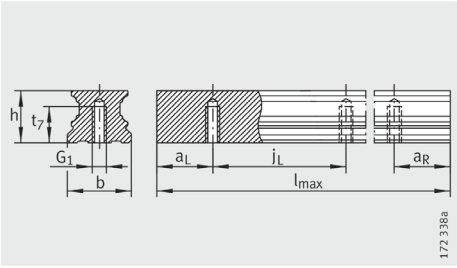
Lubrication nipple[3]



Lubrication nipple[3], width across flats W = 6 mm

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
H, S, SN carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions								
	l_{max} [1]	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	j_L	a_L, a_R [2] min.	a_L, a_R [2] max.
KUVE15-B-H	1 200	28	34	59,6	9,5	26	15	4	39,8	26	60	20	53
KUVE15-B-S		24											
KUVE20-B-H	2 960	30	44	69,8	12	32	20	6	50,4	36	60	20	53
KUVE20-B-S													
KUVE20-B-SN		27											
KUVE25-B-H	2 960	40	48	81,7	12,5	35	23	6,5	60,7	35	60	20	52
KUVE25-B-S		36											
KUVE25-B-SN		31											
KUVE30-B-H	2 960	45	60	97,4	16	40	28	10	72	40	80	20	71
KUVE30-B-S		42											
KUVE30-B-SN		38											
KUVE35-B-H	2 960	55	70	110,4	18	50	34	10	80	50	80	20	71
KUVE35-B-S		48											
KUVE35-B-SN		44											
KUVE45-B-H	2 940	70	86	139	20,5	60	45	13	102,5	60	105	20	94
KUVE45-B-S		60											
KUVE45-B-SN		52											
KUVE55-B-S	2 520	70	100	172	23,5	75	53	12,5	132	75	120	20	107

For further table values, see page 270 and page 271.

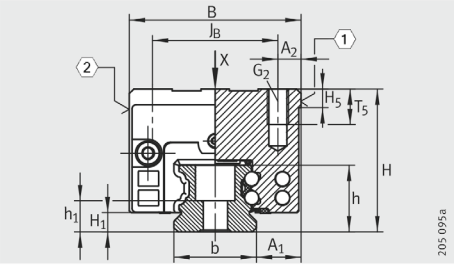
1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259. Maximum single-piece guideway length of 6 m available by agreement.

2) a_L and a_R are dependent on the guideway length.

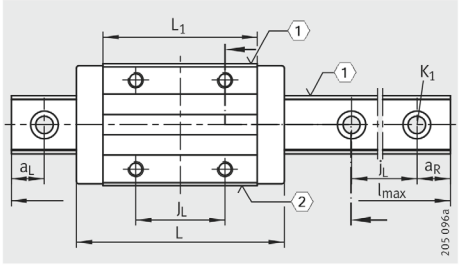
3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking

Web: www.endo.com.tr Mail: satis@endo.com.tr Tel: +90 232 433 85 15

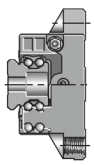


KUVE..-B (-H, -S, -SN)
①, ② 4)



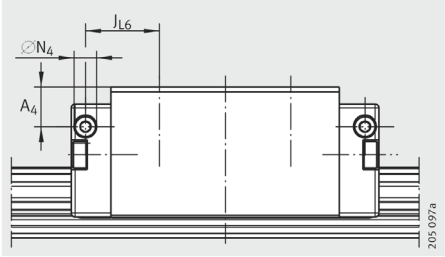
KUVE..-B (-H, -S, -SN) · View rotated 90°
①, ② 4)

						Fixing screws 3)					
H_1	H_5	T_5	t_7	h	h_1	G_1 DIN ISO 4762-12.9		G_2		K_1	
							M_A Nm		M_A Nm		M_A Nm
4,3	4,75	6	8	15	8,15	M5	10	M4	5	M4	5
4,5	5,25	7,5	10	17	9,1	M6	17	M5	10	M5	10
5,1	5,25	10	12	18,7	8,7	M6	17	M6	17	M6	17
		7,5									
5,9	6,25	13,5	15	23,5	11,5	M8	41	M8	41	M8	41
		11									
6,7	6,75	13,5	15	27	15	M8	41	M8	41	M8	41
		23,5									
9,7	9,25	17	20	34,2	16,2	M12	140	M10	83	M12	140
		16,5									
13,5	11,25	15	22	41,5	19,6	M14	220	M12	140	M14	220



Four-row linear recirculating ball bearing and guideway assemblies

Full complement
H, S, SN carriages



Lubrication connector on lateral face

Dimension table (continued) · Dimensions in mm

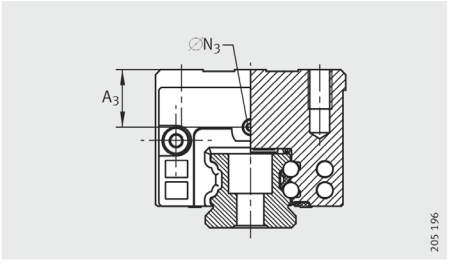
Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE15-B-H	KWVE15-B-H	0,2	TKVD15-B (-U)[2]	1,44	KA07-TN/A
KUVE15-B-S	KWVE15-B-S	0,16			
KUVE20-B-H	KWVE20-B-H	0,34	TKVD20 (-U)	2,2	KA10-TN/A
KUVE20-B-S	KWVE20-B-S				
KUVE20-B-SN	KWVE20-B-SN	0,29			
KUVE25-B-H	KWVE25-B-H	0,65	TKVD25(-U)	2,7	KA11-TN/A
KUVE25-B-S	KWVE25-B-S	0,56			
KUVE25-B-SN	KWVE25-B-SN	0,45			
KUVE30-B-H	KWVE30-B-H	1,04	TKVD30(-U)	4,3	KA15-TN/A
KUVE30-B-S	KWVE30-B-S	0,94			
KUVE30-B-SN	KWVE30-B-SN	0,8			
KUVE35-B-H	KWVE35-B-H	1,71	TKVD35(-U)	5,7	KA15-TN/A
KUVE35-B-S	KWVE35-B-S	1,3			
KUVE35-B-SN	KWVE35-B-SN	1,24			
KUVE45-B-H	KWVE45-B-H	3,36	TKVD45(-U)	9,2	KA20-TN/A
KUVE45-B-S	KWVE45-B-S	2,67			
KUVE45-B-SN	KWVE45-B-SN	2,12			
KUVE55-B-S	KWVE55-B-S	4,35	TKVD55-B(-U)	14	KA24-TN/A

1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

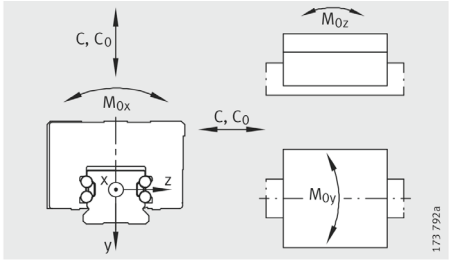
2) The new carriages cannot be used on the previous guideways TKVD15(-U).

3) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

4) Maximum permissible screw depth for lubrication connectors.

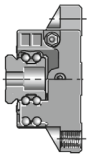


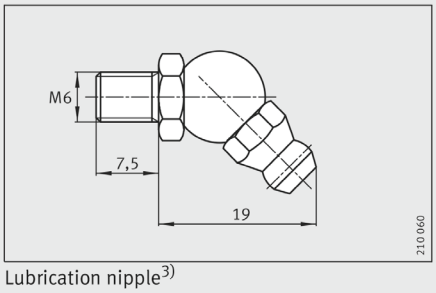
Lubrication connector on end face



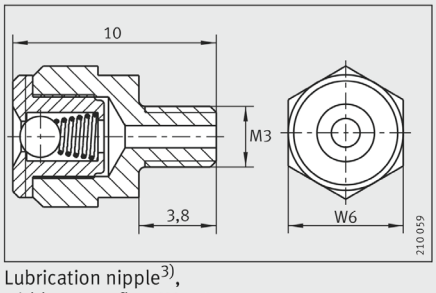
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[4]	A_4	$\varnothing N_4$	[4]	J_{L6}	Basic load ratings		Moment ratings		
							C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
8,3	2,57	5,5	7,2	2,57	5,5	11,1	7 200	14 500	150	100	100
4,3			3,2								
8	4,5	7	4,6	4,5	5,5	11,4	13 100	27 000	332	240	240
4,7			3,3	2,57							
15	5,5	7	10,5	5,6	7	17,9	17 900	37 000	510	395	395
11			6,5								
6			4	2,57	6						
14,5	5,5	7	10	5,5	7	21,5	27 500	55 000	970	700	700
11,5			7								
7,5			4,95	4,5							
19,3	5,5	7	18	5,5	7	22	38 000	72 000	1 465	1 020	1 020
12,3			11								
8,3			7								
26,5	5,5	7	26,5	5,5	7	29,3	69 000	141 000	3 610	2 485	2 485
16,5			16,5								
8,5			8,5								
15	5,5	7	15	5,5	7	40,5	104 000	213 000	5 600	2 730	2 730





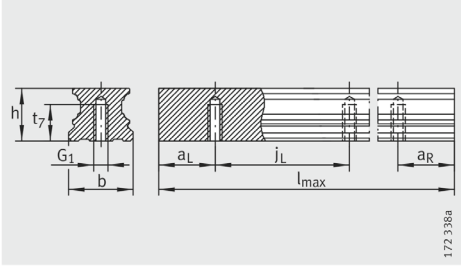
Lubrication nipple[3]



Lubrication nipple[3],
width across flats W = 6 mm

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
SL, HL, SNL carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Dimensions						
	l_{max} [1]	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	j_L
KUVE20-B-SL	2960	30	44	87,3	12	32	20	6	67,9	50	60
KUVE20-B-SNL		27									
KUVE25-B-HL	2960	40	48	107,5	12,5	35	23	6,5	86,5	50	60
KUVE25-B-SL		36									
KUVE25-B-SNL		31									
KUVE30-B-HL	2960	45	60	125,4	16	40	28	10	100	60	80
KUVE30-B-SL		42									
KUVE30-B-SNL		38									
KUVE35-B-HL	2960	55	70	143,4	18	50	34	10	113	72	80
KUVE35-B-SL		48									
KUVE35-B-SNL		44									
KUVE45-B-HL	2940	70	86	171,1	20,5	60	45	13	134,6	80	105
KUVE45-B-SL		60									
KUVE45-B-SNL		52									
KUVE55-B-SL	2520	70	100	210	23,5	75	53	12,5	170	95	120

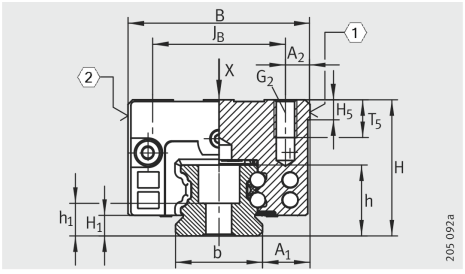
For further table values, see page 274 and page 275.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259. Maximum single-piece guideway length of 6 m available by agreement.

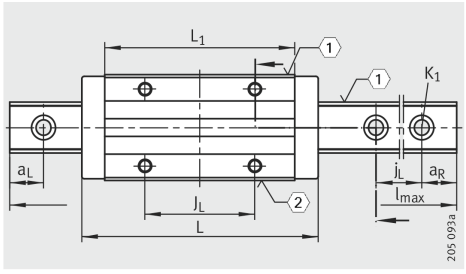
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking

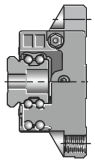


KUVE..-B (-SL, -HL, -SNL)
①, ② 4)



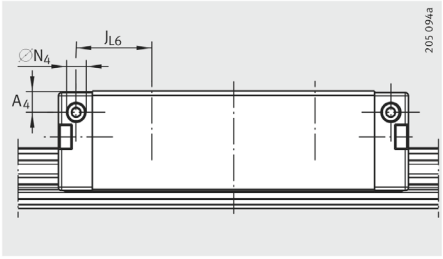
KUVE..-B (-SL, -HL, -SNL) · View rotated 90°
①, ② 4)

								Fixing screws[3]					
a_L, a_R[2]		H_1	H_5	T_5	t_7	h	h_1	G_1 DIN ISO 4 762-12.9		G_2		K_1	
min.	max.								M_A Nm		M_A Nm		M_A Nm
20	53	4,5	5,25	7,5	10	17	9,1	M6	17	M5	10	M5	10
20	53	5,1	5,25	10 7,5	12	18,7	8,7	M6	17	M6	17	M6	17
20	71	5,9	6,25	13,5 11	15	23,5	11,5	M8	41	M8	41	M8	41
20	71	6,7	6,75	13,5	15	27	15	M8	41	M8	41	M8	41
20	94	9,7	9,25	17 16,5	20	34,2	16,2	M12	140	M10	83	M12	140
20	107	13,5	11,25	15	22	41,5	19,5	M14	220	M12	140	M14	220



Four-row linear recirculating ball bearing and guideway assemblies

Full complement
SL, HL, SNL carriages



Lubrication connector on lateral face

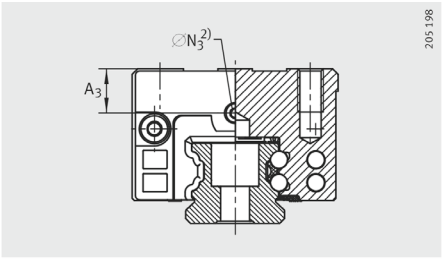
Dimension table (continued) · Dimensions in mm

Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE20-B-SL	KWVE20-B-SL	0,46	TKVD20 (-U)	2,2	KA10-TN/A
KUVE20-B-SNL	KWVE20-B-SNL	0,38			
KUVE25-B-HL	KWVE25-B-HL	1	TKVD25(-U)	2,7	KA11-TN/A
KUVE25-B-SL	KWVE25-B-SL	1			
KUVE25-B-SNL	KWVE25-B-SNL	0,62			
KUVE30-B-HL	KWVE30-B-HL	1,43	TKVD30(-U)	4,3	KA15-TN/A
KUVE30-B-SL	KWVE30-B-SL	1,7			
KUVE30-B-SNL	KWVE30-B-SNL	1,1			
KUVE35-B-HL	KWVE35-B-HL	2,4	TKVD35(-U)	5,7	KA15-TN/A
KUVE35-B-SL	KWVE35-B-SL	1,81			
KUVE35-B-SNL	KWVE35-B-SNL	1,72			
KUVE45-B-HL	KWVE45-B-HL	4,27	TKVD45(-U)	9,2	KA20-TN/A
KUVE45-B-SL	KWVE45-B-SL	3,38			
KUVE45-B-SNL	KWVE45-B-SNL	2,68			
KUVE55-B-SL	KWVE55-B-SL	6,3	TKVD55(-U)	14	KA24-TN/A

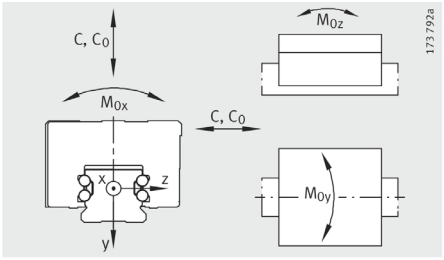
1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

2) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

3) Maximum permissible screw depth for lubrication connectors.

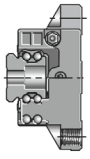


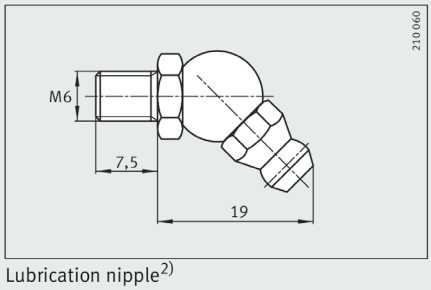
Lubrication connector on end face



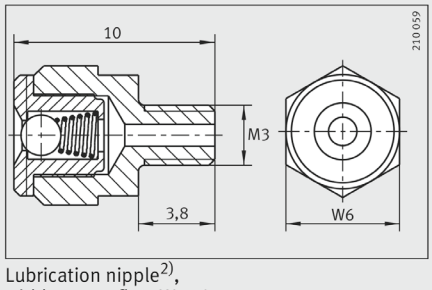
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[3]	A_4	$\varnothing N_4$	[3]	J_{L6}	Basic load ratings		Moment ratings		
							C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
7,7	4,5	7	4,6	4,5	5,5	13,2	16 200	36 500	452	430	430
4,7			3,3	2,57							
15	5,5	7	10,5	5,6	7	23,3	23 400	54 000	745	825	825
11			6,5								
6			4	2,57	6	22,5					
14,5	5,5	7	10	5,5	7	25,5	34 500	74 000	1 310	1 240	1 240
11,5			7								
7,5			4,95	4,5		25,1					
19,3	5,5	7	18	5,5	7	27,5	47 500	100 000	2 025	1 890	1 890
12,3			11								
8,3			7								
26,5	5,5	7	26,5	5,5	7	35,3	82 000	181 000	4 635	4 000	4 000
16,5			16,5								
8,5			8,5								
15	5,5	7	15	5,5	7	49,5	127 000	285 000	7 500	4 725	4 800





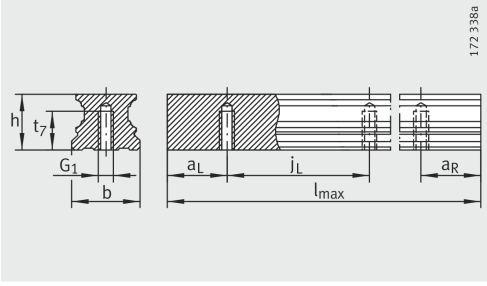
Lubrication nipple[2]



Lubrication nipple[2],
width across flats W = 6 mm

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
EC carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions							
	l_{max} [1]	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	a_L, a_R [2] min.	a_L, a_R [2] max.
KUVE15-B-EC	1 200	24	52	42,9	18,5	41	15	5,5	23,1	60	20	53
KUVE20-B-EC	2 960	28	59	48,8	19,5	49	20	5	29,4	60	20	53
KUVE25-B-EC	2 960	33	73	56,6	25	60	23	6,5	35,6	60	20	53
KUVE30-B-EC	2 960	42	90	67,4	31	72	28	9	42	80	20	71
KUVE35-B-EC	2 960	48	100	74,6	33	82	34	9	44,2	80	20	71
KUVE45-B-EC	2 940	60	120	96,2	37,5	100	45	10	59,7	105	20	94

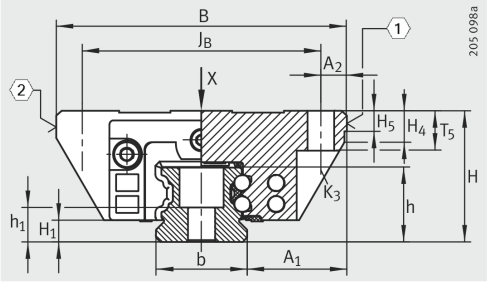
For further table values, see page 278 and page 279.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259. Maximum single-piece guideway length of 6 m available by agreement.

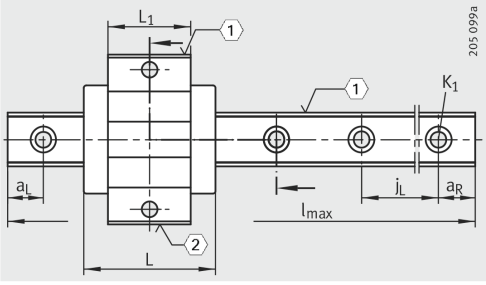
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking



KUVE..-B-EC
1, 2 4)

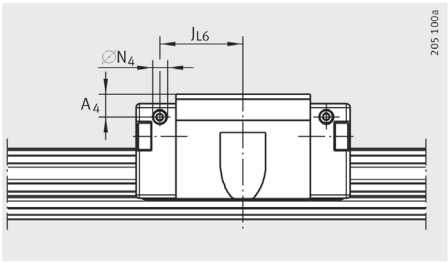


KUVE..-B-EC · View rotated 90°
1, 2 4)

							Fixing screws 3)					
H_1	H_4	H_5	T_5	t_7	h	h_1	G_1		K_1		K_3	
							DIN ISO 4762-12.9					
								M_A Nm		M_A Nm		M_A Nm
4,3	6,1	4,75	7	8	15	8,15	M5	10	M4	5	M4	5
4,5	11,2	5,25	9	10	17	9,1	M6	17	M5	10	M5	10
5,1	7,85	5,25	10	12	18,7	8,7	M6	17	M6	17	M6	17
5,9	13,8	6,25	12	15	23,5	11,5	M8	41	M8	41	M8	41
6,7	14,3	6,75	13	15	27	15	M8	41	M8	41	M8	41
9,7	19,9	9,25	15	20	34,2	16,2	M12	140	M12	140	M10	83

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
EC carriages



Lubrication connector on lateral face

Dimension table (continued) · Dimensions in mm

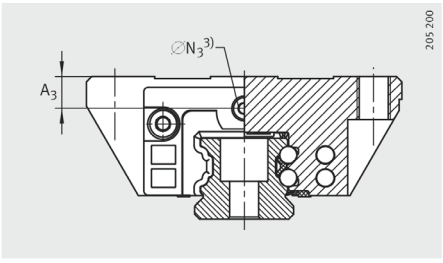
Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE15-B-EC	KWVE15-B-EC	0,13	TKVD15-B (-U)[2]	1,44	KA07-TN/A
KUVE20-B-EC	KWVE20-B-EC	0,23	TKVD20 (-U)	2,2	KA10-TN/A
KUVE25-B-EC	KWVE25-B-EC	0,4	TKVD25(-U)	2,7	KA11-TN/A
KUVE30-B-EC	KWVE30-B-EC	0,75	TKVD30(-U)	4,3	KA15-TN/A
KUVE35-B-EC	KWVE35-B-EC	1,04	TKVD35(-U)	5,7	KA15-TN/A
KUVE45-B-EC	KWVE45-B-EC	2,07	TKVD45(-U)	9,2	KA20-TN/A

1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

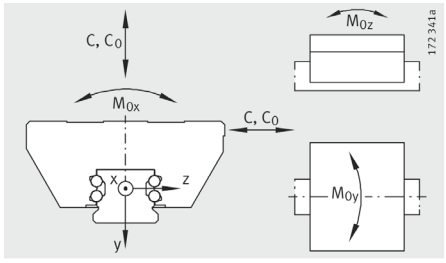
2) The new carriages cannot be used on the previous guideways TKVD15(-U).

3) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

4) Maximum permissible screw depth for lubrication connectors.

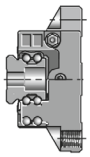


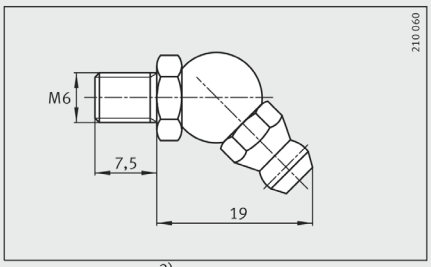
Lubrication connector on end face



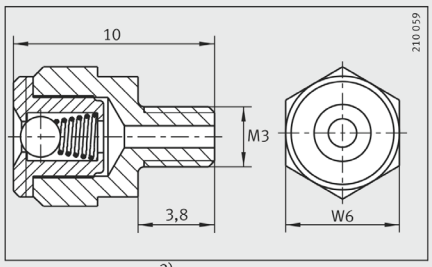
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[4]	A_4	$\varnothing N_4$	[4]	J_{L6}	Basic load ratings		Moment ratings		
							C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
4,3	2,57	5,5	3,2	2,57	5,5	15,8	4 900	8 300	86	35	35
6	4,5	7	4,3	2,57	5,5	18,9	8 900	15 400	190	85	85
8	5,5	7	6	2,57	6	22	12 500	22 200	305	155	155
11,5	5,5	7	7	5,5	7	26,5	18 700	31 500	554	248	248
12,3	5,5	7	11	5,5	7	29,1	24 600	39 000	790	330	330
16,5	5,5	7	16,5	5,5	7	37,9	46 500	80 000	2 060	883	883





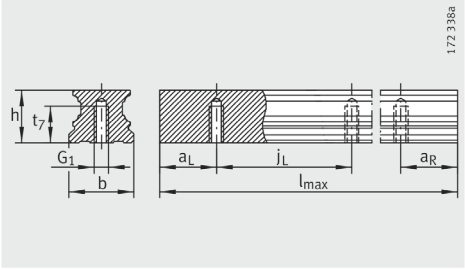
Lubrication nipple[3]



Lubrication nipple[3],
width across flats W = 6 mm

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
ESC carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions							
	l_{max} [1]	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	a_L, a_R [2] min.	a_L, a_R [2] max.
KUVE15-B-ESC	1 200	24	34	42,9	9,5	26	15	4	23,1	60	20	53
KUVE20-B-ESC	2 960	28	42	48,8	11	32	20	5	29,4	60	20	53
KUVE25-B-ESC	2 960	33	48	56,6	12,5	35	23	6,5	35,6	60	20	53
KUVE30-B-ESC	2 960	42	60	67,4	16	40	28	10	42	80	20	71
KUVE35-B-ESC	2 960	48	70	74,6	18	50	34	10	44,2	80	20	71
KUVE45-B-ESC	2 940	60	86	96,2	20,5	60	45	13	59,7	105	20	94

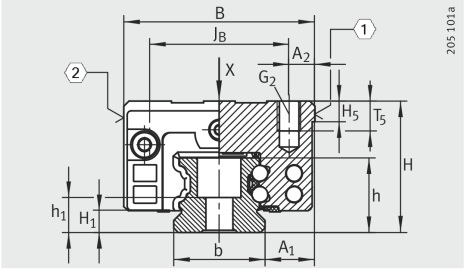
For further table values, see page 282 and page 283.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259. Maximum single-piece guideway length of 6 m available by agreement.

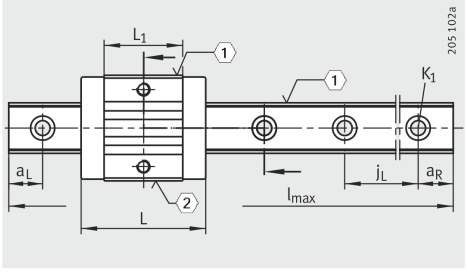
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking

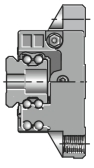


KUVE..-B-ESC
1, 2 4)



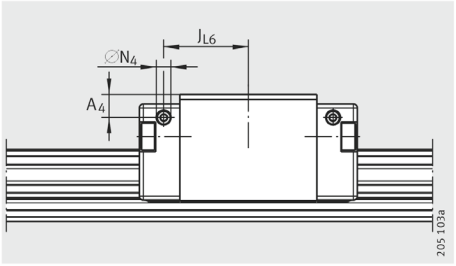
KUVE..-B-ESC · View rotated 90°
1, 2 4)

						Fixing screws3)					
H_1	H_5	T_5	t_7	h	h_1	G_1 DIN ISO 4 762-12.9		G_2		K_1	
							M_A Nm		M_A Nm		M_A Nm
4,3	4,75	6	8	15	8,15	M5	10	M4	5	M4	5
4,5	5,25	7,5	10	17	9,1	M6	17	M5	10	M5	10
5,1	5,25	10	12	18,7	8,7	M6	17	M6	17	M6	17
5,9	6,25	13,5	15	23,5	11,5	M8	41	M8	41	M8	41
6,7	6,75	13,5	15	27	15	M8	41	M8	41	M8	41
9,7	9,25	17	20	34,2	16,2	M12	140	M10	83	M12	140



Four-row linear recirculating ball bearing and guideway assemblies

Full complement
ESC carriages



Lubrication connector on lateral face

Dimension table (continued) · Dimensions in mm

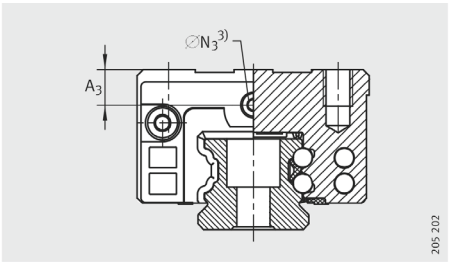
Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE15-B-ESC	KWVE15-B-ESC	0,12	TKVD15-B (-U) [2]	1,44	KA07-TN/A
KUVE20-B-ESC	KWVE20-B-ESC	0,18	TKVD20 (-U)	2,2	KA10-TN/A
KUVE25-B-ESC	KWVE25-B-ESC	0,3	TKVD25(-U)	2,7	KA11-TN/A
KUVE30-B-ESC	KWVE30-B-ESC	0,57	TKVD30(-U)	4,3	KA15-TN/A
KUVE35-B-ESC	KWVE35-B-ESC	1,04	TKVD35(-U)	5,7	KA15-TN/A
KUVE45-B-ESC	KWVE45-B-ESC	1,8	TKVD45(-U)	9,2	KA20-TN/A

1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

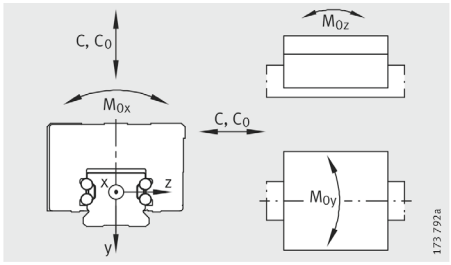
2) The new carriages cannot be used on the previous guideways TKVD15(-U).

3) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

4) Maximum permissible screw depth for lubrication connectors.

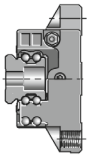


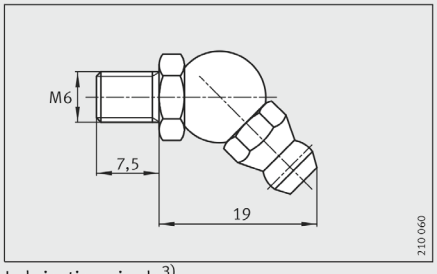
Lubrication connector on end face



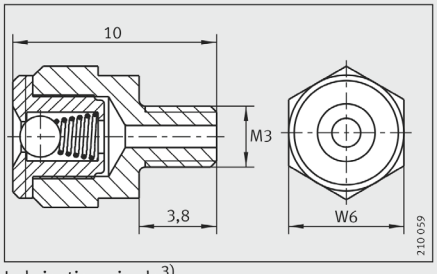
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[4]	A_4	$\varnothing N_4$	[4]	J_{L6}	Basic load ratings		Moment ratings		
							C	C_0	M_{0x}	M_{0y}	M_{0z}
							N	N	Nm	Nm	Nm
4,3	2,57	5,5	3,2	2,57	5,5	15,8	4 900	8 300	86	35	35
6	4,5	7	4,3	2,57	5,5	18,9	8 900	15 400	190	85	85
8	5,5	7	6	2,57	6	22	12 500	22 200	305	155	155
11,5	5,5	7	7	5,5	7	26,5	18 700	31 500	554	248	248
12,3	5,5	7	11	5,5	7	29,1	24 600	39 000	790	330	330
16,5	5,5	7	16,5	5,5	7	37,9	46 500	80 000	2 060	883	883





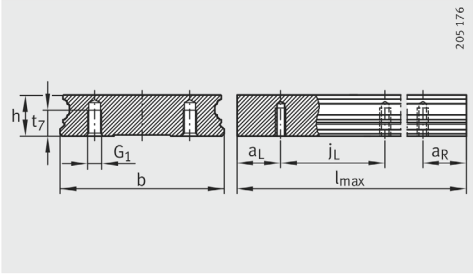
Lubrication nipple[3]



Lubrication nipple[3],
width across flats W = 6 mm

Four-row linear recirculating ball bearing and guideway assemblies

Full complement
Wide guideway
W, WL carriages



TKVD..-W-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions												
	l_{max} [1]	H	B	L	A_1	J_B	j_B	a_5	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	j_L	a_L, a_R [2] min.	a_L, a_R [2] max.	A_{L1}	H_1
KUVE15-W	1 200	21	68	55,6	15,5	60	22	7,5	37	4	39,8	29	50	10	44	1,5	4,3
KUVE20-W	1 980	27	80	69,8	19	70	24	9	42	5	50,4	40	60	20	53	19	4,6
KUVE25-WL	1 980	35	120	107,5	25,5	107	40	14,5	69	6,5	86,5	60	80	20	71	19	5,2
KUVE30-W	2 000	42	142	97,6	31	124	50	15	80	9	72	52	80	20	71	19	6
KUVE35-WL	2 960	50	162	140,2	36	144	60	15	90	9	109,8	80	80	20	71	19	6,8

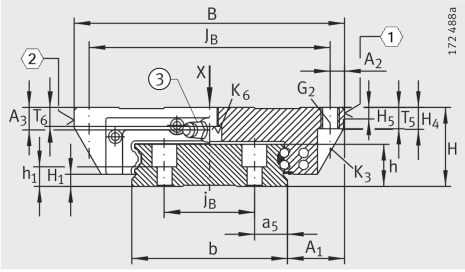
1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259.
Maximum single-piece guideway length of 6 m available by agreement.

2) a_L and a_R are dependent on the guideway length.

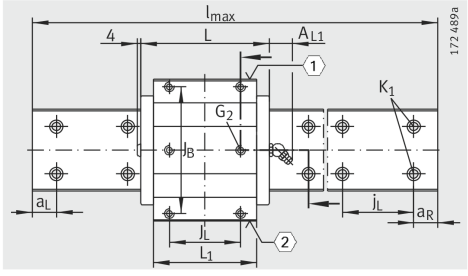
3) For location from above: the maximum screw depth for the central threaded holes is T_6 + 2,5 mm.

4) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

5) ① Locating face
② Marking
③ Tapered head lubrication nipple to DIN 71412-B M6,
KUVE20 to DIN 71412-B M5 and KUVE15 with drive fit lubrication nipple

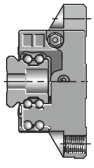


KUVE..-W (-WL)
1, 2, 3 [5]



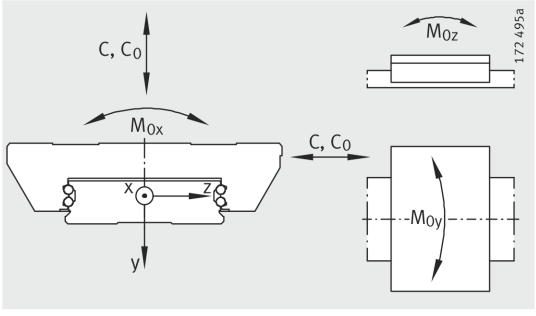
KUVE..-W (-WL) · View rotated 90°
1, 2 [5]

						Fixing screws[4]									
H_5	H_4	T_5	T_6[3]	h	h_1	G_2 DIN ISO 4 762-12.9		K_1		K_3		K_6		K_6 DIN 7984-8.8	
							M_A Nm		M_A Nm		M_A Nm		M_A Nm		M_A Nm
4,5	7,7	7	4,8	12,9	6	M5	5,8	M4	5	M4	5	–	–	M4	2
5	10,6	10	6	17	10	M6	10	M4	5	M5	10	–	–	M5	4
5	9,9	10	10	18,7	8,7	M8	41	M6	17	M6	17	M6	17	–	–
6	13,8	12	12	23,5	11,5	M10	41	M8	41	M8	41	–	–	M8	12
6,5	16,3	13	13	27	15	M10	41	M8	41	M8	41	M8	41	–	–



Four-row linear recirculating ball bearing and guideway assemblies

Full complement
Wide guideway
W, WL carriages



Load directions

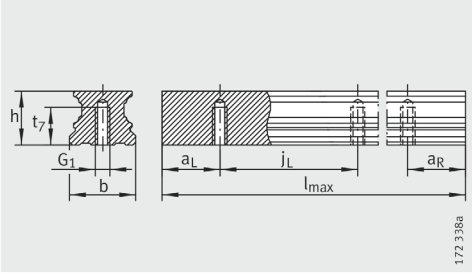
Dimension table (continued) · Dimensions in mm

Designation	Carriage		Guideway			Load carrying capacity				
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2	Basic load ratings		Moment ratings		
						C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
KUVE15-W	KWVE15-W	0,27	TKVD15-W	3,6	KA08-TN/A	7 200	14 500	332	100	100
KUVE20-W	KWVE20-W	0,5	TKVD20-W	5	KA08-TN/A	13 100	27 000	687	240	240
KUVE25-WL	KWVE25-WL	1,46	TKVD25-WL	9,4	KA11-TN/A	23 400	54 000	2 225	825	825
KUVE30-W	KWVE30-W	1,95	TKVD30-W	13,6	KA15-TN/A	27 500	55 000	2 660	700	700
KUVE35-WL	KWVE35-WL	4,11	TKVD35-W	17,4	KA15-TN/A	47 500	100 000	5 550	1 890	1 890

NOTES:

Four-row linear recirculating ball bearing and guideway assemblies

With Quad-Spacers
Standard, L carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions								
	l_{max} [1]	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	j_L	a_L, a_R [2] min.	a_L, a_R [2] max.
KUVE15-B-KT	1200	24	47	59,6	16	38	15	4,5	39,8	30	60	20	53
KUVE15-B-KT-L				73					53,2				
KUVE20-B-KT	2960	30	63	69,8	21,5	53	20	5	50,4	40	60	20	53
KUVE20-B-KT-L				87,3					67,9				
KUVE25-B-KT	2960	36	70	82,1	23,5	57	23	6,5	60,7	45	60	20	53
KUVE25-B-KT-L				107,9					86,5				
KUVE30-B-KT	2960	42	90	97,4	31	72	28	9	72	52	80	20	71
KUVE30-B-KT-L				125,4					100				
KUVE35-B-KT	2960	48	100	110,4	33	82	34	9	80	62	80	20	71
KUVE35-B-KT-L				143,4					113				
KUVE45-B-KT	2940	60	120	139	37,5	100	45	10	102,5	80	105	20	94
KUVE45-B-KT-L				171,1					134,6				
KUVE55-B-KT	2520	70	140	172	43,5	116	53	12	132	95	120	20	107
KUVE55-B-KT-L				210					170				

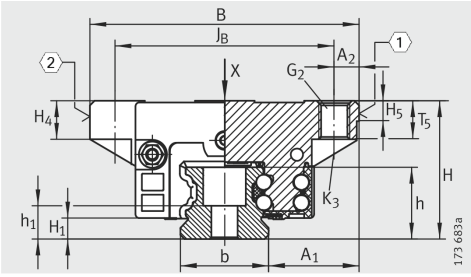
For further table values, see page 290 and page 291.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259. Maximum single-piece guideway length of 6 m available by agreement.

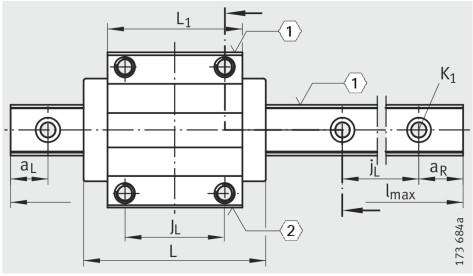
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking

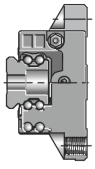


KUVE..-B-KT (-L)
①, ② 4)



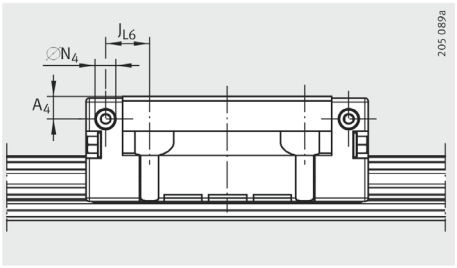
KUVE..-B-KT (-L) · View rotated 90°
①, ② 4)

							Fixing screws 3)							
H_1	H_4	H_5	T_5	t_7	h	h_1	G_1		G_2		K_1		K_3	
							DIN ISO 4 762-12.9							
								M_A Nm		M_A Nm		M_A Nm		M_A Nm
4,3	7	4,75	7	8	15	8,15	M5	10	M5	5,8	M4	5	M4	5
4,5	10,2	5,25	7,5	10	17	9,1	M6	17	M6	10	M5	10	M5	10
5,1	10,4	5,25	10	12	18,7	8,7	M6	17	M8	24	M6	17	M6	17
5,9	13,2	6,25	12	15	23,5	11,5	M8	41	M10	41	M8	41	M8	41
6,7	13,3	6,75	13	15	27	15	M8	41	M10	41	M8	41	M8	41
9,7	19,1	9,25	15	20	34,2	16,2	M12	140	M12	83	M12	140	M10	83
13,5	21,6	11,25	21	22	41,5	19,5	M14	220	M14	140	M14	220	M12	140



Four-row linear recirculating ball bearing and guideway assemblies

With Quad-Spacers
Standard, L carriages



Lubrication connector on lateral face

Dimension table (continued) · Dimensions in mm

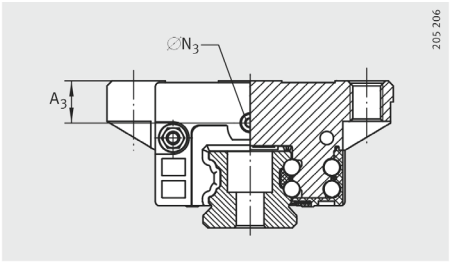
Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE15-B-KT	**KWVE15-B-KT**	0,17	TKVD15-B (-U)[2]	1,44	KA07-TN/A
KUVE15-B-KT-L	**KWVE15-B-KT-L**	0,21			
KUVE20-B-KT	**KWVE20-B-KT**	0,37	TKVD20 (-U)	2,2	KA10-TN/A
KUVE20-B-KT-L	**KWVE20-B-KT-L**	0,5			
KUVE25-B-KT	**KWVE25-B-KT**	0,6	TKVD25(-U)	2,7	KA11-TN/A
KUVE25-B-KT-L	**KWVE25-B-KT-L**	0,9			
KUVE30-B-KT	**KWVE30-B-KT**	1	TKVD30(-U)	4,3	KA15-TN/A
KUVE30-B-KT-L	**KWVE30-B-KT-L**	1,5			
KUVE35-B-KT	**KWVE35-B-KT**	1,56	TKVD35(-U)	5,7	KA15-TN/A
KUVE35-B-KT-L	**KWVE35-B-KT-L**	2,16			
KUVE45-B-KT	**KWVE45-B-KT**	2,98	TKVD45(-U)	9,2	KA20-TN/A
KUVE45-B-KT-L	**KWVE45-B-KT-L**	4,3			
KUVE55-B-KT	**KWVE55-B-KT**	4	TKVD55-B(-U)	14	KA24-TN/A
KUVE55-B-KT-L	**KWVE55-B-KT-L**	6,18			

1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

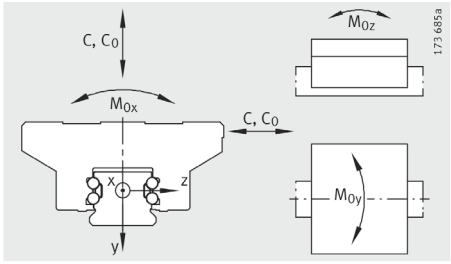
2) The new carriages cannot be used on the previous guideways TKVD15(-U).

3) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

4) Maximum permissible screw depth for lubrication connectors.

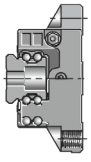


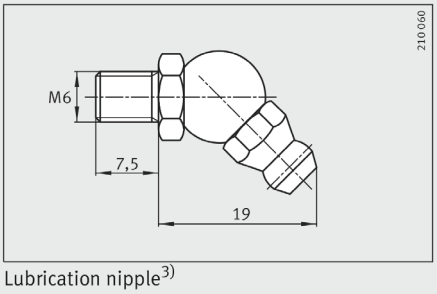
Lubrication connector on end face



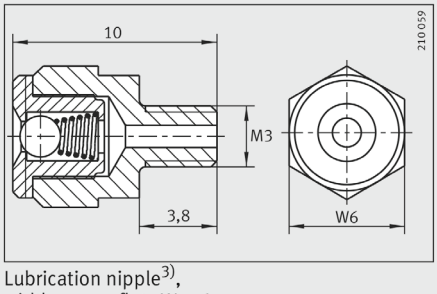
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[4]	A_4	$\varnothing N_4$	[4]	J_{L6}	Basic load ratings		Moment ratings		
							C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
4,3	2,57	5,5	3,2	2,57	5,5	9,1	6 100	11 400	105	74	74
						15,8	7 900	16 500	162	148	105
7,7	4,5	7	4,5	4,5	5,5	9,5	11 800	23 000	276	205	205
						18,3	14 400	30 500	368	345	345
11	5,5	7	6,5	5,5	7	12,9	16 200	32 000	430	330	335
						25,8	21 100	47 000	625	690	690
11,5	5,5	7	7	5,5	7	15	26 500	51 000	890	670	670
						29	33 000	71 000	1 230	1 230	1 245
12,3	5,5	7	11	5,5	7	16	36 000	67 000	1 340	995	995
						32,5	44 000	89 000	1 790	1 715	1 710
16,5	5,5	7	16,5	5,5	7	19,3	65 000	130 000	3 600	2 610	2 610
						35,3	79 000	171 000	4 715	4 335	4 330
15	5,5	7	15	5,5	7	30,5	99 000	199 000	6 730	4 750	4 750
						49,5	123 000	270 000	9 115	8 490	8 490





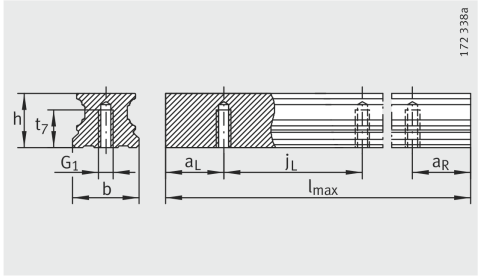
Lubrication nipple[3]



Lubrication nipple[3],
width across flats W = 6 mm

Four-row linear recirculating ball bearing and guideway assemblies

With Quad-Spacers
S, SL, H, HL carriages



TKVD..-U

Dimension table · Dimensions in mm

Designation	Dimensions				Mounting dimensions								
	l_{max} 1)	H	B	L	A_1	J_B	b $^{-0,005}_{-0,03}$	A_2	L_1	J_L	j_L	a_L, a_R 2) min.	a_L, a_R 2) max.
KUVE15-B-KT-S	1 200	24	34	59,6	9,5	26	15	4	39,8	26	60	20	53
KUVE15-B-KT-H		28											
KUVE15-B-KT-SL		24		73					53,2				
KUVE15-B-KT-HL		28											
KUVE20-B-KT-S	2 960	30	44	69,8	12	32	20	6	50,4	36	60	20	53
KUVE20-B-KT-SL				87,3					67,9	50			
KUVE25-B-KT-S	2 960	36	48	82,1	12,5	35	23	6,5	60,7	35	60	20	53
KUVE25-B-KT-H		40											
KUVE25-B-KT-SL		36		107,9					86,5	50			
KUVE25-B-KT-HL		40											
KUVE30-B-KT-S	2 960	42	60	97,4	16	40	28	10	72	40	80	20	71
KUVE30-B-KT-H		45											
KUVE30-B-KT-SL		42		125,4					100	60			
KUVE30-B-KT-HL		45											
KUVE35-B-KT-S	2 960	48	70	110,4	18	50	34	10	80	50	80	20	71
KUVE35-B-KT-H		55											
KUVE35-B-KT-SL		48		143,4					113	72			
KUVE35-B-KT-HL		55											
KUVE45-B-KT-S	2 940	60	86	139	20,5	60	45	13	102,5	60	105	20	94
KUVE45-B-KT-H		70											
KUVE45-B-KT-SL		60		171,1					134,6	80			
KUVE45-B-KT-HL		70											
KUVE55-B-KT-S	2 520	70	100	172	23,5	75	53	12,5	132	75	120	20	107
KUVE55-B-KT-SL				210									

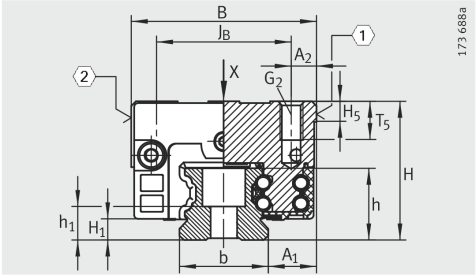
For further table values, see page 294 and page 295.

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 259. Maximum single-piece guideway length of 6 m available by agreement.

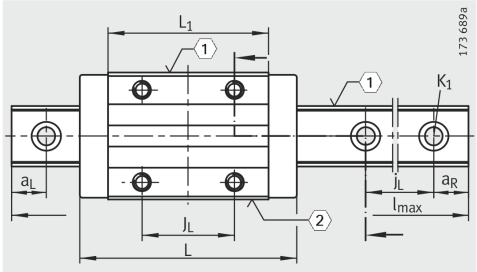
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

4) ① Locating face
② Marking

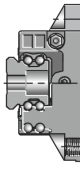


KUVE..-B-KT (-S, -SL, -H, -HL)
1, 2 [4]



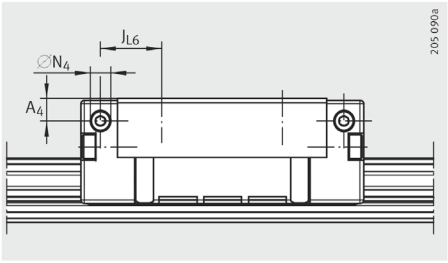
KUVE..-B-KT (-S, -SL, -H, -HL) ·
View rotated 90°
1, 2 [4]

						Fixing screws[3]					
H_1	H_5	T_5	t_7	h	h_1	G_1 DIN ISO 4762-12.9		G_2		K_1	
							M_A Nm		M_A Nm		M_A Nm
4,3	4,75	6	8	15	8,15	M5	–	M4	5	M4	5
4,5	5,25	7,5	10	17	9,1	M6	17	M5	10	M5	10
5,1	5,25	10	12	18,7	8,7	M6	17	M6	17	M6	17
5,9	6,25	13,5	15	23,5	11,5	M8	41	M8	41	M8	41
6,7	6,75	13,5	15	27	15	M8	41	M8	41	M8	41
9,7	9,25	17	20	34,2	16,2	M12	140	M10	83	M12	140
13,5	11,25	15	22	41,5	19,5	M14	220	M12	140	M14	220



Four-row linear recirculating ball bearing and guideway assemblies

With Quad-Spacers
S, SL, H, HL carriages



Lubrication connector on lateral face

Dimension table (continued) · Dimensions in mm

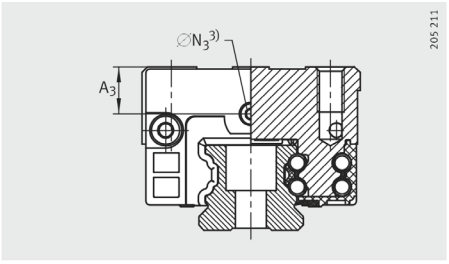
Designation	Carriage		Guideway		
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Closing plug K_2
KUVE15-B-KT-S	KWVE15-B-KT-S	0,14	TKVD15-B (-U)[2]	1,44	KA07-TN/A
KUVE15-B-KT-H	KWVE15-B-KT-H	0,18			
KUVE15-B-KT-SL	KWVE15-B-KT-SL	0,18			
KUVE15-B-KT-HL	KWVE15-B-KT-HL	0,23			
KUVE20-B-KT-S	KWVE20-B-KT-S	0,4	TKVD20 (-U)	2,2	KA10-TN/A
KUVE20-B-KT-SL	KWVE20-B-KT-SL	0,41			
KUVE25-B-KT-S	KWVE25-B-KT-S	0,56	TKVD25(-U)	2,7	KA11-TN/A
KUVE25-B-KT-H	KWVE25-B-KT-H	0,6			
KUVE25-B-KT-SL	KWVE25-B-KT-SL	0,73			
KUVE25-B-KT-HL	KWVE25-B-KT-HL	0,85			
KUVE30-B-KT-S	KWVE30-B-KT-S	0,85	TKVD30(-U)	4,3	KA15-TN/A
KUVE30-B-KT-H	KWVE30-B-KT-H	0,95			
KUVE30-B-KT-SL	KWVE30-B-KT-SL	1,1			
KUVE30-B-KT-HL	KWVE30-B-KT-HL	1,3			
KUVE35-B-KT-S	KWVE35-B-KT-S	1,3	TKVD35(-U)	5,7	KA15-TN/A
KUVE35-B-KT-H	KWVE35-B-KT-H	1,59			
KUVE35-B-KT-SL	KWVE35-B-KT-SL	1,79			
KUVE35-B-KT-HL	KWVE35-B-KT-HL	2,23			
KUVE45-B-KT-S	KWVE45-B-KT-S	2,45	TKVD45(-U)	9,2	KA20-TN/A
KUVE45-B-KT-H	KWVE45-B-KT-H	3,14			
KUVE45-B-KT-SL	KWVE45-B-KT-SL	3,2			
KUVE45-B-KT-HL	KWVE45-B-KT-HL	4,1			
KUVE55-B-KT-S	KWVE55-B-KT-S	3,95	TKVD55-B(-U)	14	KA24-TN/A
KUVE55-B-KT-SL	KWVE55-B-KT-SL	5,05			

1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

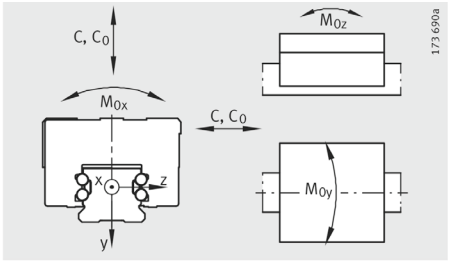
2) The new carriages cannot be used on the previous guideways TKVD15(-U).

3) Tapered head lubrication nipple to DIN 71 412-B M6,
KUVE20-B to DIN 71 412-B M5 and KUVE15-B to DIN 3 405-B M3, supplied loose with delivery.

4) Maximum permissible screw depth for lubrication connectors.

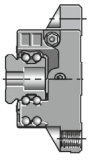


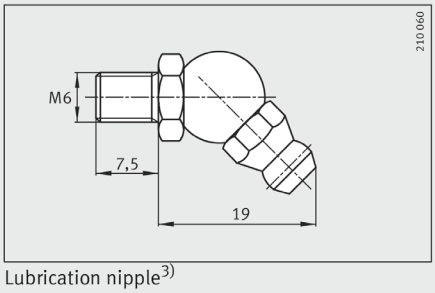
Lubrication connector on end face



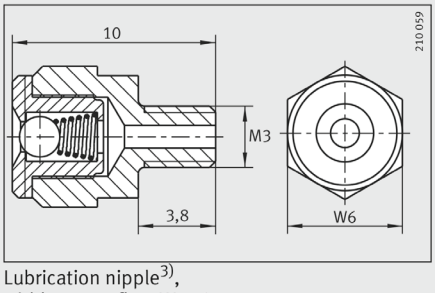
Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	∅N_3	[4]	A_4	∅N_4	[4]	J_{L6}	Basic load ratings		Moment ratings		
							C N	C_0 N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
4,3	2,57	5,5	3,2	2,57	5,5	11,1	6 100	11 400	105	74	74
8,3			7,2								
4,3			3,2			17,8	7 900	16 500	162	148	105
8,3			7,2								
7,7	4,5	5,5	4,5	4,5	5,5	11,5	11 800	23 000	276	205	205
						13,3	14 400	30 500	368	345	345
11	5,5	7	6,5	5,5	7	17,9	16 200	32 000	430	330	335
15			10,5								
11			6,5			23,3	21 100	47 000	625	690	690
15			10,5								
11,5	5,5	7	7	5,5	7	21	26 500	51 000	890	670	670
14,5			10								
11,5			7			25	33 000	71 000	1 230	1 245	1 245
14,5			10								
12,3	5,5	7	11	5,5	7	22	36 000	67 000	1 340	995	995
19,3			18								
12,3			11			27,5	44 000	89 000	1 790	1 715	1 710
19,3			18								
16,5	5,5	7	16,5	5,5	7	29,3	65 000	130 000	3 600	2 610	2 610
26,5			26,5								
16,5			16,5			35,3	79 000	171 000	4 715	4 335	4 330
26,5			26,5								
15	5,5	7	15	5,5	7	40,5	99 000	199 000	5 230	2 530	2 560
						49,5	123 000	270 000	7 100	4 580	4 580





Lubrication nipple[3]



Lubrication nipple[3], width across flats W = 6 mm

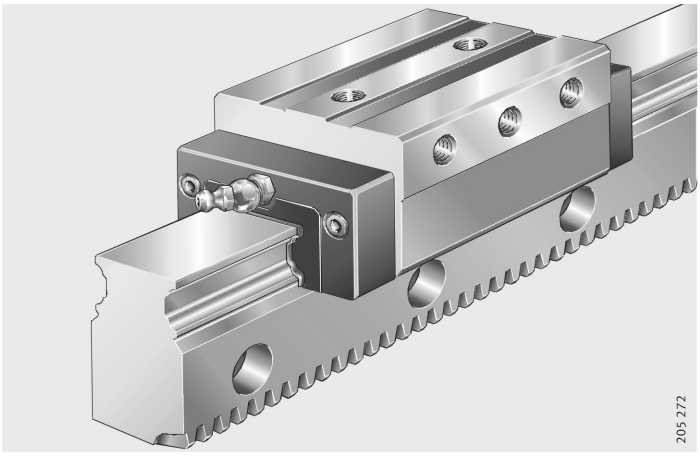
Product overview

Four-row linear recirculating ball bearing and guideway assemblies

Guideway with teeth on underside

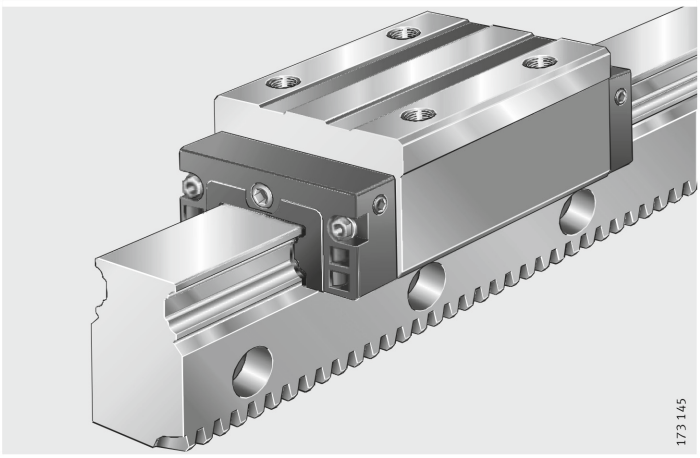
Lateral fixing of carriage

KUVE..-SB-ZHP



Fixing of carriage from above

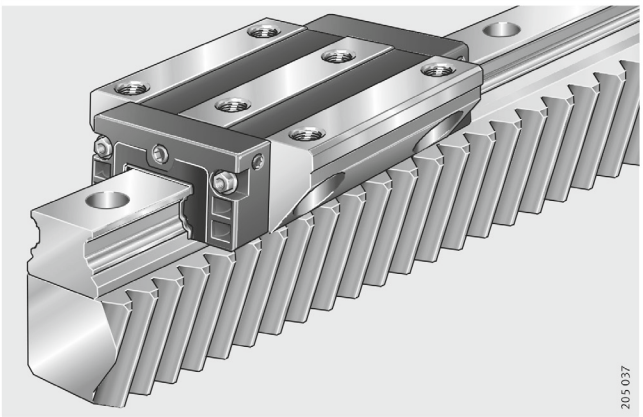
KUVE..-B-H-ZHP



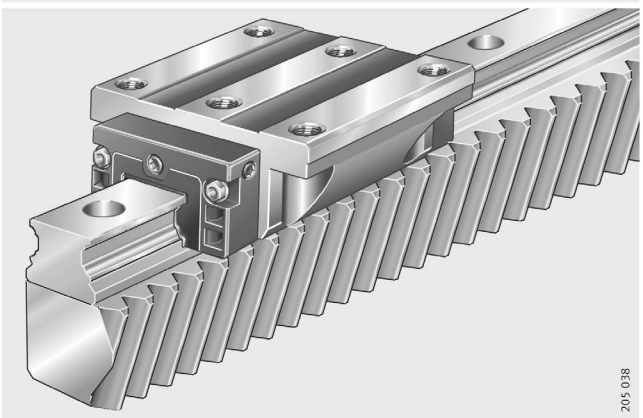
Guideway with teeth on lateral face

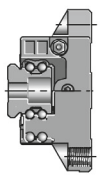
Fixing of carriage from above

KUVE..-B-N-ZHST+SVS



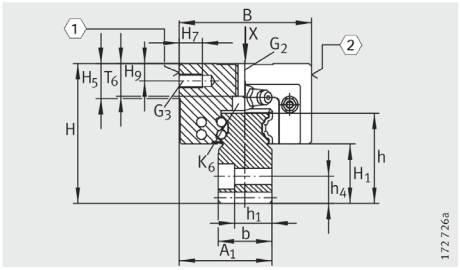
KUVE..-B-ZHST+SVS





Four-row linear recirculating ball bearing and guideway assemblies

Guideway with teeth on underside



KUVE..-SB-ZHP
1, 2 [4]

Dimension table · Dimensions in mm

Designation	Dimensions						Mounting dimensions										
	l_{max} [1]			H	B	L	A_1	A_3	b $^{-0,005}_{-0,03}$	L_1	J_{LZ}	J_{L1}	j_L	a_L, a_R [2] min.	a_L, a_R [2] max.	H_1	H_5
KUVE25-SB-ZHP [3]	540	960	1 500	60	57	81,7	40	15	23	60,7	35	17,5	60	20	53	25,2	15
KUVE35-SB-ZHP [3]	560	1 120	1 680	85	76	110,4	55	19,3	34	80	50	25	80	20	71	36,8	22

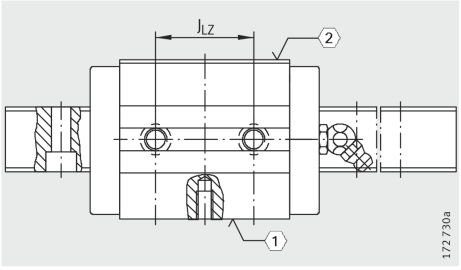
For further table values, see page 316 and page 317.

1) Standard lengths have obliquely cut ends and can be used for direct joining of guideways.

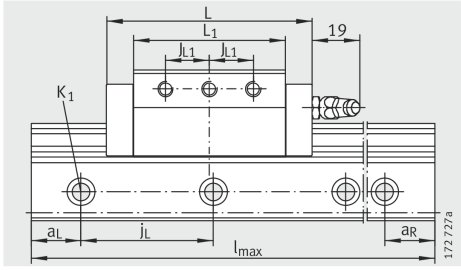
2) a_L and a_R are dependent on the guideway length l.

3) Teeth, centre distance and ratio in accordance with DIN 3 975 and DIN 3 976.

4) 1 Locating face
2 Marking

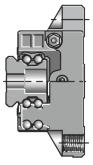


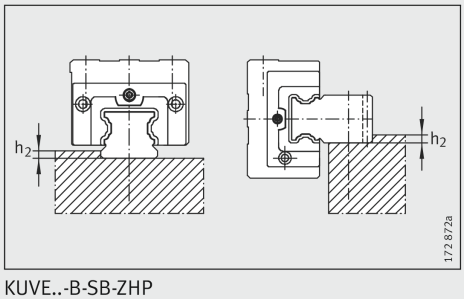
KUVE..-SB-ZHP · View rotated 90°
1, 2 [4]



KUVE..-SB-ZHP

							Fixing screws								Modulus
T_6	H_7	H_9	h	h_1	h_2	h_4	K_1 DIN ISO 4 762-12.9 [3]		G_2		G_3		K_6 DIN 7 984-8.8		m
	min.				max.			M_A Nm		M_A Nm		M_A Nm		M_A Nm	
14,8	10	7,5	38,7	13	3	11,5	M6	17	M8	24	M6	17	M6	17	2
18,15	13	11	57	22	5	17	M8	41	M10	83	M8	41	M8	41	3

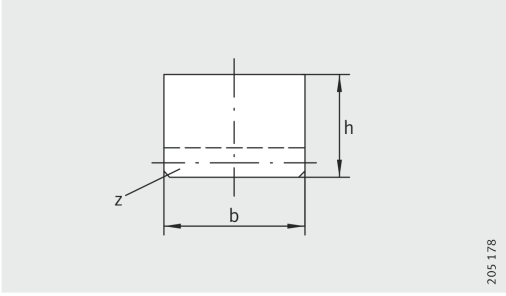




KUVE..-B-SB-ZHP

Four-row linear recirculating ball bearing and guideway assemblies

Guideway with teeth on underside

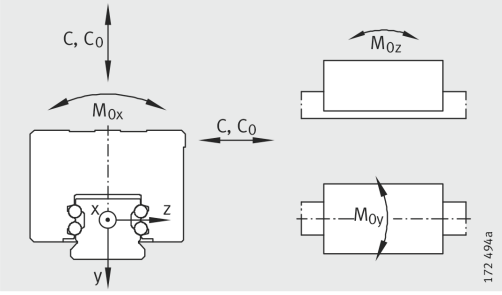


Fitting mating piece MZHP

Dimension table (continued) · Dimensions in mm

Designation	Carriage		Guideway		Mating piece[1]				
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m	Designation	Dimensions			
						Modulus	b	h	Number of teeth z
KUVE25-SB-ZHP	**KWVE25-B-SB**	0,85	**TKVD25-ZHP**	6,3	**MZHP02**	2	24	24	30
KUVE35-SB-ZHP	**KWVE35-B-SB**	1,8	**TKVD35-ZHP**	14	**MZHP03**	3	29	29	20

1) Without fixing holes.

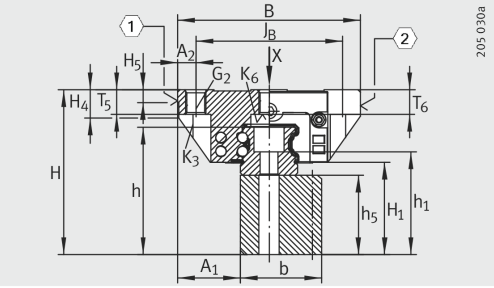


Load directions

Load carrying capacity				
Basic load ratings		Moment ratings		
C	C_0	M_{0x}	M_{0y}	M_{0z}
N	N	Nm	Nm	Nm
17 900	37 000	510	395	395
38 000	72 000	1 465	1 020	1 020

Four-row linear recirculating ball bearing and guideway assemblies

Guideway with teeth on lateral face



KUVE..-B-ZHST+SVS
1, 2 5)

Dimension table · Dimensions in mm

Designation	Mass				Mounting dimensions							
	l_{max} 1)	H	B	L	A_1	b	h_5	L_1	J_B	J_L	J_{LZ}	j_L
KUVE25-B-ZHST+SVS 3)	2860	65	70	81,7	23,5	29,75	29	60,7	57	45	40	60
KUVE30-B-ZHST+SVS 3)	2860	81	90	97,6	31	39,75	39	72	72	52	44	80
KUVE35-B-ZHST+SVS 3)	2860	87	100	110	33	48,75	39	80	82	62	52	80

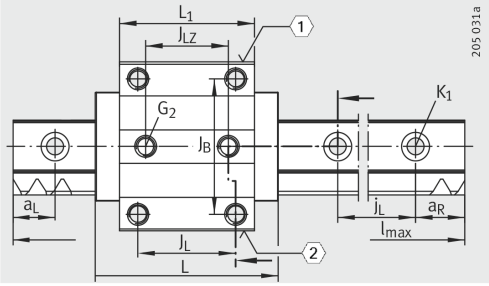
1) The maximum single-piece length of the toothed racks is 960 mm.
The maximum single-piece selling length of the unit is 2860 mm.
There is a possibility of obtaining by agreement a single-piece unit up to 5740 mm.

2) a_L and a_R are dependent on the length of the unit,
the holes may be intersected in certain cases.

3) Teeth, centre distance and ratio in accordance with DIN 3975 and DIN 3976.

4) If there is a possibility of preload loss due to settling, the fixing screws should be secured against rotation.

5) 1 Locating face
2 Marking

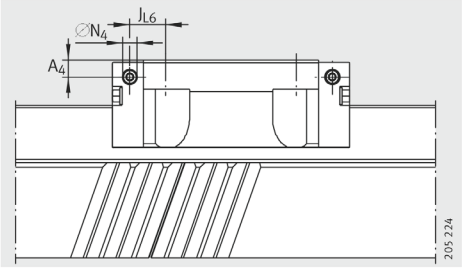


KUVE..-B-ZHST+SVS · View rotated 90°
1, 2 [5]

										Fixing screws[4]								Modulus
a_L, a_R[2]		A_2	H_1	H_4	H_5	T_5	T_6	h	h_1	K_1		G_2		G_3		K_6		m
										DIN ISO 4762-12.9						DIN 7984-8.8		
min.	max.										M_A Nm		M_A Nm		M_A Nm		M_A Nm	
28	32	6,5	34,4	10,9	5	10	10	47,7	37,7	M6	17	M8	24	M6	17	M6	17	3
28	51	9	45	13,8	6	12	12	62,5	50,5	M8	41	M10	41	M8	41	M8	41	4
28	51	9	45,8	14,3	6,5	13	12	66	54	M8	41	M10	41	M8	41	M8	41	4

Four-row linear recirculating ball bearing and guideway assemblies

Guideway with teeth on lateral face



Lubrication connector on lateral face

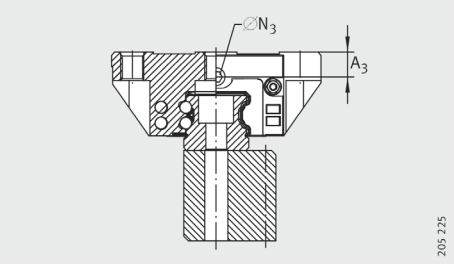
Dimension table (continued) · Dimensions in mm

Designation	Carriage[2]		Guideway	
	Designation	Mass m ≈kg	Designation	Mass m ≈kg/m
KUVE25-B-ZHST+SVS	KWVE25-B	0,71	TKVD25-ZHST+SVS	8,5
KUVE30-B-ZHST+SVS	KWVE30-B	1,4	TKVD30-ZHST+SVS	15
KUVE35-B-ZHST+SVS	KWVE35-B	2,02	TKVD35-ZHST+SVS	19,2

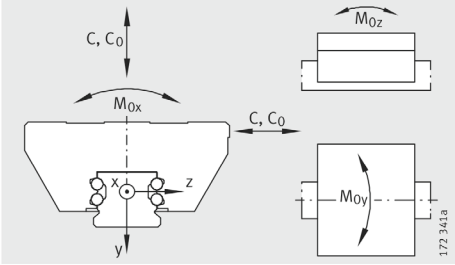
1) Calculation of basic load ratings in accordance with DIN 636.
Based on practical experience, it may be possible to increase the basic dynamic load rating.

2) Lubrication nipple with tapered head to DIN 71 412-B M6 supplied loose.

3) Maximum permissible screw depth for lubrication connectors.

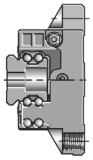


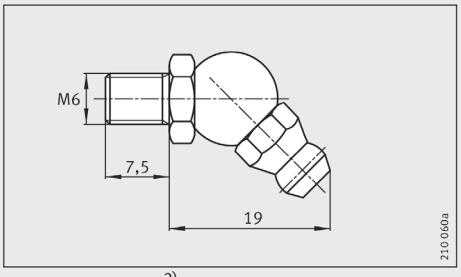
Lubrication connector on end face



Load directions

Dimensioning of lubrication connectors							Load carrying capacity[1]				
A_3	$\varnothing N_3$	[3]	A_4	$\varnothing N_4$	[3]	J_{L6}	Basic load ratings		Moment ratings		
							C	C_0	M_{0x}	M_{0y}	M_{0z}
							kN	kN	Nm	Nm	Nm
11	5,5	7	6,5	5,5	7	12,85	17,9	37	510	395	395
11,5	5,5	7	7	5,5	7	15,5	27,5	55	970	700	700
12,3	5,5	7	11	5,5	7	16	38	72	1 465	1 020	1 020





Lubrication nipple[2]

Four-row linear ball bearing and guideway assemblies with measuring system

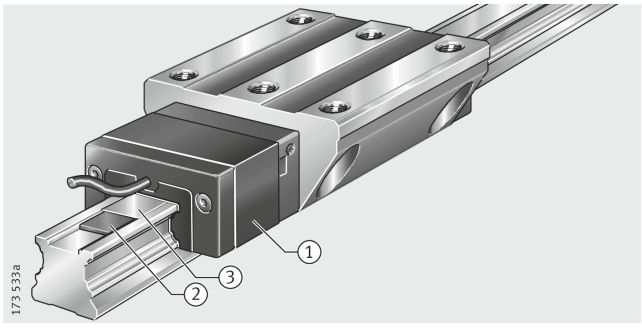
Incremental measuring system

Linear recirculating ball bearing and guideway assemblies KUVE..-B-LMST+EP have an incremental length measuring system with a fixed reference point, KUVE..-B-LMST+MP have the same system with a multiple reference point, *Figure 1*.
The technical data are given on page 329.

The multiple reference point is a freely selectable reference point and can be defined over the whole measurement length on a 5 mm grid.

Ordering examples: see page 332 and page 333.

KUVE..-B-LMST+EP
KUVE..-B-LMST+MP



① Adapted measuring head
② Guideway with integral magnetic strip
③ Covering strip

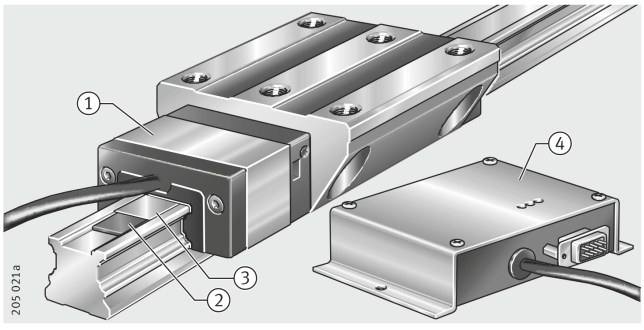
Figure 1
Incremental system

Absolute digital measuring system

Linear recirculating ball bearing and guideway assemblies KUVE..-B-LMSD have an absolute digital length measuring system. The electronic evaluation system is connected directly to the measuring head, *Figure 2*. The technical data are given on page 330.

Ordering example: see page 334.

KUVE..-B-LMSD



① Adapted measuring head
② Guideway with integral magnetic strip
③ Covering strip
④ Electronic evaluation system ASA 510

Figure 2
Absolute digital system

Four-row linear ball bearing and guideway assemblies with measuring system

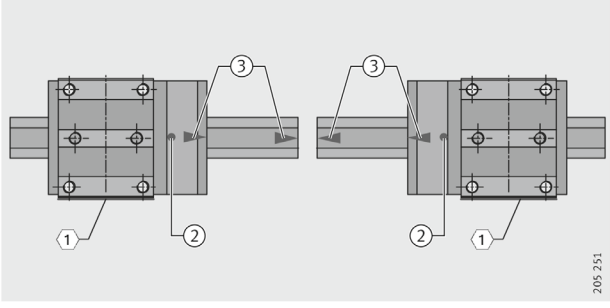
Measuring system for absolute length measurement

Technical data

Feature	Technical data
Operating voltage	24 V DC ± 20 %, standard
Cable length	2 m standard (fixed), between the measuring head and the electronic evaluation system
Measurement length	max. 83 m
Dimensional scale	1 track, pole pitch 5 mm
Positional detection	current-free, 3 V lithium battery, life approx. 7 to 10 years according to ambient temperature
Cable sheath	PUR, oil-resistant, standard
Output switching either or	SSI, standard (to RS422 A, max. 1 MHz) RS485, ASCII protocol
Resolution	0,01 mm, internally adjustable
Power consumption	< 100 mA, protection against reverse polarity
Connection type	D-SUB 9 pin
Housing for electronic evaluation system	Sheet steel, zinc electroplating
Interference protection class	3, to IEC 801
Travel speed	max. 6 m/s
Distance between strip and sensor	max. 2 mm, over whole measurement length
System accuracy	±(0,025 + 0,01×L) mm [L in m], at T_u = +20 °C; L = length per metre or part thereof
Repeat accuracy	±1 digit = ±0,01 mm
Temperature range	Working temperature 0 °C to +60 °C Storage temperature –30 °C to +70 °C
Humidity (electronic evaluation system)	95 % rF, dew formation permissible
Protection type (electronic evaluation system)	IP 40 to DIN VDE 0470, CE inspection symbol
Mass	approx. 550 g, electronic evaluation system with cable and measuring head

Fitting

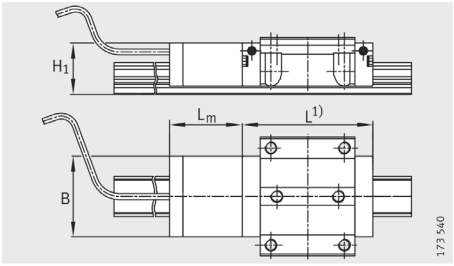
When fitting the KUVE..-B-LMST+EP, attention must be paid to the direction of the arrows, *Figure 4*. The arrow on the magnetic strip and on the measuring head must point in the same direction.



① Locating face
② Reference point
③ Marking arrows

Figure 4
Marking arrows

Four-row linear recirculating ball bearing and guideway assemblies with integral measuring system

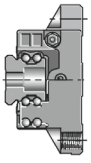


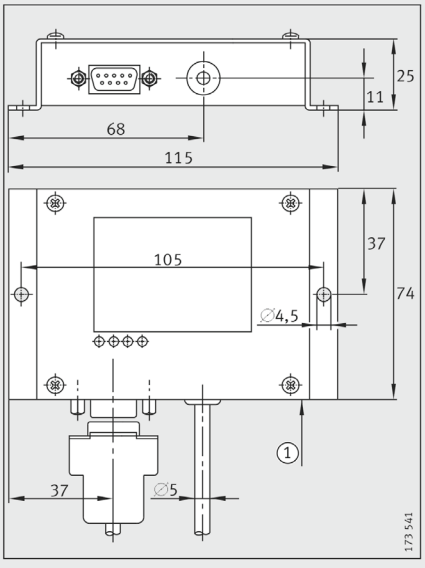
KUVE..-B-LMST, KUVE..-B-LMSD

Dimension table · Dimensions in mm

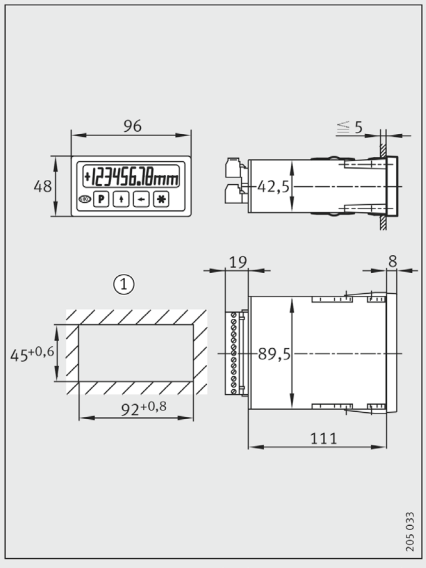
Designation		Dimensions			
		B	L_m	L	H_1
KUVE20-B..-LMST	**KUVE20-B..-LMSD**	40,6	45	1)	26,6
KUVE25-B..-LMST	**KUVE25-B..-LMSD**	46	45	1)	30,5
KUVE30-B..-LMST	**KUVE30-B..-LMSD**	58	48	1)	37,5
KUVE35-B..-LMST	**KUVE35-B..-LMSD**	68	48,6	1)	43,5
KUVE45-B..-LMST	**KUVE45-B..-LMSD**	84,6	49,7	1)	51,5

1) $\overline{\text{L}}$ = standard length of linear recirculating ball bearing and guideway assembly.





Electronic evaluation system ASA510
① Cable length 2 m



Positional display MA10/4 (special accessory)
① Panel outline to DIN 43 700

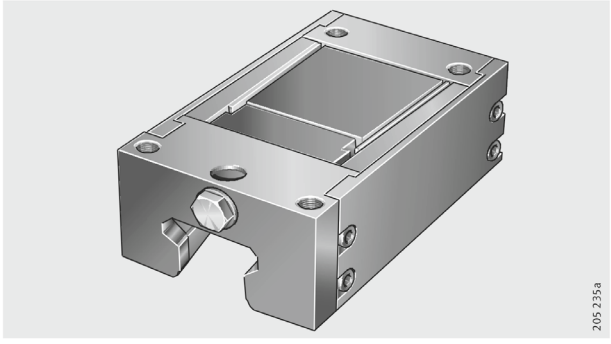
Braking and clamping element

The braking and clamping element BKE.TKVD is used, for example, as a positionally independent safety system for linear drives where the drive cannot fully provide the braking and clamping function, *Figure 7*.

The compact construction and the arrangement of the elements saves space and no special devices are required.

If particularly high braking forces are required, several braking and clamping elements can be fitted.

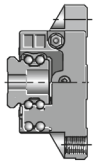
The system automatically compensates any clearance occurring up to the wear limit of the brake shoes, see Automatic clearance compensation, page 349. The elements are thus maintenance-free.



BKE.TKVD

Figure 7
Braking and clamping element

Mechanical braking and clamping forces



The elements operate by purely mechanical means, they therefore function even if a power failure occurs and are reliable in any mounting position; for a description of their function, see page 348. This eliminates safety problems resulting from power failure – a possibility with electronically braked systems.

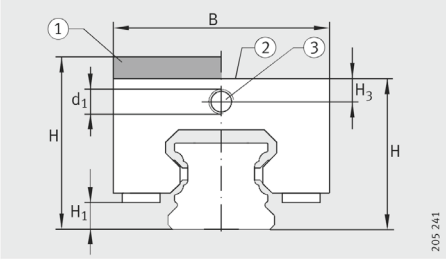
The system carries out braking only when no pressure is present. This allows safety-focussed control even in emergencies. The hydraulic brake opens under a pressure of approx. 55 bar.

If appropriate control is provided, even vertical axes can be rapidly braked to a stationary position. In a suspended arrangement, however, the entire guidance unit should be secured by a drop guard, for an example see page 67.

When the brake is locked, an axial clearance of up to 0,25 mm can occur. This must be noted if the elements are used for locating.

Braking and clamping element

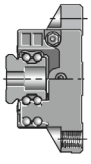
for four-row linear recirculating ball bearing and guideway assembly



BKE.TKVD
(1), (2), (3) 2)

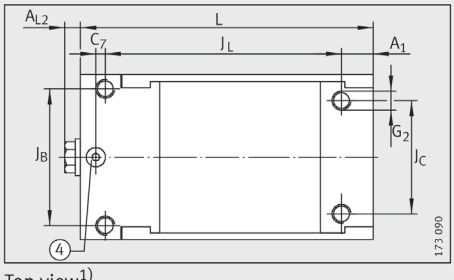
Dimension table · Dimensions in mm

Designation	Clamping force	Dimensions													
		H		B	L	J_B	J_C	A_1	J_L	C_7	H_1	H_3	A_{L2}	d_1	G_2
	N	Without adapter plate	With adapter plate												
BKE.TKVD25	1 000	36	–	47	91	38	34	10	75	–	6,5	6	5	M6X1	M6
BKE.TKVD25-O										0					
BKE.TKVD25-H		–	40							–					
BKE.TKVD25-H-SO										0					
BKE.TKVD35	2 800	48	–	69	120	58	48	13,5	100	–	7,9	8,1	5	M8X1	M8
BKE.TKVD35-O										0					
BKE.TKVD35-H		–	55							–					
BKE.TKVD35-H-SO										0					
BKE.TKVD45	4 300	60	–	85	141	70	60	15	113	–	13	10	5	M8X1	M10
BKE.TKVD45-O										5					
BKE.TKVD45-H		–	70							–					
BKE.TKVD45-H-SO										5					



1) Maximum diameter of oil inlet hole = 6 mm.

2) (1) With adapter plate
(2) Without adapter plate
(3) Hydraulic connector
(4) Hydraulic connector in top face (design O, SO)1)



Top view1)
(4) 2)

Accessories

Sealing and lubrication elements – system KIT

With their comprehensive range of standard accessories, monorail guidance systems can be easily used in numerous areas. Since the guidance systems are used in an extremely wide variety of applications, however, additional requirements are often placed on the lubrication and sealing components.

Application-oriented complete package

If the standard components are not adequate for reliable operation and a long operating life, it is possible to draw on a finely graduated system of lubrication and sealing elements. These special accessories protect the rolling element system of the guidance systems against contamination and ensure lubrication appropriate to requirements with long relubrication intervals even under the most demanding operating conditions.

Structured as a KIT

The elements are configured as the system KIT and are designed for various application conditions.

Starting from the degree of contamination, the best combination in each case can be quickly and easily compiled, see Degree of contamination. Which combinations are possible and advisable is shown in the table.

The sealing elements are described on pages 355 to 357, for table see page 360.

The description of the lubrication elements is on page 358 and page 359, for table see page 364.

Attention! Only a proportion of the KITs can retrofitted. Parts that cannot be retrofitted must be ordered together with the linear recirculating ball bearing and guideway assembly and are supplied already fitted.

Degree of contamination

Attention! The degree of contamination will vary depending on the market sector, the application and the environmental conditions. The definitions according to the table are therefore only an initial aid in the selection of KITs.

By agreement, we will be pleased to assemble complete packages for specific applications.

Definition of the degree of contamination

Degree of contamination			
Very slight	Slight	Moderate	Heavy
Clean environment	Coarse (large) metal swarf Clean environment No cooling lubricants	Coarse (large) metal swarf Slight exposure to, for example, cooling lubricants	Hot swarf (metal, aluminium) of widely varying size and shape, including very small swarf from HSC machining Aggressive media and dust as well as cooling lubricants

Sealing elements

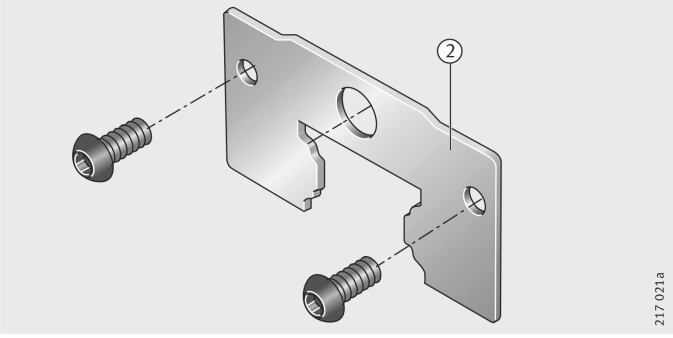
The following additional sealing components are available:

- end plates, page 355
- end wipers, page 355 and page 356
- end wipers with carrier plate, page 356
- additional wipers, page 356
- sealing strips, page 357.

End plates

End plates are corrosion-resistant, non-contact components, *Figure 1*. They protect the end wipers located behind them against, for example, coarse contaminants and hot swarf.

There is a narrow gap between the guideway and the wiper.



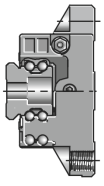
② End plate, non-contact

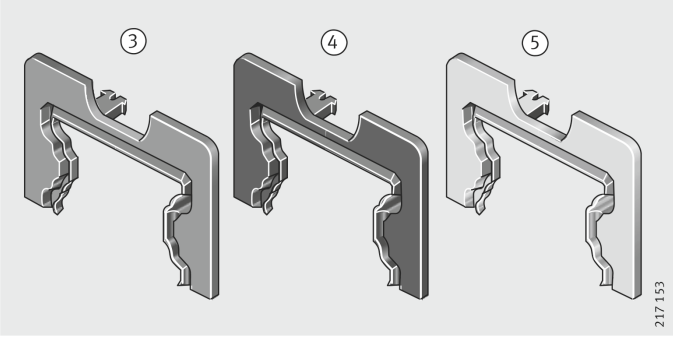
Figure 1
End plate

End wipers

End wipers are contact seals that are fixed to the end faces of the carriage.

They are available in a single lip design made from special high performance material, *Figure 2*.





③ Gap seal, single lip, grey
④ End wiper, single lip, black
⑤ Smooth-running seal, single lip, yellow

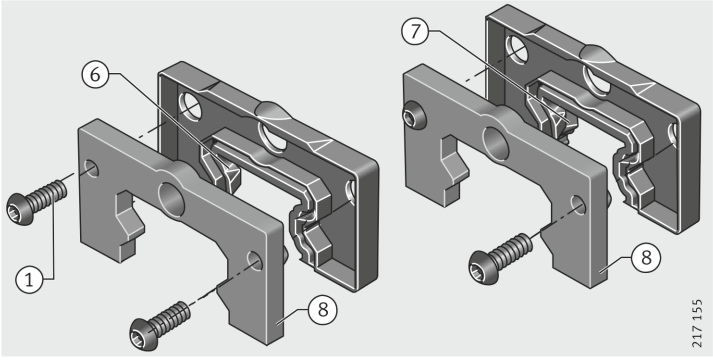
Figure 2
End wipers

Accessories

End wipers with carrier plate

In addition to the standard seal, other end wipers may be used behind each other (cascading arrangement). These are screw mounted with a carrier plate in front of the first wiper on the carriage, *Figure 3*.

The end wipers are of a single or double lip design and are made from special high performance seal material.



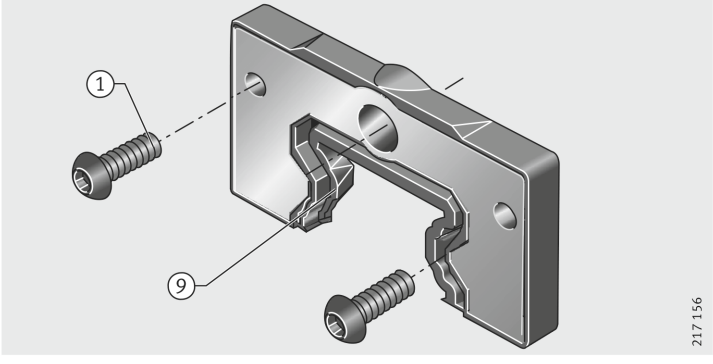
① Fixing screw
⑥ End wiper, single lip
⑦ End wiper, double lip
⑧ Carrier plate for end wiper

Figure 3
End wipers

Additional wiper

For protection against aggressive media (for example acids, alkalis), special additional wipers made from FPM are available, *Figure 4*.

The additional wipers are of single lip design.



① Fixing screw
⑨ Additional wiper, single lip

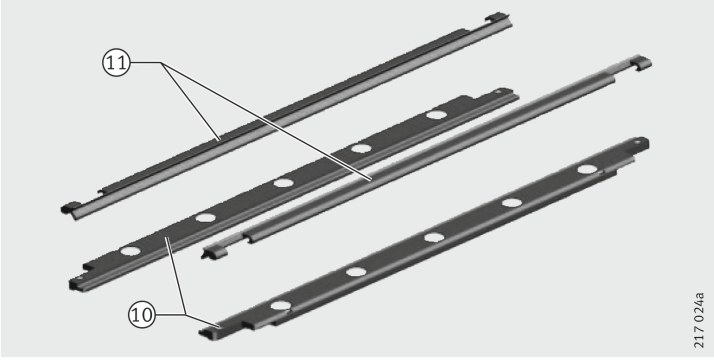
Figure 4
Additional wiper

Sealing strips

Sealing strips are contact components that are fitted to the upper and lower longitudinal sides of the carriage, *Figure 5*.
They protect the rolling element system against contamination and loss of lubricant.

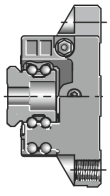
Attention!

Upper sealing strips should be used in addition to end wipers especially in applications where lubrication is critical, such as those involving fine dust or aggressive coolants.



⑩ Lower sealing strips, single lip
⑪ Upper sealing strips, single lip

Figure 5
Sealing strips



Accessories

Lubrication elements

A long term lubrication unit is available as a lubrication component.

Long term lubrication unit

Operating life of the linear guidance system

The operating life is defined as the life actually achieved by a linear guidance system. This may deviate significantly from the basic rating life.

A sufficiently long operating life is only achieved, assuming the bearing arrangement is correctly designed, through optimum lubrication and sealing.

Grease operating life and relubrication interval

If guidance systems cannot be relubricated, the grease operating life becomes the decisive factor. This indicates the length of time for which a grease can be used without its function being impaired. For calculation of the grease operating life, see page 48.

As the load increases, the grease is subjected to increasing strain. As a result, it ages more quickly. Premature destruction of the grease structure has an adverse effect on the performance characteristics of the grease. The grease operating life declines and relubrication must be carried out earlier.

If the shortened relubrication intervals are not observed, the guidance system will fail before the end of the expected operating life. With decreasing grease operating life, the operating life of the linear guidance system is thus reduced.

Longer operating life by means of a long term lubrication unit

The volume of lubricating grease in the carriage is increased by the lubrication pockets in the saddle plate.

If a long term lubrication unit KIT.KWVE..B-4 is also fitted, this gives an additional improvement in the lubricant balance, *Figure 6*, page 359. The lubricant is stored in a high capacity reservoir and continuously released to the raceways via a transfer medium. Depending on the operating and environmental conditions, long relubrication intervals or even complete freedom from maintenance are possible as a result.

The operating life of four-row monorail guidance systems KUVE with and without a long term lubrication unit is shown in *Figure 7*, page 359.

Function irrespective of position

Long term lubrication units are particularly suitable in applications where lubrication is of critical importance. They are screw mounted between the end piece and the wiper and function with equal reliability in either a horizontal or vertical mounting position.

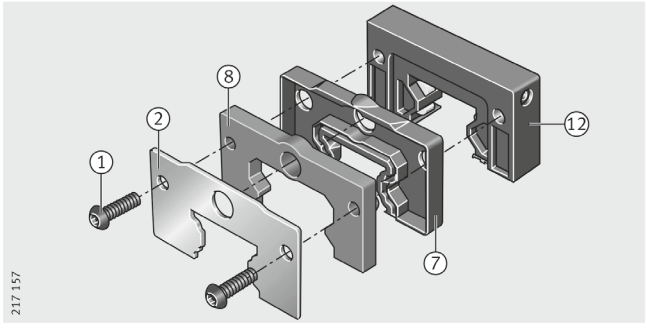
With initial greasing and refillable

Due to their initial greasing, long term lubrication units are ready for immediate operation.

If they are ordered together with a KUVE, the monorail guidance system KUVE and long term lubrication unit are greased.
If necessary, the reservoir can be refilled through lateral holes.

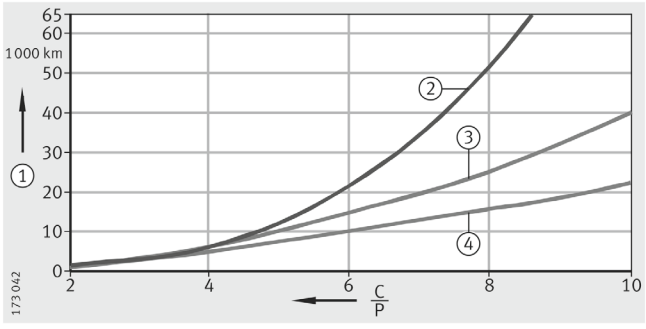
Double lip end seal

Integrated double lip end seals give protection against grease loss and contamination.



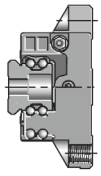
① Fixing screws
② End plate
⑦ End wiper, double lip
⑧ Carrier plate
⑫ Long term lubrication unit

Figure 6
Long term lubrication unit



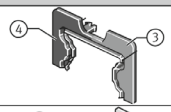
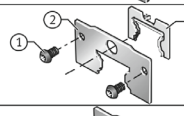
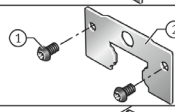
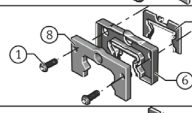
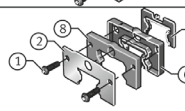
① Displacement distance
② KUVE with long term lubrication unit (restricted by material fatigue)
③ KUVE without long term lubrication unit (restricted by material fatigue)
④ Competitor systems

Figure 7
Operating life with and without long term lubrication unit



NOTES:

Accessories

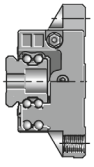
Sealing elements KIT[1] Part 1			①	②
KIT	Description	Designation and KIT end number KIT.KWVE..-B[2]	Fixing screws K_1 (2 pieces)	End plate, non-contact
 217 058a	① Fixing screws K_1 ② End plate ③ Gap seal, single lip ④ End wiper, single lip ⑤ Smooth-running seal, single lip ⑥ End wiper, single lip ⑦ End wiper, double lip ⑧ Carrier plate for end wipers ⑨ Additional wiper, single lip ⑩ Sealing strip, lower, single lip ⑪ Sealing strip, upper, single lip	100[5]	–	–
		110[6]		
 217 059a		200	1	1
		210		
 217 086a		220	1	1
 217 060a		300	1	–
		309		
 217 064a		310	1	1
		319		

Attention!
The table is only a guide.
The specific application conditions must be taken into consideration when selecting the elements.

The lubrication elements can be used in various combinations.
However, not every combination is possible or advisable.
For recommended combinations, see page 366.

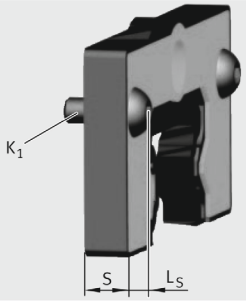
1) The KITs are available for the sizes KUVE15-B (-KT) to KUVE55-B (-KT) .
2) Ordering example for KIT100 for KUVE-35-B: KIT.KWVE35-B-100.
3) See figure bottom right.
4) For definition see page 354.
5) Standard for KUVE..-B and KUVE..-B-KT.
6) Valid for sizes 15 to 25.
7) Valid for sizes 20 to 45.

End wipers			End wipers with carrier plate ⑧		⑨	Sealing strips		Fitting of KIT			Contamination[4]			
						Lower	Upper							
③	④	⑤	⑥	⑦		⑩	⑪							
Gap seal, grey	Contact type, single lip, black	Smooth-running seal,single lip, yellow	Contact type, single lip	Contact type, double lip	Additional wiper, single lip	Single lip	Single lip	Retrofittable[2]	Factory fit	Width S in mm[3]	Very slight	Slight	Moderate	Heavy
–	1	–	–	–	–	–	–	■	■	–	■	■	–	–
1	–				–						■	–	–	
–	1	–	–	–	–	–	–	■	■	1	–	■	■	–
	–				–						■	–	–	
–	–	1	–	–	–	–	–	■	■	1	■	■	–	–
					–									
–	1	–	1	–	–	–	–	■	■	5	–	–	■	■
	–				–									
–	1	–	1	–	–	–	–	■	■	6	–	–	■	■
	–				–									

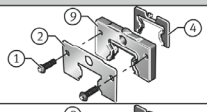
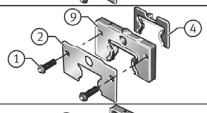
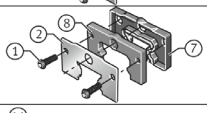
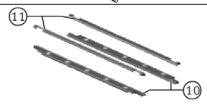


Fixing screws K_1, L_S, width S

KUVE size	KIT end number	Fixing screw K_1	
			L_S mm
15 **20**	200, 210, 220, 300, 309	M2	1,3
	310, 319, 360, 370		
25 **30, 35**	200, 210, 220, 300, 309	M3	1,65
	310, 319, 360, 370		
45 **55**	200, 210, 220, 300, 309	M4	2,2
	310, 319, 360, 370		



Accessories

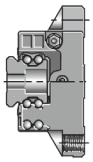
Sealing elements KIT[1] Part 2			①	②
KIT	Description	Designation and KIT end number KIT.KWVE..-B[2]	Fixing screws K_1 (2 pieces)	End plate, non-contact
 217 158	① Fixing screws K_1 ② End plate ③ Gap seal, single lip ④ End wiper, single lip	320[7]	1	–
		329[7]	1	–
 217 158	⑤ Smooth-running seal, single lip ⑥ End wiper, single lip ⑦ End wiper, double lip ⑧ Carrier plate for end wipers	330[7]	1	1
		339[7]	1	1
 217 088a	⑨ Additional wiper, single lip ⑩ Sealing strip, lower, single lip ⑪ Sealing strip, upper, single lip	360	1	1
		370		–
 217 047a		900[5]	–	–
		910		

Attention!
The table is only a guide.
The specific application conditions must be taken into consideration when selecting the elements.

The lubrication elements can be used in various combinations.
However, not every combination is possible or advisable.
For recommended combinations, see page 366.

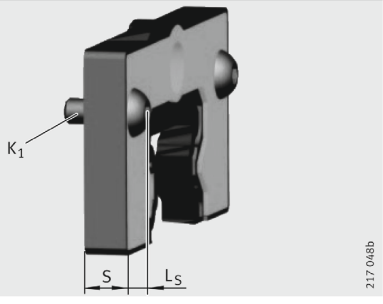
1) The KITs are available for the sizes KUVE15-B (-KT) to KUVE55-B (-KT) .
2) Ordering example for KIT100 for KUVE-35-B: KIT.KWVE35-B-100.
3) See figure bottom right.
4) For definition see page 354.
5) Standard for KUVE..-B and KUVE..-B-KT.
6) Valid for sizes 15 to 25.
7) Valid for sizes 20 to 45.

End wipers			End wipers with carrier plate ⑧		⑨	Sealing strips		Fitting of KIT			Contamination[4]			
						Lower	Upper							
③ Gap seal, grey	④ Contact type, single lip, black	⑤ Smooth-running seal, single lip, yellow	⑥ Contact type, single lip	⑦ Contact type, double lip	Additional wiper, single lip	⑩ Single lip	⑪ Single lip	Retrofittable[2]	Factory fit	Width S in mm[3]	Very slight	Slight	Moderate	Heavy
–	1	–	–	–	1	–	–	■	■	5	–	–	■	■
–	–	–	–	–	1	–	–	■	■	5	–	–	■	■
–	1	–	–	–	1	–	–	■	■	6	–	–	■	■
–	–	–	–	–	1	–	–	■	■	6	–	–	■	■
–	–	–	–	1	–	–	–	■	■	6	–	–	■	■
					–					5		■	■	–
–	–	–	–	–	–	1		■	■	–	–	■	■	–
					–		1	–				–	–	■



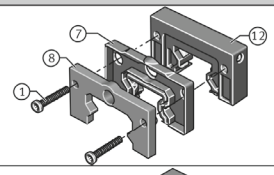
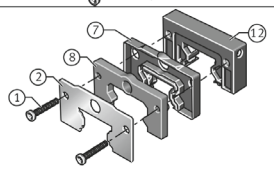
Fixing screws K_1, L_S, width S

KUVE size	KIT end number	Fixing screw K_1	
			L_S mm
15 **20**	200, 210, 220, 300, 309	M2	1,3
	310, 319, 360, 370		
25 **30, 35**	200, 210, 220, 300, 309	M3	1,65
	310, 319, 360, 370		
45 **55**	200, 210, 220, 300, 309	M4	2,2
	310, 319, 360, 370		



Accessories

Lubrication elements KIT[1)]

KIT	Description	Designation and KIT end number KIT.KWVE..-B[2)]
 217 049a	① Fixing screws K_1 ② End plate ⑥ Additional wiper, single lip ⑦ Additional wiper, double lip ⑧ Carrier plate for end wipers ⑫ Long term lubrication unit	400
 217 050a		430

Attention!
The table is only a guide.
The specific application conditions must be taken into consideration when selecting the elements.

The lubrication elements can be used in various combinations.
However, not every combination is possible or advisable.
For recommended combinations, see page 366.

1) The KITs are available for the sizes KUVE20-B (-KT) to KUVE45-B (-KT) .

2) Ordering example for KIT400 for KUVE-35-B: KIT.KWVE35-B-400.

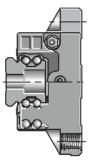
3) See figure bottom right.

4) For definition see page 354.

5) Valid for sizes 20 to 35.

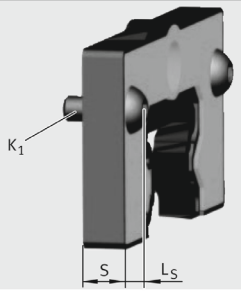
6) Valid for size 45.

① Fixing screws K_1 (2 pieces)	② End plate, non-contact	End wipers with carrier plate ⑧ ⑥ Contact type, single lip	⑦ Contact type, double lip	⑫ Long term lubrication unit	Fitting of KIT: Retrofittable	Fitting of KIT: Factory fit	Width S in mm[3]	Contamination[4]: Very slight	Slight	Moderate	Heavy
1	–	–	1	1	■	–	14[5] 15,5[6]	–	■	■	–
1	1	–	1	1	■	–	15[5] 16,5[6]	–	–	■	■

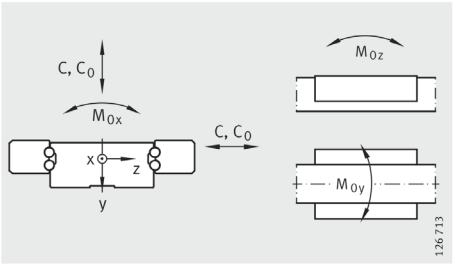


Fixing screws K_1, L_S, width S

KUVE size	KIT end number	Fixing screw K_1	L_S mm
20	400, 430	M2	1,3
25, 30, 35	400, 430	M3	1,65
45	400, 430	M4	2,2



Linear recirculating ball bearing units
Guideways



Load directions

Dimension table · Dimensions in mm

Linear recirculating ball bearing unit	Guideway	Dimensions						Mounting dimensions					
		l_{max} [1]	H	B	L	h	b	A_1	A_2	J_B	B_1	j_B	a_5
KUVS32	**TKVD32**	2 000	11	51,6	47	10	31,8	9,9	5,5	40,6	–	18	6,9
KUVS42	**TKVD42**	2 000	19	75	71	18	42	16,5	10	55	–	24	9
KUVS42	**TKVD14**	1 500	15	30	71	14	13,5	16,5	10	–	16,2	6	–
KUVS69	**TKVD69**	2 000	25	114	96	24	69	22,5	13	88	–	40	14,5
KUVS69	**TKVD19**	2 000	20	42	96	19	19,5	22,5	13	–	22,2	8	–

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 452. Longer guideways are supplied in several pieces and marked accordingly.

2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of settling, the fixing screws should be secured against rotation.

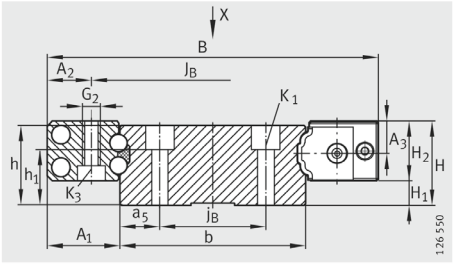
Dimension table (continued)

Linear recirculating ball bearing unit		Guideway			Load carrying capacity [4)5)]				
	Mass		Mass	Closing plug	Basic load ratings		Moment ratings		
	m		m		C	C_0	M_{0x}	M_{0y}	M_{0z}
	≈kg		≈kg/m		N	N	Nm	Nm	Nm
KUVS32	0,025	**TKVD32**	2,3	KA8-TN	5 700	10 600	203	51	51
KUVS42	0,085	**TKVD42**	5,54	KA8-TN	13 500	26 000	648	211	211
KUVS42	0,085	**TKVD14**	1,45	KA8-TN	6 750	13 000	–	–	–
KUVS69	0,2	**TKVD69**	12,42	KA11-TN	26 000	46 500	1 872	492	492
KUVS69	0,2	**TKVD19**	2,66	KA11-TN	13 000	23 250	–	–	–

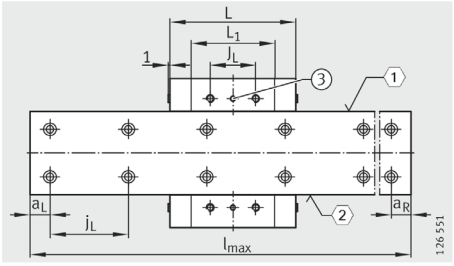
4) For two linear recirculating ball bearing units with TKVD32, TKVD42 and TKVD69, one linear recirculating ball bearing unit with TKVD 14 and TKVD19.

5) The usable load carrying capacity is influenced by the connections between the guidance elements and the adjacent construction.

6) ① Locating face
② Marking
③ Lubrication hole

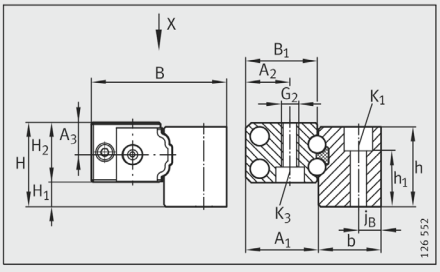


KUVS with TKVD32, TKVD42, TKVD69

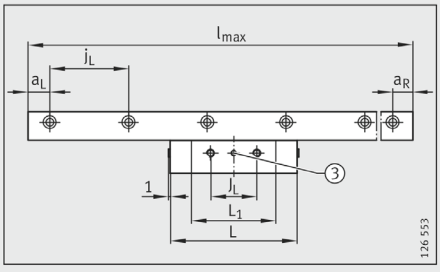


View rotated 90°
(1), (2), (3) [6]

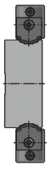
									Fixing screws[3]					
L_1	J_L	j_L	a_L, a_R[2]		H_1	H_2	A_3	h_1	K_1		G_2		K_3	
									DIN ISO 4762-12.9					
			min.	max.						M_A Nm		M_A Nm		M_A Nm
29,8	15	40	20	34	0,5	10,5	6	3,1	M3	2,5	M3	1,5	–	–
48,5	20	60	20	53	5,5	13,5	7,3	11,1	M3	2,5	M4	3	M3	2,5
48,5	20	60	20	53	1,5	13,5	7,3	7,1	M3	2,5	M4	3	M3	2,5
64	35	60	20	53	7,5	17,5	9,5	15,1	M5	10	M6	10	M5	10
64	35	60	20	53	2,5	17,5	9,5	10,1	M5	10	M6	10	M5	10



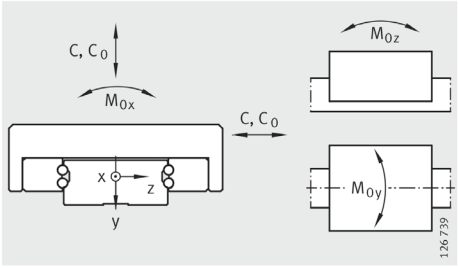
KUVS with TKVD14, TKVD19



View rotated 90°
(3) [6]



Carriages
Guideways



Load directions

Dimension table · Dimensions in mm

Carriages	Guideway	Dimensions						Mounting dimensions						
		l_{max} [1]	H	B	L	h	b	A_1	A_2	J_B	j_B	a_5	B_6	A_7
KWVK32-AL	**TKVD32**	2 000	26	62	50	10	31,8	9,9	10,7	40,6	18	6,9	51,6	–
KWVK42-AL	**TKVD42**	2 000	35	87	75	18	42	16,5	16	55	24	9	75	31
KWVK69-AL	**TKVD69**	2 000	47	130	100	24	69	22,5	21	88	40	14,5	114	42,5

1) Maximum length of single-piece guideways. For permissible number of guideway pieces, see page 452. Longer guideways are supplied in several pieces and marked accordingly.

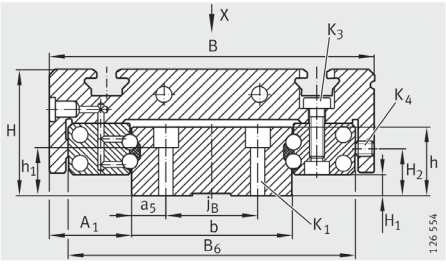
2) a_L and a_R are dependent on the guideway length.

3) If there is a possibility of settling, the fixing screws should be secured against rotation.

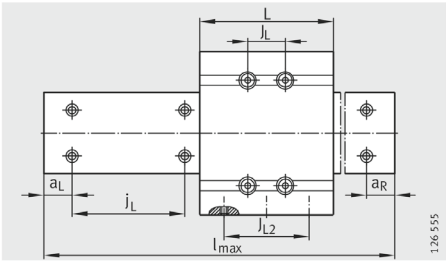
Dimension table (continued)

Carriage		Guideway			Load carrying capacity [4]				
	Mass		Mass	Closing plug	Basic load ratings		Moment ratings		
	m		m		C	C_0	M_{0x}	M_{0y}	M_{0z}
	≈kg		≈kg/m		N	N	Nm	Nm	Nm
KWVK32-AL	0,17	**TKVD32**	2,3	KA8-TN	5 700	10 600	203	51	51
KWVK42-AL	0,45	**TKVD42**	5,54	KA8-TN	13 500	26 000	648	211	211
KWVK69-AL	1,1	**TKVD69**	12,42	KA8-TN	26 000	46 500	1 800	490	492

4) The usable load carrying capacity is influenced by the connections between the guidance elements and the adjacent construction.

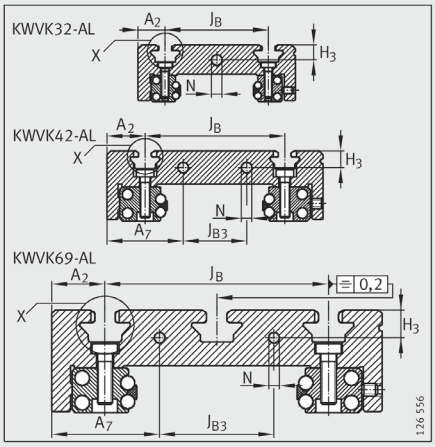


KWVK..-AL on TKVD

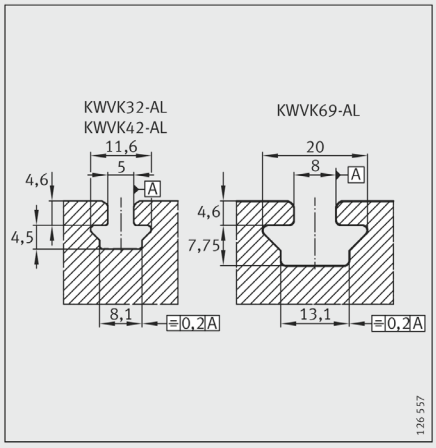


View rotated 90°

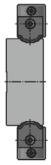
											Fixing screws[3]				
J_{B3}	J_L	J_{L2}	j_L	a_L, a_R[2]		N	H_1	H_2	h_1	H_3	K_1		K_3		K_4
											DIN ISO 4762-12.9				
				min.	max.							M_A Nm		M_A Nm	
–	15	25	40	20	35	4,2	0,5	6	3,1	7,5	M3	2,5	M3	0,6	M3
25	20	40	60	20	53	4,2	5,5	12	11,1	8	M3	2,5	M4	2,1	M4
45	35	55	60	20	53	4,2	7,5	17	15,1	11	M5	10	M6	4,8	M6



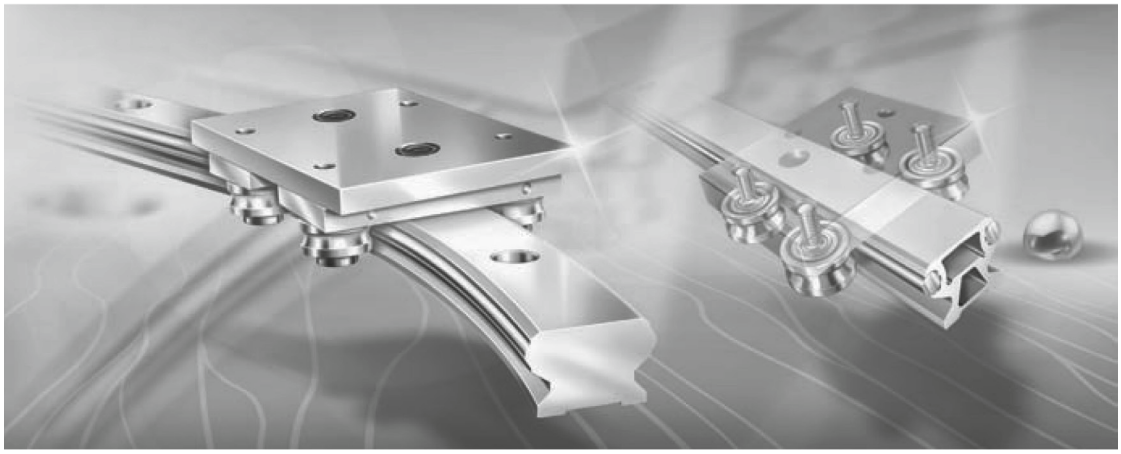
Carriage KWVK..-AL



Detail X



NOTES:



Track Roller Guidance Systems

Track roller guidance systems
Track rollers, bolts, guideways
Accessories

SCHAEFFLER GROUP
INDUSTRIAL

Design of bearing arrangements

Track roller guidance systems in accordance with customer specifications

The INA track roller guidance systems with curved guideway elements can be used to achieve an extremely wide variety of applications, *Figure 2* and *Figure 3*.

If the arrangement required cannot be represented using the standard ordering designation, a customer drawing must be submitted with the enquiry.

For arrangements with curved guideway elements, it is recommended that the guideway connector VBS should be used at the joints, see page 99. This gives considerably easier mounting.

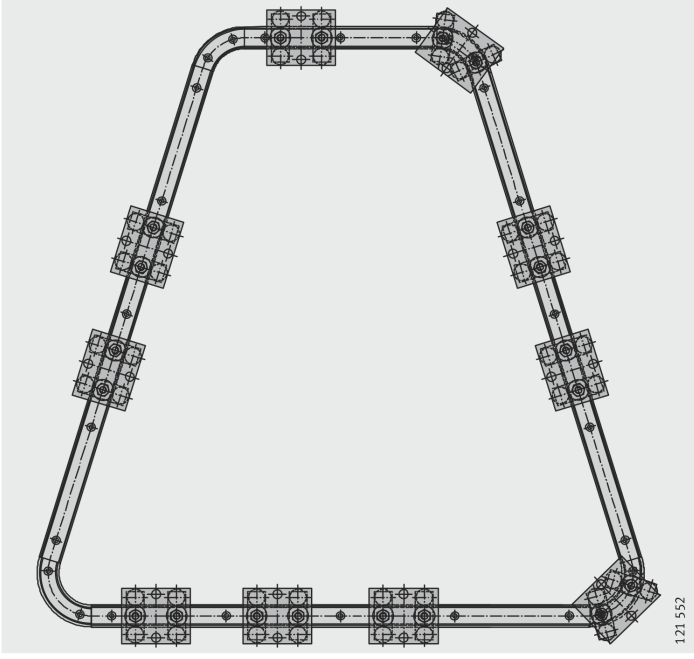


Figure 2
Arrangement according to customer requirements

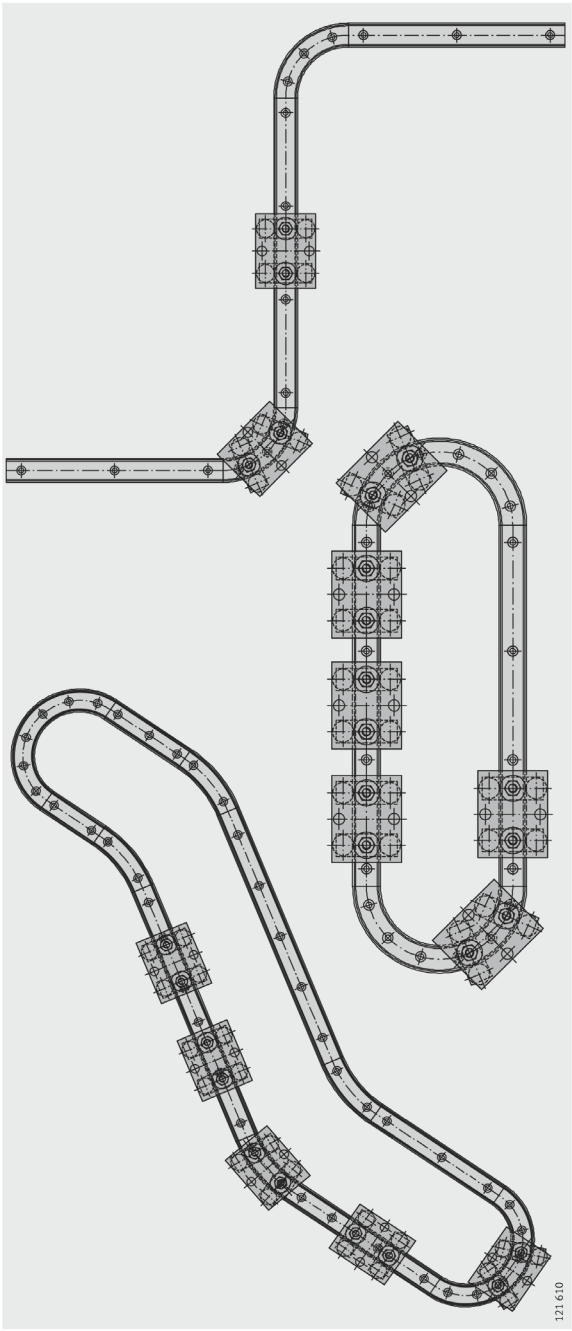
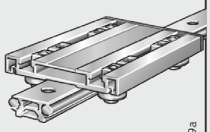
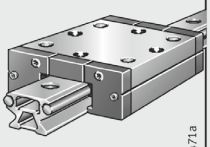
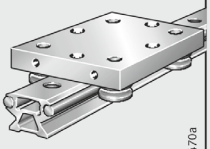
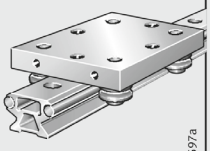
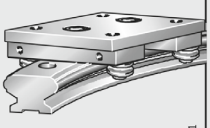


Figure 3
Closed and open applications with guidance systems including curved guideway elements

Matrix for preselection of track roller guidance systems

Track roller guidance systems with		Width of guideways						Corrosion-resistant
		20	25	32	42	52	86	
Hollow section carriage LFCL	 121 469a	–	●	–	●	–	●	■
Compact carriage LFKL..-SF	 121 471a	●	●	●	–	●	–	■
Open carriage LFL..-SF	 121 470a	●	–	●	–	●	–	■
Non-locating carriage LFLL..-SF	 121 597a	–	–	●	–	●	–	■
Bogie carriage LFDL..-SF LFDL..-B	 121 661	–	–	●	–	●	–	■

● Available sizes.

■ Possible.

1) The guideway LFS..-M can only be combined with carriages with adjustable clearance. If SF and LFCL carriages are to be used, please contact us first.

Particular features of guidance systems	Sizes	Basic dimensions of guidance systems, for dimensioning see *Figure 1*									Description
		LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ			LFS..-F, -FE			LFS..-M[1]			
		H	B	L	H	B	L	H	B	L	See page
– Economical – Low mass – High moment load carrying capacity M_x	25 42 86	32,1 39 59	80 116 190	110 150 235	– 33,9 –	80 116 190	110 150 235	63,1 – –	80 116 190	110 150 235	42
– Closed series – Protected track rollers – Integated lubrication unit	20 25 32 52 52-E 52-EE	22 25 35,5 54,3 60,4 60,4	56 65 86 13 145 155	69 85 112 136 186 205	– – 25,5 38,2 44,3 44,3	56 65 86 13 145 155	69 85 112 136 186 205	– 56 – 118,9 125 125	56 65 86 13 145 155	69 85 112 136 186 205	43
– Very robust – Simple construction	20 32 52 52-E	22 35,5 54,3 60,4	55 80 120 135	50 90 100 150	– 25,5 38,2 44,3	55 80 120 135	50 90 100 150	– 81,5 118,9 125	55 80 120 135	50 90 100 150	44
– Locating/non-locating bearing arrangement – Compensation of parallelism deviations up to ±1 mm	32 52	35,5 54,3	80 120	90 100	25,5 38,2	80 120	90 100	81,5 118,9	80 120	90 100	45
– Oval track guidance systems for unlimited stroke length	32-B 32-SF 52-B 52-SF	44,2 44,2 66,1 60,1	80 80 120 120	100 100 150 150	34,2 34,2 50 50	80 80 120 120	100 100 150 150	90,2 90,2 130,7 130,7	80 80 120 120	100 100 150 150	46



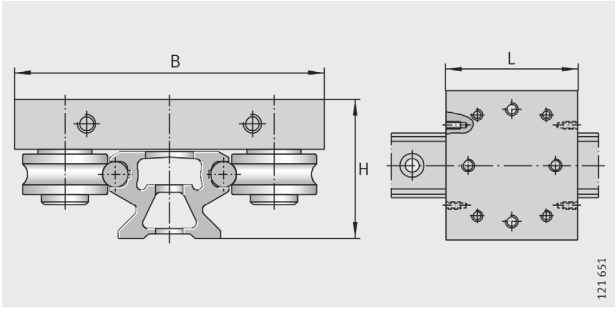
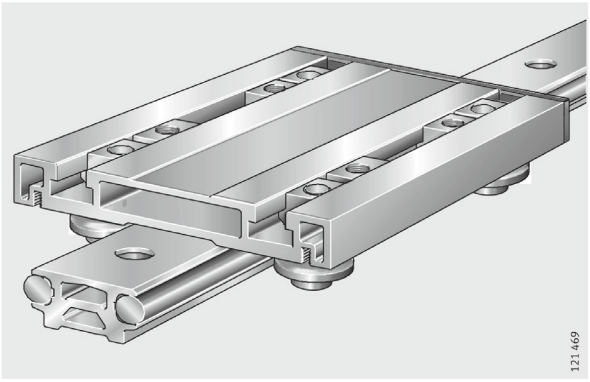


Figure 1
Dimensions H, B, L

Product overview Track roller guidance systems

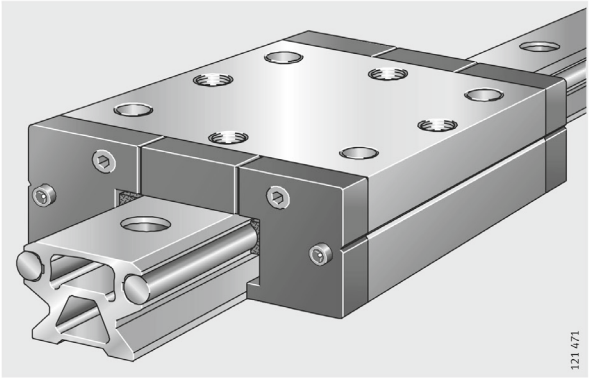
With hollow section carriage
Clearance-free

LFCL



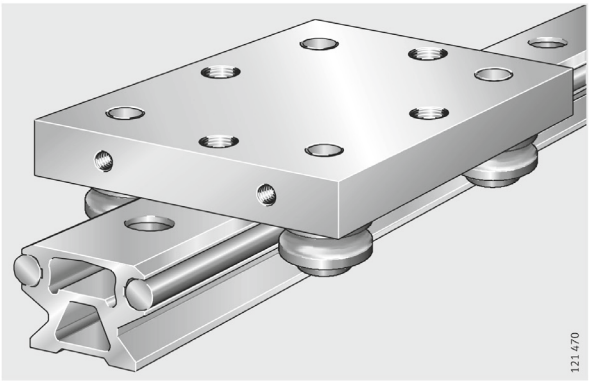
With compact carriage
Clearance-free

LFKL..-SF



With open carriage
Clearance-free

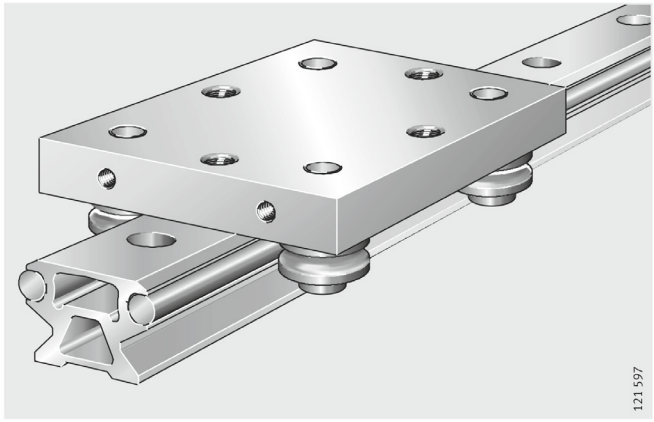
LFL..-SF



With non-locating carriage

Clearance-free

LFLL..-SF

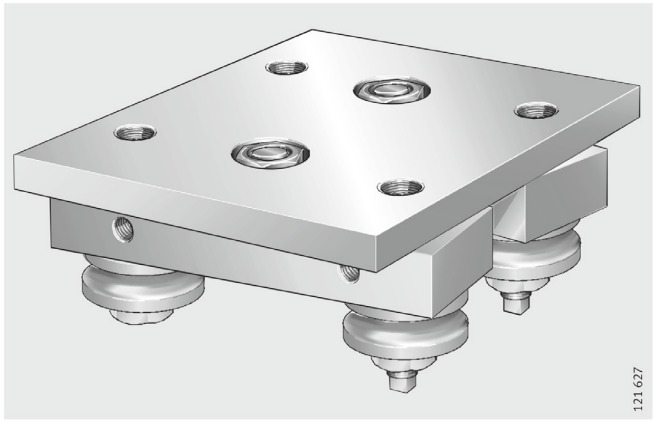




With bogie carriage

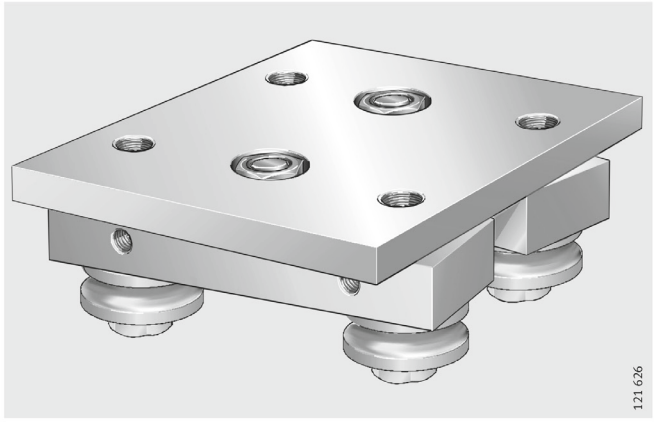
Concentric and eccentric bolts, adjustable clearance

LFDL..-B

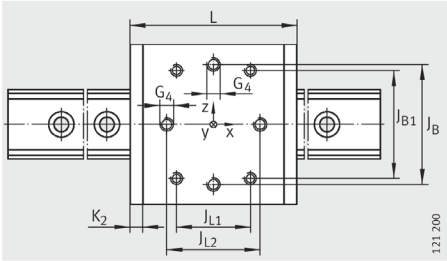


Concentric bolts
Clearance-free

LFDL..-SF



Track roller guidance system with compact carriage



LFKL with LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ, -M, -F, -FE
View rotated 90°

Dimension table · Dimensions in mm

Carriage	Mass m ≈kg	Track roller[3]	For shaft diameter	Dimensions			Mounting dimensions		
				H_1	B	L	J_B ±0,2	J_{B1}	K_2
LFKL20-SF[2]	0,2	**LFR50/5-4-2Z**	**4**	20,5	56	69	39	34	5
LFKL25-SF[2]	0,3	**LFR50/5-6-2Z**	**6**	23,5	65	85	50	40	5
LFKL32-SF	0,7	**LFR50/8-6-2Z**	**6**	32	86	112	59	54	7
LFKL52-SF	1,5	**LFR5201-10-2Z**	**10**	46,1	130	136	90	83	10
LFKL52-E-SF	2,9	**LFR5301-10-2Z**	**10**	53,8	145	186	105	90	10
LFKL52-EE-SF	4,3	**LFR5302-10-2Z**	**10**	55	155	205	115	95,2	10

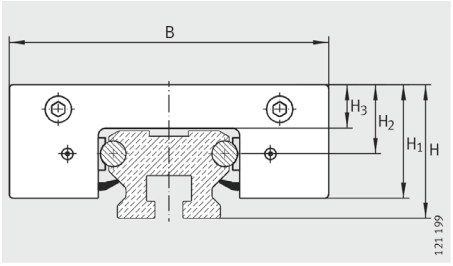
Ordering designation
Corrosion-resistant design: LFKL..-RB, LFS..-RB with LFR..-2RSR-RB
Guideways without holes: LFS..-OL.

1) Tightening torque for track roller bolts, concentric bolts are supplied tightened to M_A.
2) Without lubrication nipple, relubrication possible via end holes.
3) For ordering of replacement parts, please contact us.
4) The guideway LFS..-M can only be combined with carriages with adjustable clearance. If SF and LFKL carriages are to be used, please contact us first.

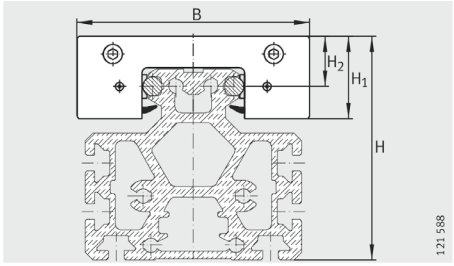
Basic load ratings[1]

Carriage	Guide-way	Track roller[2]	Basic load ratings						
			C_y N	C_{0y} N	C_z N	C_{0z} N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
LFKL20-SF	**LFS20**	**LFR50/5-4-2Z**	1 350	870	2 400	1 700	7	28	15
LFKL25-SF	**LFS25**	**LFR50/5-6-2Z**	1 280	820	2 580	1 800	8	40	18
LFKL32-SF	**LFS32**	**LFR50/8-6-2Z**	4 100	2 400	6 600	4 200	30	130	70
LFKL52-SF	**LFS52**	**LFR5201-10-2Z**	10 000	5 200	16 800	10 000	110	290	150
LFKL52-E-SF	**LFS52-E**	**LFR5301-10-2Z**	17 800	8 900	28 400	15 500	180	800	460
LFKL52-EE-SF	**LFS52-EE**	**LFR5302-10-2Z**	20 000	10 000	32 400	18 200	215	1 100	620

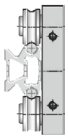
1) For basic load ratings in combination with LFS..-RB, see page 17.
2) For ordering of replacement parts, please contact us.



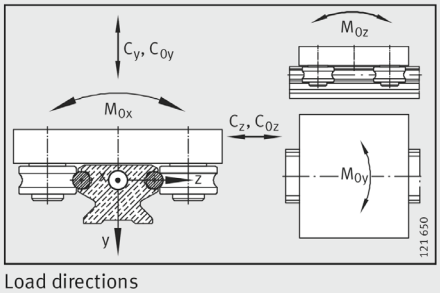
LFKL with LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ



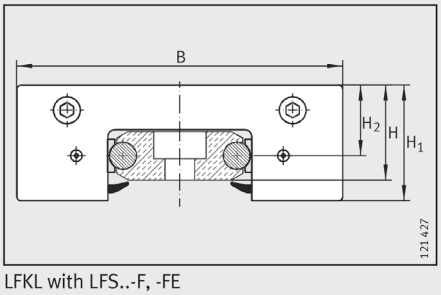
LFKL with LFS..-M[4)]



							Total height of carriage and guideway		
J_{L1}	J_{L2}	H_2	H_3	G_4	M_A[1)]		LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ	LFS-F, -FE	LFS-M[4)]
					Standard	Corrosion-resistant			
	±0,2	+0,3			Nm	Nm			
34	49	13	8,7	M5	2,5	2,5	22	–	–
45	60	14,4	9	M5	2,5	2,5	25	–	56
60	70	20,5	14	M8	15	12	35,5	25,5	81,5
60	70	29,2	19,4	M10	40	23	54,3	38,2	118,9
105	110	35,3	24	M10	40	23	60,4	44,3	125
120	140	35,3	24	M12	70	39	60,4	44,3	125

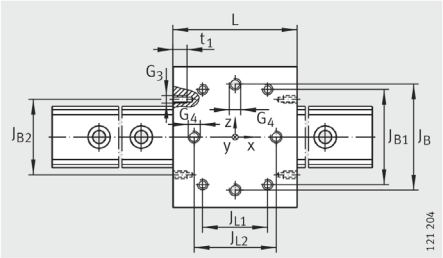


Load directions



LFKL with LFS..-F, -FE

Track roller guidance system with open carriage



LFL with LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ, -M, -F, -FE
View rotated 90°

Dimension table · Dimensions in mm

Carriage	Mass m ≈kg	Track roller[3]	For shaft diameter	Dimensions H_1	B	L	Mounting dimensions J_B ±0,2	J_{B1}	J_{B2}	J_{L1}	J_{L2} ±0,2
LFL20-SF[2]	0,16	**LFR50/5-4-2Z**	**4**	20,5	55	50	40	34	–	24	38
LFL32-SF	0,4	**LFR50/8-6-2Z**	**6**	30	80	90	59	54	56	60	70
LFL52-SF	1	**LFR5201-10-2Z**	**10**	43,2	120	100	90	83,2	65	60	70
LFL52-E-SF	1,9	**LFR5301-10-2Z**	**10**	53,8	135	150	105	90	65	105	110

Ordering designation
Corrosion-resistant design: LFL..-RB, LFS..-RB with LFR..-2RSR-RB
Guideways without holes: LFS..-OL.

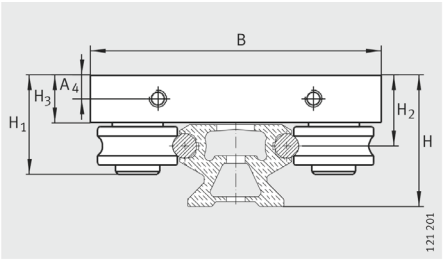
Corrosion-resistant design available by agreement.

1) Tightening torque for track roller bolts, concentric bolts are supplied tightened to M_A.
2) Hole in underside for cap wiper AB LFL20.
3) For ordering of replacement parts, please contact us.
4) The guideway LFS..-M can only be combined with carriages with adjustable clearance. If SF and LFCL carriages are to be used, please contact us first.

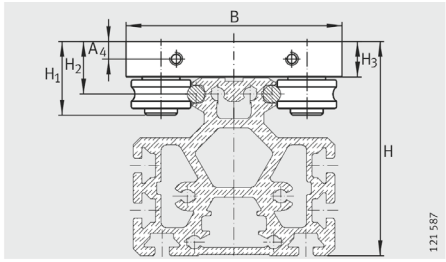
Basic load ratings[1]

Carriage	Guide-way	Track roller[2]	Basic load ratings C_y N	C_{0y} N	C_z N	C_{0z} N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
LFL20-SF	**LFS20**	**LFR50/5-4-2Z**	1 350	870	2 400	1 700	7	20	10
LFL32-SF	**LFS32**	**LFR50/8-6-2Z**	4 100	2 400	6 600	4 200	30	130	70
LFL52-SF	**LFS52**	**LFR5201-10-2Z**	10 000	5 200	16 800	10 000	110	290	150
LFL52-E-SF	**LFS52-E**	**LFR5301-10-2Z**	17 800	8 900	28 400	15 500	180	800	460

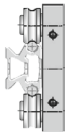
1) For basic load ratings in combination with LFS..-RB, see page 17.
2) For ordering of replacement parts, please contact us.



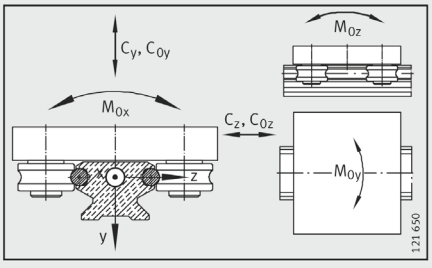
LFL with LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ



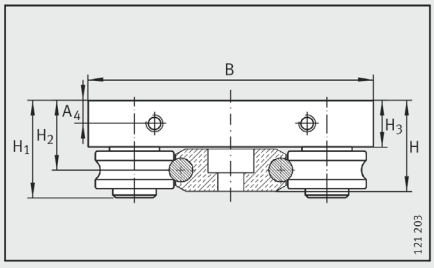
LFL with LFS..-M[4)]



								Total height of carriage and guideway		
t_1	H_2	H_3	A_4	G_3	G_4	M_A[1)]		LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ	LFS-F, -FE	LFS-M[4)]
						Standard	Corrosion-resistant			
	+0,3					Nm	Nm			
–	13	9	–	M3[2)]	M5	2,5	2,5	22	–	–
7	20,5	14	7	M6	M8	15	12	35,5	25,5	81,5
12	29,2	19,5	9,75	M6	M10	40	23	54,3	38,2	118,9
12	35,3	24	12	M6	M10	40	23	60,4	44,3	125

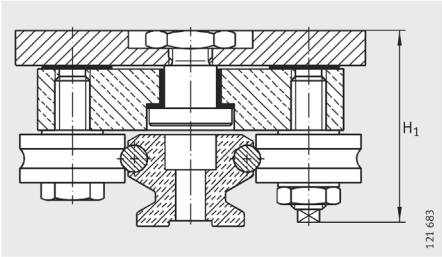


Load directions



LFL with LFS..-F, -FE

Track roller guidance system with bogie carriage



LFDL-B

Dimension table · Dimensions in mm

Carriage[1]	Mass m ≈kg	Track roller[3]	For shaft diameter	Dimensions			Mounting dimensions			
				H_1	B	L	J_B	J_{B1}	J_{L1}	J_{L2}
LFDL32-B	1	**LFR50/8-6-2Z**	**6**	43	80	100	60	54	60	70
LFDL32-SF				37						
LFDL52-B	2,5	**LFR5201-10-2Z**	**10**	65,1	120	150	90	83	76	90
LFDL52-SF				55						

Corrosion-resistant design available by agreement.

1) In order to protect the raceways, the carriages can also be fitted with the lubrication and wiper unit AB (special accessory). Please contact us.

2) Tightening torque for track roller bolts, concentric bolts are supplied tightened to M_A.

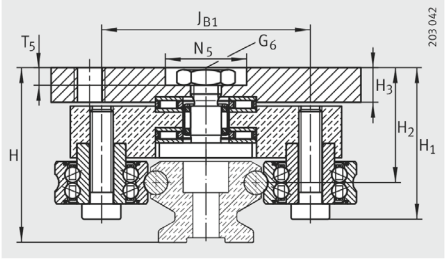
3) For ordering of replacement parts, please contact us.

Basic load ratings[1]

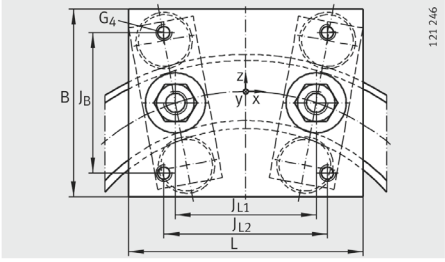
Carriage	Guide-way	Track roller[2]	Basic load ratings						
			C_y N	C_{0y} N	C_z N	C_{0z} N	M_{0x} Nm	M_{0y} Nm	M_{0z} Nm
LFDL32-B	**LFS32**	**LFR50/8-6-2Z**	4 100	2 400	6 600	4 200	30	130	70
LFDL32-SF	**LFS32**	**LFR50/8-6-2Z**							
LFDL52-B	**LFS52**	**LFR5201-10-2Z**	10 000	5 200	16 800	10 000	110	380	200
LFDL52-B-SF	**LFS52**	**LFR5201-10-2Z**							

1) For basic load ratings in combination with LFS..-RB, see page 17.

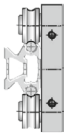
2) For ordering of replacement parts, please contact us.



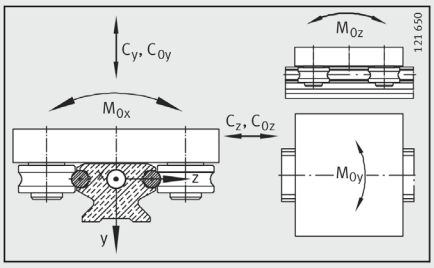
LFDL-SF with LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ



Top view



H_2 +0,3	H_3	T_5	G_4	N_5	G_6	M_A [2] Standard Nm	Total height of carriage and guideway LFS, -C, -CE, -CEE, -E, -EE, -N, -NZZ
29,2	9	5	M8	21	M8	15	44,2
41	11	6	M10	26	M10	40	66,1



Load directions

Track rollers

Sealing and lubrication

Gap seals on both sides protect the rolling element system against contamination. Bearings with this seal type have the suffix 2Z.

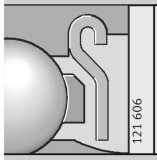
The track rollers are also available on request with contact seals on both sides, suffix 2RS and 2RSR.

The track rollers are greased for life and are therefore maintenance-free. From outside diameter ≧ 52 mm, the inner ring has a lubrication bore.

Seal types

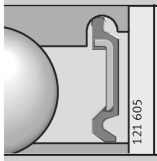
For seal types and their specific features, see table.

2Z seal



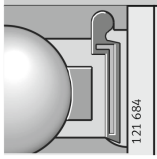
Gap seal:
- not radially preloaded
- low friction
- to be used with low levels of contamination

2RSR seal



Contact seal:
- radially preloaded
- to be used with higher requirements for sealing action and under heavy contamination

2RS seal



Contact seal:
- axially preloaded
- to be used with higher requirements for sealing action and under heavy contamination

Corrosion-resistant design

The inner ring and outer ring are made from corrosion-resistant steel. The rolling elements are protected against corrosion by the grease.

Corrosion-resistant designs have contact seals and the suffix 2RS-RB or 2RSR-RB.

Accuracy and internal clearance

The dimensional and geometrical accuracies correspond to tolerance class PN to DIN 620.

The radial internal clearance corresponds approximately to class CN; for internal clearance classes, see Catalogue HR1, Rolling Bearings.

Further information

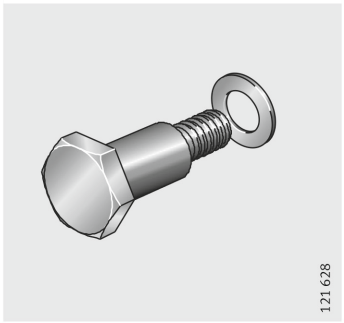
Further information is given on the following pages:

- dimension table see page 74, 78, 79
- bolts see page 64
- guideways see page 66
- accessories see page 92.

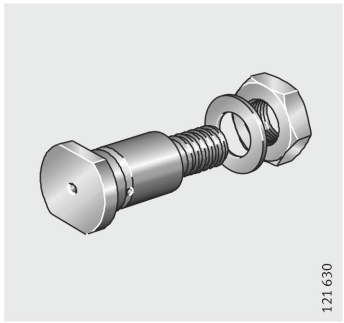
Product overview Bolts

Concentric

LFZ

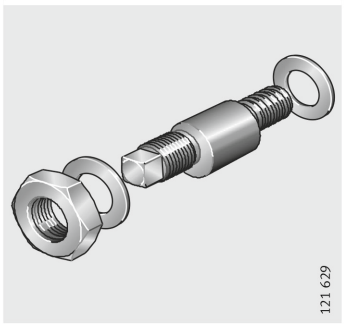


LFZ..-A1

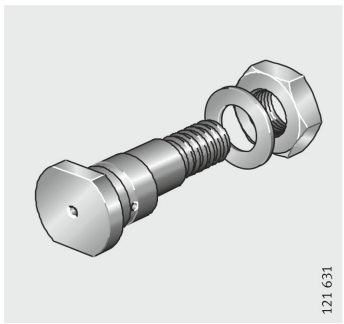


Eccentric

LFE



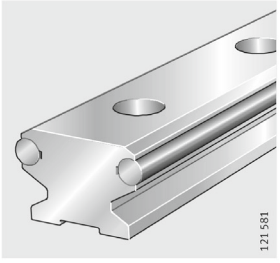
LFE..-A1



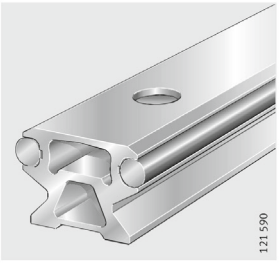
Product overview Guideways

Solid profile
Hollow section profile

LFS

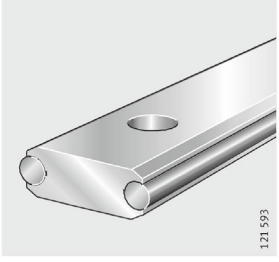


LFS..-C

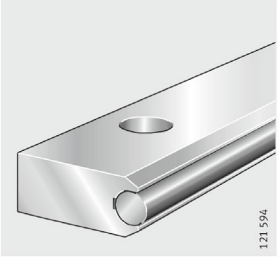


Flat design
Two raceways or one raceway

LFS..-F

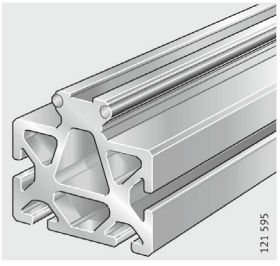


LFS..-FH



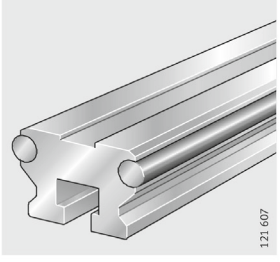
Support rail

LFS..-M

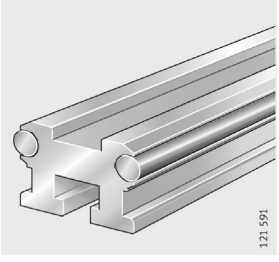


With slots
For toothed racks or toothed belts

LFS..-N

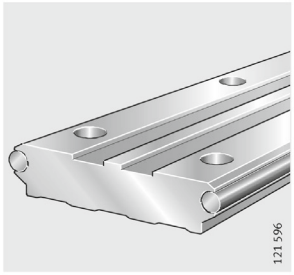


LFS..-NZZ



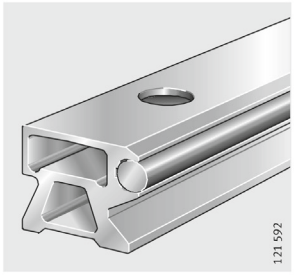
Wide, flat design
For toothed racks or toothed belts

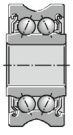
LFS120



Half guideway
With hollow section

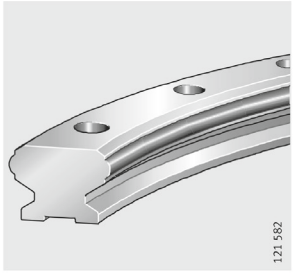
LFS..-CH





Curved guideway element

LFSR



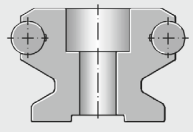
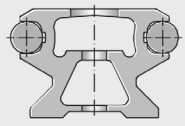
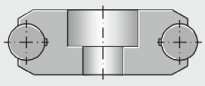
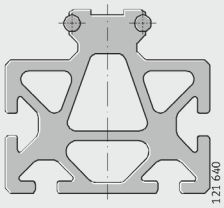
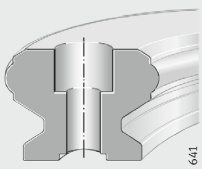


Guideways

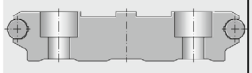
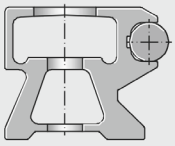
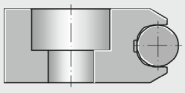
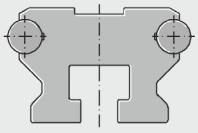
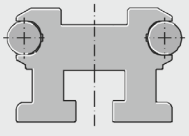
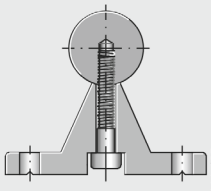
Features

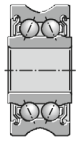
Guideway designs: see table.

Designs

Guideway	Design
LFS  121 637	■ With solid profile For location from above through holes
LFS..-C  121 638	■ With hollow section profile (low mass) ■ Location from above through holes ■ Ends of hollow sections closed off by plastic end covers
LFS..-F  121 639	■ Flat guideway ■ Preferably for applications with stationary carriage and moving guideway ■ Location from above through holes
LFS..-M  121 640	■ With support rail giving high bending rigidity ■ The support rail can be incorporated in modular constructions by means of slots. The slots are designed for nuts to DIN EN ISO 4 032 and T-nuts to DIN 508 ■ The end faces of the hollow sections are closed off using plastic end covers. Slot closing strips are also available
LFSR  121 641	■ Curved guideway element made from steel ■ Location from above through holes ■ Combinations of curved guideway elements or of curved and straight elements should be treated in the same way as multi-piece guideways and must **always be ordered together**

Designs
continued

Guideway	Design
LFS120  121 646	■ Wide, low guideway ■ With recesses for toothed racks or toothed belts ■ Location from above through holes
LFS..-CH  121 643	■ With hollow section (low mass) and only one shaft as raceway (half guideway) ■ Mainly for applications with increased distance between support sides ■ Location from above through holes
LFS..-FH  121 644	■ Flat guideway with only one shaft as raceway ■ Mainly for applications with increased distance between support sides ■ Location from above through holes
LFS..-N, LFS..-NZZ   121 656	■ With T-slot for location from below ■ The upper slot in the guideways and the lateral slots in LFS..-NZZ are suitable for toothed racks or toothed belts ■ Supplied with special support washers for the fixing screws; the quantity is based on the length of the guideway
TSN  121 657	■ Composite unit, aluminium support rail with screw mounted raceway shaft ■ Location from above ■ See Catalogue WF1

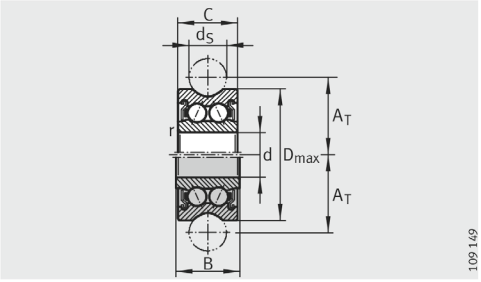




Guideways without fixing holes

All LFS guideways with the exception of LFSR are also available without fixing holes; suffix OL.

Locating track rollers



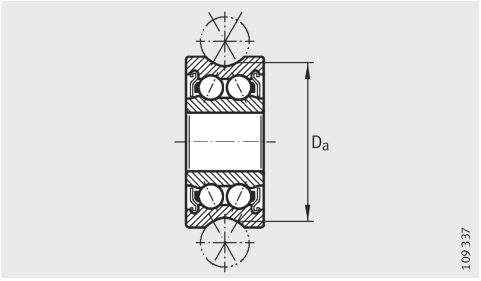
LFR..-2Z

Dimension table · Dimensions in mm

Designation	Mass m ≈kg	Dimensions d	D_{max}	B	A_T	C
LFR50/5-4-2Z **LFR50/5-4-2RS-RB**	0,01	5	16	8	9	7
LFR50/5-6-2Z **LFR50/5-6-2RS-RB**	0,01	5	17	8	10,5	7
LFR50/8-6-2Z **LFR50/8-6-2RS-RB**	0,02	8	24	11	14	11
LFR5201-10-2Z **LFR5201-10-2RS-RB**	0,08	12	35	15,9	20,65	15,9
LFR5301-10-2Z **LFR5301-10-2RS-RB**	0,1	12	42	19	24	19
LFR5302-10-2Z **LFR5302-10-2RS-RB**	0,17	15	47	19	26,65	19
LFR5201-12-2Z **LFR5201-12-2RS-RB**	0,08	12	35	15,9	21,75	15,9
LFR5204-16-2Z **LFR5204-16-2RS-RB**	0,23	20	52	22,6	31,5	20,6
LFR5206-20-2Z **LFR5206-20-2RS-RB**[5)]	0,43	25	72	25,8	41	23,8
LFR5206-25-2Z **LFR5206-25-2RS-RB**	0,43	25	72	25,8	43,5	23,8
LFR5207-30-2Z **LFR5207-30-2RS-RB**[5)]	0,66	30	80	29	51	27
LFR5208-40-2Z **LFR5208-40-2RS-RB**[5)]	1,36	40	98	38	62,5	36
LFR5308-50-2Z **LFR5308-50-KDD-RB**[5)]	1,4	40	110	46	72,5	44

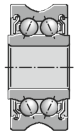
Corrosion-resistant design with the suffix ..-RB.

1) Effective dynamic load rating as track roller (radial).
2) Effective static load rating as track roller (radial).
3) Fatigue limit load.
4) Rolling contact diameter.
5) Corrosion-resistant design available by agreement.



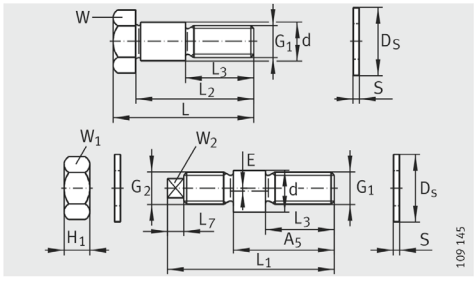
LFR..-2Z

			Load carrying capacity				
d_s	D_a [4]	r_{min}	C_{rw} [1] N	C_{0rw} [2] N	C_{ur} [3] N	F_{rper} N	F_{0rper} N
4	14,54	0,2	1 560	850	43	1 700	1 700
6	15,8	0,2	1 630	900	44,5	2 230	1 800
6	22,8	0,3	4 100	2 300	115	2 550	4 600
10	32,25	0,6	8 300	5 000	250	4 550	8 300
10	38,95	0,6	13 200	7 700	370	6 100	11 600
			11 700	7 200	360	6 600	2 100
10	44,25	1	14 500	9 100	455	9 200	16 700
12	33,1	0,6	8 300	5 000	250	4 500	8 200
16	49,14	1	15 300	10 100	520	10 000	17 600
20	64,68	1	23 200	16 500	870	20 800	33 000
25	65,35	1	22 700	16 100	850	18 800	32 000
30	76,02	1	28 500	20 800	1 100	18 000	31 000
40	90,36	1,1	38 500	29 000	1 480	50 000	58 000
50	101,7	1,1	54 000	40 500	2 000	69 000	81 000





Bolts



LFZ, LFE

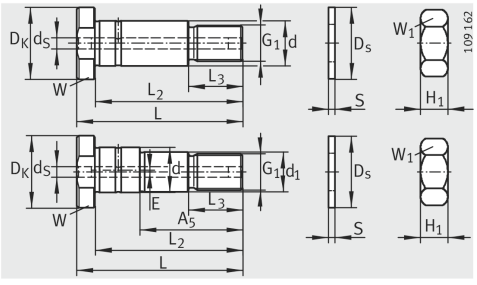
Dimension table · Dimensions in mm

Designation	Mass	Dimensions							
	m ≈kg	d	G_1	G_2	L	L_2	L_3	L_1	A_5
LFZ5	0,01	5	M4	–	19,5	16	9,5	–	–
LFE5-0,5				M4	–	–	9	20,5	15
LFZ8	0,02	8	M8	–	28,3	24,3	15	–	–
LFE8-1				M8X0,75	–	–	13,7	33,2	22
LFZ12	0,04	12	M10	–	43	36	22	–	–
LFE12-1				M10	–	–	19,5	50	33,5
LFZ12/M12	0,06			–	50,8	43,8	24	–	–
LFE12-1/M12				M12	–	–		57	41
LFZ15	0,06	15	M12	–	50,8	43,8	26	–	–
LFE15-1				M12	–	–	24	57	41
LFZ12X45-A1[2]	0,04	12	M10X1,5	–	50	45	16	–	–
LFE12X45-A1[2]									30
LFZ20X67-A1	0,2	20	M16X1,5	–	75	67	23	–	–
LFE20X67-A1									45
LFZ25X82-A1	0,4	25	M20X1,5	–	92	82	30	–	–
LFE25X82-A1									57
LFZ30X95-A1	0,62	30	M24X1,5	–	107	95	32	–	–
LFE30X95-A1									67
LFZ40X107-A1	1,1	40	M30X1,5	–	117	107	42	–	–
LFE40X107-A1									72
LFZ40X115-A1	1,2				125	115			–
LFE40X115-A1									72

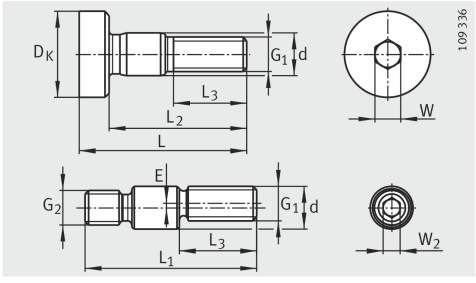
Corrosion-resistant design available by agreement.

1) No washer required.

2) Without lubrication hole.

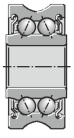


LFZ..-A1, LFE..-A1



LFZ5 and LFE5-0,5

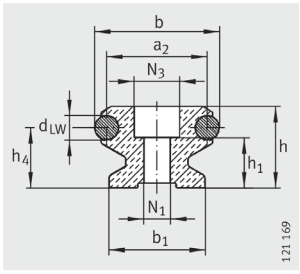
L_7	D_s	E	H_1	S	D_K	d_s	d_1	Width across flats		
								W	W_1	W_2
–	–	–	–	–[1]	10	–	–	3	–	–
		0,5	2,9		–			–	7	2
–	14	–	–	1	–	–	–	12	–	–
3,5		1	4					–	13	5
–	21	–	–	1,8	–	–	–	17	–	–
5		1	8,4					–	17	6
–	19	–	–					17	–	–
5		1	6,5	1,5				–	17	6
–	21	–	–	2	–	–	–	19	–	–
4		1	6,5					–	19	6
–	21	–	8	2	20	–	–	17	17	–
		0,75					10			
–	30	–	13	3	30	5,9	–	27	24	–
		1					17			
–	37	–	16	3	40	5,9	–	36	30	–
		1					22			
–	44	–	19	4	45	5,9	–	41	36	–
		1					27			
–	56	–	24	4	55	5,9	–	46	46	–
		1					36			
		–					–			
		1					36			



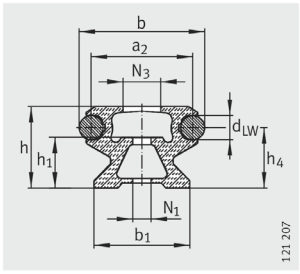


endo

Guideways



LFS



LFS..-C

Dimension table · Dimensions in mm

Designation	Mass	Dimensions			Mounting dimensions						
	m	b	h	l_{max} [1]	b_1	a_2	j_L	a_L [2]		a_R [2]	
	≈kg							min.	max.	min.	max.
LFS20	0,6	20	12,2	2 000	17	16	62,5	9	54	9	54
LFS25	1,1	25	15	2 000	21	19	62,5	10	54	10	54
LFS32	1,6	32	20	6 000	24	26	125	11	116	11	116
LFS32-E							62,5		52		52
LFS32-C [4]	1,1						125		116		116
LFS32-CE [4]							62,5		52		52
LFS32-F	1		10	4 000	–		125		116		116
LFS42-C [4]	2,2	42	20	8 000	28	32	125	20	113	20	113
LFS42-CE [4]							62,5		51		51
LFS42-F			15	4 000			125	17		17	
LFS52	4,4	52	34	8 000	40	42	250	17	235	17	235
LFS52-E							125		110		110
LFS52-EE							62,5		49		49
LFS52-C [4]	3						250		235		235
LFS52-CE [4]							125		110		110
LFS52-CEE [4]							62,5		49		49
LFS52-F			18	4 000	–		250		235		235
LFS52-FE							125		110		110
LFS86-C [4]	4,4	86	34	8 000	71	76	250	17	235	17	235
LFS86-CE [4]							125		110		110
LFS120 [7]	7,9	120	25	6 000	100	110	250	17	235	17	235
LFS120-E							125		110	17	110

Guideways in corrosion-resistant design: LFS..-RB, note page 17.

Guideways LFS, LFS..-C and LFS..-F available without holes: LFS..-OL, LFS..-C OL, LFS..-F OL.

Modulus of elasticity for LFS..-C, LFS..-CE, LFS..-CEE, LFS..-E, LFS..-EE, LFS..-F, LFS..-FE: 72 000 N/mm^2.

1) Maximum length of single-piece guideways; longer guideways are supplied in several sections and are marked accordingly.

2) a_L and a_R are dependent on the guideway length l_{max}, for calculation see page 70.

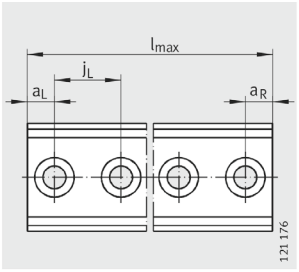
3) Under maximum load F_z and F_{0z}, support washers DIN 433 and the maximum tightening torque according to the table, page 26, are required.

4) The design of the hollow sections is dependent on the size.

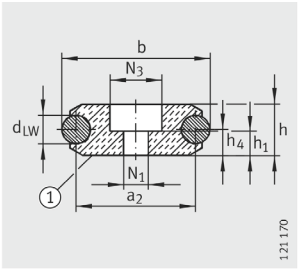
5) Counterbore depth for screws DIN 7 984.

6) If support washers to DIN 433 are used, screws to DIN 7 984 are recommended.

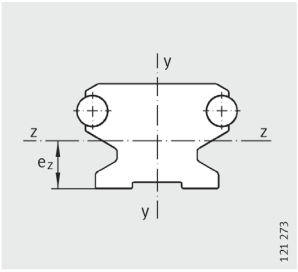
7) Hole patterns Z and ZZ are available by agreement.



LFS, LFS..-C, LFS..-F
View rotated 90°

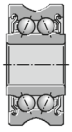


LFS..-F
① Underside marked

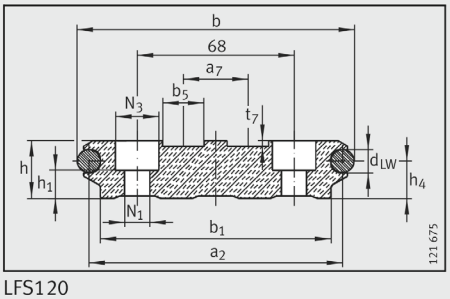


Bending axes

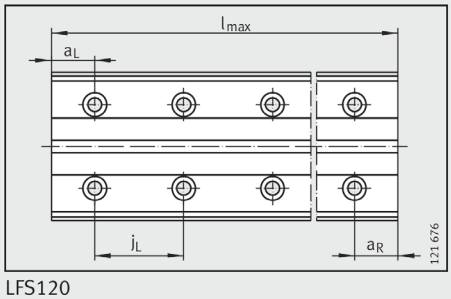
					Surface data					
d_{LW}	h_4	h_1	N_1	N_3[3]	Cross-sectional area mm²	y-y I_y mm⁴	y-y W_y mm³	z-z e_z mm	z-z I_z mm⁴	z-z W_z mm³
4	9	7,6	4,5	8	165	3 065	362	6,4	2 053	324
6	10,6	8,5	5,5	10	237	6 390	608	7,5	4 510	600
6	15	12	6,5	12	440	20 100	1 440	10,4	14 100	1 360
					261	18 305	1 165	10,1	10 072	995
	5	3,5[5]			230	11 300	810	5	2 190	438
10	12,6	12[6]	9	15	358	33 929	1 858	10,1	14 052	1 391
	7,5	8[5]			370	29 280	1 864	7,5	16 200	2 160
10	25,1	21	11	19	1 170	138 624	5 878	17,8	113 037	6 350
					649	113 821	4 896	17,1	74 878	4 378
	9	8[5]			670	84 000	3 610	9	19 900	2 211
10	25,1	21[6]	13	21	1 185	613 720	16 587	17,5	155 160	8 866
10	16,1	12	11	19	2 468	2 330 980	40 751	12,5	9 365	117 074





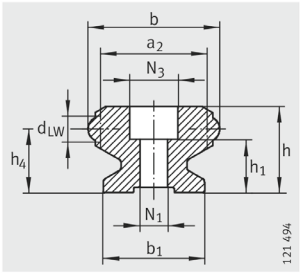


LFS120

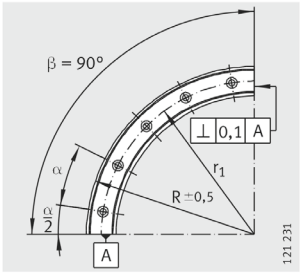


LFS120

Guideways



LFSR..-ST



LFSR../90-ST

Dimension table · Dimensions in mm

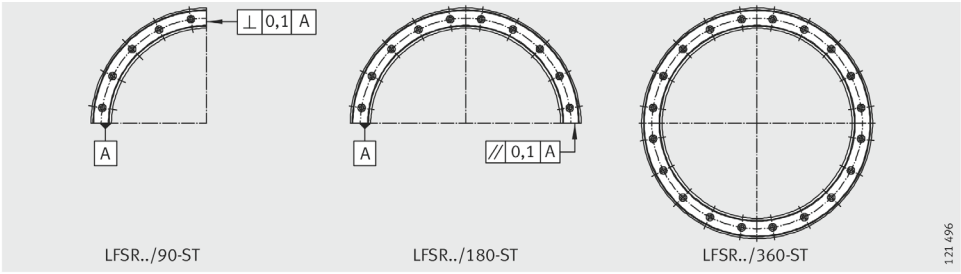
Designation	Mass	Dimensions							
	m	b	h	R	β	b_1	a_2	d_{LW}	h_1
	≈kg				°				
LFSR32-100/90-ST	0,5	32	20	100	90	24	26	6	13,5
LFSR32-100/180-ST	1				180				
LFSR32-100/360-ST	2				360				
LFSR32-150/90-ST	0,8			150	90				
LFSR32-150/180-ST	1,6				180				
LFSR32-150/360-ST	3,2				360				
LFSR32-300/90-ST	1,7			300	90				
LFSR32-300/180-ST	3,4				180				
LFSR32-300/360-ST	6,8				360				
LFSR32-500/90-ST	2,9			500	90				
LFSR32-500/180-ST	5,8				180				
LFSR32-500/360-ST	11,6				360				
LFSR52-150/90-ST	2	52	34	150	90	40	42	10	21
LFSR52-150/180-ST	4				180				
LFSR52-150/360-ST	8				360				
LFSR52-300/90-ST	4,5			300	90				
LFSR52-300/180-ST	9				180				
LFSR52-300/360-ST	18				360				
LFSR52-500/90-ST	7,8			500	90				
LFSR52-500/180-ST	15,6				180				
LFSR52-500/360-ST	31,2				360				

Attention!
If these curved guideway elements are required in combination with straight guideway sections, these must always be ordered together as a unit.

Corrosion-resistant design available by agreement.

1) For screw DIN ISO 4 762-8.8.

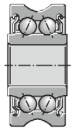
2) Number of holes on the pitch circle r_1.



LFSR../90-ST LFSR../180-ST LFSR../360-ST

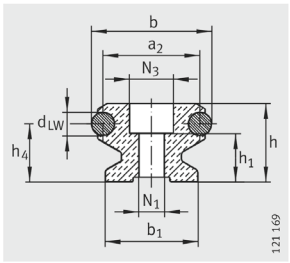
LFSR..-ST

h_4	N_1 [1]	N_3	x [2]	r_1	α °	α/2 °
15	6,5	12	3	84	30	15
			6			
			12			
			3	134	30	15
			6			
			12			
			4	284	22,5	11,25
			8			
			16			
			5	484	18	9
			10			
			20			
25,1	11	19	3	124	30	15
			6			
			12			
			4	274	22,5	11,25
			8			
			16			
			5	474	18	9
			10			
			20			

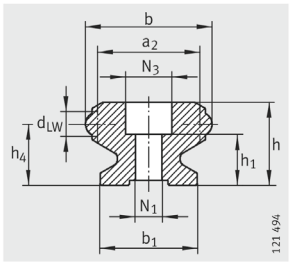




Closed oval tracks with guideway connectors VBS



LFS (section A–A)



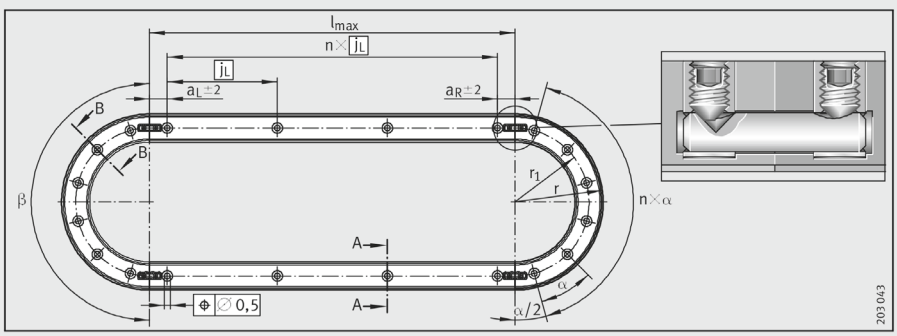
LFSR (section B–B)

Dimension table · Dimensions in mm

Closed oval tracks		Dimensions				Mounting dimensions		
Designation		b	h	β	l_{max} [1]	b_1	a_2	j_L
With two 180° arcs	With four 90° arcs			°				
–	**LFS32-OV-100/90-VBS**	32	20	90	6 000	24	26	125
LFS32-OV-100/180-VBS	–			180				
–	**LFS32-OV-300/90-VBS**			90				
LFS32-OV-300/180-VBS	–			180				
	LFS32-OV-500/90-VBS			90				
LFS32-OV-500/180-VBS	–			180				
–	**LFS52-OV-150/90-VBS**	52	34	90	8 000	40	42	250
LFS52-OV-150/180-VBS	–			180				
–	**LFS52-OV-300/90-VBS**			90				
LFS52-OV-300/180-VBS	–			180				
	LFS52-OV-500/90-VBS			90				
LFS52-OV-500/180-VBS	–			180				

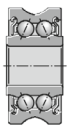
Attention!
If these curved guideway elements are required in combination with straight guideway sections, these must always be ordered together as a unit.
Closed oval tracks can only be ordered as a single unit.
One unit comprises two curved guideway elements LFSR with an arc of 180° and two straight guideway sections LFS or a unit comprises four curved guideway elements LFSR with an arc of 90° and four straight guideway sections LFS.

1) Maximum length of single-piece guideways.
2) For fixing screw to DIN ISO 4 762-8.8.
3) Number of holes on the pitch circle r_1.

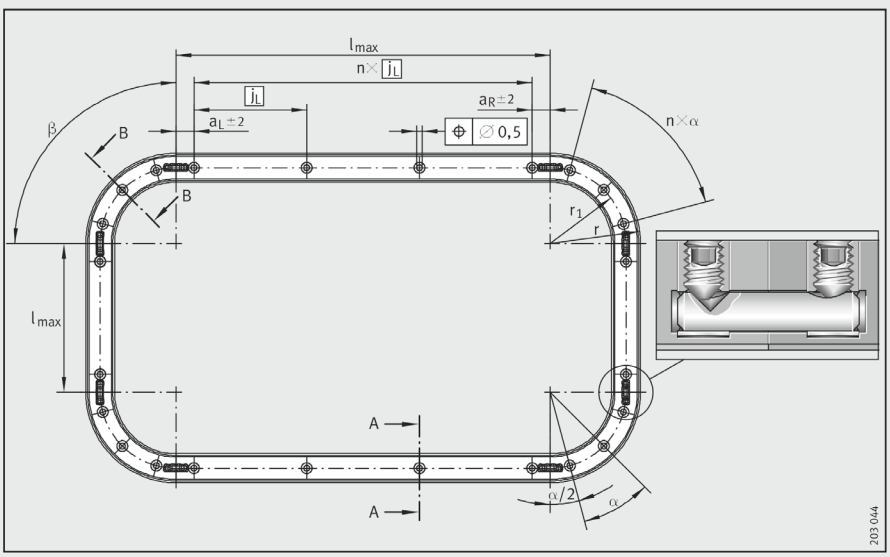


Closed oval track with two 180° arcs

a_L, a_R min.	a_L, a_R max.	d_{LW}	h_1	h_4	N_1 [2]	N_3	x [3]	r	r_1	α °
36	116	6	12	15	6,5	12	3	100	84	30
							6			
30							4	300	284	22,5
							8			
							5	500	484	18
							10			
49	235	10	21	25	11	19	3	150	124	30
							6			
41							4	300	274	22,5
							8			
							5	500	474	18
							10			

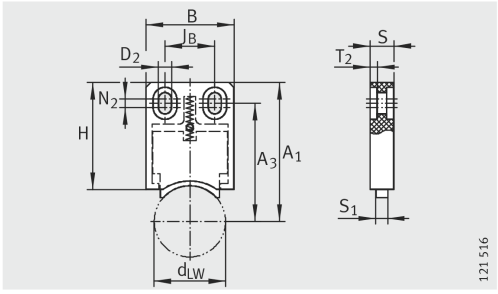






Closed oval track with four 90° arcs

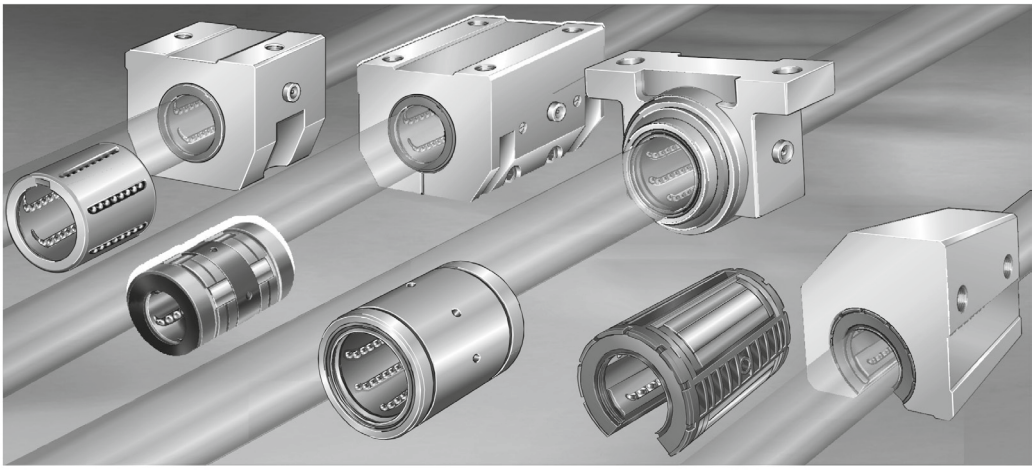
Lubrication and wiper units



AB.W

Dimension table · Dimensions in mm

Designation	Mass m ≈kg	Dimensions d_{LW}	B	S	H	J_B ±0,1	D_2	T_2	S_1	A_1	N_2	A_3	Suitable for track roller
AB.W10	0,03	10	22,5	10	45	10	4,5	3	5	49	4	40,3	LFR5201-2Z, LFR5301-2Z, LFR5302-2Z
AB.W12	0,03	12	22,5	10	45	10	4,5	3	5	51	4	42,3	LFR5201-12-2Z
AB.W16	0,03	16	22,5	10	45	10	4,5	3	5	52	4	43,3	LFR5204-16-2Z
AB.W20	0,03	20	22,5	10	45	10	4,5	3	5	54	4	45,3	LFR5206-20-2Z
AB.W25	0,03	25	37	10	45	21	5,5	3	5	54	3,5	45,3	LFR5206-25-2Z
AB.W30	0,03	30	37	10	45	21	5,5	3	5	59	3,5	50,3	LFR5207-30-2Z
AB.W40	0,03	45	37	10	45	21	5,5	3	5	71	3,5	62,3	LFR5208-40-2Z
AB.W50	0,03	50	37	10	45	21	5,5	3	5	76	3,5	67,3	LFR5308-50-2Z



Linear bearings
and linear bearing and housing units

Compact range
Light range
Heavy duty range
Machined range
Permaglide® plain bearing range

Product overview

Linear bearings and linear bearing and housing units

Compact range

Linear ball bearings
With and without seals

Features see page 56

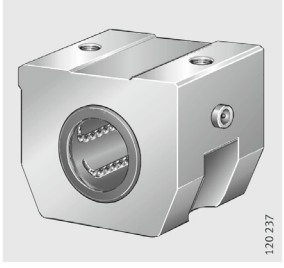
KH, KH..-PP



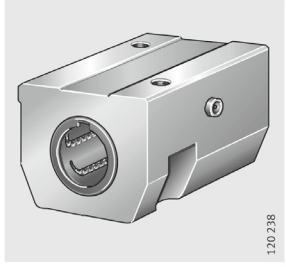
Closed units

Bearings mounted in single or tandem arrangement

KGHK..-B-PP-AS

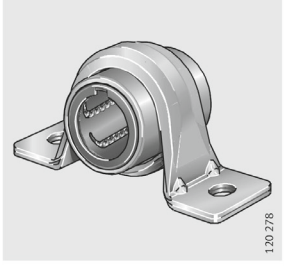


KTHK..-B-PP-AS

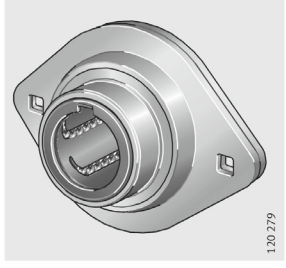


Adjustable units

KGHW..-PP

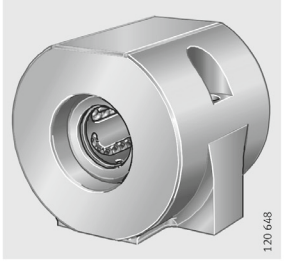


KGHWT..-PP



Closed unit

KGHA..-PP



Light range

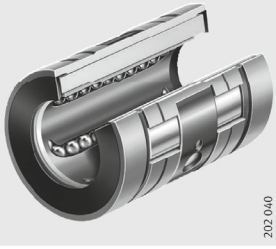
Linear ball bearings
Closed
or with segment cutout
With and without seals

Features see page 58

KN..-B, KN..-B-PP



KNO..-B, KNO..-B-PP

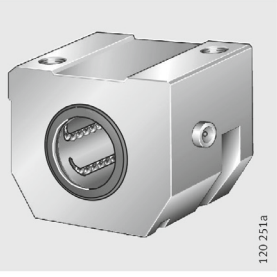




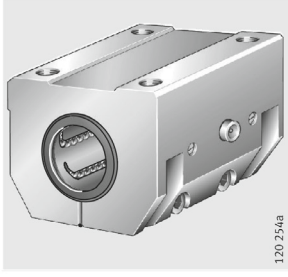


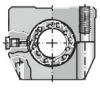
Closed units
Housing closed or slotted
Bearings mounted in single
or tandem arrangement

KGN..-C-PP-AS, KGNS..-C-PP-AS



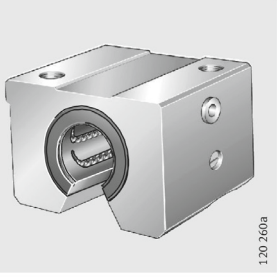
KTN..-C-PP-AS, KTNS..-C-PP-AS



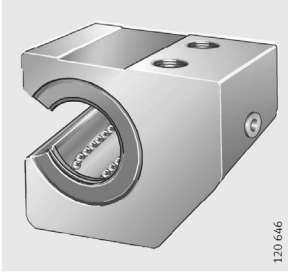


Units
with segment cutout
Housing not slotted or slotted

KGNO..-C-PP-AS, KGNOS..-C-PP-AS



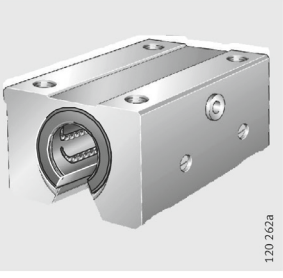
KGNC..-C-PP-AS, KGNCS..-C-PP-AS



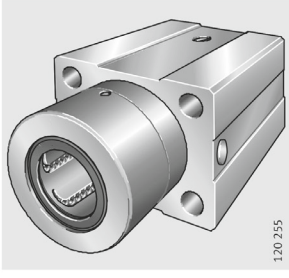


Bearings mounted
in tandem arrangement
Unit with centring collar

KTNO..-C-PP-AS, KTNOS..-C-PP-AS



KTFN..-C-PP-AS



Product overview

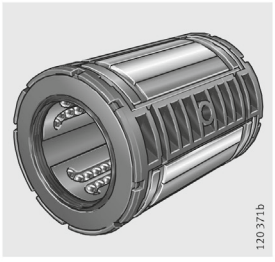
Linear bearings and linear bearing and housing units

Heavy duty range

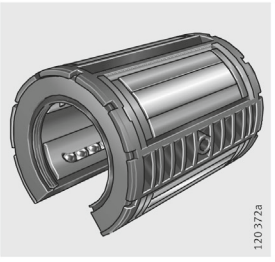
Linear ball bearings
Closed
or with segment cutout
With and without seals

Features see page 60

KS, KS..-PP

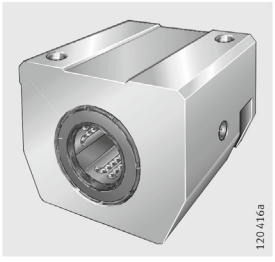


KSO, KSO..-PP

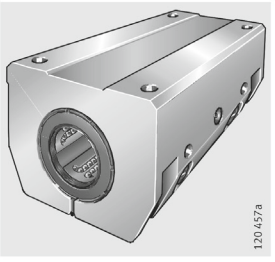


Closed units
Housing closed
or slotted
Bearings mounted in single
or tandem arrangement

KGSNG..-PP-AS,
KGSNS..-PP-AS

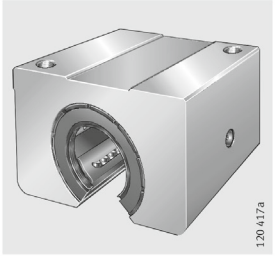


KTSG..-PP-AS,
KTSS..-PP-AS

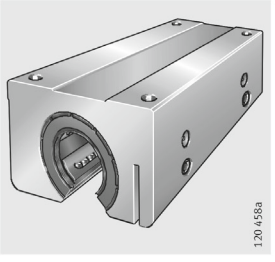


Units
with segment cutout
Housing not slotted
or slotted
Bearings mounted in single
or tandem arrangement

KGSNO..-PP-AS,
KGSNOS..-PP-AS

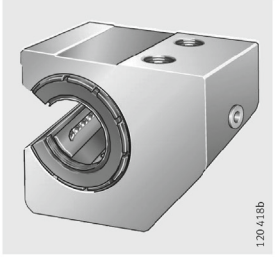


KTSO..-PP-AS,
KTSOS..-PP-AS

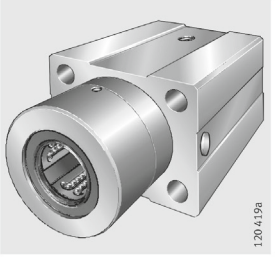


Bearings mounted in single
or tandem arrangement
Housing not slotted
or slotted
Unit with centring collar

KGSC..-PP-AS,
KGSCS..-PP-AS



KTFS



Machined range

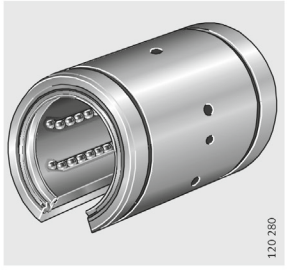
Linear ball bearings
Closed
or with slot
With segment cutout
With and without seals

Features see page 62

KB, KB..-PP, KB..-PP-AS, KBS, KBS..-PP, KBS..-PP-AS



KBO, KBO..-PP, KBO..-PP-AS

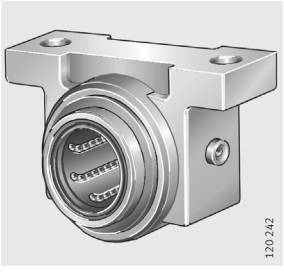




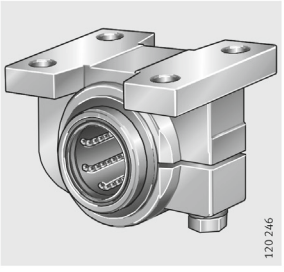


Closed units
Housing closed
or slotted

KGB..-PP-AS, KGBS..-PP-AS



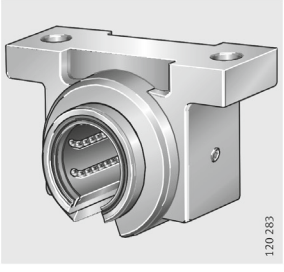
KGBA..-PP-AS, KGBAS..-PP-AS



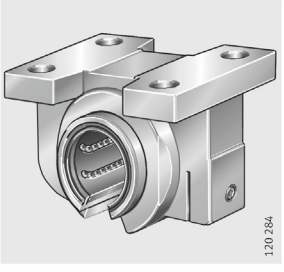


Units
with segment cutout
Housing not slotted
or slotted

KGBO..-PP-AS



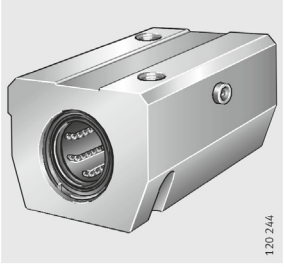
KGBAO..-PP-AS



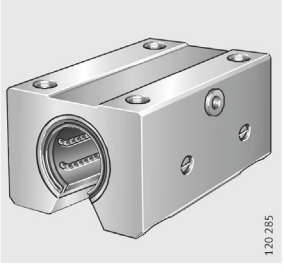


Closed units
or units
with segment output
Bearings mounted in tandem
arrangement

KTB..-PP-AS



KTBO..-PP-AS



Product overview

Linear bearings and linear bearing and housing units

Flanged housing unit
Closed design

KFB..-PP-AS



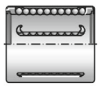
Permaglide® plain bearing range

Linear plain bearings
Closed design
Sealed

Features see page 64

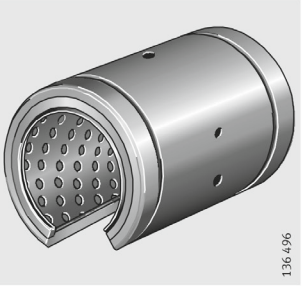
PAB..-PP-AS





With segment cutout
Sealed

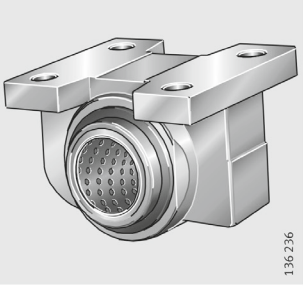
PABO..-PP-AS

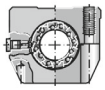




Linear plain bearing units
Closed design

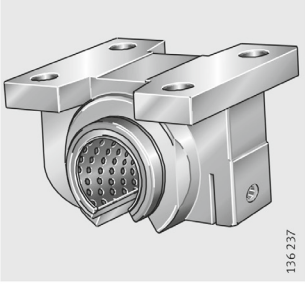
PAGBA..-PP-AS





With segment cutout

PAGBAO..-PP-AS



Linear bearings and linear bearing and housing units

Permaglide® plain bearing range

Linear plain bearings PAB and PABO and the corresponding plain bearing units have very high load carrying capacity, are extremely robust and have particularly low running noise. They have excellent emergency running characteristics.

Linear plain bearings

Linear plain bearings PAB and PABO comprise an outer ring made from high strength aluminium into which Permaglide® plain bearing bushes PAP..-P20 are fixed by adhesive.

The series PAB is of a closed construction and is designed for use on shafts. PABO has a segment cutout and is used in conjunction with shaft and support rail units.

Attention!

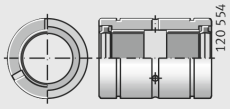
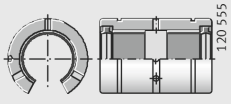
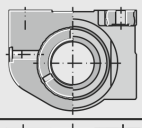
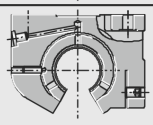
Permaglide® bushes must not be used in conjunction with the special coating Corrotect®. Crevice corrosion may occur that would impair the function of the bearing.

Further information

Further information is given on the following pages:

- dimension tables see page 114
- shafts see page 118
- shaft and support rail units see page 142
- accessories see page 160.

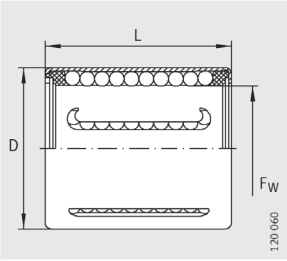
Linear plain bearings and linear plain bearing units, Permaglide® plain bearing range

Series[1]	Feature
PAB..-PP-AS  120 554	☐ Closed design ☐ Lip seals on both sides ☐ Relubrication facility
PABO..-PP-AS  120 555	☐ With segment cutout ☐ Lip seals on both sides ☐ Relubrication facility
PAGBA..-PP-AS  120 556	☐ Closed design ☐ Relubrication facility
PAGBAO..-PP-AS  120 557	☐ With segment cutout ☐ Slotted housing ☐ Relubrication facility

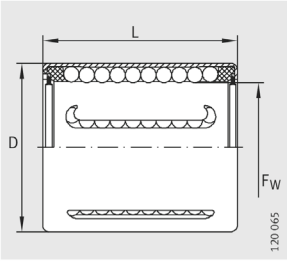
1) The suffix PP indicates that the bearing has lips seals on both sides.

Compact range

Linear ball bearings
Unsealed
or sealed
Relubrication facility



KH



KH..-PP







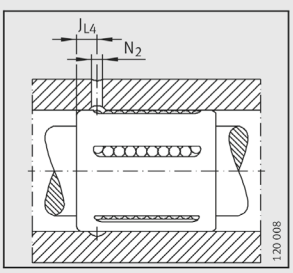


Dimension table · Dimensions in mm

Designation		Mass	Dimensions			Mounting dimensions		Basic load ratings[1]			
[2]	[3]	m g	F_W	D	L	J_{L4}	N_2	dyn. C_{min} N	stat. $C_{0\,min}$ N	dyn. C_{max} N	stat. $C_{0\,max}$ N
KH06	**KH06-PP**	7	**6**	12	22	4	2	340	240	390	340
KH08	**KH08-PP**	12	**8**	15	24	6	2	410	280	475	400
KH10	**KH10-PP**	14,5	**10**	17	26	6	2,5	510	370	590	520
KH12	**KH12-PP**	18,5	**12**	19	28	6	2,5	670	510	800	740
KH14	**KH14-PP**	20,5	**14**	21	28	6	2,5	690	520	830	760
KH16	**KH16-PP**	27,5	**16**	24	30	7	2,5	890	620	1 060	910
KH20	**KH20-PP**	32,5	**20**	28	30	7	2,5	1 110	790	1 170	1 010
KH25	**KH25-PP**	66	**25**	35	40	8	2,5	2 280	1 670	2 420	2 130
KH30	**KH30-PP**	95	**30**	40	50	8	2,5	3 300	2 700	3 300	3 100
KH40	**KH40-PP**	182	**40**	52	60	9	2,5	5 300	4 450	5 300	4 950
KH50	**KH50-PP**	252	**50**	62	70	9	2,5	6 800	6 300	6 800	7 000

Corrosion-resistant designs have the suffix -RR.
This must be stated when ordering.

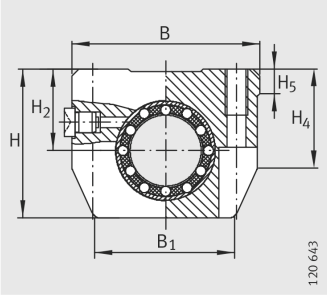
1) The basic load ratings are only valid for hardened (670 HV + 170 HV) and ground shaft raceways.
2) With preservative.
3) With initial greasing, sealed on both sides.



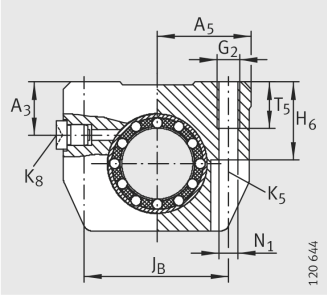
Mounting dimensions

Compact range

Linear ball bearing and housing units
Sealed
Greased,
with relubrication facility



KGHK..-B-PP-AS



KGHK..-B-PP-AS

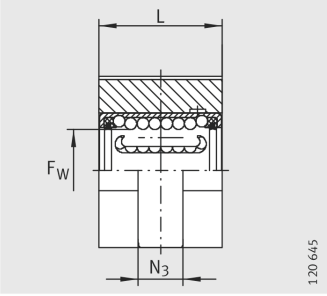
Dimension table · Dimensions in mm

Designation	Mass	Dimensions				Mounting dimensions		
	m	F_W	B	L	H	J_B	B_1	A_5
	≈g					±0,15		
KGHK06-B-PP-AS	40	**6**	32	22,2	27	23	25	16
KGHK08-B-PP-AS	50	**8**	32	24,2	27	23	25	16
KGHK10-B-PP-AS	70	**10**	40	26,2	33	29	32	20
KGHK12-B-PP-AS	80	**12**	40	28,2	33	29	32	20
KGHK14-B-PP-AS	100	**14**	43	28,2	36,5	34	34	21,5
KGHK16-B-PP-AS	110	**16**	43	30,2	36,5	34	34	21,5
KGHK20-B-PP-AS	150	**20**	53	30,2	42,5	40	40	26,5
KGHK25-B-PP-AS	270	**25**	60	40,2	52,5	48	44	30
KGHK30-B-PP-AS	400	**30**	67	50,2	60	53	49,6	33,5
KGHK40-B-PP-AS	750	**40**	87	60,2	73,5	69	63	43,5
KGHK50-B-PP-AS	1 250	**50**	103	70,2	92	82	74	51,5

1) The basic load ratings are only valid for hardened (670 HV + 170 HV) and ground shaft raceways.

2) For fixing screws ISO 4 762-8.8.
If there is a possibility of settling, the screws should be secured against rotation.

3) Lubrication nipple see page 31.



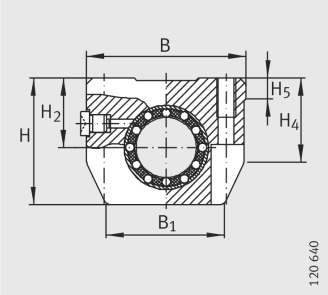
KGHK..-B-PP-AS

											Basic load ratings[1]	
H_2 +0,010 −0,014	H_4	H_5	T_5	H_6	A_3	G_2	N_1	N_3	K_5[2]	K_8[3]	dyn. C N	stat. C_0 N
13	20,6	5	9	13	9	M4	3,4	7	M3	NIPA1	340	240
14	20,6	5	9	13	9	M4	3,4	7	M3	NIPA1	410	280
16	25,1	5	11	16	11	M5	4,3	10	M4	NIPA1	510	370
17	25,1	5	11	16	11	M5	4,3	10	M4	NIPA1	670	510
18	28,1	6,9	11	18	13	M5	4,3	10	M4	NIPA1	690	520
19	28,1	6,9	11	18	13	M5	4,3	10	M4	NIPA1	890	620
23	29,8	7,4	13	22	15	M6	5,3	11	M5	NIPA2	1 110	790
27	36,6	9,9	18	26	17,5	M8	6,6	15	M6	NIPA2	2 280	1 670
30	42,7	8	18	29	18	M8	6,6	15	M6	NIPA2	3 300	2 700
39	49,7	12,8	22	38	23	M10	8,4	18	M8	NIPA2	5 300	4 450
47	62,3	10,9	26	46	28	M12	10,5	20	M10	NIPA2	6 800	6 300

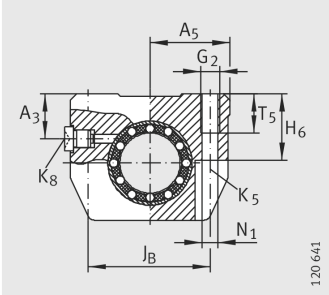
Compact range

Linear ball bearing and housing units

Tandem arrangement
Sealed
Greased,
with relubrication facility



KTHK..-B-PP-AS



KTHK..-B-PP-AS

Dimension table · Dimensions in mm

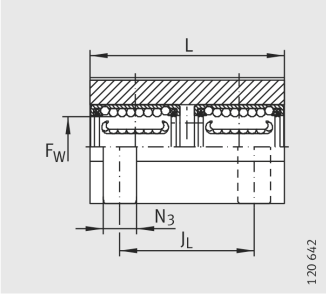
Designation	Mass	Dimensions				Mounting dimensions			
	m	F_W	B	L	H	J_B	B_1	A_5	J_L 3)
	≈g					±0,15			±0,15
KTHK12-B-PP-AS	170	**12**	40	60	33	29	32	20	35
KTHK16-B-PP-AS	230	**16**	43	65	36,5	34	34	21,5	40
KTHK20-B-PP-AS	320	**20**	53	65	42,5	40	40	26,5	45
KTHK25-B-PP-AS	580	**25**	60	85	52,5	48	44	30	55
KTHK30-B-PP-AS	850	**30**	67	105	60	53	49,6	33,5	70
KTHK40-B-PP-AS	1 600	**40**	87	125	73,5	69	63	43,5	85
KTHK50-B-PP-AS	2 700	**50**	103	145	92	82	74	51,5	100

1) The basic load ratings are only valid for hardened (670 HV + 170 HV) and ground shaft raceways and where the two linear ball bearings are subjected to equal loading.

2) For fixing screws ISO 4762-8.8.
If there is a possibility of settling, the screws should be secured against rotation.

3) Dimension J_L and lubrication hole symmetrical to the bearing length L.

4) Lubrication nipple see page 31.



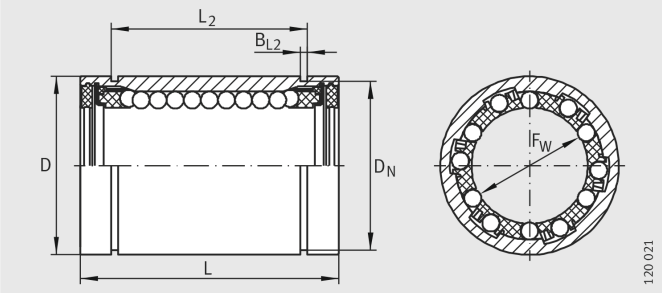
KTHK..-B-PP-AS

											Basic load ratings[1]	
H_2 $^{+0,010}_{-0,014}$	H_4	H_5	T_5	H_6	A_3	G_2	N_1	N_3	K_5[2]	K_8[4]	dyn. C N	stat. C_0 N
17	25,1	5	11	16	11	M5	4,3	10	M4	NIPA1	1 090	1 020
19	28,1	6,9	11	18	13	M5	4,3	10	M4	NIPA1	1 440	1 240
23	29,8	7,4	13	22	15	M6	5,3	11	M5	NIPA2	1 800	1 580
27	36,6	9,9	18	26	17,5	M8	6,6	11	M6	NIPA2	3 700	3 350
30	42,7	8	18	29	18	M8	6,6	15	M6	NIPA2	5 400	5 400
39	49,7	12,8	22	38	23	M10	8,4	18	M8	NIPA2	8 600	6 900
47	62,3	10,9	26	46	28	M12	10,5	20	M10	NIPA2	11 000	12 600

Machined range

Linear ball bearings

Closed, slotted
or with segment cutout
Unsealed or sealed
Not greased, greased,
with relubrication facility

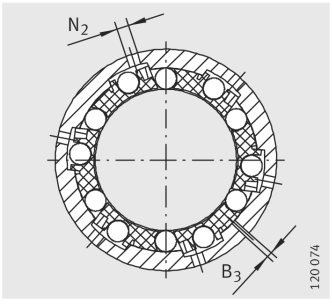


KB

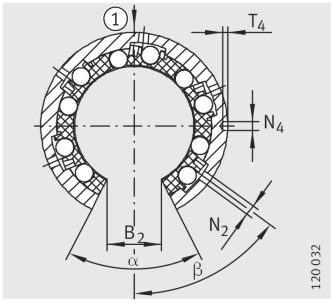
Dimension table · Dimensions in mm

Designation			Mass	Dimensions				Mounting dimensions		
7)	8)	9)	m	F_w		D 6)	L	B_2 3)	L_2	B_{L2} 5)
			≈g		Tolerances 6)	h5	h12		H13	
KB12	**KB12-PP**	**KB12-PP-AS**	40	**12**	+0,008 0	22	32	–	22,6	1,3
KBS12	**KBS12-PP**	**KBS12-PP-AS**								
KBO12	**KBO12-PP**	**KBO12-PP-AS**	30					7,7		
KB16	**KB16-PP**	**KB16-PP-AS**	50	**16**	+0,009 −0,001	26	36	–	24,6	1,3
KBS16	**KBS16-PP**	**KBS16-PP-AS**								
KBO16	**KBO16-PP**	**KBO16-PP-AS**	40					10,1		
KB20	**KB20-PP**	**KB20-PP-AS**	90	**20**	+0,009 −0,001	32	45	–	31,2	1,6
KBS20	**KBS20-PP**	**KBS20-PP-AS**								
KBO20	**KBO20-PP**	**KBO20-PP-AS**	70					10		
KB25	**KB25-PP**	**KB25-PP-AS**	190	**25**	+0,011 −0,001	40	58	–	43,7	1,85
KBS25	**KBS25-PP**	**KBS25-PP-AS**								
KBO25	**KBO25-PP**	**KBO25-PP-AS**	150					12,5		
KB30	**KB30-PP**	**KB30-PP-AS**	300	**30**	+0,011 −0,001	47	68	–	51,7	1,85
KBS30	**KBS30-PP**	**KBS30-PP-AS**								
KBO30	**KBO30-PP**	**KBO30-PP-AS**	240					13,6		
KB40	**KB40-PP**	**KB40-PP-AS**	600	**40**	+0,013 −0,002	62	80	–	60,3	2,15
KBS40	**KBS40-PP**	**KBS40-PP-AS**								
KBO40	**KBO40-PP**	**KBO40-PP-AS**	520					18,2		
KB50	**KB50-PP**	**KB50-PP-AS**	1 000	**50**	+0,013 −0,002	75	100	–	77,3	2,65
KBS50	**KBS50-PP**	**KBS50-PP-AS**								
KBO50	**KBO50-PP**	**KBO50-PP-AS**	850					22,7		

1) The basic load ratings are only valid for hardened (670 HV + 170 HV) and ground shaft raceways.
2) Basic load rating in main load direction.
3) Dimension B_2 on diameter F_W.
4) Hole position symmetrical to bearing length L.
5) Slot dimensions suitable for retaining rings to DIN 471.
6) The tolerances are only valid for KB.
7) With preservative.
8) With initial greasing, sealed on both sides.
9) With initial greasing, sealed on both sides, with relubrication facility.



KBS..-PP-AS



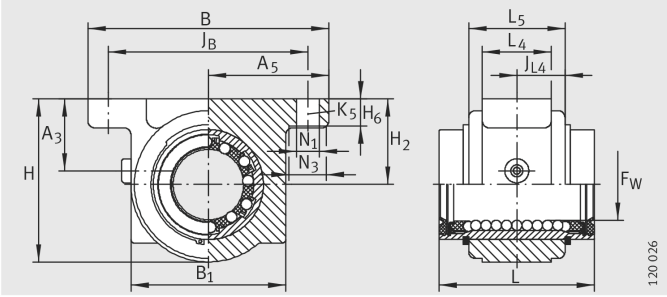
KBO..-PP-AS
① Main load direction

							Ball rows	Basic load ratings[1)2)]			
B_3	D_N[5)]	T_4	N_4[4)]	N_2	α	β	Quantity	dyn. C_{min} N	stat. $C_{0\,min}$ N	dyn. C_{max} N	stat. $C_{0\,max}$ N
–											
1	21	–	–	1,5	–	–	5	540	385	640	570
–		1,2	2,2		78	64	4	–	–	600[2)]	445[2)]
–											
1	24,9	–	–	2	–	–	5	710	530	840	780
–		1,2	2,2		78	64	4	–	–	800[2)]	620[2)]
–											
1	30,3	–	–	2	–	–	6	1 570	1 230	1 660	1 570
–		1,2	2,2		60	52	5	–	–	1 600[2)]	1 280[2)]
–											
1	37,5	–	–	2,5	–	–	6	2 800	2 220	2 950	2 850
–		1,5	3		60	53	5	–	–	2 850[2)]	2 300[2)]
–											
1	44,5	–	–	2,5	–	–	6	3 600	2 850	3 800	3 600
–		1,5	3		54	55	5	–	–	3 700[2)]	3 000[2)]
–											
1	59	–	–	3	–	–	6	6 000	4 400	6 400	5 600
–		1,5	3		54	54	5	–	–	6 100[2)]	4 600[2)]
–											
1	72	–	–	4	–	–	6	8 700	6 300	9 200	8 000
–		1,5	3		54	54	5	–	–	8 900[2)]	6 600[2)]

Machined range

Linear ball bearing and housing units

Closed, slotted
or with segment cutout
Sealed
Greased,
with relubrication facility

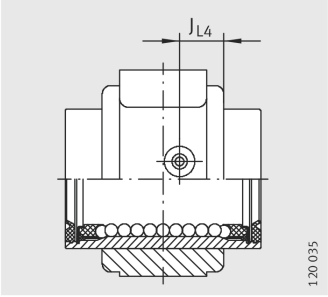


KGB..-PP-AS

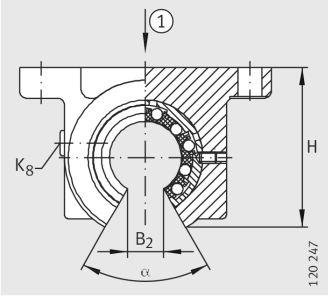
Dimension table · Dimensions in mm

Designation			Mass	Dimensions					Mounting dimensions			
			m	F_W	Toler-ances[6]	B	L	H	J_B	B_1	A_5	B_2[3]
			≈g				h12					
KGB12-PP-AS	–	–	100	**12**	+0,008 0	52	32	35,8	42 ±0,15	31,6	26 ±0,02	–
–	**KGBS12-PP-AS**	–										
–	–	**KGBO12-PP-AS**	90					32				7,7
KGB16-PP-AS	–	–	140	**16**	+0,009 −0,001	56	36	37,5	46 ±0,15	35	28 ±0,02	–
–	**KGBS16-PP-AS**	–										
–	–	**KGBO16-PP-AS**	120					33,5				10,1
KGB20-PP-AS	–	–	300	**20**	+0,009 −0,001	70	45	47,5	58 ±0,15	45	35 ±0,02	–
–	**KGBS20-PP-AS**	–										
–	–	**KGBO20-PP-AS**	250					45				10
KGB25-PP-AS	–	–	580	**25**	+0,011 −0,001	80	58	57,5	68 ±0,15	55	40 ±0,02	–
–	**KGBS25-PP-AS**	–										
–	–	**KGBO25-PP-AS**	490					54,5				12,5
KGB30-PP-AS	–	–	900	**30**	+0,011 −0,001	88	68	66,5	76 ±0,2	63	44 ±0,02	–
–	**KGBS30-PP-AS**	–										
–	–	**KGBO30-PP-AS**	780					63,5				13,6
KGB40-PP-AS	–	–	1 430	**40**	+0,013 −0,002	108	80	83,5	94 ±0,2	77	54 ±0,02	–
–	**KGBS40-PP-AS**	–										
–	–	**KGBO40-PP-AS**	1 280					79,5				18,2
KGB50-PP-AS	–	–	2 780	**50**	+0,013 −0,002	135	100	98	116 ±0,2	96	67,5 ±0,02	–
–	**KGBS50-PP-AS**	–										
–	–	**KGBO50-PP-AS**	2 460					93				22,7

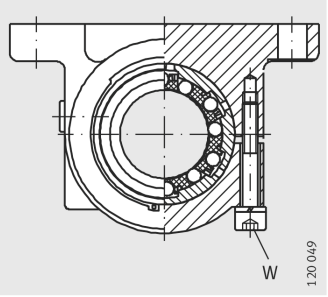
1) The basic load ratings are only valid for hardened (670 HV + 170 HV) and ground shaft raceways.
2) Basic load rating in main load direction.
3) Dimension B_2 on diameter F_W.
4) For fixing screws ISO 4 762-8.8.
If there is a possibility of settling, the screws should be secured against rotation.
5) Designs and dimensions see page 31.
6) The tolerances are valid for KGB..-PP-AS.



KGBO..-PP-AS



KGBO, KGBO..-PP-AS
① Main load direction



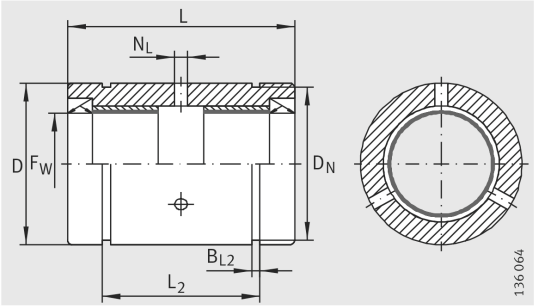
KGBS..-PP-AS

											Lubrication nipple[5]	Ball rows	Basic load ratings[1)2)]	
L_5	L_4	J_{L4}	H_2 ±0,015	A_3	H_6	N_1	N_3	K_5[4)]	α °	Width across flats W	K_8	Quantity	dyn. C N	stat. C_0 N
20	12	10	20	15	6	5,5	10	M5	–	–	NIPA1	5	540	385
										2				
		6,5							78	–		4	600[2)]	445[2)]
22	15	11	20	15	6	5,5	10	M5	–	–	NIPA1	5	710	530
										2				
		6,5							78	–		4	800[2)]	620[2)]
28	20	14	25	21	8	6,6	11	M6	–	–	NIPA1	6	1 570	1 230
										3				
		9,5							60	–		5	1 600[2)]	1 280[2)]
40	28	20	30	23	10	6,6	11	M6	–	–	NIPA1	6	2 800	2 220
										3				
		15							60	–		5	2 850[2)]	2 330[2)]
48	32	24	35	25	10	6,6	11	M6	–	–	NIPA2	6	3 600	2 850
										4				
		19							54	–		5	3 700[2)]	3 000[2)]
56	40	28	45	30	12	9	15	M8	–	–	NIPA2	6	6 000	4 400
										4				
		23							54	–		5	6 100[2)]	4 600[2)]
72	52	36	50	34	14	11	18	M10	–	–	NIPA2	6	8 700	6 300
										5				
		28							54	–		5	8 900[2)]	6 600[2)]

Permaglide® plain bearing range

Linear plain bearings

Closed or
with segment cutout
Sealed
Greased,
with relubrication facility

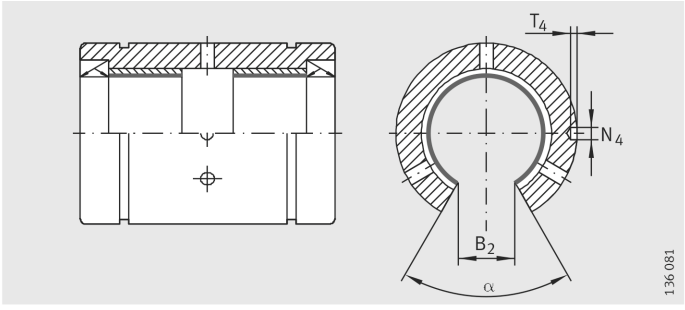


PAB..-PP-AS, PABO..-PP-AS

Dimension table · Dimensions in mm

Designation		Mass	Dimensions			Mounting dimensions	
		m	F_W	$D^{1)}$	L	$L_2^{2)}$	$B_{L2}^{3)}$
		≈g		h7	h12	H13	H13
PAB12-PP-AS	–	26	**12**	22	32	22,6	1,3
–	**PABO12-PP-AS**	21					
PAB16-PP-AS	–	34	**16**	26	36	24,6	1,3
–	**PABO16-PP-AS**	28					
PAB20-PP-AS	–	68	**20**	32	45	31,2	1,6
–	**PABO20-PP-AS**	58					
PAB25-PP-AS	–	132	**25**	40	58	43,7	1,85
–	**PABO25-PP-AS**	113					
PAB30-PP-AS	–	169	**30**	47	68	51,7	1,85
–	**PABO30-PP-AS**	143					
PAB40-PP-AS	–	426	**40**	62	80	60,3	2,15
–	**PABO40-PP-AS**	362					
PAB50-PP-AS	–	773	**50**	75	100	77,3	2,65
–	**PABO50-PP-AS**	657					

1) The tolerance is only valid for PAB..-PP-AS.
2) Holes symmetrical to bearing length L.
3) Slot dimensions suitable for retaining rings to DIN 471.
4) Dimension B_2 on diameter F_W.
5) The basic static load ratings are not valid if the bearings above are fitted – as shown on the following pages – in housings.



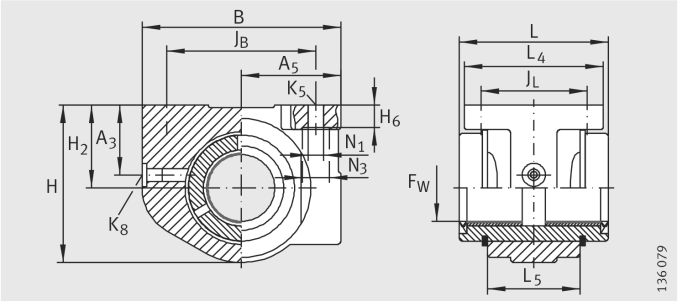
PABO..PP-AS
Segment cutout and fixing hole

D_N	B_2 [4]	T_4	N_4	N_L H13	α °	Basic load ratings [5] stat. C_0 N
21	–	–	–	2,5	–	60 000
	7,6	1,2	2,2		78	
24,9	–	–	–	2,5	–	96 000
	10,1	1,2	2,2		78	
30,3	–	–	–	2,5	–	150 000
	10	1,2	2,2		60	
37,5	–	–	–	2,5	–	250 000
	12,5	1,5	3		60	
44,5	–	–	–	3	–	375 000
	13,6	1,5	3		54	
59	–	–	–	3	–	600 000
	18,2	1,5	3		54	
72	–	–	–	4	–	1 000 000
	22,7	1,5	3		54	

Permaglide®
plain bearing range

Linear plain bearing units

Closed
or with segment cutout
Sealed
Greased,
with relubrication facility



PAGBA..-PP-AS, PAGBA..-PP-AS

Dimension table · Dimensions in mm

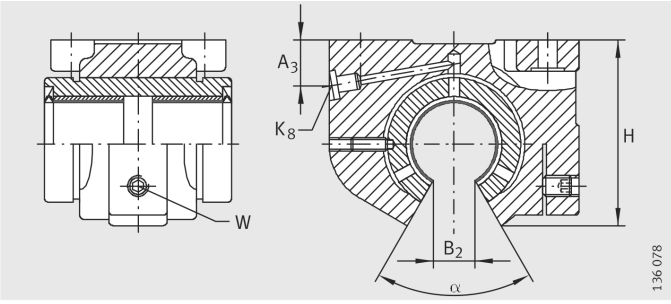
Designation		Mass	Dimensions			Mounting dimensions				
		m ≈g	F_W	B	L h12	H	J_B	A_5	B_2 [1]	L_4
PAGBA12-PP-AS	–	70	**12**	42	32	34	32 ±0,15	21 ±0,01	–	32
–	**PAGBAO12-PP-AS**	60				30,5		21	7,6	
PAGBA16-PP-AS	–	110	**16**	50	36	41	40 ±0,15	25 ±0,01	–	35
–	**PAGBAO16-PP-AS**	90				36,8		25	10,1	
PAGBA20-PP-AS	–	180	**20**	60	45	47,5	45 ±0,15	30 ±0,01	–	42
–	**PAGBAO20-PP-AS**	160				44,5		30	10	
PAGBA25-PP-AS	–	350	**25**	74	58	60	60 ±0,2	37 ±0,01	–	54
–	**PAGBAO25-PP-AS**	310				56		37	12,5	
PAGBA30-PP-AS	–	480	**30**	84	68	67	68 ±0,2	42 ±0,01	–	60
–	**PAGBAO30-PP-AS**	430				63,5		42	13,6	
PAGBA40-PP-AS	–	1 070	**40**	108	80	87	86 ±0,2	54 ±0,015	–	78
–	**PAGBAO40-PP-AS**	910				82,4		54	18,2	
PAGBA50-PP-AS	–	1 650	**50**	130	100	98	108 ±0,2	65 ±0,015	–	70
–	**PAGBAO50-PP-AS**	1 460				92,8		65	22,7	

1) Dimension B_2 on diameter F_W.

2) For fixing screws ISO 4 762-8.8.
If there is a possibility of settling, the screws should be secured against rotation.

3) Note maximum tightening torques.

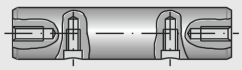
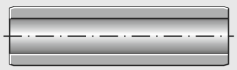
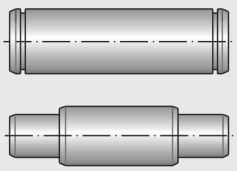
4) Designs and dimensions see page 31.



PAGBAO..-PP-AS
Segment cutout

J_L	L_5	H_2	A_3	H_6 −0,5	N_1 [2]	N_3 [2]	K_5	Width across flats W [3]		α	Lubrication nipple [4] K_8
									max. Nm	°	
23 ±0,15	20	18 ±0,01	15	4,8	4,7	8	M4	–	–	–	NIPA1
		18	7,8					2	1	78	
26 ±0,15	22	22 ±0,01	15	5,4	4,7	8	M4	–	–	–	NIPA1
		22	10					2,5	1,5	78	
32 ±0,15	28	25 ±0,01	21	6,7	4,7	8	M4	–	–	–	NIPA1
		25	11					2,5	1,5	60	
40 ±0,2	40	30 ±0,01	23	7,8	5,7	10	M5	–	–	–	NIPA1
		30	13					3	3	60	
45 ±0,2	48	35 ±0,01	25	8,7	6,8	11	M6	–	–	–	NIPA2
		35	14					3	4	54	
58 ±0,2	56	45 ±0,01	30	11	9,2	15	M8	–	–	–	NIPA2
		45	18					4	5	54	
50 ±0,2	72	50 ±0,015	34	12,5	9,2	15	M8	–	–	–	NIPA2
		50	19					4	7	54	

Matrix for preselection of solid and hollow shafts

Solid and hollow shafts		Shaft diameter d_{LW} mm from ... to	Normal shaft toler-ance
Solid shafts Without threaded holes	**W**  120 538	4 – 80	h6
Solid shafts With threaded holes	**W**  120 531a	10 – 80	h6
Hollow shafts	**WH**  120 539	12 – 80	h7
Shafts According to customer requirements	**W**  120 540	10 – 80	h6, h7

Definition:
- ■ Available by agreement
- ● Available

1) Not available for all diameters.

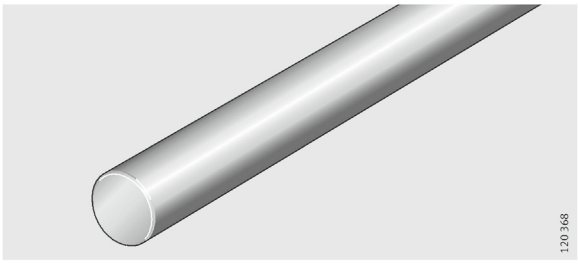
2) For WH, Cf53 or C60.

Special tolerances, only for shafts made from quenched and tempered steel		Steel			Coating[1]				Description
		Quenched and tempered steel	Corrosion-resistant steel		Hard chromium plating	Corrotect®	Protect A	Protect B	
		Cf53[2]	X46Cr13	X90CrMoV18					Page
j5	f7	●	■[1]	■[1]	■	■	■	■	123
j5	f7	●	■[1]	■[1]	■	■	■	■	128
h7	–	●	–	–	■	■	■	■	123
j5	f7	●	■[1]	■[1]	■	■	■	■	129

Product overview Solid shafts, hollow shafts

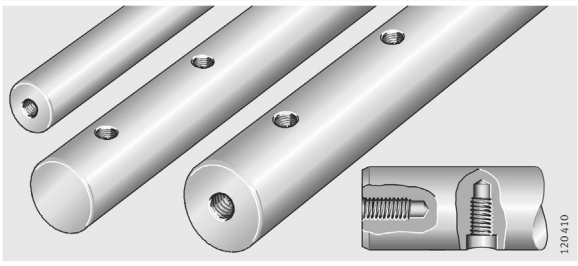
Solid shafts
Without threaded holes

W



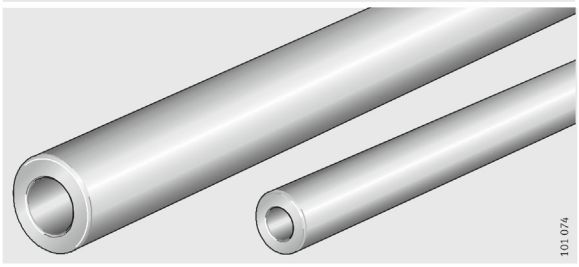
Axial and radial threaded holes

W



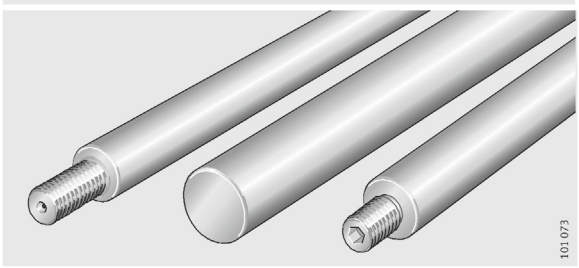
Hollow shafts

WH



Shafts according to customer requirements

W



Solid shafts, hollow shafts

Features

Solid and hollow shafts are high precision shafts made from quenched and tempered steel to rolling bearing quality and are supplied in metric sizes.

Hollow shafts are particularly suitable for reduced-mass designs. For location, solid shafts can be provided with radial and axial threaded holes or can, by agreement, be produced completely in accordance with a customer drawing, see page 128 to page 132.

High precision raceway for economical linear guidance systems

The material quality guarantees high dimensional and geometrical accuracy (roundness, parallelism). Due to their high surface hardness and surface quality, the shafts are highly suitable as precision raceways for linear ball bearings.

High precision shafts are also suitable as guide rods for plain bushes, as stretch and levelling rollers and in the construction of equipment and automatic machinery.

They can be combined with linear bearings, yoke and stud type track rollers, ball bearing track rollers and profiled track rollers to give linear guidance systems that are rigid, precise, economical and ready to fit, with high load carrying capacity and a long operating life.

Steels, hardness, surface, tolerances, lengths

Shafts made from Cf53 are induction hardened and ground; the surface hardness is 670 HV + 170 HV (59 HRC + 6 HRC).

Hollow shafts are only available made from quenched and tempered steel.

Shafts made from corrosion-resistant steel to ISO 683-17 and EN 10 880

As an alternative to quenched and tempered steel, solid shafts are also available in corrosion-resistant steels, for example X46Cr13 (material number 1.4034), or X90CrMoV18 (material number 1.4112). The surface hardness is 550 HV + 70 HV (54 HRC + 4 HRC).

These steels are particularly suitable for use in the foodstuffs industry, medical equipment and semiconductor technology.

The suffix is X46 or X90.

Attention! Due to the hardness curve, the corrosion resistance of shafts made from the materials X46Cr13 and X90CrMoV18 is restricted at the end faces. This also applies to any soft-annealed areas.

Hardness, surface, tolerances, lengths

A uniform hardening depth will ensure a smooth transition from the hardened surface layer to the tough, normally annealed core, which can support bending stresses.

The standard surface is R_a0,3.

Solid shafts have the normal tolerance h6, while hollow shafts have h7.

High precision shafts are available in single piece lengths up to 6 000 mm. Longer shafts are available by agreement and are assembled (with mortice and tenon joints).

Available steels and tolerances see also page 127.



Solid shafts, hollow shafts

Coatings

Coatings and hard chromium plating provide optimum anti-wear and anti-corrosion protection for shafts and are optional.
The characteristics of the coatings are also shown in the table Coatings, page 126.

Hard chromium plating – Anti-wear protection

Hard chromium plating is suitable for applications in which a high degree of anti-wear protection is required. The chromium coating also offers good corrosion resistance.

Chromium plated shafts are to tolerance h7. The thickness of the chromium coating is at least 5 µm, the hardness is 800 HV to 1 050 HV.

The suffix is CR.

Corrotect® – Anti-corrosion protection

Corrosion-resistant shafts are coated with the special coating Corrotect® and, for production reasons, have centring or threaded holes in the end faces.

The inside diameter of hollow shafts is not coated.

Corrotect® is resistant to neutral, organic fluids such as oil, brake fluid and petrol. For applications where aqueous salt solutions in the pH range from 5 to 10 are present, Corrotect® is also suitable due to its good resistance.

The suffix is RRF.

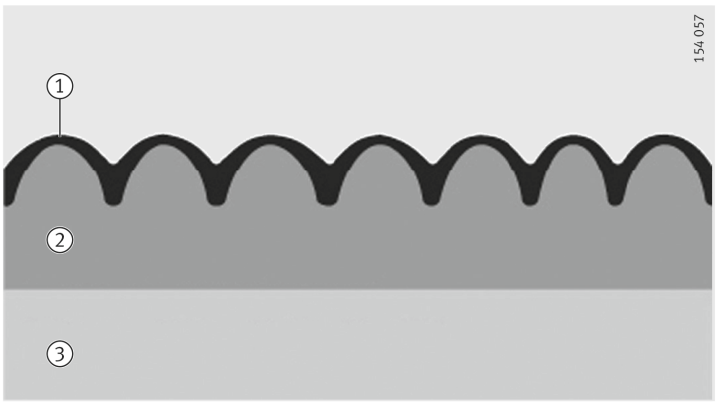
The structure of the coating is shown in *Figure 1*.

Attention!

Corrotect® reduces the adhesion of weld spatter.

Corrotect® can be worn away by contact seals.

The coating is not permitted for direct contact with foodstuffs and is not suitable in abrasive ambient media.



① Chromate layer
② ZnFe layer
③ Substrate

Figure 1
Structure of Corrotect® coating

Protect A – Anti-corrosion and anti-wear protection

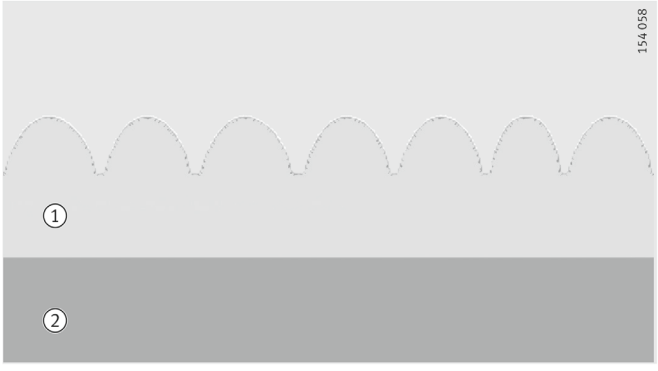
Protect A is a columnar thin layer chromium plating. The matt grey chromium layer with its pearl structure retains a certain amount of lubricant between the pearls. As a result, effective anti-wear protection is achieved even under mixed friction or slippage conditions. During running-in, the rolling elements and seals burnish the surface. This leads to a reduced coefficient of friction.

The anti-wear coating Protect A has no influence on the load carrying capacity and has good thermal conductivity.

The inside diameter of hollow shafts is not coated.

The suffix is KD.

The structure of the coating is shown in *Figure 2*.



① Cr layer
② Substrate

Figure 2
Structure of Protect A coating

Protect B – Anti-corrosion and high anti-wear protection

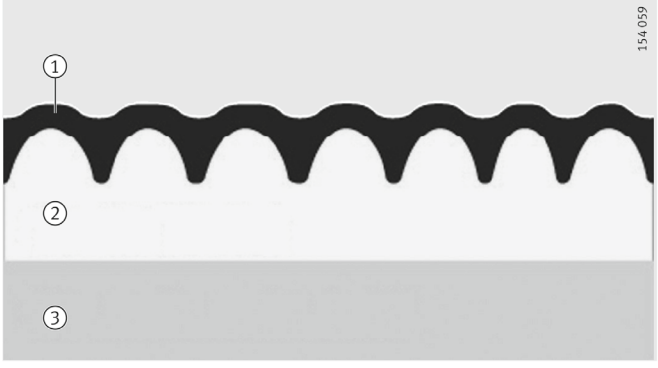
A columnar thin layer chromium plating is covered by chromium mixed oxide. This gives a high level of anti-wear protection and good corrosion resistance.

The chromium mixed oxide layer acts in a supportive capacity to the lubricant when used in aggressive atmospheres and at high temperatures.

The inside diameter of hollow shafts is not coated.

The suffix is KDC.

The structure of the coating is shown in *Figure 3*.



① CrNi layer
② Cr layer
③ Substrate

Figure 3
Structure of Protect B coating



Solid shafts, hollow shafts

Coatings

Feature	Coating			
	Corrotect®	**Protect A**	**Protect B**	**Hard chromium plating**
Colour	Black	Matt grey	Black	Chromium
Layer thickness in µm	0,5 – 5,0	2,0 – 5,0	2,0 – 5,0	5,0 – 15,0
Composition	Zinc alloyed with iron and cobalt	Pure chromium layer with pearly surface	Protect A with chromium-nickel LC coating	Chromium
Coating hardness in HV	300	950 – 1 300	950	800 – 1 050
Anti-corrosion protection in h	96	8	96	120
Anti-wear protection	–	Under mixed friction	Under inadequate lubrication	yes
Maximum shaft length in mm	3 500	3 500	3 500	4 000

Attention! Machined surfaces, end faces and bores may be uncoated.

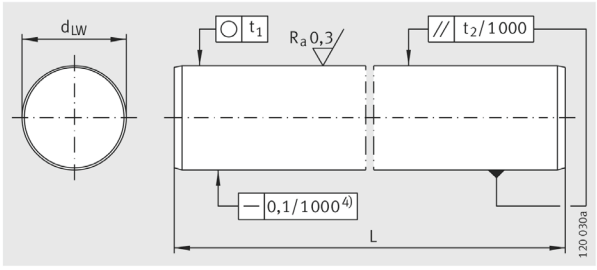
Available materials, coatings, tolerances
Solid and hollow shafts

Shaft diameter	Solid shafts							Hollow shafts
	Material							
	Quenched and tempered steel					X46Cr13	X90CrMoV18	Quenched and tempered steel
	Tolerance[5]			CR[1]	RRF[2] KD[3] KDC[4]			Tolerance
mm	h6	j5	f7	h7	h7	h6	h6	h7
4	●	–	–	–	■	●	●	–
5	●	–	–	–	■	–	–	–
6	●	–	–	●	■	●	●	–
8	●	–	–	●	■	●	●	–
10	●	–	–	●	■	●	●	–
12	●	–	–	●	■	●	●	–
14	●	–	–	●	■	●	●	–
15	●	–	●	●	■	●	●	–
16	●	●	●	●	■	●	●	–
18	●	–	●	●	■	●	●	–
20	●	●	●	●	■	●	●	●
24	●	–	–	–	■	●	●	–
25	●	●	●	●	■	●	●	●
30	●	●	●	●	■	●	●	●
32	●	●	●	–	■	●	●	–
40	●	●	–	●	■	●	●	●
50	●	●	–	●	■	●	●	●
60	●	–	–	●	■	●	●	●
80	●	–	–	●	■	●	●	●

■ Available by agreement.
● Available design.

1) Hard chromium plating see page 124.
2) Corrotect® coating see page 124.
3) Protect A coating see page 125.
4) Protect B coating see page 125.
5) Other tolerances available by agreement.

Solid shafts



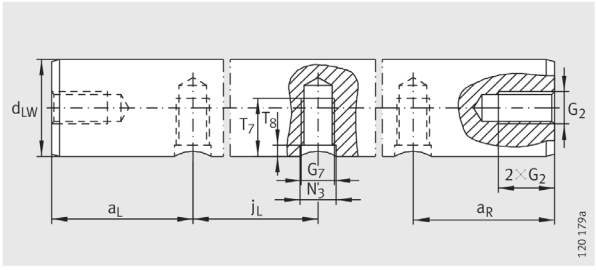
W

Dimension table · Dimensions in mm

Designation	Mass	Dimensions		Tolerance			Roundness	Parallelism	Effective hardening depth
	m	d_{LW}	L	Tolerance h6	Special tolerance 1) j5	f7	t_1	t_2 2)	Rht 3)
	≈kg/m			µm	µm	µm	µm	µm	min.
W04	0,1	**4**	2 500	$^{0}_{-8}$	–	–	4	5	0,4
W05	0,15	**5**	3 600	$^{0}_{-8}$	–	–	4	5	0,4
W06	0,22	**6**	4 000	$^{0}_{-8}$	–	–	4	5	0,4
W08	0,39	**8**	4 000	$^{0}_{-9}$	–	–	4	6	0,4
W10	0,62	**10**	6 000	$^{0}_{-9}$	–	–	4	6	0,4
W12	0,89	**12**	6 000	$^{0}_{-11}$	–	–	5	8	0,6
W14	1,21	**14**	6 000	$^{0}_{-11}$	–	–	5	8	0,6
W15	1,39	**15**	6 000	$^{0}_{-11}$	–	$^{-16}_{-34}$	5	8	0,6
W16	1,58	**16**	6 000	$^{0}_{-11}$	$^{+5}_{-3}$	$^{-16}_{-34}$	5	8	0,6
W18	2	**18**	6 000	$^{0}_{-11}$	–	$^{-16}_{-34}$	5	8	0,6
W20	2,47	**20**	6 000	$^{0}_{-13}$	$^{+5}_{-4}$	$^{-20}_{-41}$	6	9	0,9
W24	3,55	**24**	6 000	$^{0}_{-13}$	–	–	6	9	0,9
W25	3,85	**25**	6 000	$^{0}_{-13}$	$^{+5}_{-4}$	$^{-20}_{-41}$	6	9	0,9
W30	5,55	**30**	6 000	$^{0}_{-13}$	$^{+5}_{-4}$	$^{-20}_{-41}$	6	9	0,9
W32	6,31	**32**	6 000	$^{0}_{-16}$	+6,5	$^{-25}_{-50}$	7	11	1,5
W40	9,87	**40**	6 000	$^{0}_{-16}$	$^{+6}_{-5}$	–	7	11	1,5
W50	15,41	**50**	6 000	$^{0}_{-16}$	$^{+6}_{-5}$	–	7	11	1,5
W60	22,2	**60**	6 000	$^{0}_{-19}$	–	–	8	13	2,2
W80	39,45	**80**	6 000	$^{0}_{-19}$	–	–	8	13	2,2

1) Only for shafts made from quenched and tempered steel.
2) Differential diameter measurement.
3) To DIN ISO 13 012.
4) For shaft length < 400 mm max. straightness tolerance of 0,04 mm.

Recommended threaded holes for solid shafts

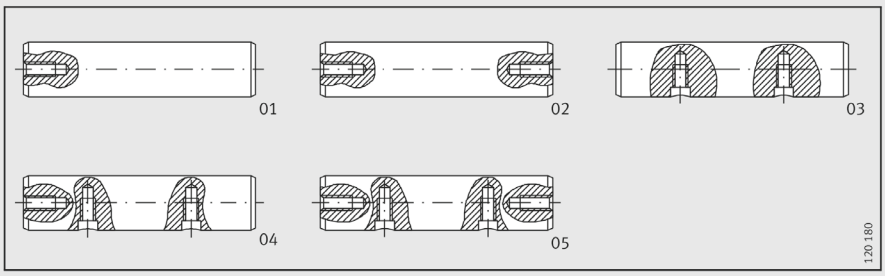


Axial and radial threaded holes

Dimension table · Dimensions in mm

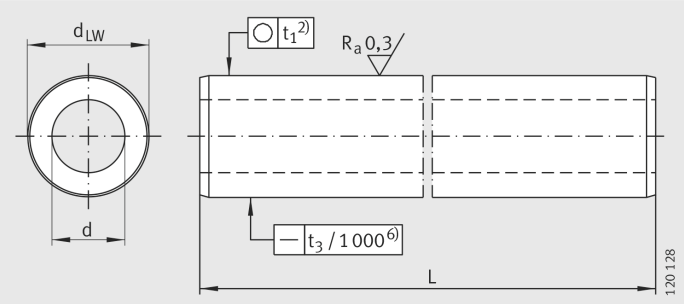
Designation d_{LW}	Axial threaded hole G_2										Radial threaded hole j_L			a_L [1] Hole pattern 03	a_R [1] Hole pattern 04–05	T_7	T_8	N_3	G_7
W08	M3	–	–	–	–	–	–	–	–	–	–	–	–	–	$3 \cdot G_2 + G_7$	–	–	–	–
W10	M3	M4	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	–
W12	–	M4	M5	–	–	–	–	–	–	–	75	–	120	10		7	2	5	M4
W14	–	M4	M5	M6	–	–	–	–	–	–	–	–	–	–		–	–	–	–
W15	–	–	M5	M6	M8	–	–	–	–	–	–	–	–	–		–	–	–	–
W16	–	–	M5	M6	M8	–	–	–	–	–	75	100	150	15		9	2,5	6	M5
W18	–	–	–	M6	M8	M10	–	–	–	–	–	–	–	–		–	–	–	–
W20	–	–	–	–	–	–	–	–	–	–	–	–	150	15		9	2,5	6	M5
W20	–	–	–	M6	M8	M10	–	–	–	–	75	100	150	15		11	3	7	M6
W24	–	–	–	–	M8	M10	M12	–	–	–	–	–	–	–		–	–	–	–
W25	–	–	–	–	–	–	–	–	–	–	–	–	150	15		11	3	7	M6
W25	–	–	–	–	M8	M10	M12	–	–	–	75	120	200	15		15	3	9	M8
W30	–	–	–	–	–	–	–	–	–	–	–	–	150	15		11	3	7	M6
W30	–	–	–	–	–	M10	M12	M16	–	–	100	150	200	20		17	3,5	11	M10
W32	–	–	–	–	–	M10	M12	M16	–	–	–	–	–	–		–	–	–	–
W40	–	–	–	–	–	M10	M12	M16	–	–	150	200	300	20		19	4	11	M10
W40	–	–	–	–	–	M10	M12	M16	–	–	100	–	–	20		21	4	13	M12
W50	–	–	–	–	–	–	–	–	–	–	–	–	150	20		19	4	11	M10
W50	–	–	–	–	–	–	M12	M16	M20	–	–	200	300	20		21	4	13	M12
W50	–	–	–	–	–	–	M12	M16	M20	–	100	–	–	20		25	4	15	M14
W60	–	–	–	–	–	–	–	M16	M20	M24	–	–	–	–		–	–	–	–
W80	–	–	–	–	–	–	–	M16	M20	M24	–	–	–	–		–	–	–	–

[1] a_L, a_R are dependent on the length of the shaft
Calculation, see page 148.
In the case of variants in accordance with codes 04 and 05, the axial threaded holes must be taken into consideration



Codes 01 to 05 for hole patterns

Hollow shafts

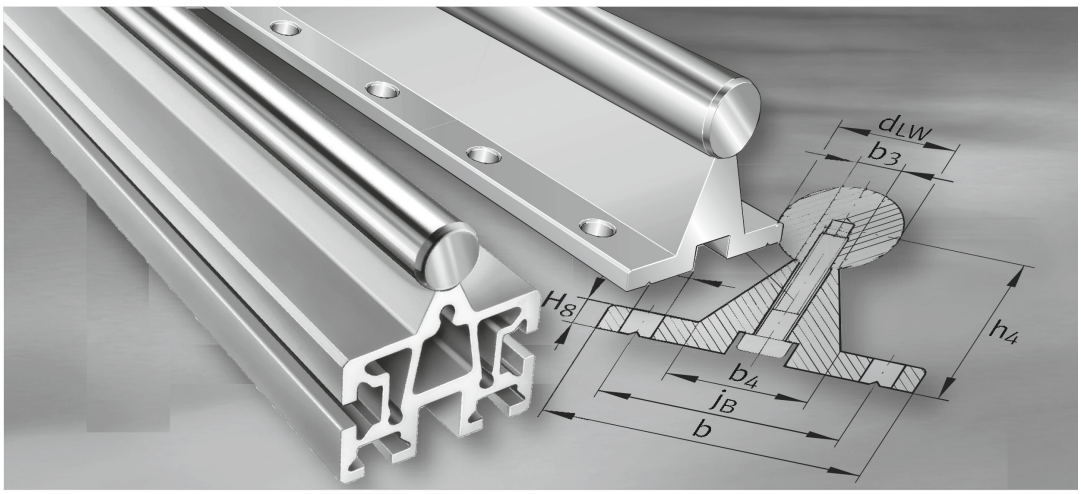


WH

Dimension table · Dimensions in mm

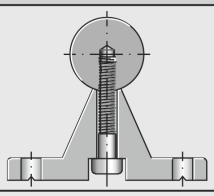
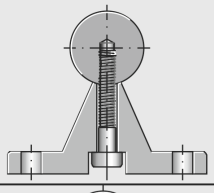
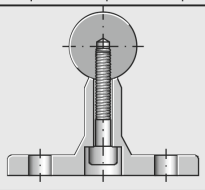
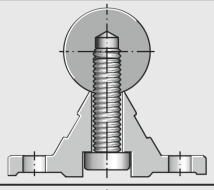
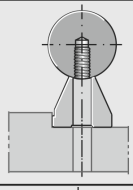
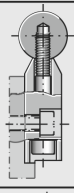
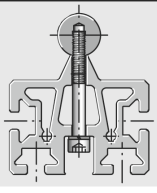
Designation	Mass	Dimensions		Inside diameter	Tolerance	Effective hardening depth	Straightness tolerance
	m	d_{LW}	L	d 1)	d_{LW} h7 5)	Rht 3)	t_3
	≈kg/m		max.		µm	min.	
WH12 4)	0,79	**12**	6 000	4±0,45	$^{0}_{-18}$	0,6	0,3
WH16	1,26	**16**	6 000	7±0,3	$^{0}_{-18}$	0,6	0,3
WH20	1,28	**20**	6 000	14±0,3	$^{0}_{-21}$	0,9	0,2
WH25	2,4	**25**	6 000	15,5±0,4	$^{0}_{-21}$	0,9	0,2
WH30	3,55	**30**	6 000	18,2±0,5	$^{0}_{-21}$	0,9	0,2
WH40	5,7	**40**	6 000	27±1,25	$^{0}_{-25}$	1,5	0,1
WH50	10,58	**50**	6 000	29±1,25	$^{0}_{-25}$	1,5	0,1
WH60	14,2	**60**	6 000	36±1,5	$^{0}_{-30}$	2,2	0,1
WH80	20,8	**80**	6 000	56±1,5	$^{0}_{-30}$	2,2	0,1

1) Difference in wall thickness of original material ±5%.
2) The roundness corresponds to no more than half the diameter tolerance.
3) To DIN ISO 13 012.
4) Available by agreement.
5) Diameter tolerance h6 available by agreement.
6) For shaft length < 500 mm max. straightness tolerance of 0,1 mm.



Shaft and support rail units

Matrix for preselection of shaft and support rail units

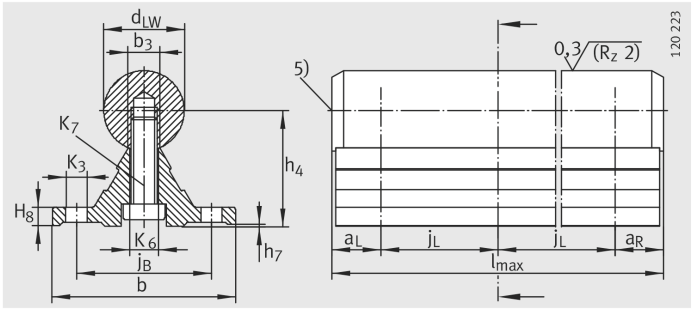
Shaft and support rail units		Precision
TSNW	 121 657a	++
TSWW	 120 510	++
TSWWA	 120 511	++
TSNW..-G4 **TSNW..-G5**	 120 512	+
TSUW	 120 513	++
TSSW	 120 514	+++
TSMW	 120 515	++

Definition:
+++ Very good
++ Good
+ Satisfactory
● Available

1) Location by screw mounting from below; threaded hole in the shaft.

Shaft diameter d_{LW}							Features	Location		Description
								Thread	Through hole	
12	16	20	25	30	40	50				Page
●	●	●	●	●	●	●	– For location from above	–	yes	147
●	●	●	●	●	●	●	– For location from above – High position of shaft	–	yes	147
●	●	●	●	●	●	●	– For location from above – Narrow crosspiece	–	yes	147
●	●	●	●	●	●	●	– For location from above – Accuracy class (G4, G5) dependent on shaft diameter – Economical	–	yes	147
●	●	●	●	●	●	●	– Threaded holes from below	[1)]	–	147
–	–	●	●	●	●	●	– For location from side	–	Lateral	147
–	–	●	●	●	–	–	– Self-supporting – With slots – End covers on end faces – For large unsupported spans	Slots	Slots	147

Shaft and support rail units



TSNW..-G4, TSNW..-G5

Dimension table · Dimensions in mm

Designation	Mass	Dimensions				Mounting dimensions		
	m	d_{LW}	b	h_4 [1]	l_{max} [2]	b_3	j_B	j_L
	≈g/m	h6			±2			
TSNW12-G4	1 600	**12**	40	22±0,1	4 000	5	29	75
TSNW16-G4	2 500	**16**	45	26±0,1	4 000	6,8	33	100
TSNW20-G4	3 800	**20**	52	32±0,1	4 000	7,8	37	100
TSNW25-G4	5 300	**25**	57	36±0,1	4 000	9,8	42	120
TSNW30-G5	7 500	**30**	69	42±0,15	4 000	11	51	150
TSNW40-G5	12 400	**40**	73	50±0,15	4 000	14,5	55	200
TSNW50-G5	18 900	**50**	84	60±0,15	4 000	18,5	63	200

1) In relation to the nominal shaft diameter, measured whilst clamped.

2) Maximum length of single-piece shaft and support rail units.

3) Dimensions a_L/a_R are dependent on the length of the shaft and support rail unit.
Calculation see page 149.

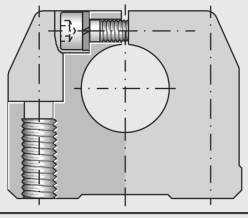
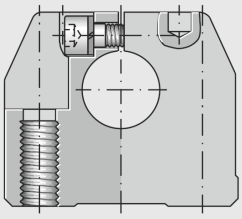
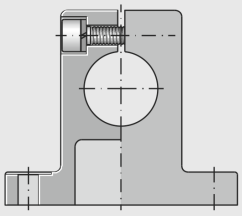
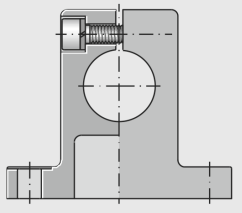
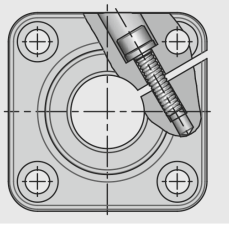
4) For fixing screws DIN 7 964.
If there is a possibility of settling, the screws should be secured against rotation.

5) The shaft protrudes on both sides beyond the support rail by approx. 2 mm.

6) Maximum variation of dimension h_4, measured on the same shaft and support rail unit over a length of 1 000 mm.

a_L/a_R [3]		H_8	h_7	K_3 [4]	K_6	K_7	Deviation from h_4 [6]	
							Accuracy class	Variation
min.	max.					ISO 4762		mm
20	69	5	0,2	4,5	4,5	M4X18	G4	0,03
20	93	5	0,2	5,5	5,5	M5X22	G4	0,03
20	92	6	0,2	6,6	6,6	M6X25	G4	0,03
20	110	6	0,3	6,6	9	M8X30	G4	0,03
20	139	7	0,3	9	11	M10X30	G5	0,04
20	189	8	0,3	9	11	M10X35	G5	0,04
20	188	9	0,3	11	13,5	M12X45	G5	0,04

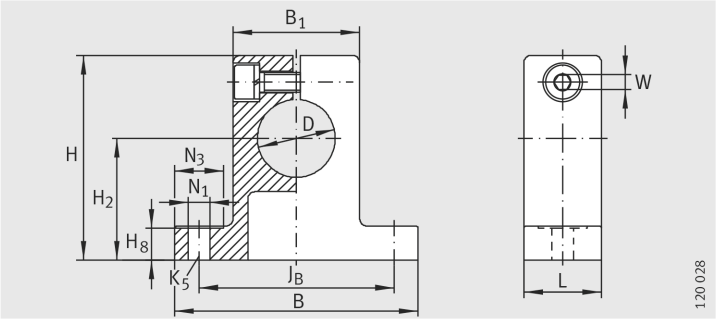
Matrix for preselection of shaft support blocks

Shaft support blocks		Material
GWH	 120 523	Aluminium
GWN	 120 524	Aluminium
GW	 120 525	Pressure diecast zinc
GWA	 120 583	Pressure diecast zinc
FW	 120 596	Aluminium

Definition:
- ● Available for stated shaft diameter d_{LW}

For shaft diameter d_{LW}												Features	Location		Description
													Threaded hole	Through hole	
06	08	10	12	14	16	20	25	30	40	50					Page
●	●	●	●	●	●	●	●	●	●	●		– Low position of shaft	yes	yes	165
–	–	–	●	–	●	●	●	●	●	●		– Suitable for dowelling	yes	yes	165
–	–	●	●	–	●	●	●	●	●	●		– Space-saving design	–	yes	165
–	–	●	●	–	●	●	●	●	●	●		– For larger fixing screws – Space-saving design	–	yes	165
–	–	–	●	–	●	●	●	●	●	●		– Suitable for dowelling	yes	yes	165

Shaft support blocks



GW, GWA

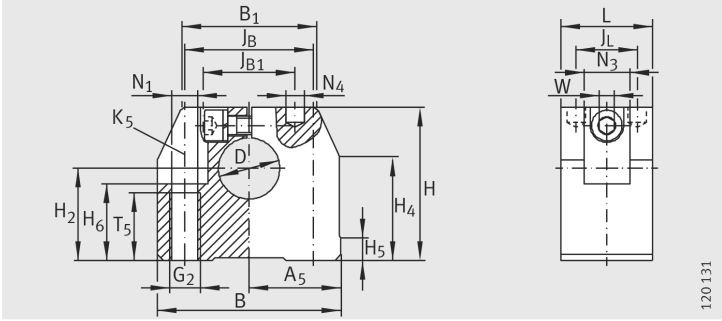
Dimension table · Dimensions in mm

Designation	Mass	Dimensions				Mounting dimensions							
	m ≈g	D	B	L	H	J_B	B_1	H_2 ±0,15	H_8	N_1 [1]	N_3	K_5	Width across flats W
GW10	30	**10**	37	11	30	28 ±0,15	18	17	5	3,4	8	M3	2,5
GWA10										4,5	9	M4	
GW12	40	**12**	42	12	35	32 ±0,15	20	20	5,5	4,5	10	M5	3
GWA12										5,5	11	M4	
GW14	60	**14**	46	14	38	36 ±0,15	23	22	6	4,5	10	M5	3
GWA14										5,5	11	M4	
GW16	80	**16**	50	16	42	40 ±0,15	26	25	6,5	4,5	10	M5	3
GWA16										5,5	11	M4	
GW20	150	**20**	60	20	50	45 ±0,15	32	30	7,5	4,5	10	M5	3
GWA20										5,5	11	M4	
GW25	260	**25**	74	25	58	60 ±0,15	38	35	8,5	5,5	11	M5	4
GWA25										6,6	13	M6	
GW30	380	**30**	84	28	68	68 ±0,2	45	40	9,5	6,6	13	M6	5
GWA30										9	18	M8	
GW40	670	**40**	108	32	86	86 ±0,2	56	50	12	9	18	M8	6
GWA40										11	22	M10	
GW50	1 380	**50**	130	40	100	108 ±0,2	80	60	14	9	18	M8	6
GWA50										11	22	M10	

[1] For fixing screws ISO 4 762-8.8.
If there is a possibility of settling, the screws should be secured against rotation.

NOTES:

Shaft support blocks



GWN

Dimension table · Dimensions in mm

Designation	Mass	Dimensions				Mounting dimensions				
	m	D	B	L	H	J_B	J_{B1}	B_1	A_5	J_L
	≈g	H8							±0,01	
GWN12	60	**12**	43	20	35	30 ±0,15	20	34	21,5	13
GWN16	100	**16**	53	24	42	38 ±0,15	26	40	26,5	16
GWN20	170	**20**	60	30	50	42 ±0,15	30	44	30	20
GWN25	330	**25**	78	38	60	56 ±0,15	40	60	39	25
GWN30	450	**30**	87	40	70	64 ±0,15	45	63	43,5	26
GWN40	850	**40**	108	48	90	82 ±0,15	65	76	54	32
GWN50	1 400	**50**	132	58	105	100 ±0,2	70	90	66	36

1) For fixing screws ISO 4 762-8.8.
If there is a possibility of settling, the screws should be secured against rotation.

2) Centring for dowel hole.

H_2 ±0,01	H_4	H_5	T_5	H_6	G_2	N_1	N_4 2)	N_3	K_5 1)	Width across flats W
20	26,6	5,4	13	16,5	M6	5,3	4	10	M5	3
25	26,6	5,4	18	21	M8	6,6	5	11	M6	4
30	34,1	7,4	22	25	M10	8,4	6	15	M8	5
35	41,5	8,3	26	30	M12	10,5	8	18	M10	6
40	46,2	9,3	26	34	M12	10,5	8	18	M10	6
50	57,6	11,7	34	44	M16	13,5	10	20	M12	8
60	62	10,6	43	49	M20	17,5	12	26	M16	10

endo

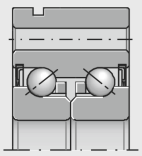
INA FAG



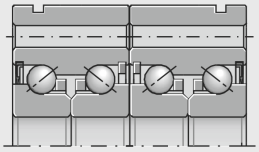
Bearings for screw drives

Axial angular contact ball bearings
Needle roller/axial cylindrical roller bearings
Seal carrier assemblies
Precision locknuts

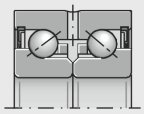
SCHAEFFLER GROUP
INDUSTRIAL



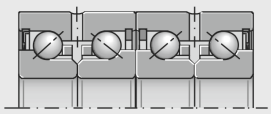
ZKLF



ZKLF..-2RS-2AP



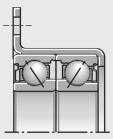
ZKLN



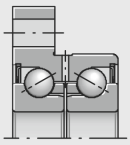
ZKLN..-2RS-2AP



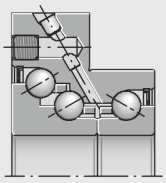
7602, 7603, BSB



ZKLR

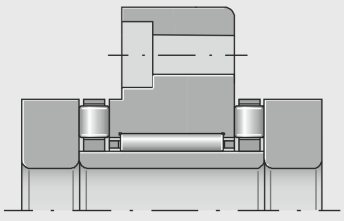


ZKLFA

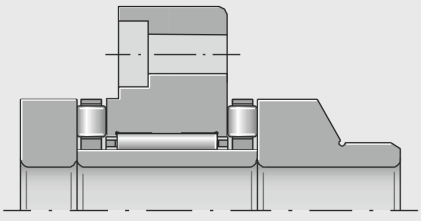


DKLFA

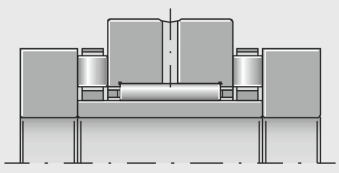
107 558a



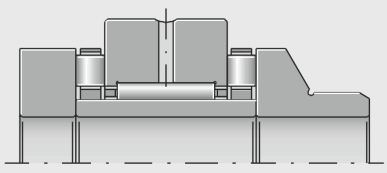
ZARF



ZARF..-L

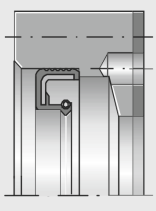


ZARN

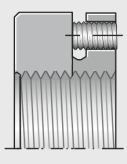


ZARN..-L

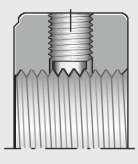
107 559



DRS



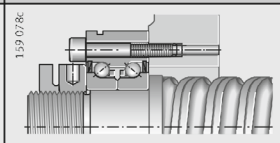
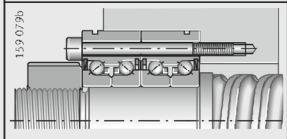
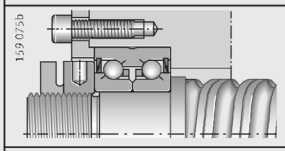
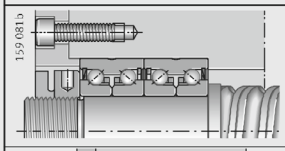
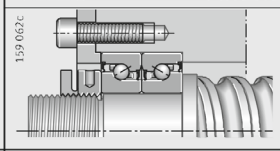
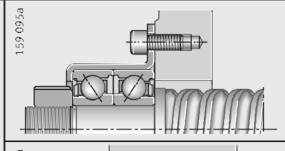
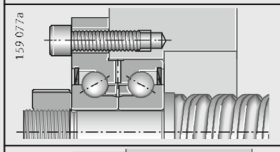
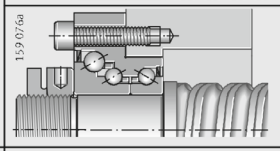
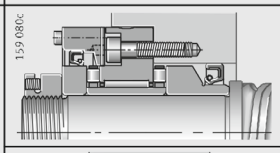
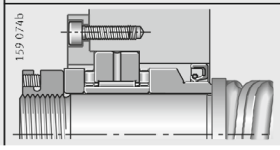
AM



ZM, ZMA

107 560

Matrix for preselection of bearings

Application	Series	
For standard applications		**ZKLF..-2Z** **ZKLF..-2RS** **ZKLF..-2RS-PE**
		**ZKLF..-2RS-2AP**
		**ZKLN..-2Z** **ZKLN..-2RS** **ZKLN..-2RS-PE**
		**ZKLN..-2RS-2AP**
		**7602** **7602-2RS** **7603** **7603-2RS** **BSB** **BSB-2RS**
For special applications		**ZKLR..-2Z** **ZKLR..-2RS**
		**ZKLFA..-2Z** **ZKLFA..-2RS**
		**DKLFA..-2RS**
For applications requiring very high accuracy and rigidity		**ZARF (L)**
		**ZARN (L)**

Definition of symbols

+++	very good
++	good
+	satisfactory
–	sufficient

Attention!

This selection matrix is a general overview for preliminary assessment of whether bearings can be considered for the required purpose. For the specific application, the data in the product sections and the technical principles must always be taken into consideration.

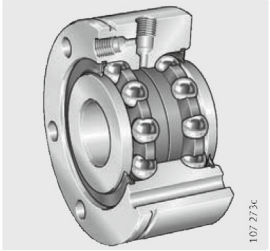
Features	Characteristics					
	High runout accuracy	High speeds and low friction	High rigidity and load carrying capacity	Work on adjacent construction and mounting	Low lubricant consumption	For description see page
– Outer ring for flange mounting – Gap seals or contact seals on both sides – Greased, with relubrication facility – Most economical type of screw drive bearing arrangement	++ ++ +	+++ ++ ++	+ + +	+++ +++ +++	++ ++ ++	10
– As ZKLF, but in matched pair – Significantly higher load carrying capacity and rigidity than ZKLF	++	++	++	++	++	11
– Gap seals or contact seals on both sides – Greased, with relubrication facility – Easier to fit than single row bearings, e.g. for plummer block housings	++ ++ +	+++ ++ ++	+ + +	+ + +	++ ++ ++	12
– As ZKLN, but in matched pair – Significantly higher load carrying capacity and rigidity than ZKLN	++	++	++	+	++	13
– Open or sealed on both sides – Highly suitable for mounting in pairs to form wide range of contact angle combinations	++ ++ ++ ++ ++ ++	+++ ++ +++ ++ +++ ++	+ + + + + +	– – – – – –	++ ++ ++ ++ ++ ++	14
– Particularly economical alternative to solutions with individual ball bearings – Gap seals or contact seals on both sides – Simple to fit – For applications with comparatively low loads, but high positional accuracy	+ +	+++ ++	– –	+++ +++	++ ++	15
– Outer ring for flange mounting – Stepped outer ring with flattened areas on both sides – Gap seals or contact seals on both sides	++ ++	+++ ++	+ +	+++ +++	++ ++	16
– Higher load capacity on one side – Outer ring for flange mounting – Sealed on both sides – For vertical axes – For locating/locating bearing arrangements	+	++	++	+++	++	17
– Outer ring for flange mounting – Very high accuracy, rigidity and load carrying capacity – Bearing prepared for sealing	+++	+	+++	+	–	63
– Very high accuracy, rigidity and load carrying capacity – Bearing prepared for sealing	+++	+	+++	–	–	64

Product overview Axial angular contact ball bearings

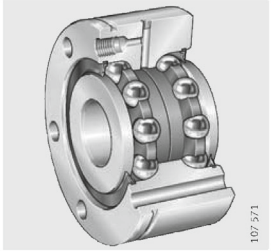
Double row, for screw mounting

Lip seals or gap seals

ZKLF..-2RS, ZKLF..-2Z

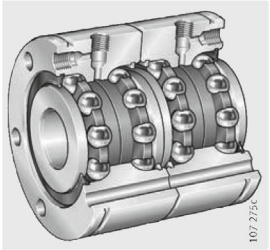


ZKLF..-2RS-PE



Matched pair

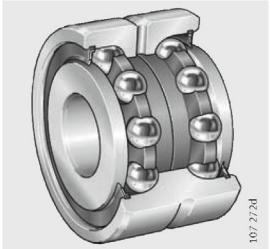
ZKLF..-2RS-2AP



Double row, not for screw mounting

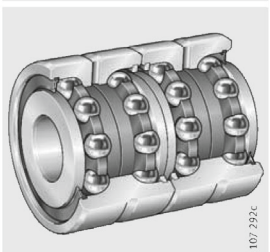
Lip seals or gap seals

ZKLN..-2RS, ZKLN..-2Z, ZKLN..-2RS-PE



Matched pair

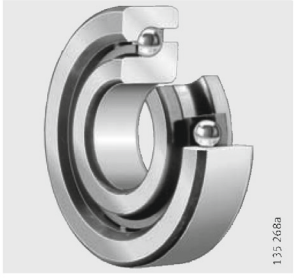
ZKLN..-2RS-2AP



Single row, for matching in pairs

With or without lip seals

7602, 7603, BSB



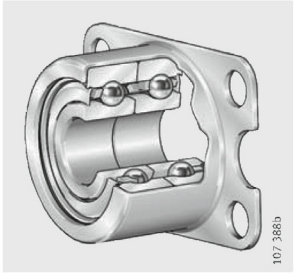
7602..-2RS, 7603..-2RS, BSB..-2RS

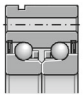


Angular contact ball bearing unit, for screw mounting

Lip seals or gap seals

ZKLR..-2RS, ZKLR..-2Z

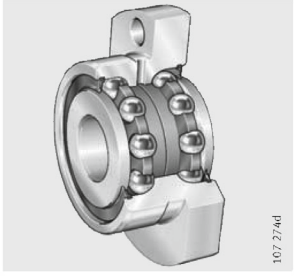




Double or triple row, flange with flattened areas, for screw mounting

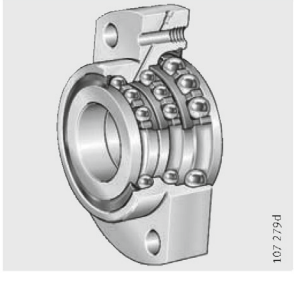
Double row
Lip seals or gap seals

ZKLFA..-2RS, ZKLFA..-2Z



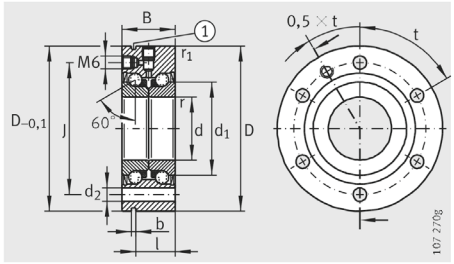
Triple row
Lip seals

DKLFA..-2RS



Axial angular contact ball bearings

For screw mounting

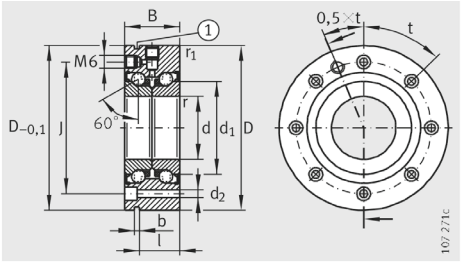


ZKLF..-2RS, ZKLF..-2Z (d ≦ 50 mm)
(1) Extraction slot

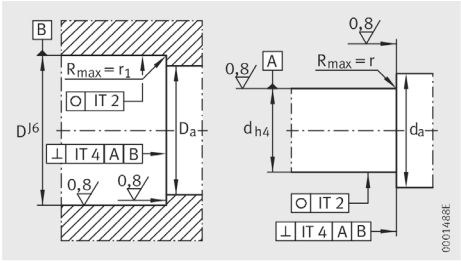
Dimension table · Dimensions in mm

Designation	Mass	Dimensions										Mounting dimensions		Fixing screws[1] DIN 912-10.9	
	m	d	D	B	d_1	r	r_1	J	d_2	b	l	D_a	d_a		
	≈kg			–0,25		min.	min.					max.	min.	Size	Quantity
ZKLF1255-2RS	0,37	**12**$_{-0,005}$	55$_{-0,01}$	25	25	0,3	0,6	42	6,8	3	17	33	16	M6	3
ZKLF1255-2Z	0,37	**12**$_{-0,005}$	55$_{-0,01}$	25	25	0,3	0,6	42	6,8	3	17	33	16	M6	3
ZKLF1560-2RS	0,43	**15**$_{-0,005}$	60$_{-0,01}$	25	28	0,3	0,6	46	6,8	3	17	35	20	M6	3
ZKLF1560-2Z	0,43	**15**$_{-0,005}$	60$_{-0,01}$	25	28	0,3	0,6	46	6,8	3	17	35	20	M6	3
ZKLF1762-2RS	0,45	**17**$_{-0,005}$	62$_{-0,01}$	25	30	0,3	0,6	48	6,8	3	17	37	23	M6	3
ZKLF1762-2Z	0,45	**17**$_{-0,005}$	62$_{-0,01}$	25	30	0,3	0,6	48	6,8	3	17	37	23	M6	3
ZKLF2068-2RS	0,61	**20**$_{-0,005}$	68$_{-0,01}$	28	34,5	0,3	0,6	53	6,8	3	19	43	25	M6	4
ZKLF2068-2Z	0,61	**20**$_{-0,005}$	68$_{-0,01}$	28	34,5	0,3	0,6	53	6,8	3	19	43	25	M6	4
ZKLF2575-2RS	0,72	**25**$_{-0,005}$	75$_{-0,01}$	28	40,5	0,3	0,6	58	6,8	3	19	48	32	M6	4
ZKLF2575-2Z	0,72	**25**$_{-0,005}$	75$_{-0,01}$	28	40,5	0,3	0,6	58	6,8	3	19	48	32	M6	4
ZKLF3080-2RS	0,78	**30**$_{-0,005}$	80$_{-0,01}$	28	45,5	0,3	0,6	63	6,8	3	19	53	40	M6	6
ZKLF3080-2Z	0,78	**30**$_{-0,005}$	80$_{-0,01}$	28	45,5	0,3	0,6	63	6,8	3	19	53	40	M6	6
ZKLF30100-2RS[3]	1,63	**30**$_{-0,005}$	100$_{-0,01}$	38	51	0,3	0,6	80	8,8	3	30	64	47	M8	8
ZKLF30100-2Z	1,63	**30**$_{-0,005}$	100$_{-0,01}$	38	51	0,3	0,6	80	8,8	3	30	64	47	M8	8
ZKLF3590-2RS	1,13	**35**$_{-0,005}$	90$_{-0,01}$	34	52	0,3	0,6	75	8,8	3	25	62	45	M8	4
ZKLF3590-2Z	1,13	**35**$_{-0,005}$	90$_{-0,01}$	34	52	0,3	0,6	75	8,8	3	25	62	45	M8	4
ZKLF40100-2RS	1,46	**40**$_{-0,005}$	100$_{-0,01}$	34	58	0,3	0,6	80	8,8	3	25	67	50	M8	4
ZKLF40100-2Z	1,46	**40**$_{-0,005}$	100$_{-0,01}$	34	58	0,3	0,6	80	8,8	3	25	67	50	M8	4
ZKLF40115-2RS[3]	2,2	**40**$_{-0,005}$	115$_{-0,01}$	46	65	0,6	0,6	94	8,8	3	36	80	56	M8	12
ZKLF40115-2Z[3]	2,2	**40**$_{-0,005}$	115$_{-0,01}$	46	65	0,6	0,6	94	8,8	3	36	80	56	M8	12
ZKLF50115-2RS	1,86	**50**$_{-0,005}$	115$_{-0,01}$	34	72	0,3	0,6	94	8,8	3	25	82	63	M8	6
ZKLF50115-2Z	1,86	**50**$_{-0,005}$	115$_{-0,01}$	34	72	0,3	0,6	94	8,8	3	25	82	63	M8	6
ZKLF50140-2RS[3]	4,7	**50**$_{-0,005}$	140$_{-0,01}$	54	80	0,6	0,6	113	11	3	45	98	63	M10	12
ZKLF50140-2Z[3]	4,7	**50**$_{-0,005}$	140$_{-0,01}$	54	80	0,6	0,6	113	11	3	45	98	63	M10	12
ZKLF60145-2Z	4,3	**60**$_{-0,008}$	145$_{-0,015}$	45	85	0,6	0,6	120	8,8	3	35	100	82	M8	8
ZKLF70155-2Z	4,9	**70**$_{-0,008}$	155$_{-0,015}$	45	85	0,6	0,6	130	8,8	3	35	110	92	M8	8
ZKLF80165-2Z	5,3	**80**$_{-0,008}$	165$_{-0,015}$	45	105	0,6	0,6	140	8,8	3	35	120	102	M8	8
ZKLF90190-2Z	8,7	**90**$_{-0,008}$	190$_{-0,015}$	55	120	0,6	0,6	165	11	3	45	138	116	M10	8
ZKLF100200-2Z	9,3	**100**$_{-0,008}$	200$_{-0,015}$	55	132	0,6	0,6	175	11	3	45	150	128	M10	8

1) Tightening torque of fixing screws according to manufacturer's data. Screws are not included in the delivery.
2) Mass moment of inertia for rotating inner ring.
3) Heavy series.
4) Only valid in conjunction with INA precision locknuts.
5) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZKLF..-2Z, (60 mm ≦ d ≦ 100 mm)
① Extraction slot

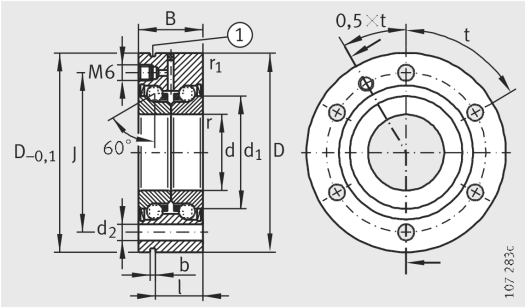


Design of adjacent construction

Pitch	Basic load ratings axial		Limiting speed	Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[2]	Axial run-out[5]	Recommended INA locknut; to be ordered separately			
t	dyn. C_a	stat. C_{0a}	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m		Designation		Tightening torque[4]	Axial preload force
Quantity Xt	N	N	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm			M_A Nm	N
3X120°	16900	24700	3800	0,16	375	50	0,068	2	**ZM12**	–	8	5038
3X120°	16900	24700	7600	0,08	375	50	0,068	2	**ZM12**	–	8	5038
3X120°	17900	28000	3500	0,2	400	65	0,102	2	**ZM15**	**AM15**	10	5484
3X120°	17900	28000	7000	0,1	400	65	0,102	2	**ZM15**	**AM15**	10	5484
3X120°	18800	31000	3300	0,24	450	80	0,132	2	**ZM17**	**AM17**	15	7157
3X120°	18800	31000	6600	0,12	450	80	0,132	2	**ZM17**	**AM17**	15	7157
4X 90°	26000	47000	3000	0,3	650	140	0,273	2	**ZM20**	**AM20**	18	9079
4X 90°	26000	47000	5400	0,15	650	140	0,273	2	**ZM20**	**AM20**	18	9079
4X 90°	27500	55000	2600	0,4	750	200	0,486	2	**ZM25**	**AM25**	25	9410
4X 90°	27500	55000	4700	0,2	750	200	0,486	2	**ZM25**	**AM25**	25	9410
6X 60°	29000	64000	2200	0,5	850	300	0,73	2,5	**ZM30**	**AM30**	32	10451
6X 60°	29000	64000	4300	0,25	850	300	0,73	2,5	**ZM30**	**AM30**	32	10451
8X 45°	59000	108000	2100	0,8	950	400	1,91	2,5	**ZMA30/52**	**AM30**	65	19509
8X 45°	59000	108000	4000	0,4	950	400	1,91	2,5	**ZMA30/52**	**AM30**	65	19509
4X 90°	41000	89000	2000	0,6	900	400	1,51	2,5	**ZM35**	**AM35/58**	40	10770
4X 90°	41000	89000	3800	0,3	900	400	1,51	2,5	**ZM35**	**AM35/58**	40	10770
4X 90°	43000	101000	1800	0,7	1000	550	2,26	2,5	**ZM40**	**AM40**	55	13412
4X 90°	43000	101000	3300	0,35	1000	550	2,26	2,5	**ZM40**	**AM40**	55	13412
12X 30°	72000	149000	1600	1,3	1200	750	5,5	2,5	**ZMA40/62**	**AM40**	110	25185
12X 30°	72000	149000	3100	0,65	1200	750	5,5	2,5	**ZMA40/62**	**AM40**	110	25815
6X 60°	46500	126000	1500	0,9	1250	1000	5,24	2,5	**ZM50**	**AM50**	85	17009
6X 60°	46500	126000	3000	0,45	1250	1000	5,24	2,5	**ZM50**	**AM50**	85	17009
12X 30°	113000	250000	1200	2,6	1400	1500	15,2	2,5	**ZMA50/75**	**AM50**	150	29436
12X 30°	113000	250000	2500	1,3	1400	1500	15,2	2,5	**ZMA50/75**	**AM50**	150	29436
8X 45°	84000	214000	3000	1	1300	1650	13,7	3	**ZMA60/98**	**AM60**	100	17893
8X 45°	88000	241000	2800	1,2	1450	2250	19,8	3	**ZMA70/110**	**AM70**	130	19717
8X 45°	91000	265000	2700	1,4	1600	3000	27,6	3	**ZMA80/120**	**AM80**	160	20604
8X 45°	135000	395000	2300	2,3	1700	4400	59,9	3	**ZMA90/130**	**AM90**	200	25198
8X 45°	140000	435000	2150	2,6	1900	5800	85,3	3	**ZMA100/140**	**AM100**	250	28760

Axial angular contact ball bearings

For screw mounting
Less stringent tolerances

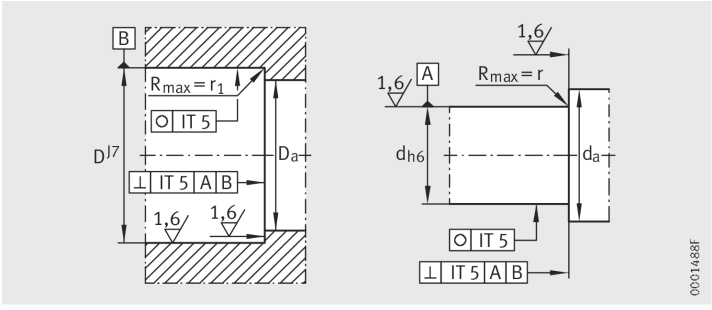


ZKLF..-2RS-PE
(1) Extraction slot

Dimension table · Dimensions in mm

Designation	Mass	Dimensions										Mounting dimensions		Fixing screws[1] DIN 912-10.9	
	m	d	D	B	d_1	r	r_1	J	d_2	b	l	D_a	d_a		
	≈kg	–0,01		–0,25		min.	min.					max.	min.	Size	Quantity
ZKLF1255-2RS-PE	0,37	**12**	$55_{-0,013}$	25	25	0,3	0,6	42	6,8	3	17	33	16	M6	3
ZKLF1560-2RS-PE	0,43	**15**	$60_{-0,013}$	25	28	0,3	0,6	46	6,8	3	17	35	20	M6	3
ZKLF1762-2RS-PE	0,45	**17**	$62_{-0,013}$	25	30	0,3	0,6	48	6,8	3	17	37	23	M6	3
ZKLF2068-2RS-PE	0,61	**20**	$68_{-0,013}$	28	34,5	0,3	0,6	53	6,8	3	19	43	25	M6	4
ZKLF2575-2RS-PE	0,72	**25**	$75_{-0,013}$	28	40,5	0,3	0,6	58	6,8	3	19	48	32	M6	4
ZKLF3080-2RS-PE	0,78	**30**	$80_{-0,013}$	28	45,5	0,3	0,6	63	6,8	3	19	53	40	M6	6
ZKLF3590-2RS-PE	1,13	**35**	$90_{-0,015}$	34	52	0,3	0,6	75	8,8	3	25	62	45	M8	4
ZKLF40100-2RS-PE	1,46	**40**	$100_{-0,015}$	34	58	0,3	0,6	80	8,8	3	25	67	50	M8	4
ZKLF50115-2RS-PE	1,86	**50**	$115_{-0,015}$	34	72	0,3	0,6	94	8,8	3	25	82	63	M8	6

1) Tightening torque of fixing screws according to manufacturer's data.
Screws are not included in the delivery.
2) Mass moment of inertia for rotating inner ring.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.

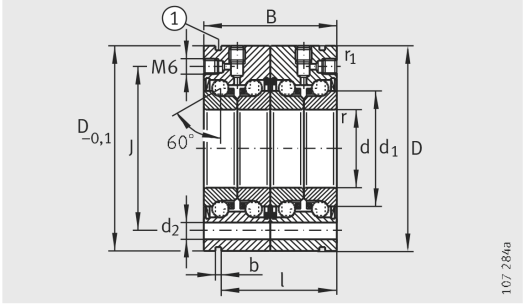


Design of adjacent construction

Pitch t Quantity Xt	Basic load ratings axial dyn. C_a N	Basic load ratings axial stat. C_{0a} N	Limiting speed n_G grease min^{-1}	Bearing frictional torque M_{RL} Nm	Rigidity axial c_{aL} N/µm	Tilting rigidity c_{kL} Nm/mrad	Mass moment of inertia[2] M_m kg · cm^2	Axial run-out[4] µm	Recommended INA locknut; to be ordered separately Designation	Tightening torque[3] M_A Nm	Axial preload force N
3X120°	16 900	24 700	3 800	0,16	375	50	0,068	5	**ZM12** –	8	5 038
3X120°	17 900	28 000	3 500	0,2	400	65	0,102	5	**ZM15 AM15**	10	5 484
3X120°	18 800	31 000	3 300	0,24	450	80	0,132	5	**ZM17 AM17**	15	7 157
4X 90°	26 000	47 000	3 000	0,3	650	140	0,273	5	**ZM20 AM20**	18	9 079
4X 90°	27 500	55 000	2 600	0,4	750	200	0,486	5	**ZM25 AM25**	25	9 410
6X 60°	29 000	64 000	2 200	0,5	850	300	0,73	5	**ZM30 AM30**	32	10 451
4X 90°	41 000	89 000	2 000	0,6	900	400	1,51	5	**ZM35 AM35/58**	40	10 770
4X 90°	43 000	101 000	1 800	0,7	1 000	550	2,26	5	**ZM40 AM40**	55	13 412
6X 60°	46 500	126 000	1 500	0,9	1 250	1 000	5,24	5	**ZM50 AM50**	85	17 009

Axial angular contact ball bearings

For screw mounting
Matched pair



ZKLF..-2RS-2AP
① Extraction slot

Dimension table · Dimensions in mm

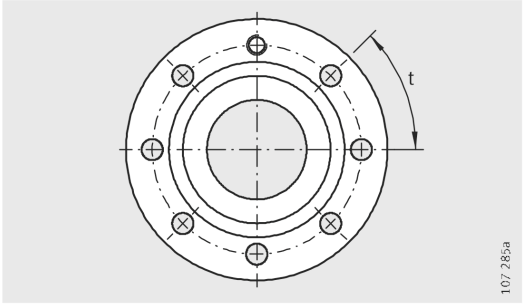
Designation	Mass	Dimensions										Mounting dimensions		Fixing screws[1] DIN 912-10.9	
	m	d	D	B	d_1	r	r_1	J	d_2	l	b	D_a	d_a		
	≈kg	−0,005	−0,010	−0,50		min.	min.					max.	min.	Size	Quantity
ZKLF1762-2RS-2AP	0,9	**17**	62	50	30	0,3	0,6	48	6,8	42	3	37	23	M6X60	5
ZKLF2068-2RS-2AP	1,22	**20**	68	56	34,5	0,3	0,6	53	6,8	47	3	43	25	M6X70	7
ZKLF2575-2RS-2AP	1,44	**25**	75	56	40,5	0,3	0,6	58	6,8	47	3	48	32	M6X70	7
ZKLF3080-2RS-2AP	1,56	**30**	80	56	45,5	0,3	0,6	63	6,8	47	3	53	40	M6X70	11
ZKLF3590-2RS-2AP	2,26	**35**	90	68	52	0,3	0,6	75	8,8	59	3	62	45	M8X80	7
ZKLF40100-2RS-2AP	2,92	**40**	100	68	58	0,3	0,6	80	8,8	59	3	67	50	M8X80	7
ZKLF50115-2RS-2AP	3,72	**50**	115	68	72	0,3	0,6	94	8,8	59	3	82	63	M8X80	11

1) Tightening torque of fixing screws according to manufacturer's data.
Screws are not included in the delivery.

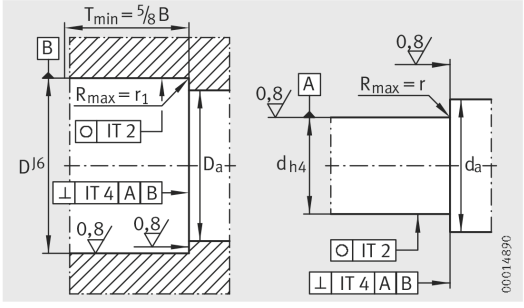
2) Mass moment of inertia for rotating inner ring.

3) Only valid in conjunction with INA precision locknuts.

4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



Hole pattern

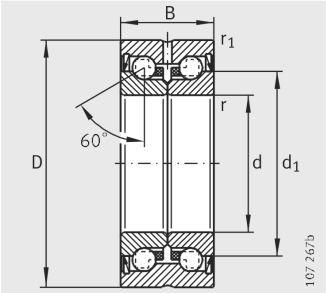


Design of adjacent construction

Pitch	Basic load ratings axial		Limiting speed	Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[2]	Axial run-out[4]	Recommended INA locknut; to be ordered separately		
t	dyn. C_a	stat. C_{0a}	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m		Designation	Tightening torque[3]	Axial preload force
Quantity Xt	N	N	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm		M_A Nm	N
6X60°	30 500	62 000	3 300	0,36	800	200	0,264	2	**ZM17 AM17**	15	7 157
8X45°	42 000	94 000	3 000	0,45	1 150	320	0,564	2	**ZMA20/38 AM20**	18	9 079
8X45°	44 500	111 000	2 600	0,6	1 300	450	0,972	2	**ZMA25/45 AM25**	25	9 410
12X30°	47 500	127 000	2 200	0,75	1 500	620	1,46	2,5	**ZMA30/52 AM30**	32	10 451
8X45°	66 000	177 000	2 000	0,9	1 600	900	3,02	2,5	**ZMA35/58 AM35/58**	40	10 770
8X45°	70 000	202 000	1 800	1,05	1 750	1 200	4,52	2,5	**ZMA40/62 AM40**	55	13 412
12X30°	76 000	250 000	1 500	1,35	2 200	2 250	10,48	2,5	**ZMA50/75 AM50**	85	17 009

Axial angular contact ball bearings

Not for screw mounting

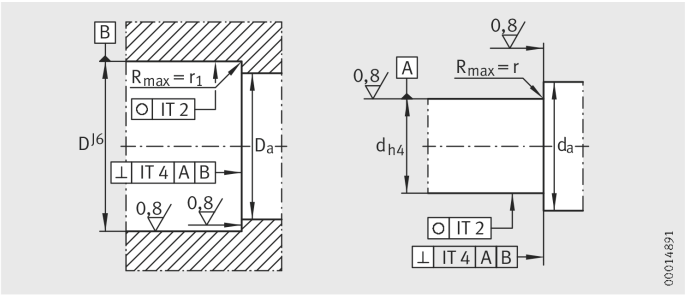


ZKLN..-2RS
ZKLN..-2Z

Dimension table · Dimensions in mm

Designation	Mass	Dimensions						Mounting dimensions		Basic load ratings axial	
	m	d	D	B	d_1	r	r_1	D_a	d_a	dyn. C_a	stat. C_{0a}
	≈kg	–0,005	–0,010	–0,25		min.	min.	max.	min.	N	N
ZKLN0619-2Z	0,02	$6^{+0,002}_{-0,003}$	19	12	12	0,3	0,3	16	9	4 900	6 100
ZKLN0624-2RS	0,03	$6^{+0,002}_{-0,003}$	24	15	14	0,3	0,6	19	9	6 900	8 500
ZKLN0624-2Z	0,03	$6^{+0,002}_{-0,003}$	24	15	14	0,3	0,6	19	9	6 900	8 500
ZKLN0832-2RS	0,09	**8**	32	20	19	0,3	0,6	26	11	12 500	16 300
ZKLN0832-2Z	0,09	**8**	32	20	19	0,3	0,6	26	11	12 500	16 300
ZKLN1034-2RS	0,1	**10**	34	20	21	0,3	0,6	28	14	13 400	18 800
ZKLN1034-2Z	0,1	**10**	34	20	21	0,3	0,6	28	14	13 400	18 800
ZKLN1242-2RS	0,2	**12**	42	25	25	0,3	0,6	33	16	16 900	24 700
ZKLN1242-2Z	0,2	**12**	42	25	25	0,3	0,6	33	16	16 900	24 700
ZKLN1545-2RS	0,21	**15**	45	25	28	0,3	0,6	35	20	17 900	28 000
ZKLN1545-2Z	0,21	**15**	45	25	28	0,3	0,6	35	20	17 900	28 000
ZKLN1747-2RS	0,22	**17**	47	25	30	0,3	0,6	37	23	18 800	31 000
ZKLN1747-2Z	0,22	**17**	47	25	30	0,3	0,6	37	23	18 800	31 000
ZKLN2052-2RS	0,31	**20**	52	28	34,5	0,3	0,6	43	25	26 000	47 000
ZKLN2052-2Z	0,31	**20**	52	28	34,5	0,3	0,6	43	26	26 000	47 000
ZKLN2557-2RS	0,34	**25**	57	28	40,5	0,3	0,6	48	32	27 500	55 000
ZKLN2557-2Z	0,34	**25**	57	28	40,5	0,3	0,6	48	32	27 500	55 000
ZKLN3062-2RS	0,39	**30**	62	28	45,5	0,3	0,6	53	40	29 000	64 000
ZKLN3062-2Z	0,39	**30**	62	28	45,5	0,3	0,6	53	40	29 000	64 000
ZKLN3072-2RS[2)]	0,72	**30**	72	38	51	0,3	0,6	64	47	59 000	108 000
ZKLN3072-2Z[2)]	0,72	**30**	72	38	51	0,3	0,6	64	47	59 000	108 000
ZKLN3572-2RS	0,51	**35**	72	34	52	0,3	0,6	62	45	41 000	89 000
ZKLN3572-2Z	0,51	**35**	72	34	52	0,3	0,6	62	45	41 000	89 000

1) Mass moment of inertia for rotating inner ring.
2) Heavy series.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.

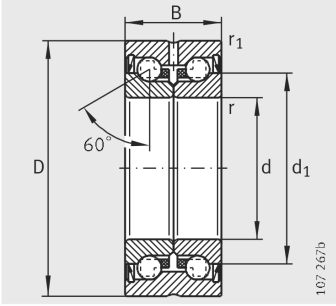


Design of adjacent construction

Limiting speed	Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[1]	Axial runout[4]	Recommended INA locknut; to be ordered separately			
						Designation		Tightening torque[3]	Axial preload force
n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m				M_A	
min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm			Nm	N
14 000	0,01	150	4	0,0019	2	**ZM06**	–	1	916
6 800	0,04	200	8	0,0044	2	**ZM06**	–	2	2 404
12 000	0,02	200	8	0,0044	2	**ZM06**	–	2	2 404
5 100	0,08	250	20	0,02	2	**ZM08**	–	4	2 216
9 500	0,04	250	20	0,02	2	**ZM08**	–	4	2 216
4 600	0,12	325	25	0,029	2	**ZM10**	–	6	4 891
8 600	0,06	325	25	0,029	2	**ZM10**	–	6	4 891
3 800	0,16	375	50	0,068	2	**ZM12**	–	8	5 038
7 600	0,08	375	50	0,068	2	**ZM12**	–	8	5 038
3 500	0,2	400	65	0,102	2	**ZM15**	**AM15**	10	5 484
7 000	0,1	400	65	0,102	2	**ZM15**	**AM15**	10	5 484
3 300	0,24	450	80	0,132	2	**ZM17**	**AM17**	15	7 157
6 600	0,12	450	80	0,132	2	**ZM17**	**AM17**	15	7 157
3 000	0,3	650	140	0,273	2	**ZM20**	**AM20**	18	9 079
5 400	0,15	650	140	0,273	2	**ZM20**	**AM20**	18	9 079
2 600	0,4	750	200	0,486	2	**ZM25**	**AM25**	25	9 410
4 700	0,2	750	200	0,486	2	**ZM25**	**AM25**	25	9 410
2 200	0,5	850	300	0,73	2,5	**ZM30**	**AM30**	32	10 451
4 300	0,25	850	300	0,73	2,5	**ZM30**	**AM30**	32	10 451
2 100	0,8	950	400	1,91	2,5	**ZMA30/52**	**AM30**	65	19 509
4 000	0,4	950	400	1,91	2,5	**ZMA30/52**	**AM30**	65	19 509
2 000	0,6	900	400	1,51	2,5	**ZM35**	**AM35/58**	40	10 770
3 800	0,3	900	400	1,51	2,5	**ZM35**	**AM35/58**	40	10 770

Axial angular contact ball bearings

Not for screw mounting

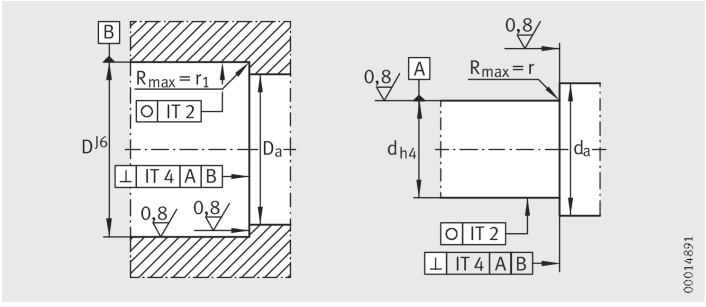


ZKLN..-2RS
ZKLN..-2Z

Dimension table (continued) · Dimensions in mm

Designation	Mass	Dimensions						Mounting dimensions		Basic load ratings axial	
	m	d	D	B	d_1	r	r_1	D_a	d_a	dyn. C_a	stat. C_{0a}
	≈kg			–0,25		min.	min.	max.	min.	N	N
ZKLN4075-2RS	0,61	**40**$_{-0,005}$	75$_{-0,01}$	34	58	0,3	0,6	67	50	43 000	101 000
ZKLN4075-2Z	0,61	**40**$_{-0,005}$	75$_{-0,01}$	34	58	0,3	0,6	67	50	43 000	101 000
ZKLN4090-2RS[2]	0,95	**40**$_{-0,005}$	90$_{-0,01}$	46	65	0,6	0,6	80	56	72 000	149 000
ZKLN4090-2Z[2]	0,95	**40**$_{-0,005}$	90$_{-0,01}$	46	65	0,6	0,6	80	56	72 000	149 000
ZKLN5090-2RS	0,88	**50**$_{-0,005}$	90$_{-0,01}$	34	72	0,3	0,6	82	63	46 500	126 000
ZKLN5090-2Z	0,88	**50**$_{-0,005}$	90$_{-0,01}$	34	72	0,3	0,6	82	63	46 500	126 000
ZKLN50110-2RS[2]	2,5	**50**$_{-0,005}$	110$_{-0,01}$	54	80	0,6	0,6	98	63	113 000	250 000
ZKLN50110-2Z[2]	2,5	**50**$_{-0,005}$	110$_{-0,01}$	54	80	0,6	0,6	98	63	113 000	250 000
ZKLN60110-2Z	2,2	**60**$_{-0,008}$	110$_{-0,015}$	45	85	0,6	0,6	100	82	84 000	214 000
ZKLN70120-2Z	2,4	**70**$_{-0,008}$	120$_{-0,015}$	45	95	0,6	0,6	110	92	88 000	241 000
ZKLN80130-2Z	2,7	**80**$_{-0,008}$	130$_{-0,015}$	45	105	0,6	0,6	120	102	91 000	265 000
ZKLN90150-2Z	4,5	**90**$_{-0,008}$	150$_{-0,015}$	55	120	0,6	0,6	138	116	135 000	395 000
ZKLN100160-2Z	4,9	**100**$_{-0,008}$	160$_{-0,015}$	55	132	0,6	0,6	150	128	140 000	435 000

1) Mass moment of inertia for rotating inner ring.
2) Heavy series.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.

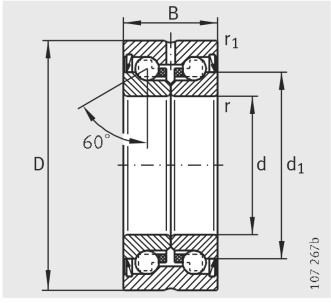


Design of adjacent construction

Limiting speed	Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[1]	Axial runout[4]	Recommended INA locknut; to be ordered separately			
						Designation		Tightening torque[3]	Axial preload force
n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m				M_A	
min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm			Nm	N
1 800	0,7	1 000	550	2,26	2,5	**ZM40**	**AM40**	55	13 412
3 300	0,35	1 000	550	2,26	2,5	**ZM40**	**AM40**	55	13 412
1 600	1,3	1 200	750	5,5	2,5	**ZMA40/62**	**AM40**	110	25 185
3 100	0,65	1 200	750	5,5	2,5	**ZMA40/62**	**AM40**	110	25 185
1 500	0,9	1 250	1 000	5,24	2,5	**ZM50**	**AM50**	85	17 009
3 000	0,45	1 250	1 000	5,24	2,5	**ZM50**	**AM50**	85	17 009
1 200	2,6	1 400	1 500	15,2	2,5	**ZMA50/75**	**AM50**	150	29 436
2 500	1,3	1 400	1 500	15,2	2,5	**ZMA50/75**	**AM50**	150	29 436
3 000	1	1 300	1 650	13,7	3	**ZMA60/98**	**AM60**	100	17 893
2 800	1,2	1 450	2 250	19,8	3	**ZMA70/110**	**AM70**	130	19 171
2 700	1,4	1 600	3 000	27,6	3	**ZMA80/120**	**AM80**	160	20 604
2 300	2,3	1 700	4 400	59,9	3	**ZMA90/130**	**AM90**	200	25 198
2 150	2,6	1 900	5 800	85,3	3	**ZMA100/140**	**AM100**	250	28 760

Axial angular contact ball bearings

Not for screw mounting
Less stringent tolerances

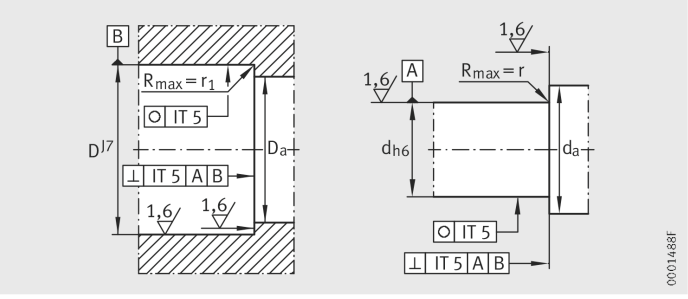


ZKLN..-2RS-PE

Dimension table · Dimensions in mm

Designation	Mass	Dimensions						Mounting dimensions		Basic load ratings axial	
	m	d	D	B	d_1	r	r_1	D_a	d_a	dyn. C_a	stat. C_{0a}
	≈kg			–0,25		min.	min.	max.	min.	N	N
ZKLN0624-2RS-PE	0,03	**6** $^{+0,003}_{-0,005}$	$24_{-0,01}$	15	14	0,3	0,6	19	9	6 900	8 500
ZKLN1034-2RS-PE	0,1	**10** $_{-0,008}$	$34_{-0,011}$	20	21	0,3	0,6	28	14	13 400	18 800
ZKLN1242-2RS-PE	0,2	**12** $_{-0,01}$	$42_{-0,011}$	25	25	0,3	0,6	33	16	16 900	24 700
ZKLN1545-2RS-PE	0,21	**15** $_{-0,01}$	$45_{-0,011}$	25	28	0,3	0,6	35	20	17 900	28 000
ZKLN1747-2RS-PE	0,22	**17** $_{-0,01}$	$47_{-0,011}$	25	30	0,3	0,6	37	23	18 800	31 000
ZKLN2052-2RS-PE	0,31	**20** $_{-0,01}$	$52_{-0,013}$	28	34,5	0,3	0,6	43	25	26 000	47 000
ZKLN2557-2RS-PE	0,34	**25** $_{-0,01}$	$57_{-0,013}$	28	40,5	0,3	0,6	48	32	27 500	55 000
ZKLN3062-2RS-PE	0,39	**30** $_{-0,01}$	$62_{-0,013}$	28	45,5	0,3	0,6	53	40	29 000	64 000
ZKLN3572-2RS-PE	0,51	**35** $_{-0,01}$	$72_{-0,013}$	34	52	0,3	0,6	62	45	41 000	89 000
ZKLN5090-2RS-PE	0,88	**50** $_{-0,01}$	$90_{-0,015}$	34	72	0,3	0,6	82	63	46 500	126 000

1) Mass moment of inertia for rotating inner ring.
2) Only valid in conjunction with INA precision locknuts.
3) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.

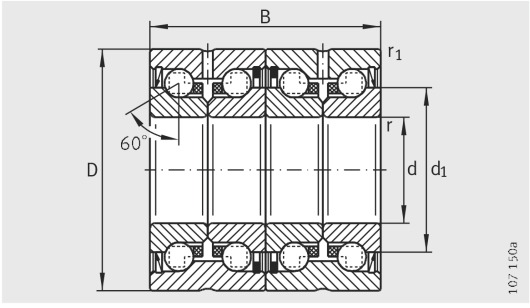


Design of adjacent construction

Limiting speed	Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[1]	Axial runout[3]	Recommended INA locknut; to be ordered separately			
						Designation		Tightening torque[2]	Axial preload force
n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m				M_A	
min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm			Nm	N
6 800	0,04	200	8	0,0044	5	**ZM06**	–	2	2 404
4 600	0,12	325	25	0,029	5	**ZM10**	–	6	4 891
3 800	0,16	375	50	0,068	5	**ZM12**	–	8	5 038
3 500	0,2	400	65	0,102	5	**ZM15**	**AM15**	10	5 484
3 300	0,24	450	80	0,132	5	**ZM17**	**AM17**	15	7 157
3 000	0,3	650	140	0,273	5	**ZM20**	**AM20**	18	9 079
2 600	0,4	750	200	0,486	5	**ZM25**	**AM25**	25	9 410
2 200	0,5	850	300	0,73	5	**ZM30**	**AM30**	32	10 451
2 000	0,6	900	400	1,51	5	**ZM35**	**AM35/38**	40	10 770
1 500	0,9	1 250	1 000	5,24	5	**ZM50**	**AM50**	85	17 009

Axial angular contact ball bearings

Not for screw mounting
Matched pair

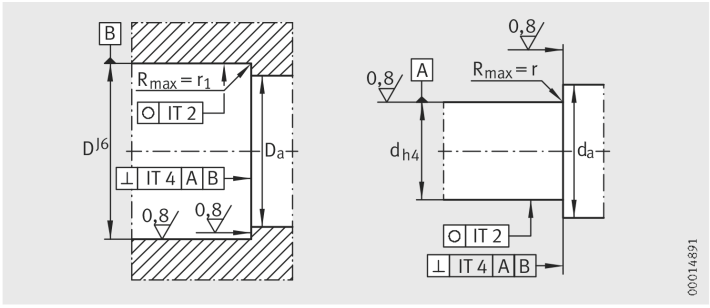


ZKLN..-2RS-2AP

Dimension table · Dimensions in mm

Designation	Mass	Dimensions						Mounting dimensions		Basic load ratings axial	
	m	d	D	B	d_1	r	r_1	D_a	d_a	dyn. C_a	stat. C_{0a}
	≈kg	–0,005	–0,01	–0,5		min.	min.	max.	min.	N	N
ZKLN1747-2RS-2AP	0,44	**17**	47	50	30	0,3	0,6	37	23	30 500	62 000
ZKLN2052-2RS-2AP	0,62	**20**	52	56	34,5	0,3	0,6	43	25	42 000	94 000
ZKLN2557-2RS-2AP	0,68	**25**	57	56	40,5	0,3	0,6	48	32	44 500	111 000
ZKLN3062-2RS-2AP	0,78	**30**	62	56	45,5	0,3	0,6	53	40	47 500	127 000
ZKLN3572-2RS-2AP	1,02	**35**	72	68	52	0,3	0,6	62	45	66 000	177 000
ZKLN4075-2RS-2AP	1,22	**40**	75	68	58	0,3	0,6	67	50	70 000	202 000
ZKLN5090-2RS-2AP	1,76	**50**	90	68	72	0,3	0,6	82	63	76 000	250 000

1) Mass moment of inertia for rotating inner ring.
2) Only valid in conjunction with INA precision locknuts.
3) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



Design of adjacent construction

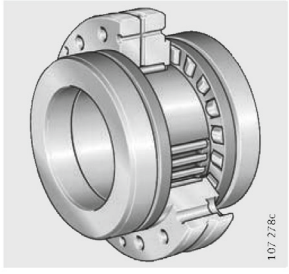
Limiting speed	Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[1]	Axial runout[3]	Recommended INA locknut; to be ordered separately			
						Designation		Tightening torque[2]	Axial preload force
n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m				M_A	
min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm			Nm	N
3 300	0,36	800	200	0,264	2	**ZM17**	**AM17**	15	7 157
3 000	0,45	1 150	320	0,546	2	**ZMA20/38**	**AM20**	18	9 079
2 600	0,6	1 300	450	0,972	2	**ZMA25/45**	**AM25**	25	9 410
2 200	0,75	1 500	620	1,46	2,5	**ZMA30/52**	**AM30**	32	10 451
2 000	0,9	1 600	900	3,02	2,5	**ZMA35/58**	**AM35/58**	40	10 770
1 800	1,05	1 750	1 200	4,52	2,5	**ZMA40/62**	**AM40**	55	13 412
1 500	1,35	2 200	2 250	10,48	2,5	**ZMA50/75**	**AM50**	85	17 009

Product overview

Needle roller/ axial cylindrical roller bearings

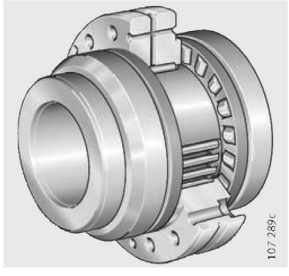
For screw mounting

ZARF



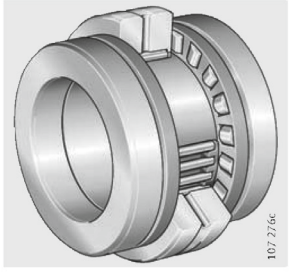
With extended shaft locating washer

ZARF..-L



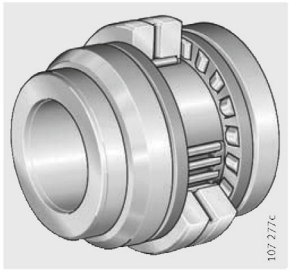
Not for screw mounting

ZARN



With extended shaft locating washer

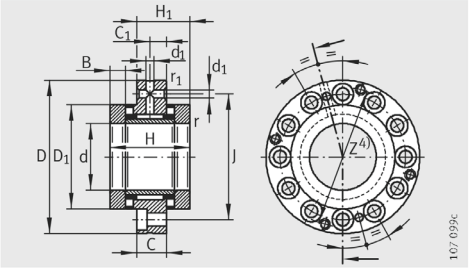
ZARN..-L



NOTES:

Needle roller/ axial cylindrical roller bearings

Light series
For screw mounting



ZARF

Dimension table · Dimensions in mm

Designation	Mass	Dimensions																	
	m	d	D	H	H_1	H_2	H_3	C	C_1	D_1	D_2	D_3	B	B_1	B_2	r	r_1	d_1	J
	≈kg															min.	min.		
ZARF1560-TV	0,42	**15**	60	40	26	–	–	14	8	35	–	–	7,5	–	–	0,3	0,6	3,2	46
ZARF1560-L-TV	0,45	**15**	60	–	–	53	39	14	8	35	24	34	7,5	20,5	11	0,3	0,6	3,2	46
ZARF1762-TV	0,49	**17**	62	43	27,5	–	–	14	8	38	–	–	9	–	–	0,3	0,6	3,2	48
ZARF1762-L-TV	0,52	**17**	62	–	–	57	41,5	14	8	38	28	38	9	23	11	0,3	0,6	3,2	48
ZARF2068-TV	0,56	**20**	68	46	29	–	–	14	8	42	–	–	10	–	–	0,3	0,6	3,2	53
ZARF2068-L-TV	0,61	**20**	68	–	–	60	43	14	8	42	30	40	10	24	11	0,3	0,6	3,2	53
ZARF2575-TV	0,78	**25**	75	50	33	–	–	18	10	47	–	–	10	–	–	0,3	0,6	3,2	58
ZARF2575-L-TV	0,84	**25**	75	–	–	65	48	18	10	47	36	45	10	25	11	0,3	0,6	3,2	58
ZARF3080-TV	0,85	**30**	80	50	33	–	–	18	10	52	–	–	10	–	–	0,3	0,6	3,2	63
ZARF3080-L-TV	0,9	**30**	80	–	–	65	48	18	10	52	40	50	10	25	11	0,3	0,6	3,2	63

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.

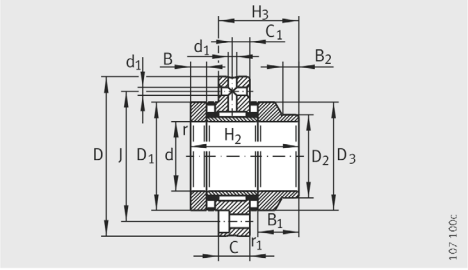
2) Tightening torque of fixing screws according to manufacturer's data.
Screws are not included in the delivery.

3) Mass moment of inertia for rotating inner ring.

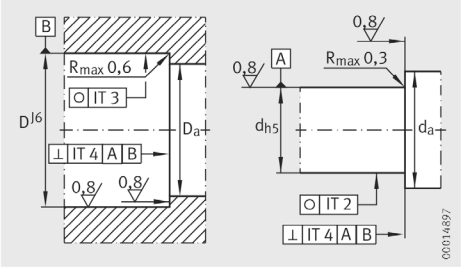
4) Mounting dimension for seal carrier assembly DRS.
Seal carrier assemblies: see page 91 and page 97.

5) Only valid in conjunction with INA precision locknuts.

6) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARF..-L



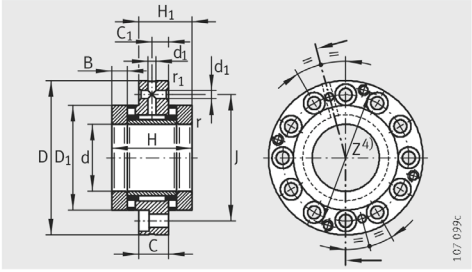
Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[3]	Axial runout[6]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/ mrad	kg · cm^2	µm
36	28	24 900	53 000	13 000	17 500	8 500	2 200	0,35	1 400	110	0,24	1
36	22	24 900	53 000	13 000	17 500	8 500	2 200	0,35	1 400	110	0,274	1
39	28	26 000	57 000	14 000	19 900	7 800	2 100	0,4	1 600	160	0,373	1
39	26	26 000	57 000	14 000	19 900	7 800	2 100	0,4	1 600	160	0,464	1
43	33	33 500	76 000	14 900	22 400	7 000	2 000	0,5	1 800	230	0,615	1
43	28	33 500	76 000	14 900	22 400	7 000	2 000	0,5	1 800	230	0,683	1
48	39	35 500	86 000	22 600	36 000	6 000	1 900	0,55	1 900	350	0,989	1
48	34	35 500	86 000	22 600	36 000	6 000	1 900	0,55	1 900	350	1,15	1
53	44	39 000	101 000	24 300	41 500	5 500	1 800	0,65	2 200	520	1,46	1
53	38	39 000	101 000	24 300	41 500	5 500	1 800	0,65	2 200	520	1,7	1

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately	Fixing screws[2] DIN 912-10.9	
	Designation		Tightening torque[5]	Axial preload force			
			M_A Nm	N		Size	Quantity
ZARF1560-TV	**ZMA15/33**	**AM15**	10	6 506	–	M6	6
ZARF1560-L-TV	**ZMA15/33**	**AM15**	10	6 506	24X35X7	M6	6
ZARF1762-TV	**ZM17**	**AM17**	12	7 078	–	M6	6
ZARF1762-L-TV	**ZM17**	**AM17**	12	7 078	28X40X7	M6	6
ZARF2068-TV	**ZMA20/38**	**AM20**	18	9 376	–	M6	8
ZARF2068-L-TV	**ZMA20/38**	**AM20**	18	9 376	30X42X7	M6	8
ZARF2575-TV	**ZMA25/45**	**AM25**	25	10 470	–	M6	8
ZARF2575-L-TV	**ZMA25/45**	**AM25**	25	10 470	36X47X7	M6	8
ZARF3080-TV	**ZMA30/52**	**AM30**	32	11 091	–	M6	12
ZARF3080-L-TV	**ZMA30/52**	**AM30**	32	11 091	40X52X7	M6	12

Needle roller/ axial cylindrical roller bearings

Light series
For screw mounting

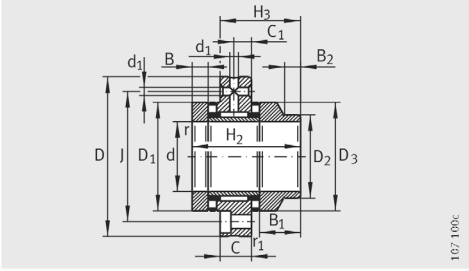


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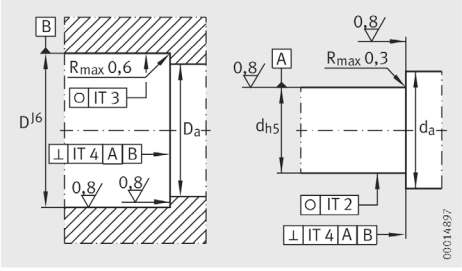
Dimension table (continued) · Dimensions in mm

Designation	Mass	Dimensions																	
	m	d	D	H	H_1	H_2	H_3	C	C_1	D_1	D_2	D_3	B	B_1	B_2	r	r_1	d_1	J
	≈kg															min.	min.		
ZARF3590-TV	1,12	**35**	90	54	35	–	–	18	10	60	–	–	11	–	–	0,3	0,6	3,2	73
ZARF3590-L-TV	1,25	**35**	90	–	–	70	51	18	10	60	45	58	11	27	12	0,3	0,6	3,2	73
ZARF40100-TV	1,35	**40**	100	54	35	–	–	18	10	65	–	–	11	–	–	0,3	0,6	3,2	80
ZARF40100-L-TV	1,45	**40**	100	–	–	70	51	18	10	65	50	63	11	27	12	0,3	0,6	3,2	80
ZARF45105-TV	1,7	**45**	105	60	40	–	–	22,5	12,5	70	–	–	11,5	–	–	0,3	0,6	6	85
ZARF45105-L-TV	1,85	**45**	105	–	–	75	55	22,5	12,5	70	56	68	11,5	26,5	12	0,3	0,6	6	85
ZARF50115-TV	2,1	**50**	115	60	40	–	–	22,5	12,5	78	–	–	11,5	–	–	0,3	0,6	6	94
ZARF50115-L-TV	2,45	**50**	115	–	–	78	58	22,5	12,5	78	60	78	11,5	29,5	12	0,3	0,6	6	94

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.
2) Tightening torque of fixing screws according to manufacturer's data.
Screws are not included in the delivery.
3) Mass moment of inertia for rotating inner ring.
4) Mounting dimension for seal carrier assembly DRS.
Seal carrier assemblies: see page 91 and page 97.
5) Only valid in conjunction with INA precision locknuts.
6) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARF..-L



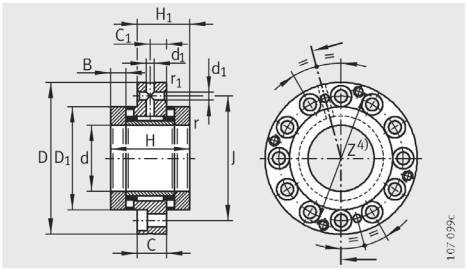
Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[3]	Axial runout[6]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm
61	50	56 000	148 000	26 000	47 000	4 800	1 700	0,9	2 600	740	2,8	1
61	43	56 000	148 000	26 000	47 000	4 800	1 700	0,9	2 600	740	3,21	1
66	55	59 000	163 000	27 500	53 000	4 400	1 600	1	2 800	1 030	3,78	1
66	48	59 000	163 000	27 500	53 000	4 400	1 600	1	2 800	1 030	4,35	1
71	60	61 000	177 000	38 000	74 000	4 000	1 500	1,2	3 000	1 340	5,33	1
71	54	61 000	177 000	38 000	74 000	4 000	1 500	1,2	3 000	1 340	6,03	1
79	67	90 000	300 000	40 000	82 000	3 600	1 200	2,2	4 800	2 470	8,42	1
79	58	90 000	300 000	40 000	82 000	3 600	1 200	2,2	4 800	2 470	10,46	1

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately	Fixing screws[2] DIN 912-10.9	
	Designation		Tightening torque[5]	Axial preload force			
			M_A Nm	N		Size	Quantity
ZARF3590-TV	**ZMA35/58**	**AM35/58**	42	12 486	–	M6	12
ZARF3590-L-TV	**ZMA35/58**	**AM35/58**	42	12 486	45X60X8	M6	12
ZARF40100-TV	**ZMA40/62**	**AM40**	55	14 240	–	M8	8
ZARF40100-L-TV	**ZMA40/62**	**AM40**	55	14 240	50X65X8	M8	8
ZARF45105-TV	**ZMA45/68**	**AM45**	65	15 765	–	M8	8
ZARF45105-L-TV	**ZMA45/68**	**AM45**	65	15 765	56X70X8	M8	8
ZARF50115-TV	**ZMA50/75**	**AM50**	85	18 410	–	M8	12
ZARF50115-L-TV	**ZMA50/75**	**AM50**	85	18 410	60X80X8	M8	12

Needle roller/ axial cylindrical roller bearings

Heavy series
For screw mounting

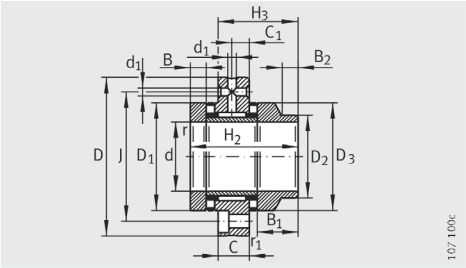


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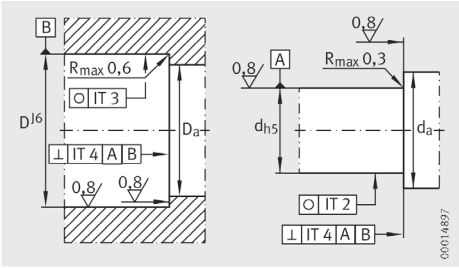
Dimension table · Dimensions in mm

Designation	Mass	Dimensions															
	m	d	D	H	H_1	H_2	H_3	C	C_1	D_1	D_2	D_3	B	B_1	B_2	r	r_1
	≈kg															min.	min.
ZARF2080-TV	1,1	**20**	80	60	38	–	–	18	10	52	–	–	12,5	–	–	0,3	0,6
ZARF2080-L-TV	1,22	**20**	80	–	–	75	53	18	10	52	40	50	12,5	27,5	11	0,3	0,6
ZARF2590-TV	1,6	**25**	90	60	38	–	–	18	10	62	–	–	12,5	–	–	0,3	0,6
ZARF2590-L-TV	1,75	**25**	90	–	–	75	53	18	10	62	48	60	12,5	27,5	11	0,3	0,6
ZARF30105-TV	1,95	**30**	105	66	41	–	–	18	10	68	–	–	14	–	–	0,3	0,6
ZARF30105-L-TV	2,15	**30**	105	–	–	82	57	18	10	68	52	66	14	30	12	0,3	0,6
ZARF35110-TV	1,6	**35**	110	66	41	–	–	18	10	73	–	–	14	–	–	0,3	0,6
ZARF35110-L-TV	1,85	**35**	110	–	–	82	57	18	10	73	60	73	14	30	12	0,3	0,6
ZARF40115-TV	2,7	**40**	115	75	47,5	–	–	22,5	12,5	78	–	–	16	–	–	0,3	0,6
ZARF40115-L-TV	3	**40**	115	–	–	93	65,5	22,5	12,5	78	60	78	16	34	12	0,3	0,6
ZARF45130-TV	3,9	**45**	130	82	51	–	–	22,5	12,5	90	–	–	17,5	–	–	0,3	0,6
ZARF45130-L-TV	4,3	**45**	130	–	–	103	72	22,5	12,5	90	70	88	17,5	38,5	14	0,3	0,6

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.
2) Tightening torque of fixing screws according to manufacturer's data.
Screws are not included in the delivery.
3) Mass moment of inertia for rotating inner ring.
4) Mounting dimension for seal carrier assembly DRS.
Seal carrier assemblies: see page 91 and page 97.
5) Only valid in conjunction with INA precision locknuts.
6) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARF..-L



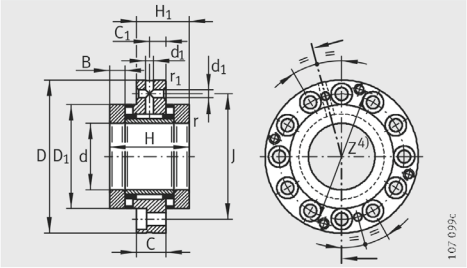
Design of adjacent construction

		Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[3]	Axial run-out[6]
				axial		radial								
d_1	J	D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
		max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm
3,2	63	53	38	64 000	141 000	22 600	36 000	6 000	1 500	1,3	2 300	400	1,98	1
3,2	63	53	38	64 000	141 000	22 600	36 000	6 000	1 500	1,3	2 300	400	2,27	1
3,2	73	63	45	80 000	199 000	24 300	41 500	4 900	1 400	1,6	3 000	800	3,88	1
3,2	73	63	45	80 000	199 000	24 300	41 500	4 900	1 400	1,6	3 000	800	4,51	1
3,2	85	69	52	107 000	265 000	26 000	47 000	4 400	1 300	2,1	3 300	1 100	6,53	1
3,2	85	69	50	107 000	265 000	26 000	47 000	4 400	1 300	2,1	3 300	1 100	7,43	1
3,2	88	74	60	105 000	265 000	27 500	53 000	4 000	1 250	2,3	2 500	1 300	8,47	1
3,2	88	74	58	105 000	265 000	27 500	53 000	4 000	1 250	2,3	3 500	1 300	10,4	1
6	94	79	65	117 000	315 000	38 000	74 000	3 700	1 200	2,5	3 800	1 800	13,3	1
6	94	79	58	117 000	315 000	38 000	74 000	3 700	1 200	2,5	3 800	1 800	15,5	1
6	105	91	70	154 000	405 000	40 000	82 000	3 300	1 150	3,5	4 000	2 100	23,7	1
6	105	91	68	154 000	405 000	40 000	82 000	3 300	1 150	3,5	4 000	2 100	28,1	1

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately	Fixing screws[2] DIN 912-10.9	
	Designation		Tightening torque[5] M_A Nm	Axial preload force N		Size	Quantity
ZARF2080-TV	**ZMA20/52**	**AM20**	38	18 448	–	M6	12
ZARF2080-L-TV	**ZMA20/52**	**AM20**	38	18 448	40X52X7	M6	12
ZARF2590-TV	**ZMA25/58**	**AM25**	55	20 790	–	M6	12
ZARF2590-L-TV	**ZMA25/58**	**AM25**	55	20 790	48X62X8	M6	12
ZARF30105-TV	**ZMA30/65**	**AM30**	75	24 287	–	M8	12
ZARF30105-L-TV	**ZMA30/65**	**AM30**	75	24 287	52X68X8	M8	12
ZARF35110-TV	**ZMA35/70**	**AM35**	100	27 480	–	M8	12
ZARF35110-L-TV	**ZMA35/70**	**AM35**	100	27 480	60X75X8	M8	12
ZARF40115-TV	**ZMA40/75**	**AM40**	120	29 834	–	M8	12
ZARF40115-L-TV	**ZMA40/75**	**AM40**	120	29 834	60X80X8	M8	12
ZARF45130-TV	**ZMA45/85**	**AM45**	150	33 549	–	M8	12
ZARF45130-L-TV	**ZMA45/85**	**AM45**	150	33 549	70X90X10	M8	12

Needle roller/ axial cylindrical roller bearings

Heavy series
For screw mounting



ZARF

Dimension table (continued) · Dimensions in mm

Designation	Mass	Dimensions																	
	m	d	D	H	H_1	H_2	H_3	C	C_1	D_1	D_2	D_3	B	B_1	B_2	r	r_1	d_1	J
	≈kg															min.	min.		
ZARF50140-TV	4,2	**50**	140	82	51	–	–	22,5	12,5	95	–	–	17,5	–	–	0,3	0,6	6	113
ZARF50140-L-TV	4,65	**50**	140	–	–	103	72	22,5	12,5	95	75	93	17,5	38,5	14	0,3	0,6	6	113
ZARF55145-TV	4,5	**55**	145	82	51	–	–	22,5	12,5	100	–	–	17,5	–	–	0,3	0,6	6	118
ZARF55145-L-TV	5	**55**	145	–	–	103	72	22,5	12,5	100	80	98	17,5	38,5	14	0,3	0,6	6	118
ZARF60150-TV	4,7	**60**	150	82	51	–	–	22,5	12,5	105	–	–	17,5	–	–	0,3	0,6	6	123
ZARF60150-L-TV	5,35	**60**	150	–	–	103	72	22,5	12,5	105	90	105	17,5	38,5	16	0,3	0,6	6	123
ZARF65155-TV	5,1	**65**	155	82	51	–	–	22,5	12,5	110	–	–	17,5	–	–	0,3	0,6	6	128
ZARF65155-L-TV	5,7	**65**	155	–	–	103	72	22,5	12,5	110	90	108	17,5	38,5	16	0,3	0,6	6	128
ZARF70160-TV	5,2	**70**	160	82	51	–	–	22,5	12,5	115	–	–	17,5	–	–	0,3	0,6	6	133
ZARF70160-L-TV	5,95	**70**	160	–	–	103	72	22,5	12,5	115	100	115	17,5	38,5	16	0,3	0,6	6	133
ZARF75185-TV	9,4	**75**	185	100	62	–	–	27	15	135	–	–	21	–	–	0,3	1	6	155
ZARF75185-L-TV	10,6	**75**	185	–	–	125	87	27	15	135	115	135	21	46	16	0,3	1	6	155
ZARF90210-TV	13,7	**90**	210	110	69,5	–	–	32	17,5	160	–	–	22,5	–	–	0,3	1	8	180
ZARF90210-L-TV	15,1	**90**	210	–	–	135	94,5	32	17,5	160	130	158	22,5	47,5	16	0,3	1	8	180

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.

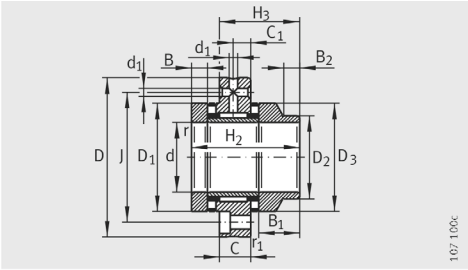
2) Tightening torque of fixing screws according to manufacturer's data.
Screws are not included in the delivery.

3) Mass moment of inertia for rotating inner ring.

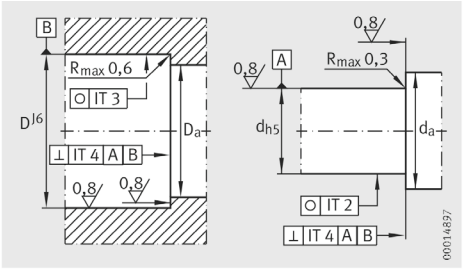
4) Mounting dimension for seal carrier assembly DRS.
Seal carrier assemblies: see page 91 and page 97.

5) Only valid in conjunction with INA precision locknuts.

6) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARF..-L



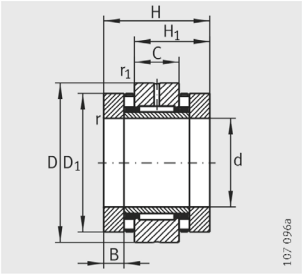
Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[3]	Axial run-out[6]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm
96	75	172 000	480 000	42 000	90 000	3 100	1 100	3,8	4 600	2 900	29,8	1
96	73	172 000	480 000	42 000	90 000	3 100	1 100	3,8	4 600	2 900	35,3	1
101	85	177 000	500 000	44 000	98 000	2 900	1 000	4	4 900	3 600	36,1	1
101	78	177 000	500 000	44 000	98 000	2 900	1 000	4	4 900	3 600	43	1
106	90	187 000	550 000	44 500	92 000	2 700	950	4,2	5 300	4 300	43,8	1
106	88	187 000	550 000	44 500	92 000	2 700	950	4,2	5 300	4 300	54,5	1
111	97	172 000	500 000	54 000	104 000	2 600	900	4	4 800	4 000	51	1
111	88	172 000	500 000	54 000	104 000	2 600	900	4	4 800	4 000	60,1	1
116	100	201 000	630 000	56 000	119 000	2 400	800	4,8	5 800	6 000	62,2	1
116	98	201 000	630 000	56 000	119 000	2 400	800	4,8	5 800	6 000	77,3	1
136	113	290 000	890 000	72 000	132 000	2 100	700	8	6 600	8 500	149	2
136	110	290 000	890 000	72 000	132 000	2 100	700	8	6 600	8 500	188	2
161	130	325 000	1 030 000	98 000	210 000	1 800	700	10,5	7 700	14 500	312	2
161	125	325 000	1 030 000	98 000	210 000	1 800	700	10,5	7 700	14 500	372	2

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately	Fixing screws[2] DIN 912-10.9	
	Designation		Tightening torque[5] M_A Nm	Axial preload force N		Size	Quantity
ZARF50140-TV	**ZMA50/92**	**AM50**	180	37 109	–	M10	12
ZARF50140-L-TV	**ZMA50/92**	**AM50**	180	37 109	75X95X10	M10	12
ZARF55145-TV	**ZMA55/98**	**AM55**	220	40 772	–	M10	12
ZARF55145-L-TV	**ZMA55/98**	**AM55**	220	40 772	80X100X10	M10	12
ZARF60150-TV	**ZMA60/98**	**AM60**	250	42 190	–	M10	12
ZARF60150-L-TV	**ZMA60/98**	**AM60**	250	42 190	90X110X12	M10	12
ZARF65155-TV	**ZMA65/105**	**AM65**	270	41 778	–	M10	12
ZARF65155-L-TV	**ZMA65/105**	**AM65**	270	41 778	90X110X12	M10	12
ZARF70160-TV	**ZMA70/110**	**AM70**	330	47 692	–	M10	12
ZARF70160-L-TV	**ZMA70/110**	**AM70**	330	47 692	100X120X12	M10	12
ZARF75185-TV	**ZMA75/125**	**AM75**	580	76 339	–	M12	12
ZARF75185-L-TV	**ZMA75/125**	**AM75**	580	76 339	115X140X12	M12	12
ZARF90210-TV	**ZMA90/155**	**AM90**	960	102 468	–	M12	16
ZARF90210-L-TV	**ZMA90/155**	**AM90**	960	102 468	130X160X12	M12	16

Needle roller/ axial cylindrical roller bearings

Light series
Not for screw mounting

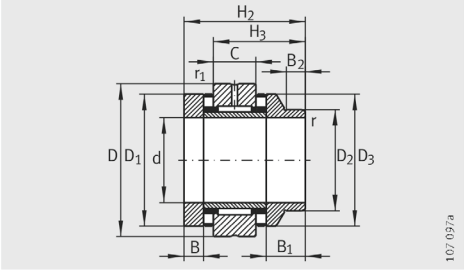


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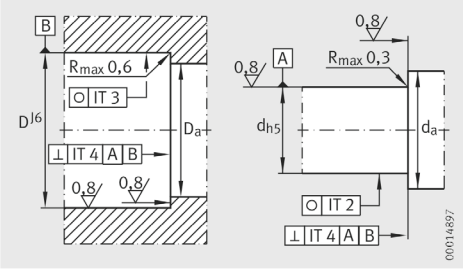
Dimension table · Dimensions in mm

Designation	Mass	Dimensions														
	m	d	D	H	H_1	H_2	H_3	C	D_1	D_2	D_3	B	B_1	B_2	r	r_1
	≈kg														min.	min.
ZARN1545-TV	0,34	**15**	45	40	28	–	–	16	35	–	–	7,5	–	–	0,3	0,6
ZARN1545-L-TV	0,37	**15**	45	–	–	53	41	16	35	24	34	7,5	20,5	11	0,3	0,6
ZARN1747-TV	0,37	**17**	47	43	29,5	–	–	16	38	–	–	9	–	–	0,3	0,6
ZARN1747-L-TV	0,41	**17**	47	–	–	57	43,5	16	38	28	38	9	23	11	0,3	0,6
ZARN2052-TV	0,41	**20**	52	46	31	–	–	16	42	–	–	10	–	–	0,3	0,6
ZARN2052-L-TV	0,46	**20**	52	–	–	60	45	16	42	30	40	10	24	11	0,3	0,6
ZARN2557-TV	0,53	**25**	57	50	35	–	–	20	47	–	–	10	–	–	0,3	0,6
ZARN2557-L-TV	0,59	**25**	57	–	–	65	50	20	47	36	45	10	25	11	0,3	0,6
ZARN3062-TV	0,6	**30**	62	50	35	–	–	20	52	–	–	10	–	–	0,3	0,6
ZARN3062-L-TV	0,75	**30**	62	–	–	65	50	20	52	40	50	10	25	11	0,3	0,6

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.
2) Mass moment of inertia for rotating inner ring.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARN..-L



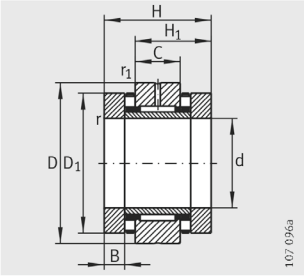
Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[2]	Axial runout[4]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm
36	28	24 900	53 000	13 000	17 500	8 500	2 200	0,35	1 400	110	0,24	1
36	22	24 900	53 000	13 000	17 500	8 500	2 200	0,35	1 400	110	0,274	1
39	28	26 000	57 000	14 000	19 900	7 800	2 100	0,4	1 600	160	0,373	1
39	26	26 000	57 000	14 000	19 900	7 800	2 100	0,4	1 600	160	0,464	1
43	33	33 500	76 000	14 900	22 400	7 000	2 000	0,5	1 800	230	0,615	1
43	28	33 500	76 000	14 900	22 400	7 000	2 000	0,5	1 800	230	0,683	1
48	39	35 500	86 000	22 600	36 000	6 000	1 900	0,55	1 900	350	0,989	1
48	34	35 500	86 000	22 600	36 000	6 000	1 900	0,55	1 900	350	1,15	1
53	44	39 000	101 000	24 300	41 500	5 500	1 800	0,65	2 200	520	1,46	1
53	38	39 000	101 000	24 300	41 500	5 500	1 800	0,65	2 200	520	1,7	1

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately
	Designation		Tightening torque[3] M_A Nm	Axial preload force N	
ZARN1545-TV	**ZMA15/33**	**AM15**	10	6 506	–
ZARN1545-L-TV	**ZMA15/33**	**AM15**	10	6 506	24X35X7
ZARN1747-TV	**ZM17**	**AM17**	12	7 078	–
ZARN1747-L-TV	**ZM17**	**AM17**	12	7 078	28X40X7
ZARN2052-TV	**ZMA20/38**	**AM20**	18	9 376	–
ZARN2052-L-TV	**ZMA20/38**	**AM20**	18	9 376	30X42X7
ZARN2557-TV	**ZMA25/45**	**AM25**	25	10 470	–
ZARN2557-L-TV	**ZMA25/45**	**AM25**	25	10 470	36X47X7
ZARN3062-TV	**ZMA30/52**	**AM30**	32	11 091	–
ZARN3062-L-TV	**ZMA30/52**	**AM30**	32	11 091	40X52X7

Needle roller/ axial cylindrical roller bearings

Light series
Not for screw mounting

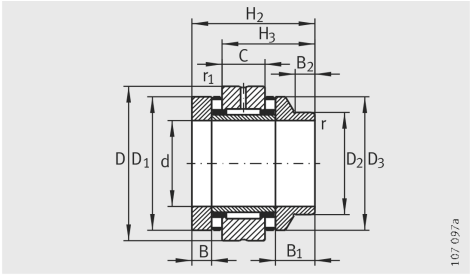


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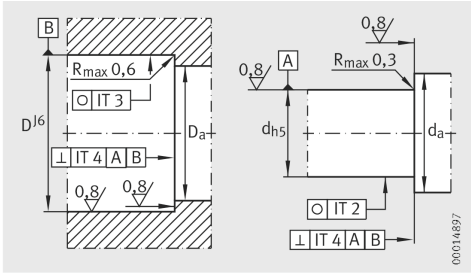
Dimension table (continued) · Dimensions in mm

Designation	Mass	Dimensions														
	m	d	D	H	H_1	H_2	H_3	C	D_1	D_2	D_3	B	B_1	B_2	r	r_1
	≈kg														min.	min.
ZARN3570-TV	0,8	**35**	70	54	37	–	–	20	60	–	–	11	–	–	0,3	0,6
ZARN3570-L-TV	0,93	**35**	70	–	–	70	53	20	60	45	58	11	27	12	0,3	0,6
ZARN4075-TV	0,9	**40**	75	54	37	–	–	20	65	–	–	11	–	–	0,3	0,6
ZARN4075-L-TV	1	**40**	75	–	–	70	53	20	65	50	63	11	27	12	0,3	0,6
ZARN4580-TV	1,12	**45**	80	60	42,5	–	–	25	70	–	–	11,5	–	–	0,3	0,6
ZARN4580-L-TV	1,27	**45**	80	–	–	75	57,5	25	70	56	68	11,5	26,5	12	0,3	0,6
ZARN5090-TV	1,43	**50**	90	60	42,5	–	–	25	78	–	–	11,5	–	–	0,3	0,6
ZARN5090-L-TV	1,78	**50**	90	–	–	78	60,5	25	78	60	78	11,5	29,5	12	0,3	0,6

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.
2) Mass moment of inertia for rotating inner ring.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARN..-L



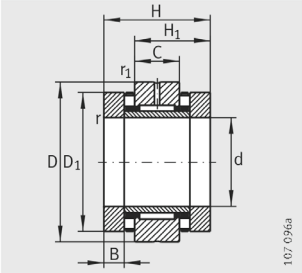
Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[2]	Axial runout[4]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm
61	50	56 000	148 000	26 000	47 000	4 800	1 700	0,9	2 600	740	2,8	1
61	43	56 000	148 000	26 000	47 000	4 800	1 700	0,9	2 600	740	3,21	1
66	55	59 000	163 000	27 500	53 000	4 400	1 600	1	2 800	1 030	3,78	1
66	48	59 000	163 000	27 500	53 000	4 400	1 600	1	2 800	1 030	4,35	1
71	60	61 000	177 000	38 000	74 000	4 000	1 500	1,2	3 000	1 340	5,33	1
71	54	61 000	177 000	38 000	74 000	4 000	1 500	1,2	3 000	1 340	6,03	1
79	67	90 000	300 000	40 000	82 000	3 600	1 200	2,2	4 800	2 470	8,42	1
79	58	90 000	300 000	40 000	82 000	3 600	1 200	2,2	4 800	2 470	10,46	1

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately
	Designation		Tightening torque[3] M_A Nm	Axial preload force N	
ZARN3570-TV	**ZMA35/58**	**AM35/58**	42	12 486	–
ZARN3570-L-TV	**ZMA35/58**	**AM35/58**	42	12 486	45X60X8
ZARN4075-TV	**ZMA40/62**	**AM40**	55	14 240	–
ZARN4075-L-TV	**ZMA40/62**	**AM40**	55	14 240	50X65X8
ZARN4580-TV	**ZMA45/68**	**AM45**	65	15 765	–
ZARN4580-L-TV	**ZMA45/68**	**AM45**	65	15 765	56X70X8
ZARN5090-TV	**ZMA50/75**	**AM50**	85	18 410	–
ZARN5090-L-TV	**ZMA50/75**	**AM50**	85	18 410	60X80X8

Needle roller/ axial cylindrical roller bearings

Heavy series
Not for screw mounting

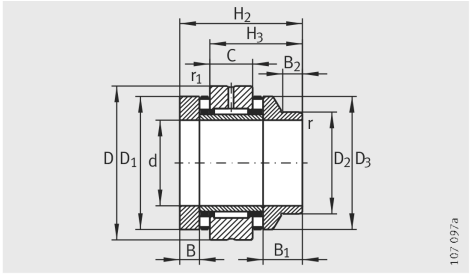


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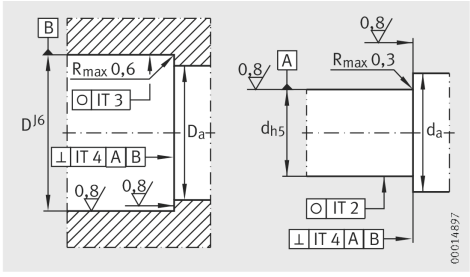
Dimension table · Dimensions in mm

Designation	Mass	Dimensions														
	m	d	D	H	H_1	H_2	H_3	C	D_1	D_2	D_3	B	B_1	B_2	r	r_1
	≈kg														min.	min.
ZARN2062-TV	0,87	**20**	62	60	40	–	–	20	52	–	–	12,5	–	–	0,3	0,6
ZARN2062-L-TV	0,99	**20**	62	–	–	75	55	20	52	40	50	12,5	27,5	11	0,3	0,6
ZARN2572-TV	1,17	**25**	72	60	40	–	–	20	62	–	–	12,5	–	–	0,3	0,6
ZARN2572-L-TV	1,32	**25**	72	–	–	75	55	20	62	48	60	12,5	27,5	11	0,3	0,6
ZARN3080-TV	1,5	**30**	80	66	43	–	–	20	68	–	–	14	–	–	0,3	0,6
ZARN3080-L-TV	1,7	**30**	80	–	–	82	59	20	68	52	66	14	30	12	0,3	0,6
ZARN3585-TV	1,65	**35**	85	66	43	–	–	20	73	–	–	14	–	–	0,3	0,6
ZARN3585-L-TV	1,8	**35**	85	–	–	82	59	20	73	60	73	14	30	12	0,3	0,6
ZARN4090-TV	2,09	**40**	90	75	50	–	–	25	78	–	–	16	–	–	0,3	0,6
ZARN4090-L-TV	2,39	**40**	90	–	–	93	68	25	78	60	78	16	34	12	0,3	0,6
ZARN45105-TV	3,02	**45**	105	82	53,5	–	–	25	90	–	–	17,5	–	–	0,3	0,6
ZARN45105-L-TV	3,42	**45**	105	–	–	103	74,5	25	90	70	88	17,5	38,5	14	0,3	0,6
ZARN50110-TV	3,3	**50**	110	82	53,5	–	–	25	95	–	–	17,5	–	–	0,3	0,6
ZARN50110-L-TV	3,75	**50**	110	–	–	103	74,5	25	95	75	93	17,5	38,5	14	0,3	0,6

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.
2) Mass moment of inertia for rotating inner ring.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARN..-L



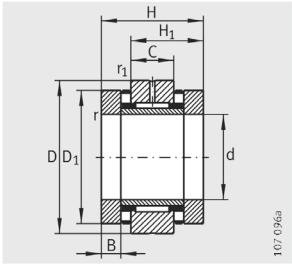
Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[2]	Axial runout[4]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/mrad	kg · cm^2	µm
53	38	64 000	141 000	22 600	36 000	6 000	1 500	1,3	2 300	400	1,98	1
53	38	64 000	141 000	22 600	36 000	6 000	1 500	1,3	2 300	400	2,27	1
63	45	80 000	199 000	24 300	41 500	4 900	1 400	1,6	3 000	800	3,88	1
63	45	80 000	199 000	24 300	41 500	4 900	1 400	1,6	3 000	800	4,51	1
69	52	107 000	265 000	26 000	47 000	4 400	1 300	2,1	3 300	1 100	6,53	1
69	50	107 000	265 000	26 000	47 000	4 400	1 300	2,1	3 300	1 100	7,43	1
74	60	105 000	265 000	27 500	53 000	4 000	1 250	2,3	3 500	1 300	8,47	1
74	58	105 000	265 000	27 500	53 000	4 000	1 250	2,3	3 500	1 300	10,4	1
79	65	117 000	315 000	38 000	74 000	3 700	1 200	2,5	3 800	1 800	13,3	1
79	58	117 000	315 000	38 000	74 000	3 700	1 200	2,5	3 800	1 800	15,5	1
91	70	154 000	405 000	40 000	82 000	3 300	1 150	3,5	4 000	2 100	23,7	1
91	68	154 000	405 000	40 000	82 000	3 300	1 150	3,5	4 000	2 100	28,1	1
96	75	172 000	480 000	42 000	90 000	3 100	1 100	3,8	4 600	2 900	29,8	1
96	73	172 000	480 000	42 000	90 000	3 100	1 100	3,8	4 600	2 900	35,3	1

Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately
	Designation		Tightening torque[3] M_A Nm	Axial preload force N	
ZARN2062-TV	**ZMA20/52**	**AM20**	38	18 448	–
ZARN2062-L-TV	**ZMA20/52**	**AM20**	38	18 448	40X52X7
ZARN2572-TV	**ZMA25/58**	**AM25**	55	20 790	–
ZARN2572-L-TV	**ZMA25/58**	**AM25**	55	20 790	48X62X8
ZARN3080-TV	**ZMA30/65**	**AM30**	75	24 287	–
ZARN3080-L-TV	**ZMA30/65**	**AM30**	75	24 287	52X68X8
ZARN3585-TV	**ZMA35/70**	**AM35**	100	27 480	–
ZARN3585-L-TV	**ZMA35/70**	**AM35**	100	27 480	60X75X8
ZARN4090-TV	**ZMA40/75**	**AM40**	120	29 834	–
ZARN4090-L-TV	**ZMA40/75**	**AM40**	120	29 834	60X80X8
ZARN45105-TV	**ZMA45/85**	**AM45**	150	33 549	–
ZARN45105-L-TV	**ZMA45/85**	**AM45**	150	33 549	70X90X10
ZARN50110-TV	**ZMA50/92**	**AM50**	180	37 109	–
ZARN50110-L-TV	**ZMA50/92**	**AM50**	180	37 109	75X95X10

Needle roller/ axial cylindrical roller bearings

Heavy series
Not for screw mounting

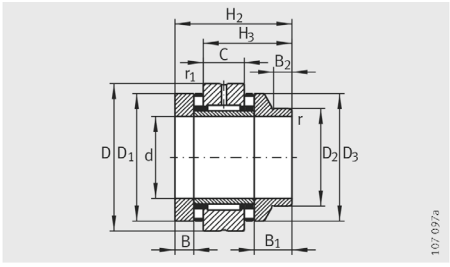


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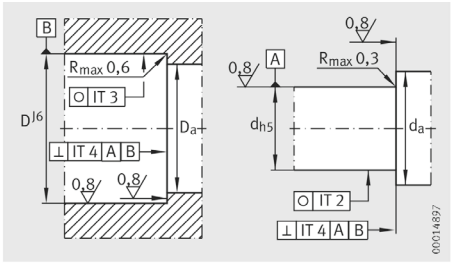
Dimension table (continued) · Dimensions in mm

Designation	Mass	Dimensions														
	m	d	D	H	H_1	H_2	H_3	C	D_1	D_2	D_3	B	B_1	B_2	r	r_1
	≈kg														min.	min.
ZARN55115-TV	3,5	**55**	115	82	53,5	–	–	25	100	–	–	17,5	–	–	0,3	0,6
ZARN55115-L-TV	4	**55**	115	–	–	103	74,5	25	100	80	98	17,5	38,5	14	0,3	0,6
ZARN60120-TV	3,7	**60**	120	82	53,5	–	–	25	105	–	–	17,5	–	–	0,3	0,6
ZARN60120-L-TV	4,85	**60**	120	–	–	103	74,5	25	105	90	105	17,5	38,5	16	0,3	0,6
ZARN65125-TV	4	**65**	125	82	53,5	–	–	25	110	–	–	17,5	–	–	0,3	0,6
ZARN65125-L-TV	4,6	**65**	125	–	–	103	74,5	25	110	90	108	17,5	38,5	16	0,3	0,6
ZARN70130-TV	4,1	**70**	130	82	53,5	–	–	25	115	–	–	17,5	–	–	0,3	0,6
ZARN70130-L-TV	4,85	**70**	130	–	–	103	74,5	25	115	100	115	17,5	38,5	16	0,3	0,6
ZARN75155-TV	7,9	**75**	155	100	65	–	–	30	135	–	–	21	–	–	0,3	1
ZARN75155-L-TV	9,1	**75**	155	–	–	125	90	30	135	115	135	21	46	16	0,3	1
ZARN90180-TV	11,8	**90**	180	110	72,5	–	–	35	160	–	–	22,5	–	–	0,3	1
ZARN90180-L-TV	13,2	**90**	180	–	–	135	97,5	35	160	130	158	22,5	47,5	16	0,3	1

1) If rotary shaft seals are used, the outside diameter of the sealing ring must be taken into consideration.
2) Mass moment of inertia for rotating inner ring.
3) Only valid in conjunction with INA precision locknuts.
4) The axial runout data for screw drive bearing arrangements are based on the rotating inner ring.



ZARN..-L



Design of adjacent construction

Mounting dimensions[1]		Basic load ratings				Limiting speeds		Bearing frictional torque	Rigidity axial	Tilting rigidity	Mass moment of inertia[2]	Axial runout[4]
		axial		radial								
D_a	d_a	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G oil	n_G grease	M_{RL}	c_{aL}	c_{kL}	M_m	
max.	min.	N	N	N	N	min^{-1}	min^{-1}	Nm	N/µm	Nm/ mrad	kg · cm^2	µm
101	85	177 000	500 000	44 000	98 000	2 900	1 000	4	4 900	3 600	36,1	1
101	78	177 000	500 000	44 000	98 000	2 900	1 000	4	4 900	3 600	43	1
106	90	187 000	550 000	44 500	92 000	2 700	950	4,2	5 300	4 300	43,8	1
106	88	187 000	550 000	44 500	92 000	2 700	950	4,2	5 300	4 300	54,5	1
111	97	172 000	500 000	54 000	104 000	2 600	900	4	4 800	4 000	51	1
111	88	172 000	500 000	54 000	104 000	2 600	900	4	4 800	4 000	60,1	1
116	100	201 000	630 000	56 000	119 000	2 400	800	4,8	5 800	6 000	62,2	1
116	98	201 000	630 000	56 000	119 000	2 400	800	4,8	5 800	6 000	77,3	1
136	113	290 000	890 000	72 000	132 000	2 100	700	8	6 600	8 500	149	2
136	110	290 000	890 000	72 000	132 000	2 100	700	8	6 600	8 500	188	2
161	130	325 000	1 030 000	98 000	210 000	1 800	700	10,5	7 700	14 500	312	2
161	125	325 000	1 030 000	98 000	210 000	1 800	700	10,5	7 700	14 500	372	2

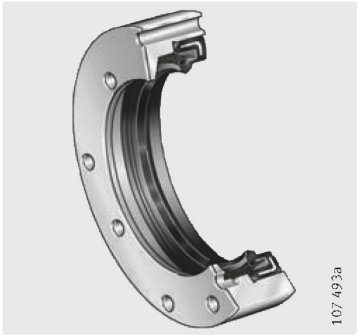
Designation	Recommended INA locknut; to be ordered separately				Rotary shaft seal to DIN 3 760; to be ordered separately
	Designation		Tightening torque[3] M_A Nm	Axial preload force N	
ZARN55115-TV	**ZMA55/98**	**AM55**	220	40 772	–
ZARN55115-L-TV	**ZMA55/98**	**AM55**	220	40 772	80X100X10
ZARN60120-TV	**ZMA60/98**	**AM60**	250	42 190	–
ZARN60120-L-TV	**ZMA60/98**	**AM60**	250	42 190	90X110X12
ZARN65125-TV	**ZMA65/105**	**AM65**	270	41 778	–
ZARN65125-L-TV	**ZMA65/105**	**AM65**	270	41 778	90X110X12
ZARN70130-TV	**ZMA70/110**	**AM70**	330	47 692	–
ZARN70130-L-TV	**ZMA70/110**	**AM70**	330	47 692	100X120X12
ZARN75155-TV	**ZMA75/125**	**AM75**	580	76 339	–
ZARN75155-L-TV	**ZMA75/125**	**AM75**	580	76 339	115X140X12
ZARN90180-TV	**ZMA90/155**	**AM90**	960	102 246	–
ZARN90180-L-TV	**ZMA90/155**	**AM90**	960	102 246	130X160X12

Product overview

Seal carrier assemblies
Precision locknuts

Seal carrier assemblies

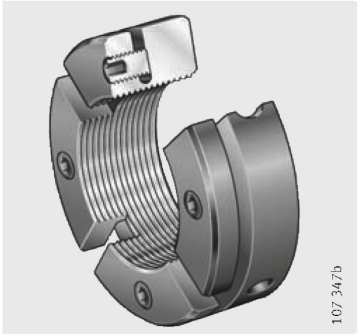
DRS



Precision locknuts

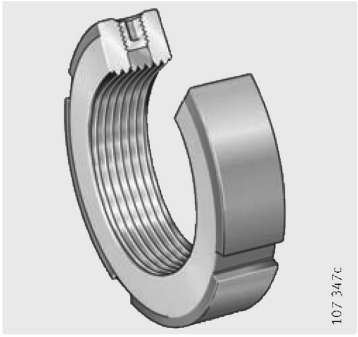
For axial locking

AM

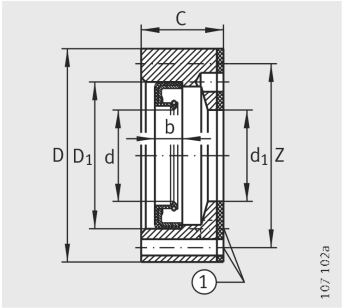


For radial locking

ZM, ZMA



Seal carrier assemblies



DRS[1)]
① 4 holes, offset by 90°

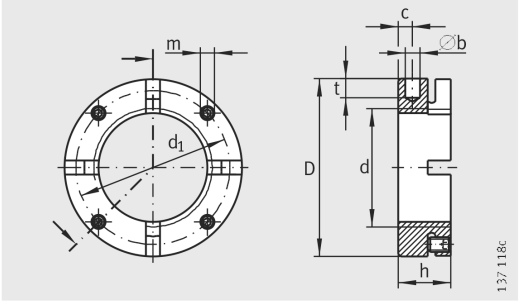
Dimension table · Dimensions in mm

Designation	Mass	Dimensions				Rotary shaft seal				Corresponding bearing in standard or L design
	m	D	C	d_1	Z[2)]	d	D_1	b	Socket head screws DIN 912	
	≈kg								4 each	Designation
DRS1560	0,16	60	14	35	52,4	35	45	7	M3X20	**ZARF1560-TV**
DRS1762	0,18	62	15,5	38	54,4	38	47	7	M3X25	**ZARF1762-TV**
DRS2068	0,11	68	17	42	60,4	42	55	8	M3X25	**ZARF2068-TV**
DRS2080	0,2	80	22	52	73,4	52	68	8	M3X30	**ZARF2080-TV**
DRS2575	0,16	75	17	47	67,4	47	62	6	M3X25	**ZARF2575-TV**
DRS2590	0,3	90	22	62	81	62	75	10	M3X30	**ZARF2590-TV**
DRS3080	0,15	80	17	52	73,4	52	68	8	M3X25	**ZARF3080-TV**
DRS30105	0,35	105	25	68	95	68	85	10	M4X35	**ZARF30105-TV**
DRS3590	0,15	90	19	60	80	60	72	8	M4X25	**ZARF3590-TV**
DRS35110	0,3	110	25	73	101	73	95	10	M3X30	**ZARF35110-TV**
DRS40100	0,25	100	19	65	90	65	80	8	M4X30	**ZARF40100-TV**
DRS40115	0,5	115	27,5	78	106	78	100	10	M3X35	**ZARF40115-TV**
DRS45105	0,3	105	20	70	95	70	85	8	M4X30	**ZARF45105-TV**
DRS45130	0,7	130	31	90	120	90	110	12	M4X40	**ZARF45130-TV**
DRS50115	0,2	115	20	78	106	78	100	10	M3X30	**ZARF50115-TV**
DRS50140	0,8	140	30	95	127,5	95	115	13	M5X40	**ZARF50140-TV**
DRS55145	0,9	145	30	100	132,5	100	120	12	M5X40	**ZARF55145-TV**
DRS60150	0,9	150	30	105	137,5	105	125	12	M5X40	**ZARF60150-TV**
DRS65155	1	155	30	110	142,5	110	130	12	M5X40	**ZARF65155-TV**
DRS70160	1	160	30	115	147,5	115	135	13	M5X40	**ZARF70160-TV**
DRS75185	1,8	185	36	135	172,5	135	160	15	M5X50	**ZARF75185-TV**
DRS90210	2,7	210	38	160	194	160	180	15	M5X50	**ZARF90210-TV**

1) The seal carrier assembly is supplied as a kit comprising:
– seal carrier
– rotary shaft seal
– flange seal
– socket head screws.

2) Four holes offset by 90°.

Precision locknuts



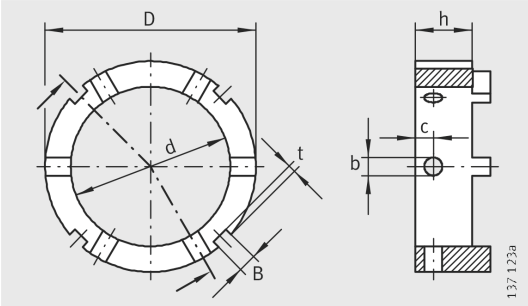
AM15 to AM40 with 4 segments
AM45 to AM90 with 6 segments
AM100 to AM130 with 8 segments

Dimension table · Dimensions in mm

Designation	Nut thread	Mass	Dimensions							Grub screw	Locknut[1]			
										Tightening torque	Axial rupture load	Breakaway torque	Reference tightening torque	Mass moment of inertia
		m	D	h	b	t	d_1	c	m	M_A	F_{aB}	M_L at	M_{AL}	M_M
	d	≈kg			H11					Nm	N	Nm	Nm	kg · cm²
AM15	**M15X1**	0,06	30	18	4	5	24	5	M5	3	100 000	20	10	0,09
AM17	**M17X1**	0,07	32	18	4	5	26	5	M5	3	120 000	25	15	0,11
AM20	**M20X1**	0,13	38	18	4	6	31	5	M6	5	145 000	45	18	0,23
AM25	**M25X1,5**	0,16	45	20	5	6	38	6	M6	5	205 000	60	25	0,49
AM30	**M30X1,5**	0,20	52	20	5	7	45	6	M6	5	250 000	70	32	0,86
AM30/65	**M30X1,5**	0,50	65	30	6	8	45	6	M6	5	400 000	70	32	2,8
AM35/58	**M35X1,5**	0,23	58	20	5	7	51	6	M6	5	280 000	90	40	1,3
AM35	**M35X1,5**	0,33	65	22	6	8	58	6	M6	5	330 000	100	40	2,4
AM40	**M40X1,5**	0,30	65	22	6	8	58	6	M6	5	350 000	120	55	2,3
AM40/85	**M40X1,5**	0,75	85	32	6	8	58	6	M6	5	570 000	120	55	7,6
AM45	**M45X1,5**	0,34	70	22	6	8	63	6	M6	5	360 000	220	65	2,9
AM50	**M50X1,5**	0,43	75	25	6	8	68	8	M6	5	450 000	280	85	4,3
AM55	**M55X2**	0,60	85	26	6	8	75	8	M8	15	520 000	320	95	7,7
AM60	**M60X2**	0,65	90	26	6	8	80	8	M8	15	550 000	365	100	9,4
AM65	**M65X2**	0,83	100	26	8	10	88	8	M8	15	560 000	400	120	14,6
AM70	**M70X2**	0,79	100	28	8	10	90	9	M8	15	650 000	450	130	14,7
AM75	**M75X2**	1,23	115	30	8	10	102	10	M10	20	750 000	610	150	29
AM80	**M80X2**	0,93	110	30	8	10	98	10	M10	20	670 000	770	160	21,3
AM85	**M85X2**	0,97	115	30	8	10	102	10	M10	20	690 000	930	180	24,8
AM90	**M90X2**	1,53	130	32	8	10	118	13	M10	20	900 000	1 100	200	48
AM100	**M100X2**	1,12	130	30	8	10	118	10	M10	20	740 000	1 200	250	38
AM110	**M110X2**	1,22	140	30	8	10	128	10	M10	20	770 000	1 300	250	48
AM120	**M120X2**	1,56	155	30	8	10	142	10	M10	20	880 000	1 450	250	75
AM130	**M130X2**	1,67	165	30	8	10	152	10	M10	20	900 000	1 600	250	92

[1] Caution!
If precision locknuts AM are fitted using the adapter AMS,
a maximum tightening torque of twice the value given in the dimension table for the bearing is permissible.

Adapters

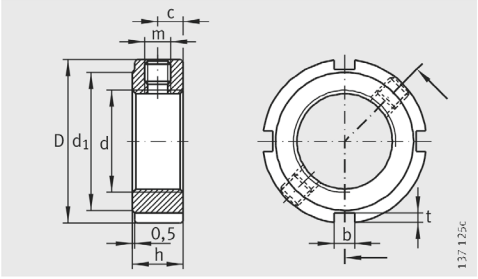


AMS

Dimension table · Dimensions in mm

Designation	Mass	Dimensions							For precision locknuts
	m ≈kg	D	h	d	b H11	c	B	t	
AMS20	0,047	32	14	22	4	5	4	2	**AM15, AM17, AM20**
AMS30	0,093	45	15	35	5	5	5	2	**AM25, AM30, AM35/58, AM30/65**
AMS40	0,217	65	16	45	6	6	6	2,5	**AM35, AM40**
AMS50	0,245	70	19	53	6	6	6	2,5	**AM45, AM50**
AMS60	0,37	85	20	65	6	6	7	3	**AM55, AM60**
AMS70	0,615	98	25	75	8	10	8	3,5	**AM65, AM70**
AMS80	0,755	110	25	85	8	10	8	3,5	**AM75, AM80, AM85**
AMS90	1,215	130	25	95	8	10	10	4	**AM90**
AMS110	0,74	130	25	110	8	10	10	4	**AM100, AM110**
AMS130	1,485	155	25	130	8	10	12	5	**AM120, AM130**

Precision locknuts



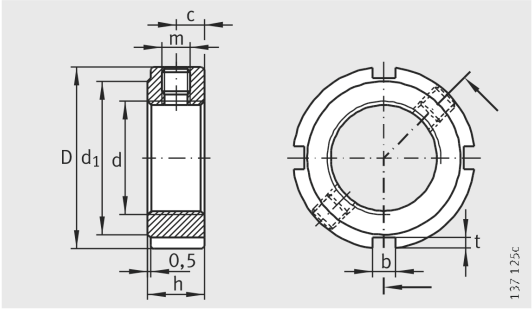
ZM, ZMA

Dimension table · Dimensions in mm

Designation	Thread	Mass	Dimensions							Grub screw	Locknut			
										Tightening torque	Axial rupture load	Breakaway torque	Reference tightening torque	Mass moment of inertia
		m	D	h	b	t	d_1	c	m	M_A	F_{aB}	M_L at	M_{AL}	M_M
		≈kg								Nm	N	Nm	Nm	kg · cm^2
ZM06	**M6X0,5**	0,01	16	8	3	2	11	4	M4	1	17 000	20	2	0,004
ZM08[1]	**M8X0,75**	0,01	16	8	3	2	11	4	M4	1	23 000	25	4	0,004
ZM10[1]	**M10X1**	0,01	18	8	3	2	14	4	M4	1	31 000	30	6	0,006
ZM12	**M12X1**	0,015	22	8	3	2	18	4	M4	1	38 000	30	8	0,013
ZM15	**M15X1**	0,018	25	8	3	2	21	4	M4	1	50 000	30	10	0,021
ZMA15/33	**M15X1**	0,08	33	16	4	2	28	8	M5	3	106 000	30	10	0,14
ZM17	**M17X1**	0,028	28	10	4	2	23	5	M5	3	57 000	30	15	0,401
ZM20	**M20X1**	0,035	32	10	4	2	27	5	M5	3	69 000	40	18	0,068
ZMA20/38	**M20X1**	0,12	38	20	5	2	33	10	M5	3	174 000	40	18	0,297
ZMA20/52	**M20X1**	0,32	52	25	5	2	47	12,5	M5	3	218 000	40	18	1,38
ZM25	**M25X1,5**	0,055	38	12	5	2	33	6	M6	5	90 000	60	25	0,157
ZMA25/45	**M25X1,5**	0,16	45	20	5	2	40	10	M6	5	211 000	60	25	0,572
ZMA25/58	**M25X1,5**	0,43	58	28	6	2,5	52	14	M6	5	305 000	60	25	2,36
ZM30	**M30X1,5**	0,075	45	12	5	2	40	6	M6	5	112 000	70	32	0,304
ZMA30/52	**M30X1,5**	0,22	52	22	5	2	47	11	M6	5	270 000	70	32	1,1
ZMA30/65	**M30X1,5**	0,55	65	30	6	2,5	59	15	M6	5	390 000	70	32	3,94
ZM35	**M35X1,5**	0,099	52	12	5	2	47	6	M6	5	134 000	80	40	0,537
ZMA35/58	**M35X1,5**	0,26	58	22	6	2,5	52	11	M6	5	300 000	80	40	1,66
ZMA35/70	**M35X1,5**	0,61	70	30	6	2,5	64	15	M6	5	460 000	80	40	5,2
ZM40	**M40X1,5**	0,14	58	14	6	2,5	52	7	M6	5	157 000	95	55	0,945
ZMA40/62	**M40X1,5**	0,27	62	22	6	2,5	56	11	M8	15	310 000	95	55	2,07
ZMA40/75	**M40X1,5**	0,67	75	30	6	2,5	69	15	M8	15	520 000	95	55	6,72
ZM45	**M45X1,5**	0,17	65	14	6	2,5	59	7	M6	5	181 000	110	65	1,48
ZMA45/68	**M45X1,5**	0,35	68	24	6	2,5	62	12	M8	15	360 000	110	65	3,2
ZMA45/85	**M45X1,5**	0,92	85	32	7	3	78	16	M8	15	630 000	110	65	11,9
ZM50	**M50X1,5**	0,19	70	14	6	2,5	64	7	M6	5	205 000	130	85	1,92
ZMA50/75	**M50X1,5**	0,43	75	25	6	2,5	68	12,5	M8	15	415 000	130	85	4,89
ZMA50/92	**M50X1,5**	1,06	92	32	8	3,5	84	16	M8	15	680 000	130	85	16,1
ZM55	**M55X2**	0,23	75	16	7	3	68	8	M6	5	229 000	150	95	2,77
ZMA55/98	**M55X2**	1,17	98	32	8	3,5	90	16	M8	15	620 000	150	95	20,5

[1] When clamped, the grub screw protrudes by approx. 0,5 mm.

Precision locknuts



ZM, ZMA

Dimension table (continued) · Dimensions in mm

Designation	Thread	Mass	Dimensions							Grub screw	Locknut			
										Tightening torque	Axial rupture load	Breakaway torque	Reference tightening torque	Mass moment of inertia
		m	D	h	b	t	d_1	c	m	M_A	F_{aB}	M_L at	M_{AL}	M_M
		≈kg								Nm	N	Nm	Nm	kg · cm^2
ZM60	**M60X2**	0,25	80	16	7	3	73	8	M6	5	255 000	180	100	3,45
ZMA60/98	**M60X2**	1,07	98	32	8	3,5	90	16	M8	15	680 000	180	100	19,6
ZM65	**M65X2**	0,27	85	16	7	3	78	8	M6	5	280 000	200	120	4,24
ZMA65/105	**M65X2**	1,21	105	32	8	3,5	97	16	M8	15	750 000	200	120	25,6
ZM70	**M70X2**	0,36	92	18	8	3,5	85	9	M8	15	305 000	220	130	6,61
ZMA70/110	**M70X2**	1,4	110	35	8	3,5	102	17,5	M8	15	810 000	220	130	33
ZM75	**M75X2**	0,4	98	18	8	3,5	90	9	M8	15	331 000	260	150	8,41
ZMA75/125	**M75X2**	2,11	125	38	8	3,5	117	19	M8	15	880 000	260	150	62,2
ZM80	**M80X2**	0,46	105	18	8	3,5	95	9	M8	15	355 000	285	160	11,2
ZMA80/120	**M80X2**	1,33	120	35	8	4	105	17,5	M8	15	810 000	285	160	44,6
ZM85	**M85X2**	0,49	110	18	8	3,5	102	9	M8	15	385 000	320	190	13,1
ZM90	**M90X2**	0,7	120	20	10	4	108	10	M8	15	410 000	360	200	21,8
ZMA90/130	**M90X2**	2,01	130	38	10	4	120	19	M8	15	910 000	360	200	64,1
ZMA90/155	**M90X2**	3,36	155	38	10	4	146	19	M8	15	1 080 000	360	200	150
ZM100	**M100X2**	0,77	130	20	10	4	120	10	M8	15	465 000	425	250	28,6
ZMA100/140	**M100X2**	2,23	140	38	12	5	128	19	M10	20	940 000	425	250	82,8
ZM105	**M105X2**	1,05	140	22	12	5	126	11	M10	20	495 000	475	300	44,5
ZM110	**M110X2**	1,09	145	22	12	5	133	11	M10	20	520 000	510	350	50,1
ZM115	**M115X2**	1,13	150	22	12	5	137	11	M10	20	550 000	550	400	56,2
ZM120	**M120X2**	1,28	155	24	12	5	138	12	M10	20	580 000	600	450	68,4
ZM125	**M125X2**	1,33	160	24	12	5	148	12	M10	20	610 000	640	500	76,1
ZM130	**M130X2**	1,36	165	24	12	5	149	12	M10	20	630 000	700	550	84,3
ZM140	**M140X2**	1,85	180	26	14	6	160	13	M12	38	690 000	800	600	133
ZM150	**M150X2**	2,24	195	26	14	6	171	13	M12	38	750 000	900	650	188

endo

INA FAG



High Precision Bearings for Combined Loads

Axial/radial bearings
Axial angular contact ball bearings
Axial/radial bearings with angular measuring system

SCHAEFFLER

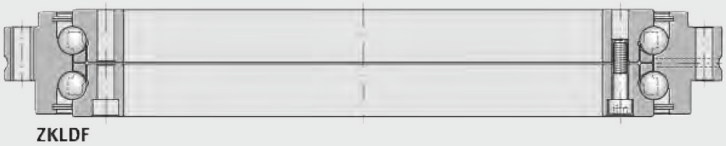


YRT



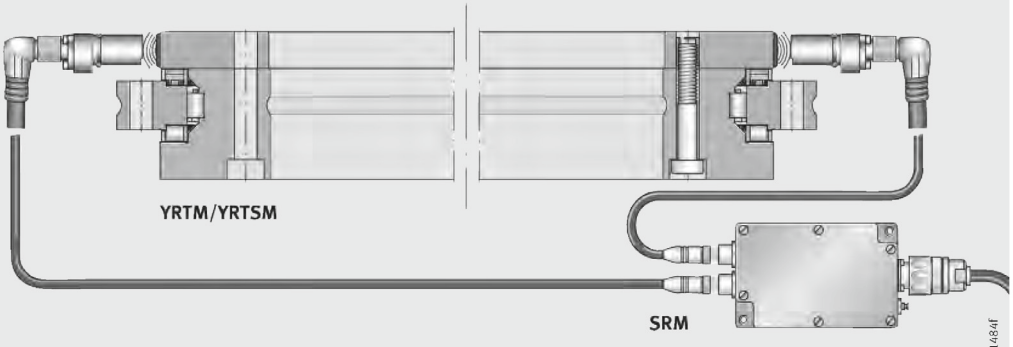
YRTS

0001831EC



ZKLDF

1075185



YRTM/YRTSM

SRM

0001484f

Product overview

Axial/radial bearings
Axial angular contact ball bearings

Axial/radial bearings

YRT



For higher speeds

YRTS



Axial angular contact ball bearings

ZKLDF



NOTES:

Accuracy

The dimensional tolerances are derived from tolerance class P5. The diameter tolerances stated are mean values in accordance with ISO 1132.

The geometrical tolerances correspond to P4 in accordance with DIN 620, see table.

The bearing bore in series YRT and YRTS may be slightly conical in the delivered condition. This is typical of the bearing design and is a result of the radial bearing preload forces. The bearing will regain its ideal geometry when fitted.

Dimensional tolerances and mounting dimensions for axial/radial bearing YRT



Dimensional tolerances[1]				Mounting dimensions					
Bore		Outside diameter		Normal		Restricted[2]	Normal		Restricted[2]
d	Δ_{ds}	D	Δ_{Ds}	H_1	Δ_{H1s}	Δ_{H1s}	H_2	Δ_{H2s}	Δ_{H2s}
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
50	–0,008	126	–0,011	20	±0,025	–	10	±0,02	–
80	–0,009	146	–0,011	23,35	±0,025	–	11,65	±0,02	–
100	–0,01	185	–0,015	25	±0,025	–	13	±0,02	–
120	–0,01	210	–0,015	26	±0,025	–	14	±0,02	–
150	–0,013	240	–0,015	26	±0,03	–	14	±0,02	–
180	–0,013	280	–0,018	29	±0,03	–	14	±0,025	–
200	–0,015	300	–0,018	30	±0,03	–	15	±0,025	–
260	–0,018	385	–0,02	36,5	±0,04	–	18,5	±0,025	–
325	–0,023	450	–0,023	40	±0,05	–	20	±0,025	–
395	–0,023	525	–0,028	42,5	±0,05	–	22,5	±0,025	–
460	–0,023	600	–0,028	46	±0,06	–	24	±0,03	–
580	–0,025	750	–0,035	60	±0,25	±0,075	30	±0,25	±0,03
650	–0,038	870	–0,05	78	±0,25	±0,1	44	±0,25	±0,03
850	–0,05	1 095	–0,063	80,5	±0,3	±0,12	43,5	±0,3	±0,03
950	–0,05	1 200	–0,063	86	±0,3	±0,12	46	±0,3	±0,03
1 030	–0,063	1 300	–0,08	92,5	±0,3	±0,15	52,5	±0,3	±0,03



1) The diameter tolerances stated are mean values (DIN 620).

2) Special design with suffix, see table, page 8.

Dimensional tolerances and mounting dimensions for axial/radial bearing YRTS

Dimensional tolerances[1]				Mounting dimensions		
Bore		Outside diameter				
d	Δ_{ds}	D	Δ_{Ds}	H_1	Δ_{H1s}	H_2
mm	mm	mm	mm	mm	mm	mm
200	–0,015	300	–0,018	30	+0,04 –0,06	15
260	–0,018	385	–0,02	36,5	+0,05 –0,07	18,5
325	–0,023	450	–0,023	40	+0,06 –0,07	20
395	–0,023	525	–0,028	42,5	+0,06 –0,07	22,5
460	–0,023	600	–0,028	46	+0,07 –0,08	24

1) The diameter tolerances stated are mean values (DIN 620).

Axial/radial bearings
Axial angular contact ball bearings

Dimensional tolerances and mounting dimensions for axial/radial bearing ZKLDF

Dimensional tolerances[1]				Mounting dimensions	
Bore		Outside diameter			
d	Δ_{ds}	D	Δ_{Ds}	H_1	Δ_{H1s}
mm	mm	mm	mm	mm	mm
100	–0,01	185	–0,015	25	±0,175
120	–0,01	210	–0,015	26	±0,175
150	–0,013	240	–0,015	26	±0,175
180	–0,013	280	–0,018	29	±0,175
200	–0,015	300	–0,018	30	±0,175
260	–0,018	385	–0,02	36,5	±0,2
325	–0,023	450	–0,023	40	±0,2
395	–0,023	525	–0,028	42,5	±0,2
460	–0,023	600	–0,028	46	±0,225

1) The diameter tolerances stated are mean values (DIN 620).

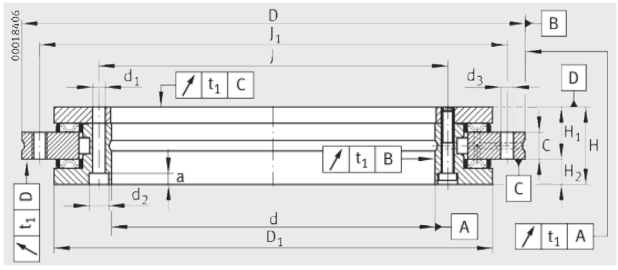
Axial and radial runout for axial/radial bearings YRT, YRTS and ZKLDF

Bore d	Axial and radial runout[1] t_1				
	YRT		YRTS		ZKLDF
	Normal[2]	Restricted[2]	Normal[2]	Restricted[3]	Normal[2]
mm	µm		µm		µm
50	2	1	–	–	–
80	3	1,5	–	–	–
100	3	1,5	–	–	3
120	3	1,5	–	–	3
150	3	1,5	–	–	3
180	4	2	–	–	4
200	4	2	4	2	4
260	6	3	6	3	6
325	6	3	6	3	6
395	6	3	6	3	6
460	6	3	6	3	6
580	10	5[4]	–	–	–
650	10	5[4]	–	–	–
850	12	6[4]	–	–	–
950	12	6[4]	–	–	–
1 030	12	6[4]	–	–	–

1) Measured on fitted bearing with ideal adjacent construction.
2) For rotating inner and outer ring.
3) For rotating inner ring only.
4) Available by agreement.

Axial/radial bearings

Double direction



YRT

Dimension table · Dimensions in mm

Designation	Mass	Dimensions									Fixing holes					
											Inner ring				Outer ring	
	m	d	D	H	H_1	H_2	C	D_1	J	J_1	d_1	d_2	a	Quantity[4]	d_3	Quantity[4]
	≈kg							max.								
YRT50	1,6	**50**	126	30	20	10	10	105	63	116	5,6	–	–	10	5,6	12
YRT80-TV[5)7)]	2,4	**80**	146	35	23,35	11,65	12	130	92	138	5,6	10	4	10	4,6	12
YRT100[5)]	4,1	**100**	185	38	25	13	12	161	112	170	5,6	10	5,4	16	5,6	15
YRT120	5,3	**120**	210	40	26	14	12	185	135	195	7	11	6,2	22	7	21
YRT150	6,2	**150**	240	40	26	14	12	214	165	225	7	11	6,2	34	7	33
YRT180	7,7	**180**	280	43	29	14	15	244	194	260	7	11	6,2	46	7	45
YRT200	9,7	**200**	300	45	30	15	15	274	215	285	7	11	6,2	46	7	45
YRT260	18,3	**260**	385	55	36,5	18,5	18	345	280	365	9,3	15	8,2	34	9,3	33

1) Including retaining screws or threaded extraction holes.

2) Tightening torque for screws to DIN 912, grade 10.9.

3) Rigidity values taking account of the rolling element set, the deformation of the bearing rings and the screw connections. For explanations, see page 30.

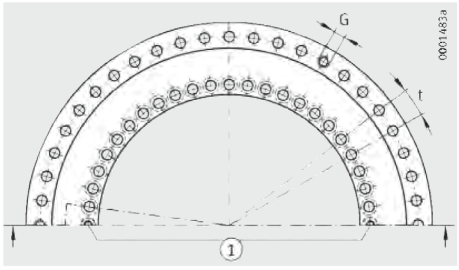
4) Attention! For fixing holes in the adjacent construction. Observe the pitch of the bearing holes.

5) Screw counterbores in the L-section ring open to the bearing bore. The bearing inside diameter is unsupported in the area ②.

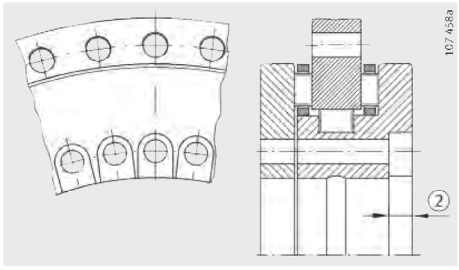
6) For high operating durations or continuous operation, please contact us.

7) Cages made from glass fibre reinforced polyamide 66.

8) Measurement speed n_{const} = 5 min^{-1}.



Hole pattern
(1) Two retaining screws



For YRT80-TV and YRT100:
(2) Screw counterbores open[5]

Pitch t[1] / QuantityXt	Threaded extraction hole G	Threaded extraction hole Quantity	Screw tightening torque M_A[2] Nm	Basic load ratings axial dyn. C_a N	Basic load ratings axial stat. C_{0a} N	Basic load ratings radial dyn. C_r N	Basic load ratings radial stat. C_{0r} N	Limiting speed[6] n_G min^{-1}	Bearing frictional torque[8] M_R Nm
12X30°	–	–	8,5	56 000	280 000	28 500	49 500	440	2,5
12X30°	–	–	8,5/4,5	38 000	158 000	44 000	98 000	350	3
18X20°	M5	3	8,5	73 000	370 000	52 000	108 000	280	3
24X15°	M8	3	14	80 000	445 000	70 000	148 000	230	7
36X10°	M8	3	14	85 000	510 000	77 000	179 000	210	13
48X7,5°	M8	3	14	92 000	580 000	83 000	209 000	190	14
48X7,5°	M8	3	14	98 000	650 000	89 000	236 000	170	15
36X10°	M12	3	34	109 000	810 000	102 000	310 000	130	25

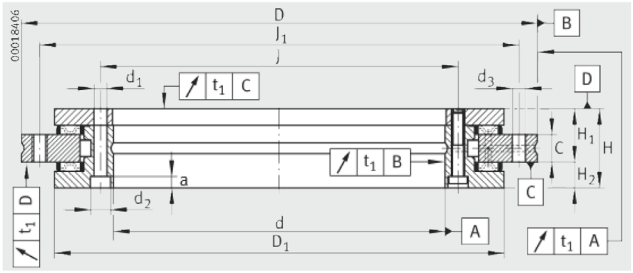




Designation	Rigidity of bearing position[3] axial c_{aL} kN/µm	radial c_{rL} kN/µm	Tilting rigidity c_{kL} kNm/mrad	Rigidity of rolling element set axial c_{aL} kN/µm	radial c_{rL} kN/µm	Tilting rigidity c_{kL} kNm/mrad
YRT50	1,3	1,1	1,25	6,2	1,5	5,9
YRT80-TV[5)7)]	1,6	1,8	2,5	4	2,6	6,3
YRT100[5)]	2	2	5	6,8	2,4	15
YRT120	2,1	2,2	7	7,8	3,8	24
YRT150	2,3	2,6	11	8,7	4,6	38
YRT180	2,6	3	17	9,9	5,3	57
YRT200	3	3,5	23	11,2	6,2	80
YRT260	3,5	4,5	45	13,7	8,1	155

Axial/radial bearings

Double direction



YRT

Dimension table (continued) · Dimensions in mm

Designation	Mass	Dimensions									Fixing holes					
											Inner ring				Outer ring	
	m	d	D	H	H_1	H_2	C	D_1	J	J_1	d_1	d_2	a	Quantity[4]	d_3	Quantity[4]
	≈kg							max.								
YRT325[5]	25	**325**	450	60	40	20	20	415	342	430	9,3	15	8,2	34	9,3	33
YRT395	33	**395**	525	65	42,5	22,5	20	486	415	505	9,3	15	8,2	46	9,3	45
YRT460	45	**460**	600	70	46	24	22	560	482	580	9,3	15	8,2	46	9,3	45
YRT580	89	**580**	750	90	60	30	30	700	610	720	11,4	18	11	46	11,4	42
YRT650	170	**650**	870	122	78	44	34	800	680	830	14	20	13	46	14	42
YRT850	253	**850**	1 095	124	80,5	43,5	37	1 018	890	1 055	18	26	17	58	18	54
YRT950[7]	312	950	1 200	132	86	46	40	1 130	990	1 160	18	26	17	58	18	54
YRT1030	375	**1 030**	1 300	145	92,5	–	40	1 215	1 075	1 255	18	26	17	70	18	66

Dimensions d > 1 030 mm available by agreement.

1) Including retaining screws or threaded extraction holes.

2) Tightening torque for screws to DIN 912, grade 10.9.

3) Rigidity values taking account of the rolling element set, the deformation of the bearing rings and the screw connections. For explanations, see page 30.

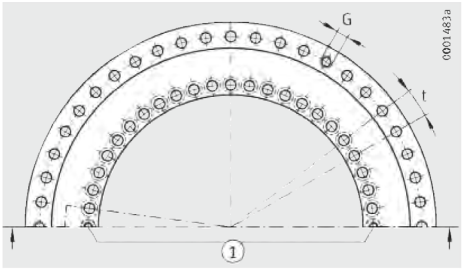
4) Attention! For fixing holes in the adjacent construction. Observe the pitch of the bearing holes.

5) Screw counterbores in the L-section ring open to the bearing bore. The bearing inside diameter is unsupported in the area ②.

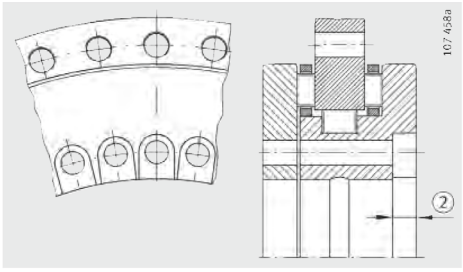
6) For high operating durations or continuous operation, please contact us.

7) Not to be used for new designs, available by agreement only.

8) Measurement speed n_{const} = 5 min^{-1}.



Hole pattern
① Two retaining screws



For YRT325:
② Screw counterbores open[5)]



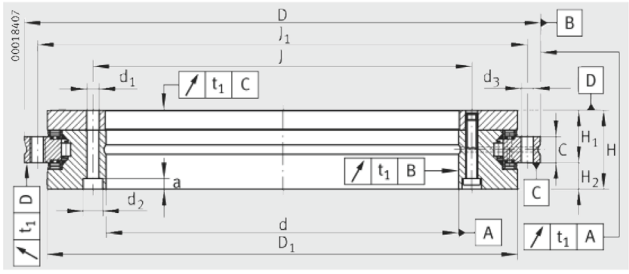
Pitch t[1)] / QuantityXt	Threaded extraction hole		Screw tightening torque	Basic load ratings				Limiting speed[6)]	Bearing frictional torque[8)]
				axial		radial			
	G	Quantity	M_A[2)]	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G	M_R
			Nm	N	N	N	N	min^{-1}	Nm
36X10°	M12	3	34	186 000	1 710 000	134 000	415 000	110	48
48X7,5°	M12	3	34	202 000	2 010 000	133 000	435 000	90	55
48X7,5°	M12	3	34	217 000	2 300 000	187 000	650 000	80	70
48X7,5°	M12	6	68	390 000	3 600 000	211 000	820 000	60	140
48X7,5°	M12	6	116	495 000	5 200 000	415 000	1 500 000	55	200
60X6°	M16	6	284	560 000	6 600 000	475 000	1 970 000	40	300
60X6°	M16	6	284	1 040 000	10 300 000	600 000	2 450 000	40	600
72X5°	M16	6	284	1 080 000	11 000 000	620 000	2 650 000	35	800



Designation	Rigidity					
	of bearing position[3)]			of rolling element set		
	axial	radial	Tilting rigidity	axial	radial	Tilting rigidity
	c_{aL} kN/µm	c_{rL} kN/µm	c_{kL} kNm/mrad	c_{aL} kN/µm	c_{rL} kN/µm	c_{kL} kNm/mrad
YRT325[5)]	4,3	5	80	26,1	9,4	422
YRT395	4,9	6	130	30,3	11,3	684
YRT460	5,7	7	200	33,5	13,9	1 049
YRT580	6,9	9	380	42,1	17,4	2 062
YRT650	7,6	10	550	58,3	13,7	3 669
YRT850	9,3	13	1 100	73,4	20,2	7 587
YRT950[7)]	10,4	14	1 500	74,5	16,4	9 692
YRT1030	11,2	16	1 900	79,7	18,8	12 025

Axial/radial bearings

Double direction



YRTS

Dimension table · Dimensions in mm

Designation	Mass	Dimensions									Fixing holes					
											Inner ring				Outer ring	
	m	d	D	H	H_1	H_2	C	D_1	J	J_1	d_1	d_2	a	Quantity[3]	d_3	Quantity[3]
	≈kg															
YRTS200	9,7	**200**	300	45	30	15	15	274	215	285	7	11	6,2	46	7	45
YRTS260	18,3	**260**	385	55	36,5	18,5	18	345	280	365	9,3	15	8,2	34	9,3	33
YRTS325[5]	25	**325**	450	60	40	20	20	415	342	430	9,3	15	8,2[5]	34	9,3	33
YRTS395	33	**395**	525	65	42,5	22,5	20	486	415	505	9,3	15	8,2	46	9,3	45
YRTS460	45	**460**	600	70	46	24	22	560	482	580	9,3	15	8,2	46	9,3	45

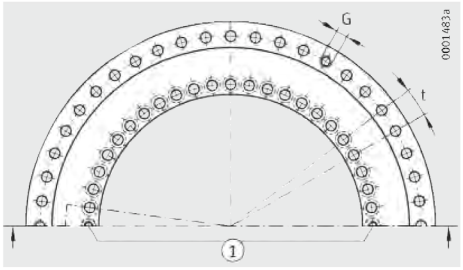
1) Including retaining screws or threaded extraction holes.

2) For screws to DIN 912, grade 10.9.

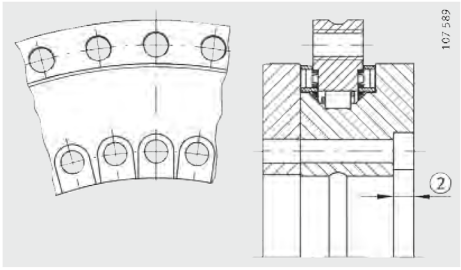
3) Attention!
For fixing holes in the adjacent construction.
Observe the pitch of the bearing holes.

4) Rigidity values taking account of the rolling element set,
the deformation of the bearing rings and the screw connections.
For explanations, see page 30.

5) Screw counterbores in the L-section ring open to the bearing bore.
The bearing inside diameter is unsupported in the area ②.



Hole pattern
① Two retaining screws



For YRTS325:
② Screw counterbores open[5)]



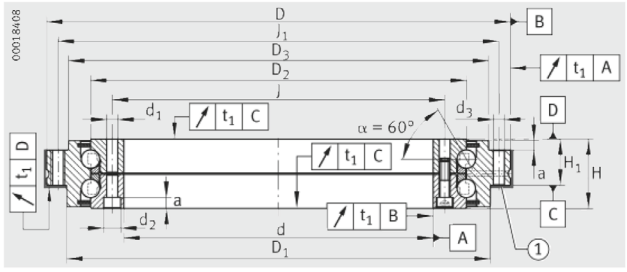
Pitch $t^{1)}$	Threaded extraction hole		Screw tightening torque	Basic load ratings				Limiting speed	Mass moment of inertia for rotating	
				axial		radial			Inner ring IR	Outer ring AU
QuantityXt	G	Quantity	M_A [2)]	dyn. C_a	stat. C_{0a}	dyn. C_r	stat. C_{0r}	n_G	M_M	
			Nm	N	N	N	N	min^{-1}	$kg \cdot cm^2$	$kg \cdot cm^2$
48X7,5°	M8	3	14	155 000	840 000	94 000	226 000	1 160	667	435
36X10°	M12	3	34	173 000	1 050 000	110 000	305 000	910	2 074	1 422
36X10°	M12	3	34	191 000	1 260 000	109 000	320 000	760	4 506	2 489
48X7,5°	M12	3	34	214 000	1 540 000	121 000	390 000	650	8 352	4 254
48X7,5°	M12	3	34	221 000	1 690 000	168 000	570 000	560	15 738	7 379



Designation	Rigidity					
	of bearing position[4)]			of rolling element set		
	axial	radial	Tilting rigidity	axial	radial	Tilting rigidity
	c_{aL}	c_{rL}	c_{kL}	c_{aL}	c_{rL}	c_{kL}
	kN/µm	kN/µm	kNm/mrad	kN/µm	kN/µm	kNm/mrad
YRTS200	4	1,2	29	13,6	3,9	101
YRTS260	5,4	1,6	67	16,8	5,8	201
YRTS325[5)]	6,6	1,8	115	19,9	7,1	350
YRTS395	7,8	2	195	23,4	8,7	582
YRTS460	8,9	1,8	280	25,4	9,5	843

Axial angular contact ball bearings

Double direction



ZKLDF

① Contact surface/centring diameter

Dimension table · Dimensions in mm

Designation	Mass	Dimensions										Inner ring		
	m	d	D	H	H_1	D_1	D_2	D_3	J	J_1	a	Fixing screws		
	≈kg											d_1	d_2	Quantity[4]
ZKLDF100[5]	3,8	**100**	185	38	25	161	136	158	112	170	5,4	5,6	10	16
ZKLDF120	4,8	**120**	210	40	26	185	159	181	135	195	6,2	7	11	22
ZKLDF150	5,6	**150**	240	40	26	214	188	211	165	225	6,2	7	11	34
ZKLDF180	7,7	**180**	280	43	29	244	219	246	194	260	6,2	7	11	46
ZKLDF200	10	**200**	300	45	30	274	243	271	215	285	6,2	7	11	46
ZKLDF260	19	**260**	385	55	36,5	345	313	348	280	365	8,2	9,3	15	34
ZKLDF325[5]	25	**325**	450	60	40	415	380	413	342	430	8,2	9,3	15	34
ZKLDF395	33	**395**	525	65	42,5	486	450	488	415	505	8,2	9,3	15	46
ZKLDF460	47	**460**	600	70	46	560	520	563	482	580	8,2	9,3	15	46

Dimensions d > 460 mm available by agreement.

1) Including retaining screws or threaded extraction holes.

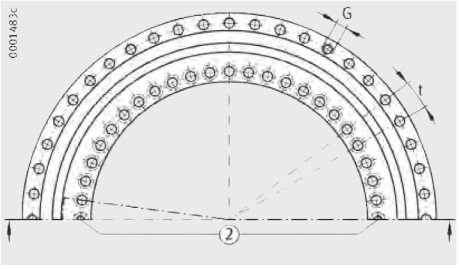
2) Tightening torque for screws to DIN 912, grade 10.9.

3) Rigidity values taking account of the rolling element set, the deformation of the bearing rings and the screw connections. For explanations, see page 30.

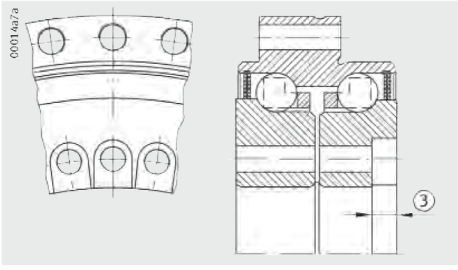
4) Attention! For fixing holes in the adjacent construction. Note the pitch of the bearing holes.

5) Screw counterbores in the L-section ring open to the bearing bore. The bearing inside diameter is unsupported in the area ③.

6) The limiting speeds increased by a factor of two are vaild for bearings of the current generation with the internal suffix -B.



Hole pattern
② Two retaining screws



For ZKLDF100, ZKLDF325:
③ Screw counterbores open[5)]



Outer ring				Pitch $t^{1)}$	Screw tightening torque	Basic load ratings		Limiting speed[6)]
Fixing screws		Threaded extraction hole				axial		
d_3	Quantity[4)]	G	Quantity	QuantityXt	M_A[2)] Nm	dyn. C_a N	stat. C_{0a} N	n_G min^{-1}
5,6	15	M5	3	18X20°	8,5	71 000	265 000	5 000
7	21	M8	3	24X15°	14	76 000	315 000	4 300
7	33	M8	3	36X10°	14	81 000	380 000	3 600
7	45	M8	3	48X7,5°	14	85 000	440 000	3 500
7	45	M8	3	48X7,5°	14	121 000	610 000	3 200
9,3	33	M12	3	36X10°	34	162 000	920 000	2 400
9,3	33	M12	3	36X10°	34	172 000	1 110 000	2 000
9,3	45	M12	3	48X7,5°	34	241 000	1 580 000	1 600
9,3	45	M12	3	48X7,5°	34	255 000	1 860 000	1 400



Designation	Rigidity					
	of bearing position[3)]			of rolling element set		
	axial c_{aL} kN/µm	radial c_{rL} kN/µm	Tilting rigidity c_{kL} kNm/mrad	axial c_{aL} kN/µm	radial c_{rL} kN/µm	Tilting rigidity c_{kL} kNm/mrad
ZKLDF100[5)]	1,2	0,35	3,6	2,2	0,35	5
ZKLDF120	1,5	0,4	5,5	2,5	0,4	8
ZKLDF150	1,7	0,4	7,8	2,9	0,4	12
ZKLDF180	1,9	0,5	10,7	2,8	0,5	16
ZKLDF200	2,5	0,6	17,5	3,7	0,6	26
ZKLDF260	3,2	0,7	40	4,7	0,7	54
ZKLDF325[5)]	4	0,8	60	5,4	0,8	90
ZKLDF395	4,5	0,9	100	6,3	0,9	148
ZKLDF460	5,3	1,1	175	7,1	1,1	223

NOTES:

Schaeffler screw drive range

The function of screw drives

Screw drives comprise a threaded spindle and a threaded nut. Due to the rotation of the spindle, the nut moves in a linear manner on the spindle and thus converts the rotary motion of the drive into linear motion. It is rigidly connected to the adjacent construction and gives axial displacement or positioning of the component.
The main load direction of screw drives is axial, but radial load is not permissible. The screw drive can be subjected to high dynamic axial load.

Threaded nuts

Nuts are available in a flanged or cylindrical design and in the form of single or double nuts. Preloaded nuts (double nuts) facilitate high positional accuracy and rigidity. Flanged nuts are particularly easy to fit, since they are screw mounted on the adjacent construction.

Threaded drives

The thread on the spindles is either rolled or ground. The threaded spindle can be driven by direct or indirect means. It is supported on one or both sides. Support on both sides is normally in the form of a locating/non-locating bearing arrangement. The locating bearing side is preferably realised by means of specially developed double row axial angular contact ball bearings for screw drives that have high rigidity as well as high axial and radial load carrying capacity. In addition to numerous standard designs, the ends of the spindle can be configured in accordance with customer requirements.

Ball screw drives, roller screw drives and planetary screw drives

For a wide range of application areas in machine building and automotive engineering as well as in handling and automation technology, Schaeffler offers a comprehensive portfolio of ball drives, roller screw drives and planetary screw drives, *Figure 1*:

- ball screw drives KGT, see page 2
- roller screw drives RGT, see page 5
- planetary screw drives PWG, see page 9.



① Ball screw drive KGT
② Roller screw drive RGT
③ Planetary screw drive PWG

Figure 1
Screw drives

Schaeffler screw drive range

Selection criteria

The selection criteria for screw drives are essentially the requirements placed on:

- positional accuracy
- rigidity
- freedom from clearance/preload
- load carrying capacity (axial load carrying capacity)
- basic rating life
- speed
- permissible axial spindle load (buckling)
- frictional torque
- smoothness of running (running noise)
- pitch.



For advice on these products as well as the design and calculation of the bearing arrangement, please consult Schaeffler.

Ball screw drives

In ball screw drives KGT, the load is transmitted from the spindle by means of balls to the nut. The nut (cylindrical nut or flanged nut) has a return system for recirculating the rolling elements.

Ball screw drives have the following technical features:

- high load carrying capacity due to the large number of balls
- smooth, uniform running
- reliable function and operational security due to the internal return and recirculation system
- easy-to-fit nut design
- sealed nuts (optional).

Axial deflection, preload

Schaeffler ball screw drives have a contact angle of 45°. External drive forces induce an axial force F_a. This causes axial deflection as a function of the preload.

In the case of preloaded single nuts, the preload is achieved by the introduction of oversize balls. There are then four contact points per rolling element; this means that the rolling elements are in four point contact with the raceways.

Double nuts are preloaded by the introduction of a spacer that sets the nut in an O arrangement. In this case, the rolling elements are in two point contact with the raceways.

Preload classes: see table, page 3.

Preload classes for ball screw drives

Spindle diameter d_w	Preload class		
	V0 Standard Max. axial clearance mm	V1[1] Clearance-free mm	V2[1] Preloaded mm
06, 08, 10, 12, 14	0,05	0	approx. 3% · C[2]
16, 20, 25, 32, 40	0,08		
50, 63, 80	0,12		

1) Available by agreement.

2) C = basic dynamic load rating.

Accuracy

Depending on the operating conditions and the application, different requirements are placed on the accuracy of ball screw drives. Schaeffler ball screw drives have the accuracy class T7, see table. By agreement, class T5 is also available.

Accuracy classes for ball screw drives with rolled spindle

Deviation	Accuracy class	
	T5[3] µm	T7[1] µm
Displacement variation over 300 mm axial displacement[2] in accordance with DIN 69051-3	23	52

1) Standard accuracy class.

2) Other tolerances in accordance with DIN 69051-3 (ISO 3408-3).

3) Available by agreement.

Sealing

With a few exceptions, the threaded nuts are sealed by means of gap or labyrinth seals (depending on the design of the nut) and thus protected against contamination.

Optionally, contact seals can be supplied for certain series.

If there is a risk that dust or foreign particles can penetrate the threaded nut, additional sealing measures must be taken.

Lubrication

Ball screw drives must be lubricated. Technical, economic and ecological factors will determine whether oil or grease should be used for lubrication.

The threaded nut is pregreased with a high quality lubricant. For relubrication, the use of lithium or lithium complex soap greases with a mineral oil base is recommended. The base oil viscosity should be between ISO VG 68 and ISO VG 100.

If ball screw drives are to be relubricated using oil, please contact us for further advice.

Operating temperature

Ball screw drives can be used at operating temperatures from –10 °C to +80 °C. For brief periods, a maximum operating temperature of +100 °C is possible and this should be measured on the outside cylindrical surface of the threaded nut.

Schaeffler screw drive range

Pitch values

Available pitch values P for threaded spindles are shown in the table; d_w = spindle diameter, l_w = spindle length.

Pitch of threaded spindles

Designation	Dimensions in mm		Mass	Pitch P				
	d_w	l_w max.	m kg/m	1	2	2,5	3	4
KGS06 to **KGS80**	06	900	0,22	●	–	–	–	–
	08	1 200	0,39	●	●	●	–	–
	10	1 200	0,62	–	●	–	●	●
	12	3 000	0,89	–	●	–	–	–
	14	3 000	1,21	–	●	–	–	–
	16	3 000	1,58	–	–	–	–	–
	20	3 000	2,47	–	–	–	–	–
	25	6 000	3,85	–	–	–	–	●
	32	6 000	6,31	–	–	–	–	–
	40	6 000	9,86	–	–	–	–	–
	50	6 000	15,41	–	–	–	–	–
	63	7 200	24,47	–	–	–	–	–
	80	7 600	39,46	–	–	–	–	–

● Right hand thread.

Pitch of threaded spindles (continued)

Designation	Dimensions d_w mm	Pitch P							
		5	6	10	16	20	25	32	40
KGS06 to **KGS80**	06	–	–	–	–	–	–	–	–
	08	–	–	–	–	–	–	–	–
	10	–	–	–	–	–	–	–	–
	12	●	–	–	–	–	–	–	–
	14	–	–	–	–	–	–	–	–
	16	●, ■	–	●	●	–	–	–	–
	20	●, ■	–	–	–	●	–	–	–
	25	●, ■	–	▲, ●[1)]	–	–	●	–	–
	32	●, ■	–	●	–	●	–	●	
	40	●, ■	●	●	–	●	–		
	50	–	–	●	–	●	–		
	63	–	–	●	–	●	–		
	80	–	–	●	–	●	–		

● Right hand thread.
■ Optionally with left hand thread.
▲ Ball diameter 3,5 mm, suitable for threaded nut KGM25×10-2D3.

1) Standard ball diameter 4,762 mm

Roller screw drives RGT

In roller screw drives RGT, force is transmitted via the thread flanks of the rollers. Since the number of contact surfaces here is significantly higher than in ball screw drives, roller screw drives have significantly higher load carrying capacity.

Roller screw drives have significantly smaller pitch values than ball screw drives. Since there is no recirculation of balls, in contrast to KGT, very quiet running is achieved.

In the case of preloaded double threaded nuts, the load carrying capacity is lower due to the load-bearing length of the threaded rollers – smaller pitch – than for single preloaded nuts.

Design of roller screw drives

Roller screw drives comprise, as in the case of ball screw drives, a threaded spindle and a threaded nut. However, the threaded nut contains threaded rollers arranged parallel to the axis.
As the threaded spindle rotates, the threaded rollers rotate in planetary motion about the threaded spindle without axial displacement. The rotational motion of the nut and planets is synchronised by means of gear rings in order to prevent axial displacement.
As a result, a high positional accuracy is achieved.

Schaeffler roller screw drives are available, in various series and with corresponding bearing components, as ready-to-fit units. Roller screw drives differ essentially in terms of the threaded nut design.

Characteristics

Roller screw drives are characterised by:

- high axial load carrying capacity
- high axial rigidity
- small thread pitch values
- low running noise
- simple mounting and dismounting of the spindle nut
- high operational security
- high positional accuracy.

Areas of application

Due to their high rigidity and axial load carrying capacity, roller screw drives are used particularly in high precision machine tools, measuring machinery, industrial robots as well as in electronic component manufacture and precision engineering.

Schaeffler screw drive range

Threaded spindles

Threaded spindles are available in standard or special design. The material used is a surface-hardened steel. The thread is ground and has multiple starts.

Threaded rollers

Threaded rollers have journals at both ends. The journals support the threaded rollers parallel to the axis in the holes in the guide discs. The geared ends of the threaded rollers mesh in the internal gearing of the geared rings in the threaded nut. The thread on the threaded rollers has a single start and crowned flanks.

The threaded rollers roll without slippage in the threaded nut. They are not axially displaced relative to the threaded nut, since the axial displacement components of the contact points of both elements are identical.

Threaded nuts

Schaeffler supplies cylindrical threaded nuts and flanged nuts. Geared rings with internal gearing are fitted in the ends of the nuts. The gearing of the geared rings meshes in the gearing of the threaded rollers. Guide discs in the geared rings support the journals of the threaded rollers and maintain the spacing between these. The guide discs rotate in the threaded nut and prevent the ingress of coarse contamination into the nut. The discs are located by means of retaining rings. The thread of the nuts is identical with the thread of the spindles and has multiple starts.



Threaded nuts are supplied with preload set at the factory. The preload already set must not be changed.

Accuracy classes

Roller screw drives are available in the accuracy class KL 10 or, by agreement, in the higher accuracy class KL 5, see table.

Accuracy classes

Accuracy class	Pitch tolerance[1)] mm
KL 10 (standard)	±0,01
KL 5[2)]	±0,005

1) Deviation over 315 mm thread length.

2) Available by agreement.

Pitch accuracy

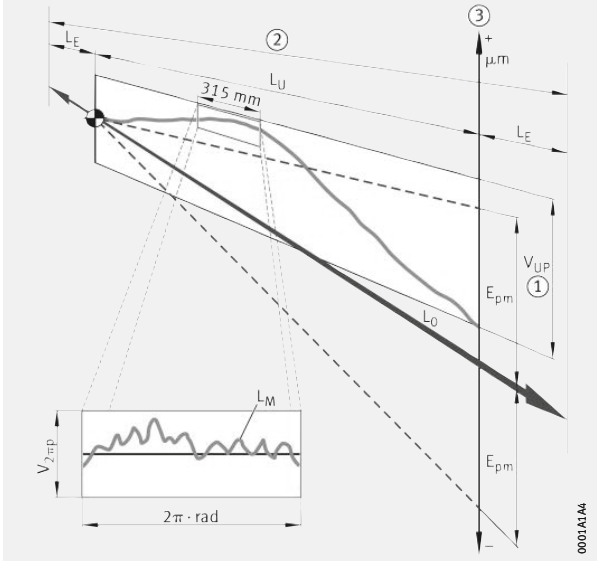
The threaded spindles for roller screw drives have a high pitch accuracy, *Figure 2*. This is achieved by measures including special manufacturing processes.

The maximum values for the pitch deviation E_{pm} and the spread of the pitch deviation V_{UP} are shown in the table. They are valid only for reference lengths up to 1 800 mm.

Pitch accuracy

Effective thread length and reference length		Accuracy class			
L_U[1)] mm		KL 5 µm		KL 10 µm	
over	incl.	E_{pm}	V_{UP}	E_{pm}	V_{UP}
0	315	5	5	10	10
315	400	6	5	11	10
400	500	7	6	13	11
500	630	8	6	14	12
630	800	9	7	18	14
800	1 000	10	8	19	15
1 000	1 250	12	9	22	17
1 250	1 600	14	10	27	20
1 600	1 800	17	12	34	23

1) $\overline{L_U}$ in mm (effective thread length and reference length for measurement of the pitch accuracy).



① Spread for total measurement distance
② Thread length
③ Pitch deviation

Figure 2
Diagram of pitch deviation

Schaeffler screw drive range

Preload

Roller screw drives are supplied with preload set at the factory. Preload increases the rigidity and positional accuracy of the screw drive; it also, however, influences the frictional torque of the nut and thus the drive torque and life of the planetary screw drive.

Rigidity

The rigidity of a roller screw drive is influenced by:

- the preload on the threaded nut
- the number of bearing positions
- the type and size of bearings
- the spacing of the bearings
- the bearing preload
- the length of the threaded spindle
- the housing dimensions.

The total rigidity of a roller screw drive increases with the preload on the threaded nut. If an operating load acts on the roller screw drive, elastic deformations occur on all elements transmitting load. The total deformation is essentially calculated from the deflection values of the threaded nut, the threaded spindle and the screw drive bearing arrangement.

Speed

Schaeffler roller screw drives can be used in applications with high speeds.

The permissible speed for roller screw drives is dependent on:

- the nominal diameter and the free spindle length
- the type of spindle bearing arrangement
- the lubrication.

In the case of a rotating threaded spindle, the critical whirling speed must be taken into consideration as the upper limit for the permissible speed range.

If roller screw drives are operated at speeds that are higher than the maximum permissible spindle speed, the smooth running and life of the spindle will be impaired.

Lubrication

Roller screw drives can be lubricated with oil or grease and run almost exclusively in the mixed friction range. If other machine elements are lubricated with oil, the screw drives should preferably be connected to the existing oil supply system.

Roller screw drives are greased using a low-noise barium complex soap grease with a diester oil base KPE2K–30 in accordance with DIN 51825.

By agreement, screw drives can also be supplied dry or with an oil-based preservative. The oil used is compatible with oils and greases having a diester or mineral oil base. If greases with polycarbamide thickeners are used, please consult us.

At very high loads ($C_0/P \leqq 1{,}5$), continuous relubrication is necessary.

Operating temperature

Roller screw drives are suitable for operating temperatures from –40 °C to +130 °C.

Further information on roller screw drives

The roller screw drives presented here are described in detail in Publication RGT.

Planetary screw drives PWG

Planetary screw drives PWG are a new addition to the Schaeffler range, *Figure 3*. These screw drives are characterised by a very high performance density.

In these planetary screw drives, force is transmitted via the flanks of the rollers, spindle and nut. Due to the large number of contact points, a very high axial load carrying capacity is achieved.
Due to the very small pitch values, high axial operating forces can be achieved with small drive units (without a gearbox).



Figure 3
Planetary screw drive PWG

Design of planetary screw drives PWG

Planetary screw drives PWG comprise a threaded spindle and a cylindrical nut or flanged nut. The cylindrical nut and flanged nut differ only in the method by which they are attached to the table.

The nut contains planets arranged parallel to the axis. The planets roll uniformly on the threaded spindle and the nut.

The planetary screw drive is designed for temperatures from –10 °C to +80 °C.

Schaeffler screw drive range

Transmission of forces

At the rolling contacts between the spindle, planets and nut, force is transmitted in a circumferential direction purely by means of force locking, on a basis comparable to a friction gear transmission. This method of force transmission is subject to slippage. The slippage is essentially dependent on the axial force and the spindle pitch.

Pitch

Due to the slippage, the overall pitch of the planetary screw drive does not correspond to the pitch of the spindle. In positioning, attention must be paid to the difference between the overall pitch and the spindle pitch.

Ready-to-fit

The nut is supplied in a ready-to-fit form. For fitting, the cylindrical nut is slid into the bore in the table and located by means of a bearing cover. The nut is secured against rotation in the table by means of a feather key.

The flanged nut is mounted on the table via the flange bore by means of fixing screws.

Preset free from clearance

The nut is set free from clearance. It is not necessary to set the preload during or after mounting.

Lubrication and sealing

The nut of a planetary screw drive PWG is pregreased and the end faces are sealed by means of gap seals. The cylindrical nut is relubricated via the threaded spindle. The flanged nut has a relubrication hole that facilitates lubrication via the adjacent construction.

Basic rating life

The basic rating life L_{10} is calculated using the general rating equation for rolling bearing technology.

$$L_{10} = \left(\frac{C}{P}\right)^{p}$$

L_{10} 10^6 revolutions
The basic rating life in millions of revolutions is the life reached or exceeded by 90% of a sufficiently large group of apparently identical bearings before the first evidence of material fatigue develops

C N
Basic dynamic load rating

P N
Equivalent dynamic bearing load for radial and axial bearings

p –
Life exponent; for planetary screw drives: p = 3.

Advantages

The features of these planetary screw drives are:

- very economical drive
- high load carrying capacity due to the large number of rolling contacts
- high axial rigidity
- preloaded clearance-free
- very small pitch values (< 1 mm)
- very quiet running (no rotating rolling elements)
- simple, robust design
- very high performance density
- High reliability and operational security.

Expanded area of application

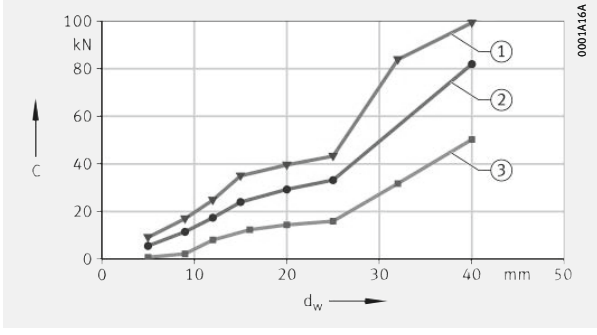
Due to the high performance density, these planetary screw drives are extremely suitable as force actuators and offer the potential for replacing hydraulic axes by energy-efficient electromechanical drives.

Downsizing possible due to high load carrying capacity

The dynamic load carrying capacity C of PWG is almost three times as high as that of KGT (example: nominal diameter of spindle d_w = 63 mm, length of nut L = 200 mm), *Figure 4*.
On the basis of its load carrying capacity, the planetary screw drive can replace a significantly larger ball screw drive.
As a result, it is possible to design the adjacent construction with smaller dimensions.

Comparison of basic load ratings PWG, RGT, KGT

Figure 4 shows a comparison of the dynamic load carrying capacity C between ball screw drives, roller screw drives and planetary screw drives against the different spindle diameters d_w. This shows clearly the significantly higher load carrying capacity of the PWG.



C = dynamic load carrying capacity
d_w = spindle diameter

① Planetary screw drive PWG
② Roller screw drive RGT
③ Ball screw drive KGT

Figure 4
Dynamic load carrying capacity – PWG, RGT, KGT

Bearing unit

Due to the high performance density of a planetary screw drive, high axial forces occur. In this case, it is advantageous to use two angular contact ball bearings in an O arrangement as a locating bearing. For the non-locating bearing, a needle roller bearing is suitable.

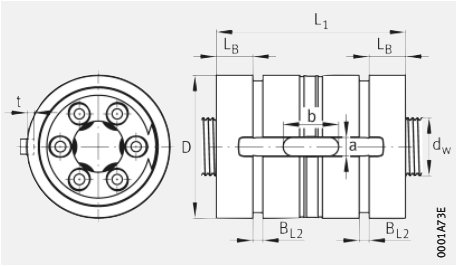
The drive stud of the planetary screw drive is equipped with a slot for a feather key.

This bearing unit is available fully preassembled from Schaeffler, see dimension table.

NOTES:

Planetary screw drives

With cylindrical nut
With flanged nut

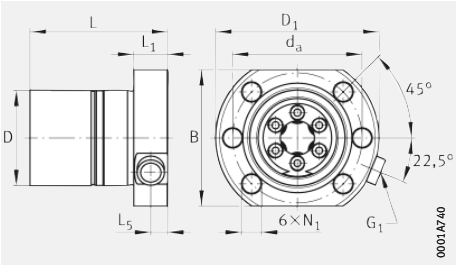


Cylindrical nut

Dimension table · Dimensions in mm

Cylindrical nut									Flanged nut					
Desig-nation	Mass	Dimen-sions		Mounting dimensions					Desig-nation	Mass	Dimensions			
	m ≈ g	∅D	L	b	a	t	L_B	B_{L2}		m ≈ g	∅D	$∅D_1$	L	B
PWM09	192	28	41	14	3	1,95	6	2,15	**PWMF09**	267	28	48	41	40
PWM12	214	30	41	12	4	2,55	6	2,15	**PWMF12**	290	30	52	41	40
PWM15	249	35	41	12	4	2,55	6	2,15	**PWMF15**	327	35	58	41	44

1) Lubrication connector in accordance with DIN 3405-D.

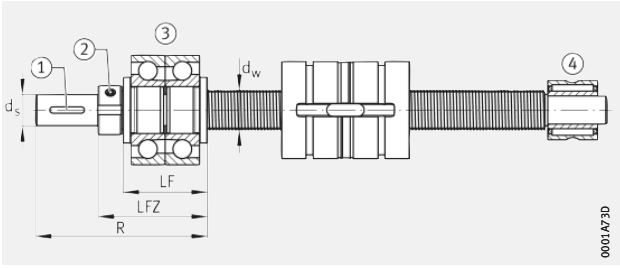


Flanged nut

Mounting dimensions					Spindle diam-eter	System pitch	Performance data with cylindrical and flanged nut			
							Basic load ratings		Effi-ciency	Slippage
							dyn.	stat.		
d_a	N_1	L_1	L_5	G_1 [1)]	d_w	p	C	C_0	η	
							N	N	%	%
38	6	10	5	5,9	9,35	0,75	16 000	18 000	57	0,1
						2,25			80	0,59
42	6	10	5	5,9	12,67	0,72	25 000	28 000	52	0,08
						2,86			83	0,59
47	6,6	10	5	5,9	14,97	2,11	34 000	38 000	71	0,26

Planetary screw drives

With spindle bearing units



Preassembled bearing unit[1)]

Dimension table · Dimensions in mm

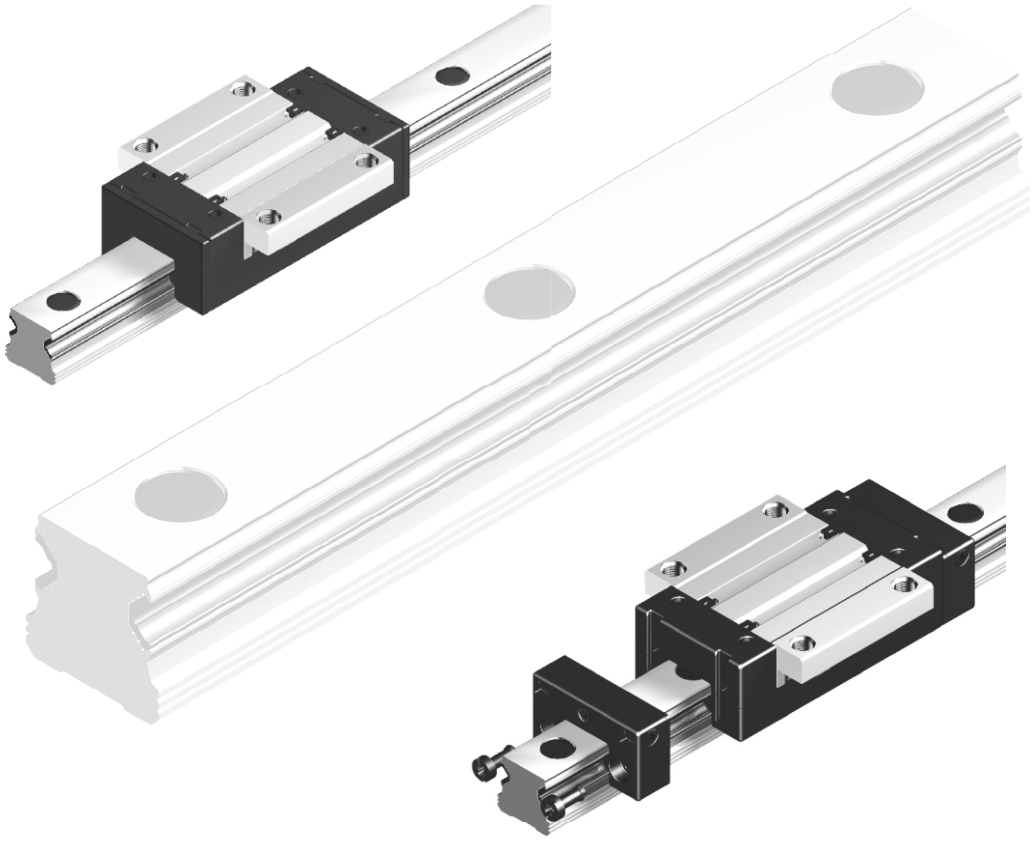
Designation	Planetary screw drive				Spindle bearing arrangement (minimum requirement)						
	Overall pitch P	d_w	Maximum drive torque Nm	Nut Limiting speed n_G min^{-1}	Non-locating bearing	Locating bearing Angular contact ball bearings in O arrangement	Lock-nut	Mounting dimensions			
								d_s	LF	LFZ	R ≈
PWG09	0,75 / 2,25	9,35	9,24	5 000	NKI7/16	2×7202-B-TVP	ZM6	5	27	35	62
PWG12	0,72 / 2,86	12,67	17,24	5 000	NKI7/16	2×7301-50-TVP	ZM8	7	29	37	69
PWG15	2,11	14,97	27,41	5 000	NKI9/16	2×7303-60-TVP	ZM10	9	32	40	75

1) ① Feather key slot on drive stud
② Locknut
③ Locating bearing arrangement
④ Non-locating bearing arrangement

NOTES:

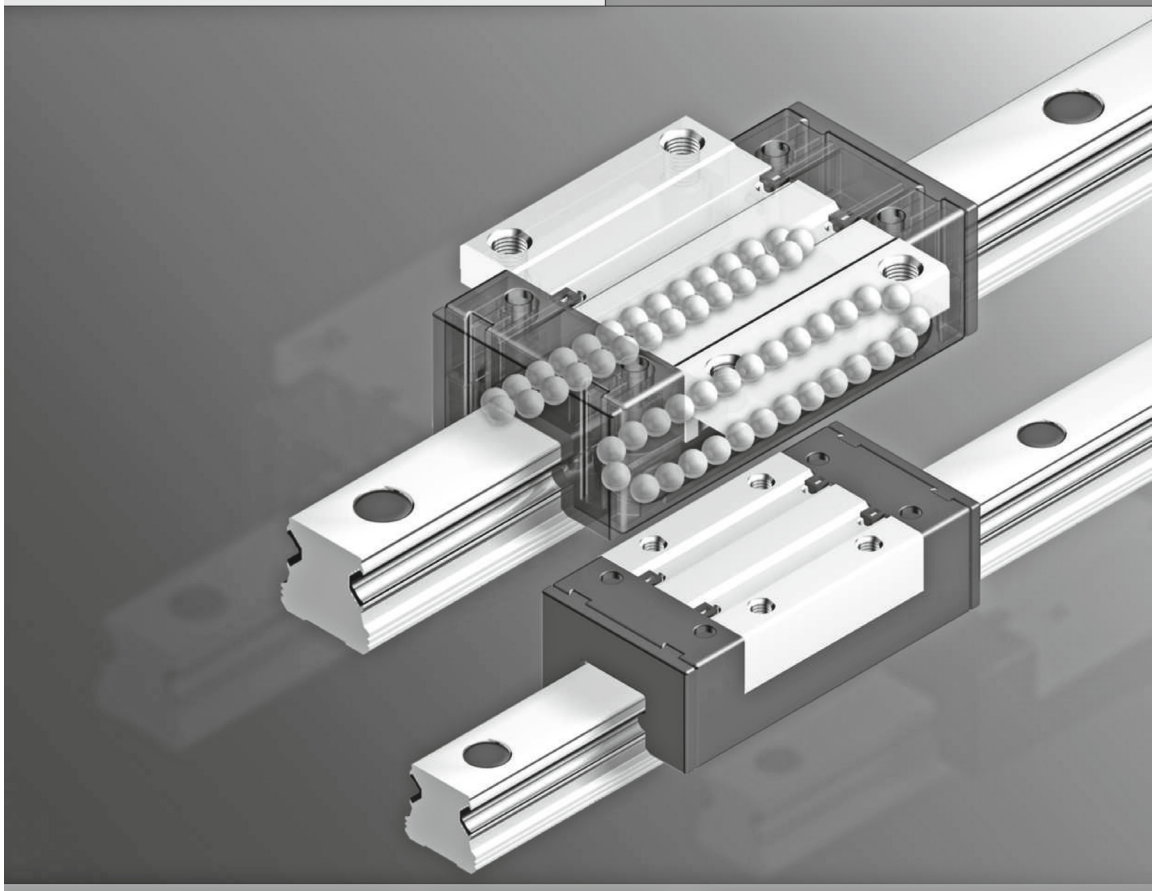
Aluminium Rail Guides

Alulineartechnik



Alulineartechnik AG

ALUMINIUM RAIL GUIDES



LIGHTWEIGHT ✪ STAINLESS ✪ INTERCHANGEABLE

Alulin

Lay out design

Determination of the carriage size

1. Pre-select the runner block

2. Determine F_{comb}

3. Calculate the ratio of the dynamic load capacity "C" of the selected runner block relative to F_{comb} (F_{comb} divided by "C")

If F_{comb} /C > 0.4: runner block is sized too small. Select the next largest size and repeat the calculation (step 2 and 3).

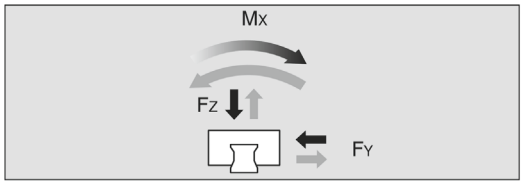
The ratio must always be F_{comb} / C≤ 0.4, otherwise F_{max} will be exceeded.

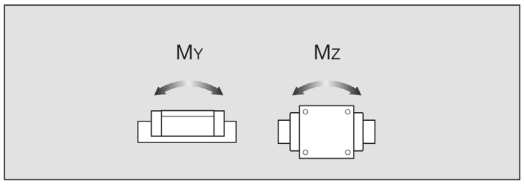
Note:

The load ratio F_{comb} / C is the quotient of the equivalent dynamic load on the bearing divided by the dynamic load capacity "C".

Please control dynamic demand of bolted joints.

Calculation of load on bearing for a runner block





F_{comb}	=	combined equivalent load	(N)
F_Y, F_z	=	Dynamic load	(N)
M_x	=	torque of the X-axis [1]	(Nm)
M_y	=	torque of the Y-axis [2]	(Nm)
M_z	=	Moment um die Z-Achse [2]	(Nm)
M_t	=	dynamic torsional moment load capacity	(Nm)
M_L	=	dynamic longitudinal moment load capacity	(Nm)
C	=	dynamic load capacity	(N)
b	=	operating factors	

For values, see runner block on page 9 and 10
For values, see runner block on page 9 and 10
For values, see runner block on page 9 and 10
For values, see table "Recommended values for operating factors "b".

1) Torque M_x will only be fully effective in an application with one guide rail.
2) Torque M_y or M_x will only be fully effective when only one runner block is mounted on one guide rail.

$$F_{comb} = b \cdot \left(|F_Z| + |F_Y| + C \cdot \frac{|M_x|}{M_t} + C \cdot \frac{|M_Y|}{M_L} + C \cdot \frac{|M_Z|}{M_L} \right)$$

Recommended operating factors b

Values for operating factors b

1,0	Clean environment, low technical demands, manual operation
1,5	In a linear motion axis with ball screw drive
2,0	Linear motion axis with toothed belt drive
6,0	Linear motion axis with pneumatic drive
9,0	In very dirty environments

Static load rating

A static load rating could not specify, because of the composite material. Instead of this you can find the values F_{max} respectively M_{max} , when it exceed it may cause malfunction.

Lubrication Concept

We aim to achieve a lifetime lubrication, which we define as at least 30'000km. The following conditions apply:

- Initial greasing with Dynalub 510
- Mounted seal unit
- No exposure to metal-working fluids
- Ambient temperature T = 20° to 30°C

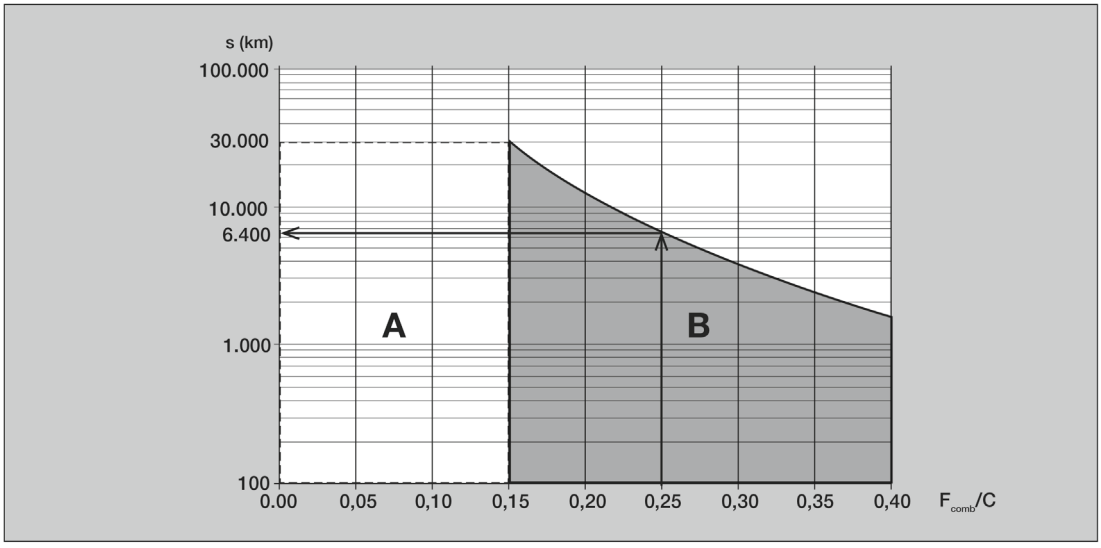
First, the quotient F_{comb} / C is calculated with F_{comb} according to the formula on the previous page and the dynamic load rating C from the mass tables on pages 9 and 10. With this value you go then in to the diagram below.

Is F_{comb} / C ≤ 0,15, it lies in the zone A of the diagram bellow. This means it will have lifetime lubrication.

With 0,15 < F_{comb}/C ≤ 0,4 it lies in the zone B of the diagram bellow.

For this you must distinguish two cases:
For Example F_{comb} / C = 0,25 goes up to 6400km.
a) Is the running distance required < 6400 km, there is a lifetime lubrication here.
b) Is the running distance required > 6400 km, then instead of seal unit the lube unit with sealing function must be used.

Value F_{comb}/C > 0,4 then F_{max} is exceeded.



Note:

- Take account of the general service life of lubricants.

- If other lubricants are used, this may lead to a reduction in the re-lubrication intervals, the achievable travel in short-stroke applications and the load capacities. Possible chemical interactions between the plastic materials, lubricants and preservative oils must also be taken into account.

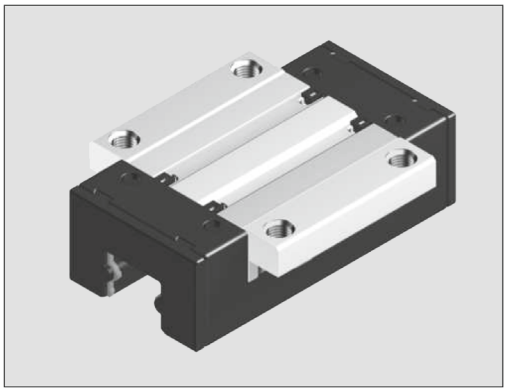
- Do not use greases with solid particles such as graphite or MoS_2.

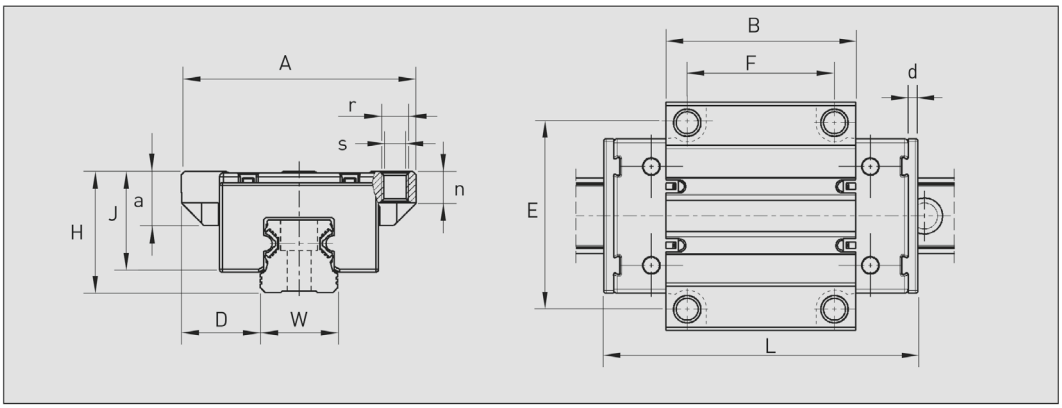
- If your application involves more demanding environmental requirements such as clean room, vacuum, food industry, increased exposure to fluids or aggressive media, extreme temperatures, please consult us. These situations must be investigated on a case by case basis and may require the use of a special lubricant. Be sure to have all the information concerning you application at hand when contacting us.

Flanged Ball Runner Block

This light-weight aluminium runner block is designed for cost-effective applications such as assembly and handling processes. Mounting dimensions are identical to those of the steel guiding rails and in accordance to DIN 645-1, which makes them interchangeable and replaceable.

The runner block has a lateral abutment edge and can then be screwed from above or below. Runner block consists of wrought aluminium alloy with a tensile strength of 350N/mm², balls and running tracks of hardened anti-friction bearing steel. All others parts are made of POM. The carriage is pre-lubricated and has standard according seal units, which you can replace.





Order ref. no.	A	H	W	D	L	B	E	F	s	r	n	J	a max	d	weight (kg)
FNS-1500	47	24	15	16,0	64,0	37,8	38	30	4,3	M5	6,0	19,8	11	2,5	0,08
FNS-2000	63	30	20	21,5	85,9	51,5	53	40	5,3	M6	8,0	24,7	13	2,8	0,18
FNS-2500	70	36	23	23,5	96,0	58,0	57	45	6,7	M8	9,3	29,9	17	3,0	0,26

Dynamic load capacities (N)[1]			Torque (Nm)			
Size	C dyn.	F_{max} [2]	M_t dyn.	$M_{t,max}$ [2] stat.	M_L dyn.	$M_{L,max}$ [2] stat.
15	5 000	2 000	36	14	29	12
20	11 000	4 400	101	40	89	35
25	16 000	6 400	165	66	147	59

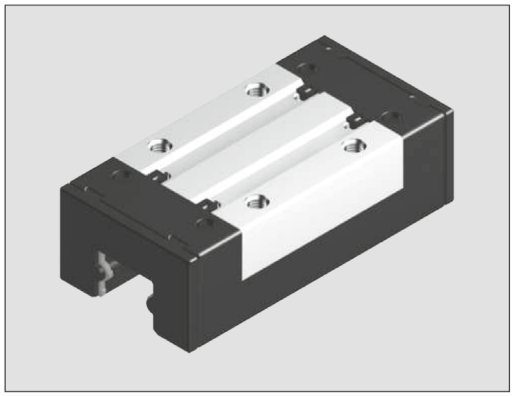
[1] Determination of the dynamic load capacities and torques is based on a travel life of 100.000 m.

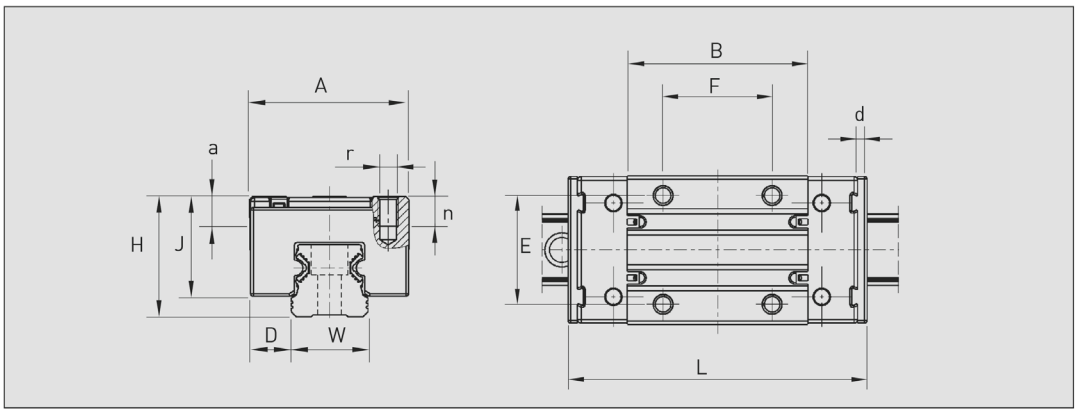
[2] Due to the mechanical operations of guide rails and runner block with their different materials, is not possible to, clearly indicate a load rating. In this case never exceed F_{max} or M_{max}. Otherwise malfunction or damage may occur.

Standard Runner Block

This light-weight standard runner block corresponds to the structure of the flanged runner block from the previous page. It's only slimmer and designed for mounting from above.

The mounting dimensions are also identical to the steel guiding rails and in accordance to DIN 645-1. On this way you can easily change the installed constructions.





Order ref. no.	A	H	W	D	L	B	E	F	r	n	J	a	d	weight (kg)
GNS-1500	34	24	15	9,5	64,0	37,8	26	26	M4	6,0	19,8	4,1	2,5	0,07
GNS-2000	44	30	20	12,0	85,9	51,5	32	36	M5	7,5	24,7	5,5	2,8	0,15
GNS-2500	48	36	23	12,5	96,0	58,0	35	35	M6	9,0	29,9	6,4	3,0	0,22

Dynamic load capacities (N)[1]			Torque (Nm)			
Size	C dyn.	F_{max} [2]	M_t dyn.	$M_{t,max}$ [2] stat.	M_L dyn.	$M_{L,max}$ [2] stat.
15	5 000	2 000	36	14	29	12
20	11 000	4 400	101	40	89	35
25	16 000	6 400	165	66	147	59

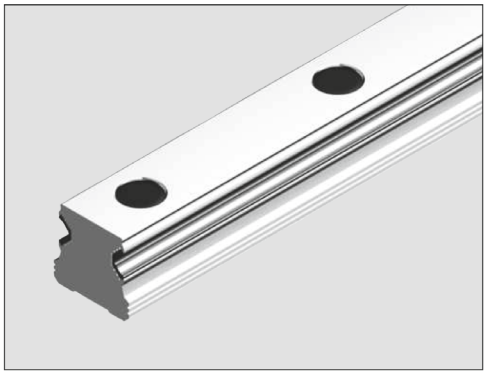
[1] Determination of the dynamic load capacities and torques is based on a travel life of 100.000 m.

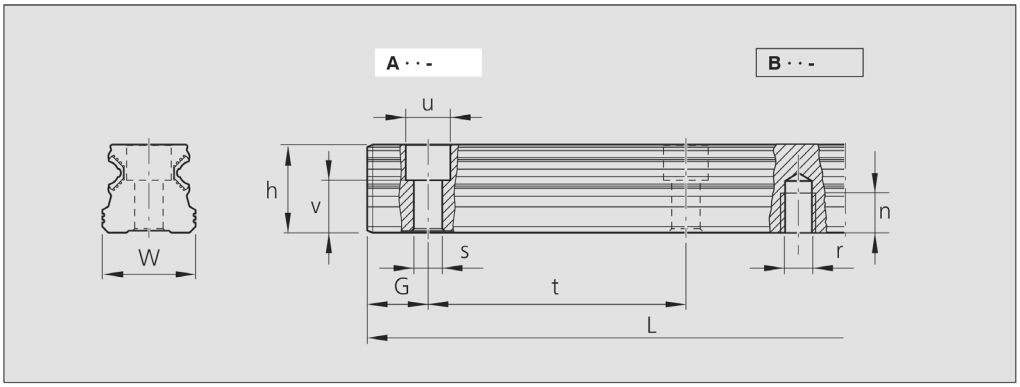
[2] Due to the mechanical operations of guide rails and runner block with their different materials, is not possible to, clearly indicate a load rating. In this case never exceed F_{max} or M_{max}. Otherwise malfunction or damage may occur.

Corrosion Resistant Profiled Rail

The aluminium profile rails are made of high quality aluminium alloy with rolled and precisely calibrated raceways made of stainless steel (niro-steel) and are produced only in the accuracy class P.

The use of aluminium achieves a weight saving compared to the steel types. It better compensates any unevenness in the mounting surface. The use of stainless steel for the track material, makes the rail corrosion resistant. The rail with the order number **A..-....** Is for mounting from above and **B..-....** for mounting from below. Because of the aluminium / steel composite construction, the rails should get ordered in the right length. Only in exceptional cases it is allowed to cut it by yourself.





Order ref. no.	W	h	u	v	s	G*	r	n	t	L_{max}	weight kg/m
A15-....	15	14,0	7,5	8,1	4,4	28			60	4000	0,57
B15-....	15	14,0				28	M5	7	60	4000	0,57
A20-....	20	19,0	9,5	11,6	6,0	28			60	4000	0,98
B20-....	20	19,0				28	M6	9	60	4000	0,98
A25-....	23	21,8	11,0	12,9	7,0	28			60	4000	1,25
B25-....	23	21,8				28	M6	12	60	4000	1,25

* recommended G-measure

Please insert rail lengths in mm.

Mounting caps[1)]
oSP-315
oSP-320
oSP-325

[1)] Please order separately

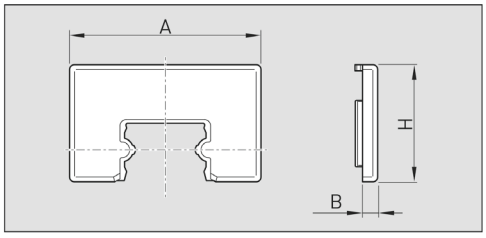
Accessories

Seal Unit

- All runner blocks are delivered with greased seal units.
- The basic material is POM

Instructions for the replacement

- Assembly with mounted carriage is not possible.
- Pull exchanged seal unit up
- Insert the new seal unit
- Push the runner block back on the guide rail.
  The seal unit align vertical to the guide rail.

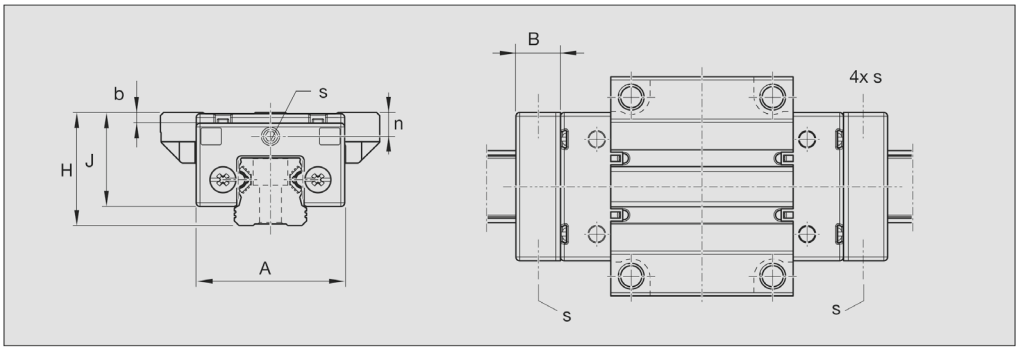


Order ref. no.	Measurements (mm)		
	A	B	H
nVA-1500	31,7	2,5	19,4
nVA-2000	43,2	2,8	24,3
nVA-2500	47,2	3,0	26,5

Lube unit with sealing function

Lube units with sealing function are used for applications with higher mileage or dirty environment. The in its interior located, with oil ISO VG 100 impregnated foam, allows a contentious lubrication and simultaneously acts as a front seal. Because of this a service life of 12500 km is possible, without further lubrication. After that you can lubricate via the lubrication oil connections or the enclosed grease nipple. Optimally is when you replace the whole unit.

The lube units are simply pushed over the rail and mounted by the attached bayonet fittings at the front side of the runner block, when the existing seal unit is removed.

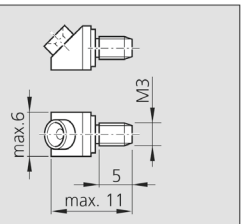


Order ref. no.	Size	A	B	H	J	b	n	s	oil (cm^3)	supplied grease nipple
dSF-1500	15	31,7	11,5	24	19,4	0,4	4,5	M3	0,65	nSN-00M3
dSF-2000	20	43,2	13,0	30	24,3	0,4	5,0	M6	1,35	nGN-00M6
dSF-2500	23	47,2	14,0	36	30,0	3,4	7,6	M6	1,70	nGN-00M6

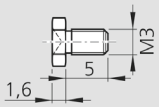
Accessories

Lubricating nipple for lube units

Funnel-type lube nipple
for size 15

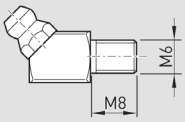


Order ref. no.
nTN-00M3

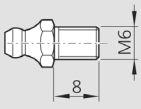


Order ref. no.
nSN-00M3

Hydraulic-type lube nipple
for sizes 20 and 25



Order ref. no.
nKN-00M6



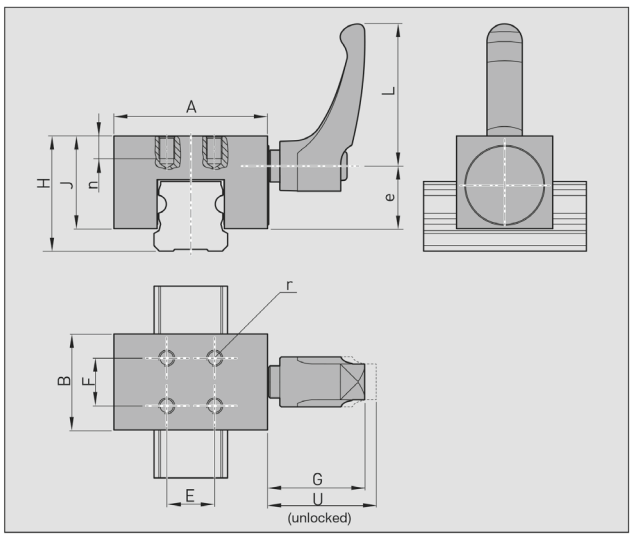
Order ref. no.
nGN-00M6

Manual clamping unit

The manual clamping unit dHK
is made of aluminium and plastic.
It fits on both type of rails (A and B).

A·····

B·····

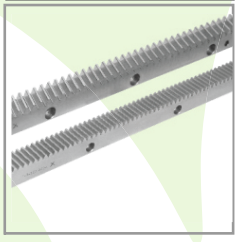
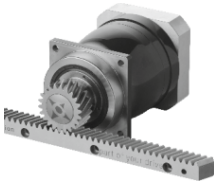
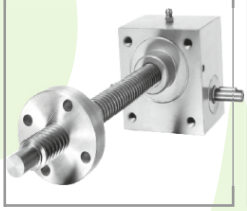
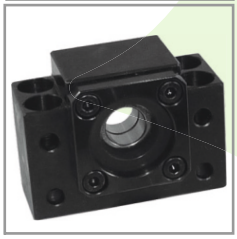
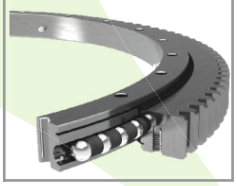


Order ref. no.	Torsional	Measurements (mm)											
		A	B	e	H	J	E	F	L	G	U	n	r
dHK-1500	130 N / 3 Nm	34	20	12,9	24	19,8	10	10	40	29,9	33,3	6	M3
dHK-2000	250 N / 3 Nm	44	24	16,0	30	24,0	12	12	40	29,9	33,4	6	M4
dHK-2500	330 N / 3 Nm	48	30	19,6	36	29,0	15	15	44	29,8	33,3	7	M5

NOTES:

Rack & Pinions, Drive Systems

WMH Herion
part of your drive

Racks	Pinions	Rack&Pinion Drive	Bevel Gears
			
Screw Jacks	**Worm Gear Units**	**Sprockets**	**Lead Screws & Ball Screws**
			
Support Units	**Slewing Bearings**		
			

Stirnräder
Spur Gears

Lagerprogramm — Stock Programme

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Preloaded Double Pinion Version 2013
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Flanschritzel - NEU
Flange Pinion - NEW
• Seiten | pages A 3



Flansch-Abmessungen
Flange Dimensions
• Seiten | pages A 4



Montageanleitung Spielfreies Stirnradsystem
Assembly Instruction Preloaded Double Pinion
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Masterräder gerade & schräg
Master-Gears Straight & Helical
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Stirnräder geschliffen gerade & schräg
Spur Gears Ground Straight & Helical
• Seiten | pages A 11 - A 16



Stirnräder gefräst gerade
Spur Gears Milled Straight
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Stirnräder gefräst schräg
Spur Gears Milled Helical
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Stirnräder gefräst gerade, induktiv gehärtet
Spur Gears Milled Straight, Induction Hardened
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Stirnräder gefräst gerade, rostfrei
Spur Gears Milled Straight, Stainless Steel
• Seiten | pages A 41 - A 42



Stirnräder Kunststoff spanabhebend bearbeitet
Spur Gears Synthetic Material Machined
• Seiten | pages A 43 - A 44



Stirnräder Kunststoff gespritzt
Moulded Spur Gears
• Seiten | pages A 45 - A 51



Verzahnungsgeometrie und Kräfte
Toothing Geometrie and Forces
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Auswahl- und Belastungstabellen
Selection and Load Tables
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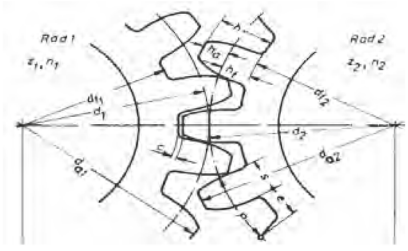
Berechnung von Kunststoff-Stirnrädern
Calculation of Plastic Spur Gears
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Stirnräder - Verzahnungsgeometrie und Kräfte
Gearwheels - Toothing Geometrie and Forces

Bezugsgrößen und Formeln | reference data and formulae



Benennung	Description	Zeichen / Formel Symbol / Formula	Einheit Dimension
Modul	module	$m = \frac{p}{\pi} = \frac{d}{z}$	mm
Zähnezahl	number of teeth	$z = \frac{d}{m}$	
Teilkreisdurchmesser	pitch diameter	$d = z \cdot m$	mm
Kopfkreisdurchmesser	outside diameter	$d_a = (z + 2) \cdot m$	mm
Fußkreisdurchmesser	root diameter	$d_f = (z - 2{,}5) \cdot m$	mm
Zahnkopfhöhe	addendum	$h_a = m$	mm
Zahnfußhöhe	dedendum	$h_f = m + c \approx 1{,}25 \cdot m = m + 0{,}25 \cdot m$	mm
Zahnhöhe	tooth depth	$h = h_a + h_f = 2 \cdot m + c$	mm
Achsabstand	centre distance	$a = \left(\frac{d_1 + d_2}{2}\right) = \frac{(z_1 + z_2) \cdot m}{2}$	mm
Übersetzungsverhältnis	ratio	$i = \frac{z_2}{z_1} = \frac{d_2}{d_1} = \frac{n_2}{n_1}$	
Umfangskraft	peripheral force	$F_u = \frac{2 \cdot 10^3 \cdot T}{d}$	N
Drehmoment	torque	$T = \frac{9550 \cdot P}{n}$	Nm
Umfangsgeschwindigkeit	peripheral speed	$v = \frac{z_1 \cdot m \cdot n_1}{19100} = \frac{d_1 \cdot n_1}{19100}$	m/s
Leistung	output	P	kW
Drehzahl	r.p.m.	n	1/min

Auswahl- und Belastungstabellen für geradverzahnte Stirnräder, Übersetzung 1:1

Selection and Load Tables for Straight Spur Gears, Ratio 1:1

Maximal übertragbare Momente in Nm
bei ausreichender Fettschmierung, einer stabilen Lagerung, einer Geschwindigkeit von v=2,5 m/s und einem Anwendungs- und Sicherheitsfaktor 1,0. Die Berechnung erfolgte nach DIN 3990. Ein Sicherheitsfaktor von S_F= 1,4 für die Zahnfußbeanspruchung und S_H=1,0 für die Flankenbeanspruchung wurde einberechnet.

Maximum permissible torques in Nm
with good grease lubrication, robust bearing, speed v=2,5 m/s, loading and safety factor 1,0. The values of the table were calculated in accordance with DIN 3990. A Safety factor for tooth stress S_F=1,4 and for Herzian stress S_H=1,0 is taken in account.

Modul | module 1
b = 15 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]
15	15	3183	0,6	1,9
20	20	2387	1,0	3,4
25	25	1910	1,6	4,7
30	30	1592	2,3	7,3
40	40	1194	4,4	12,9
50	50	955	6,9	19,5
60	60	796	9,2	32,4

Modul | module 1.5
b = 17 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]
15	22,5	2122	1,6	4,7
20	30	1592	2,7	8,6
25	37,5	1273	4,1	13,2
30	45	1061	6,0	19,2
40	60	796	10,0	36,2
50	75	637	17,5	55,1
60	90	531	25,0	83,3

Modul | module 2
b = 20 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]	16MnCr5 einsatzgehärtet und geschliffen 16MnCr5 case hardened and ground [Nm]
15	30	1592	3,5	9,7	46,0
20	40	1194	5,6	18,4	73,9
25	50	955	8,5	29,2	106,8
30	60	796	12,6	41,9	163,6
40	80	597	23,1	73,7	326,3
50	100	477	37,8	115,4	489,5
60	120	398	47,6	174,4	750,0

Modul | module 2,5
b = 25 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]	16MnCr5 einsatzgehärtet und geschliffen 16MnCr5 case hardened and ground [Nm]
15	37,5	1273	5,9	18,2	70,5
20	50	955	10,0	35,0	106,8
25	62,5	764	15,9	47,7	163,6
30	75	637	23,1	75,6	252,4
40	100	477	42,0	135,9	463,2
50	125	382	65,2	206,0	795,5
60	150	318	90,1	338,0	1090,1

Auswahl- und Belastungstabellen für geradverzahnte Stirnräder, Übersetzung 1:1
Selection and Load Tables for Straight Spur Gears, Ratio 1:1

Maximal übertragbare Momente in Nm
bei ausreichender Fettschmierung, einer stabilen Lagerung, einer Geschwindigkeit von v=2,5 m/s und einem Anwendungs- und Sicherheitsfaktor 1,0. Die Berechnung erfolgte nach DIN 3990. Ein Sicherheitsfaktor von S_F= 1,4 für die Zahnfußbeanspruchung und S_H=1,0 für die Flankenbeanspruchung wurde einberechnet.

Maximum permissible torques in Nm
with good grease lubrication, robust bearing, speed v=2,5 m/s, loading and safety factor 1,0. The values of the table were calculated in accordance with DIN 3990. A Safety factor for tooth stress S_F=1,4 and for Herzian stress S_H=1,0 is taken in account.

Modul | module 3
b = 30 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]	16MnCr5 einsatzgehärtet und geschliffen 16MnCr5 case hardened and ground [Nm]
15	45	1061	10,0	35,0	134,1
20	60	796	18,0	57,7	159,1
25	75	637	28,9	88,5	252,6
30	90	531	41,7	135,9	384,2
40	120	398	73,5	242,0	715,9
50	150	318	117,1	398,0	1477,3
60	180	265	162,9	565,8	1659,1

Modul | module 4
b = 40 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]	16MnCr5 einsatzgehärtet und geschliffen 16MnCr5 case hardened and ground [Nm]
15	60	796	25,1	80,8	473,7
20	80	597	44,3	146,2	537,0
25	100	477	66,2	206,0	727,3
30	120	398	94,1	344,0	977,3
40	160	298	174,3	578,9	1840,9
50	200	239	300,0	921,1	3241,4
60	240	199	406,7	1400,0	

Modul | module 5
b = 50 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]	16MnCr5 einsatzgehärtet und geschliffen 16MnCr5 case hardened and ground [Nm]
15	75	637	47,4	153,8	670,5
20	100	477	83,8	290,0	863,6
25	125	382	128,6	428,0	1318,2
30	150	318	182,9	631,6	1886,4
40	200	239	360,0	1089,5	2810,3
50	250	191	542,9	1769,2	
60	300	159	771,4	2538,5	

Modul | module 6
b = 60 mm

Zähnezahl Number of teeth	TeilkreisØ Pitch diameter	U/min r.p.m.	C45 weich C45 soft [Nm]	C45 induktiv gehärtet C45 induction hardened [Nm]	16MnCr5 einsatzgehärtet und geschliffen 16MnCr5 case hardened and ground [Nm]
15	90	531	91,0	284,0	1181,8
20	120	398	163,3	476,0	1272,7
25	150	318	269,4	736,8	2413,8
30	180	265	402,7	1100,0	3655,2
40	240	199	768,7	1900,0	6704,5
50	300	159	1369,3		
60	360	133	2452,7		

NEU! Spielfreies Stirnradsystem in gerad- & schrägverzahnter Ausführung - Version 2013

NEW! Preloaded Double Pinion with Straight & Helical Teeth - Version 2013

Unser neues Spielfreies Stirnradsystem ermöglicht den spielfreien Antrieb in Verbindung mit einer Zahnstange. Die Anbindung an ein Getriebe erfolgt über einen Flansch nach ISO 9409-1. Das Spielfreie Stirnradsystem ist sowohl als schrägverzahnte als auch geradverzahnte Variante erhältlich.

Our new Preloaded Double Pinion enables a back-lash-free drive in connection with a rack. A flange acc. to ISO 9409-1 connects the Preloaded Double Pinion with a gearbox. The Preloaded Double Pinion is available as either helical or straight teeth type.



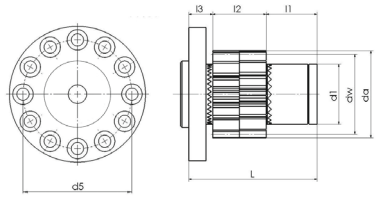
Ausführungen | type:	
Material | material:	Stahl | steel 1.7131 [16MnCr5]
einsatzgehärtet | case-hardened	58+4 HRC
Verzahnung geschliffen | ground teeth	
geradeverzahnt oder schrägverzahnt linkssteigend straight teeth or helical, left hand, helix angle	19° 31´42´´
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	6 e25
Modul | module	2 - 5

Bei Spielfreien Stirnradsystemen umfasst unser Fertigungsprogramm neben den Standardausführungen auf Seite A 2 auch **kundenspezifische Sonderlösungen**. Parameter wie Modul und Zähnezahl sind frei wählbar entsprechend Kundenwunsch. Bitte teilen Sie uns Ihre individuelle Konfiguration mit, um ein entsprechendes Angebot zu erhalten.

In addition to our standard range shown on page A 2, we offer **customized Preloaded Double Pinions** as well. Parameters such as module or number of teeth can be chosen freely to suit customers´ requirements. Please send us your specific configuration in order to receive an accordant offer.

NEU! Spielfreies Stirnradsystem - Version 2013

NEW! Preloaded Double Pinion - Version 2013



Flansch-Bohrbild exemplarisch - Typen und Abmessungen siehe Seite A 4.
Example of flange hole pattern - for types and dimensions see page A 4.

Material | material	**Stahl** | steel **1.7131 [16MnCr5]**
einsatzgehärtet | case-hardened	**58+4 HRC**
geradeverzahnt oder schrägverzahnt linkssteigend straight teeth or helical, left hand, helix angle	**19° 31´ 42´´**
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality	**6 e25**

Geradverzahnt — straight teeth

Modul Module	Zähnez. No. teeth	β	x	d_1	d_w	d_a	d_5	L	l_1	l_2	l_3	Flanschtyp Flange type	Bestell Nr. Part No.
2	22	0°	0,500	36	46	50	63	63	23	25	15	1	113-020-122
3	15	0°	0,167	36	46	52	63	68	23	30	15	1	113-030-115
4	14	0°	0,250	45	58	66	80	96	38	40	18	2	113-040-114
5	15	0°	0,500	65	80	90	125	113	38	50	25	3	113-050-115

Schrägverzahnt — helical teeth

Modul Module	Zähnez. No. teeth	β	x	d_1	d_w	d_a	d_5	L	l_1	l_2	l_3	Flanschtyp Flange type	Bestell Nr. Part No.
2	22	19° 31´ 42´´	0,330	36	48	52	63	63	23	25	15	1	123-020-122
3	14	19° 31´ 42´´	0,239	36	46	52	63	68	23	30	15	1	123-030-114
4	13	19° 31´ 42´´	0,353	45	58	66	80	96	38	40	18	2	123-040-113
5	14	19° 31´ 42´´	0,573	65	80	90	125	113	38	50	25	3	123-050-114

x = Profilverschiebung | addendum modification

L: Durch die verschiedenen Vorspannungsmöglichkeiten kann die Länge l_1 und somit auch die Gesamtlänge L um ± 1,5mm variieren.
Due to different preload options, the length l_1 and therefore the overall length L may vary by ± 1.5 mm.

Belastungstabellen:
Werte wurden unter folgenden Bedingungen ermittelt:
Geschwindigkeit: 2,5 m/s; K_A = 1,25; 20.000h; Fettschmierung

Load tables:
Values determined under following conditions:
speed: 2,5 m/s; K_A = 1,25; 20.000h; grease

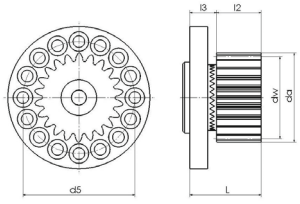
Geradverzahnt — straight teeth

Modul Module	Zähnez. No. teeth	x	max. Drehmoment | max. Torque [Nm] ohne Vorspannung without preload	 mit max. Vorspannung with max. preload	Drehzahl [1/min] Speed [r.p.m]	Flansch Flange
2	22	0,500	92	46	1061	ISO 9409-1 - 63
3	15	0,167	109	55	1061	ISO 9409-1 - 63
4	14	0,250	237	119	853	ISO 9409-1 - 80
5	15	0,500	623	312	637	ISO 9409-1 - 125

Schrägverzahnt — helical teeth

Modul Module	Zähnez. No. teeth	x	max. Drehmoment | max. Torque [Nm] ohne Vorspannung without preload	 mit max. Vorspannung with max. preload	Drehzahl [1/min] Speed [r.p.m]	Flansch Flange
2	22	0,330	132	66	1071	ISO 9409-1 - 63
3	14	0,239	147	74	1071	ISO 9409-1 - 63
4	13	0,353	305	153	865	ISO 9409-1 - 80
5	14	0,573	594	297	643	ISO 9409-1 - 125

NEU! Flanschritzel
NEW! Flange Pinion



Flansch-Bohrbild exemplarisch - Typen und Abmessungen siehe Seite A 4.
Example of flange hole pattern - for types and dimensions see page A 4.

Material | material	**Stahl** | steel **1.7131 [16MnCr5]**
einsatzgehärtet | case-hardened	**58+4 HRC**
geradeverzahnt oder schrägverzahnt linkssteigend straight teeth or helical, left hand, helix angle	**19° 31´ 42´´**
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality	**6 e25**

Geradverzahnt — straight teeth

Modul Module	Zähnez. No. teeth	β	x	d_w	d_a	d_5	L	l_2	l_3	Flanschtyp Flange type	Bestell Nr. Part No.
2	22	0°	0,500	46	50	63	40	25	15	1	112-120-022
3	15	0°	0,167	46	52	63	45	30	15	1	112-130-015
3	19	0°	0,500	60	66	80	58	30	18	2	112-230-019
4	14	0°	0,250	58	66	80	58	40	18	2	112-240-014
4	20	0°	0,250	82	90	125	65	40	25	3	112-340-020
5	15	0°	0,500	80	90	125	75	50	25	3	112-350-015

Schrägverzahnt — helical teeth

Modul Module	Zähnez. No. teeth	β	x	d_w	d_a	d_5	L	l_2	l_3	Flanschtyp Flange type	Bestell Nr. Part No.
2	22	19° 31´ 42´´	0,330	48	52	63	40	25	15	1	122-120-022
3	14	19° 31´ 42´´	0,239	46	52	63	45	30	15	1	122-130-014
3	18	19° 31´ 42´´	0,450	60	66	80	58	30	18	2	122-230-018
4	13	19° 31´ 42´´	0,353	58	66	80	58	40	18	2	122-240-013
4	19	19° 31´ 42´´	0,170	82	90	125	65	40	25	3	122-340-019
5	14	19° 31´ 42´´	0,573	80	90	125	75	50	25	3	122-350-014

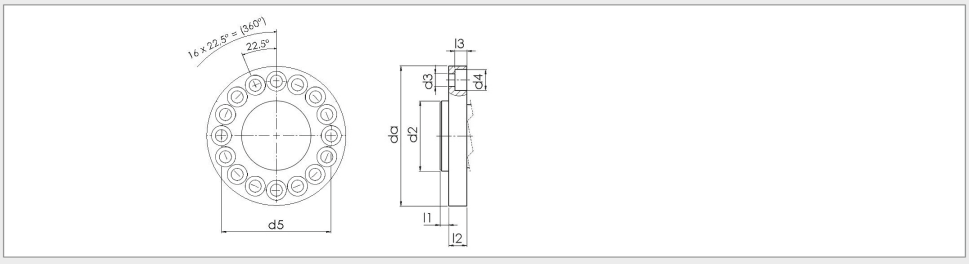
x = Profilverschiebung | addendum modification

Das Fertigungsprogramm unserer **Flanschritzel** umfasst neben den aufgeführten Standardausführungen auch kundenspezifische Sonderlösungen. Parameter wie Modul und Zähnezahl sind frei wählbar entsprechend Kundenwunsch. Bitte teilen Sie uns Ihre individuelle Konfiguration mit, um ein entsprechendes Angebot zu erhalten.

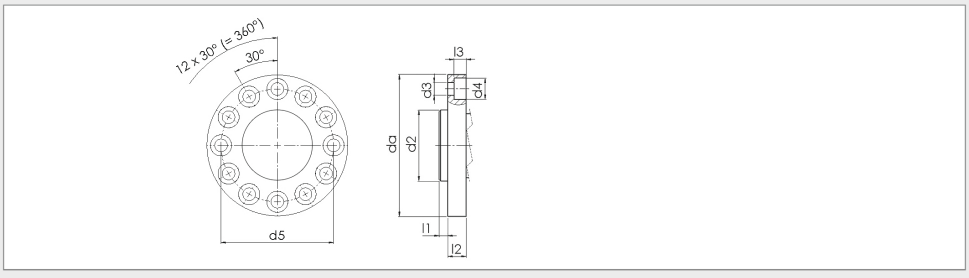
In addition to our standard range shown above, we offer **customized Flange Pinions** as well. Parameters such as module or number of teeth can be chosen freely to suit customers´ requirements. Please send us your specific configuration in order to receive an accordant offer.

Flansch-Abmessungen - Verwendung im Spielfreien Stirnradsystem & Flanschritzel

Flange Dimensions - Use for Preloaded Double Pinion & Flange Pinion



Flanschtyp Flange type	d_a	d_2	d_3	d_4	d_5	l_1	l_2	l_3
1	80	40	6,6	11	63	4	10	6,4



Flanschtyp Flange type	d_a	d_2	d_3	d_4	d_5	l_1	l_2	l_3
2	100	50	9	15	80	6	13	8,6
3	160	80	11	18	125	6	20	10,6

Montageanleitung für gerad- und schrägverzahnte Spielfreie Stirnradsysteme

Assembly Instruction for Preloaded Double Pinions with Straight and Helical Teeth

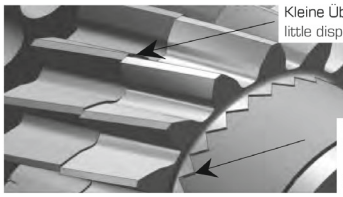
1. Anbau an das Getriebe und Aufsetzen des Vorspannritzels
   assemble to the gearbox and attach the preloaded pinion on the shaft



2. Anbringen des Druckstücks mit Hirth-Verzahnung
   put on the pressure plate with Hirth-Coupling



3. Ermittlung der richtigen Position
   choose the correct angular orientation



!!* * * Achtung!! Bitte beachten Sie bei der Montage des Druckstückes, dass die Flanke des zweiten Zahnrades linksseitig wie im Bild 3 dargestellt übersteht. Falls dies nicht der Fall ist, ist das Drückstück jeweils um einen Zahn weiter zu versetzen bis ein linksseitiger Überstand vorliegt. **Bei Nichtbeachtung können Schäden am spielfreien Stirnrad entstehen.**

!!* * * Caution!! Please note during the installation of the pressure plate that the flank of the second gear is overlapping on the left side, as shown in figure 3. If this is not the case, rotate the pressure plate one tooth at a time until an overlap on the left side is attained. **Non-observance may lead to damages of the preloaded double pinion.**

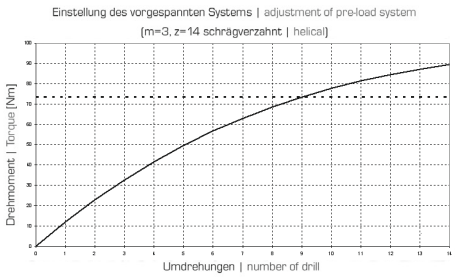
4. Einsetzen der Tellerfedern
   install the disc springs



5. Aufschrauben der Druckschraube und Vorspannen bis spielfrei
   insert the pressure screw and preload until backlash free



6. Diagramm für die gewünschte Vorspannung
   use the diagram and turn the no. of tapped holes as requested

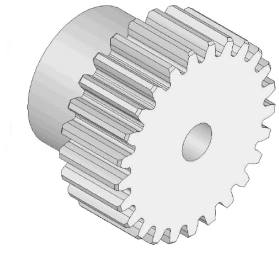


vorgespanntes Drehmoment | preloaded torque [Nm]
max. vorgespanntes Drehmoment | max. preloaded torque [Nm]

7. Arretieren mit Fixierschraube
   insert the locking screw



Masterräder
Master-Gears



Ausführungen | type	**Stahl** | steel **1.7131 [16MnCr5]**
aufgekohlt | carburized Zähne induktiv gehärtet teeth induction hardened	60 HRC
Verzahnung geschliffen | ground teeth geradeverzahnt oder schrägverzahnt linkssteigend straight teeth or helical, left hand, helix angle	**19° 31´42´´**
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality	**6 e25**

Lieferprogramm: Modul 2 - 6

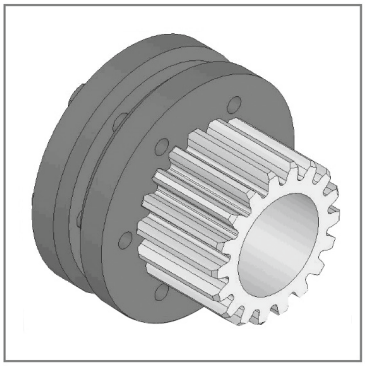
Product range: module 2 - 6

Die Masterräder haben gehärtete und geschliffene Zähne. Die Nabe und die Bohrung werden entsprechend dem Einsatz noch weiterbearbeitet. Dadurch erreichen wir kürzere Lieferzeiten und ein breiteres Spektrum an Anwendungsmöglichkeiten.

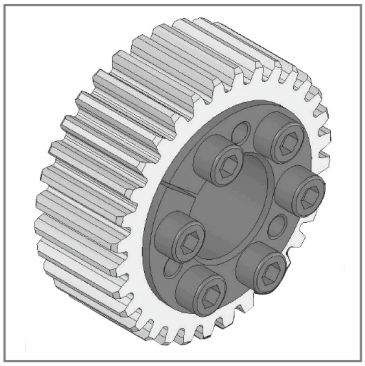
The teeth of the master-gears are case-hardened and ground. The hub and the bore will be machined according to the operating range. Thereby the delivery time is shorter and the spectrum of applications will be enlarged.

Beispiele | examples

mit Schrumpfscheibe (siehe Seite K 16)
with shrink discs (see page K 16)

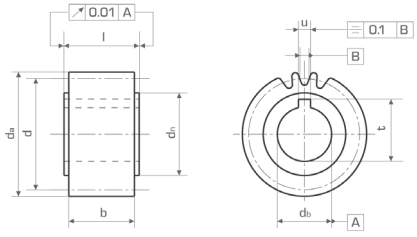


mit Innenspannsatz (siehe Kapitel K)
with locking assemblies (see chapter K)



Stirnräder mit geschliffenen Zahnflanken, geradeverzahnt

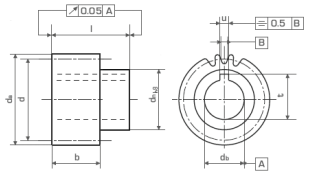
Spur Gears with Straigth Ground Teeth



Modul | module	**2,0**
Verzahnungsqualität | toothing quality	**7 e25**
geradverzahnt | straigth teeth	
Eingriffswinkel | pressure angle	**20°**
einsatzgehärtet | case hardened	
Material | material	**1.7131 [16MnCr5]**

Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
16	36,0	32,0	15	25	28	30	5	17,3	113-120-516
18	40,0	36,0	20	25	28	30	6	22,8	113-220-018
20	44,0	40,0	20	30	28	30	6	22,8	113-220-020
22	48,0	44,0	15	25	28	30	5	17,3	113-120-522
22	48,0	44,0	20	30	28	30	6	22,8	113-220-022
22	48,0	44,0	25	36	28	30	8	28,3	113-220-522
25	54,0	50,0	20	30	28	30	6	22,8	113-220-025
25	54,0	50,0	25	36	28	30	8	28,3	113-220-525
25	54,0	50,0	30	45	28	30	8	33,3	113-320-025
28	60,0	56,0	20	30	28	30	6	22,8	113-220-028
28	60,0	56,0	25	36	28	30	8	28,3	113-220-528
28	60,0	56,0	30	45	28	30	8	33,3	113-320-028
28	60,0	56,0	35	48	28	30	10	38,3	113-320-528
32	68,0	64,0	20	30	28	30	6	22,8	113-220-032
32	68,0	64,0	25	36	28	30	8	28,3	113-220-532
32	68,0	64,0	30	45	28	30	8	33,3	113-320-032
32	68,0	64,0	35	48	28	30	10	38,3	113-320-532
36	76,0	72,0	25	36	28	30	8	28,3	113-220-536
36	76,0	72,0	30	45	28	30	8	33,3	113-320-036
36	76,0	72,0	35	48	28	30	10	38,3	113-320-536
36	76,0	72,0	45	58	28	30	14	48,8	113-420-536
40	84,0	80,0	25	36	28	30	8	28,3	113-220-540
40	84,0	80,0	30	45	28	30	8	33,3	113-320-040
40	84,0	80,0	35	48	28	30	10	38,3	113-320-540
40	84,0	80,0	45	58	28	30	14	48,8	113-420-540
45	94,0	90,0	35	48	28	30	10	38,3	113-320-545
45	94,0	90,0	45	58	28	30	14	48,8	113-420-545
50	104,0	100,0	35	48	28	30	10	38,3	113-320-550
50	104,0	100,0	45	58	28	30	14	48,8	113-420-550

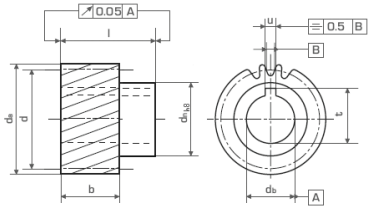
mit Nabe | **with hub**



Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	44,0	40,0	19	30	28	56	6	21,8	115-120-920
20	44,0	40,0	22	36	28	56	6	24,8	115-220-220
22	48,0	44,0	19	30	28	56	6	21,8	115-120-922
22	48,0	44,0	22	36	28	56	6	24,8	115-220-222
25	54,0	50,0	16	30	28	54	5	18,3	115-120-625
25	54,0	50,0	19	30	28	56	6	21,8	115-120-925
25	54,0	50,0	22	36	28	56	6	24,8	115-220-225
28	60,0	56,0	19	30	28	56	6	21,8	115-120-928
28	60,0	56,0	30	50	28	60	8	33,3	115-320-028
32	68,0	64,0	16	30	28	54	5	18,3	115-120-632
32	68,0	64,0	22	36	28	56	6	24,8	115-220-232
32	68,0	64,0	30	50	28	60	8	33,3	115-320-032
32	68,0	64,0	32	55	28	65	10	35,3	115-320-232
36	76,0	72,0	40	62	28	65	12	43,3	115-420-036
40	84,0	80,0	32	55	28	65	10	35,3	115-320-240
40	84,0	80,0	40	62	28	65	12	43,3	115-420-040
40	84,0	80,0	45	68	28	65	14	48,8	115-420-540
50	104,0	100,0	45	68	28	65	14	48,8	115-420-550

Stirnräder mit geschliffenen Zahnflanken, schrägverzahnt

Spur Gears with Ground Teeth, Helical

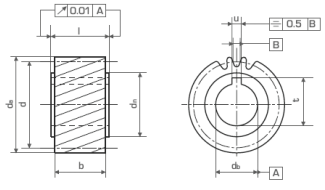


Modul | module **2,0**

Verzahnungsqualität | toothing quality **7 e25**
schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
einsatzgehärtet | case hardened
Material | material **1.7131 [16MnCr5]**

Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	46,4	42,44	20	30	28	30	6	22,8	123-220-020
25	57,1	53,05	20	30	28	30	6	22,8	123-220-025
25	57,1	53,05	25	36	28	30	8	28,3	123-220-525
28	63,4	59,42	35	48	28	30	10	38,3	123-320-528
30	67,7	63,66	25	36	28	30	8	28,3	123-220-530
30	67,7	63,66	30	45	28	30	8	33,3	123-320-030
32	71,9	67,91	20	30	28	30	6	22,8	123-220-032
32	71,9	67,91	25	36	28	30	8	28,3	123-220-532
32	71,9	67,91	35	48	28	30	10	38,3	123-320-532
36	80,4	76,39	35	48	28	30	10	38,3	123-320-536
40	88,9	84,88	35	48	28	30	10	38,3	123-320-540

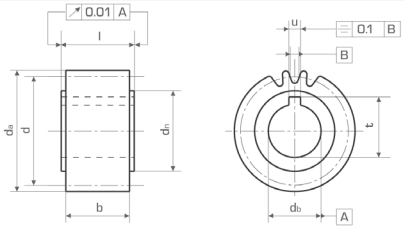
mit Nabe | **with hub**



Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	46,4	42,44	19	30	28	56	6	21,8	125-120-920
20	46,4	42,44	22	36	28	56	6	24,8	125-220-220
21	48,6	44,56	22	36	28	56	6	24,8	125-220-221
22	50,6	46,69	19	30	28	56	6	21,8	125-120-922
22	50,6	46,69	22	36	28	56	6	24,8	125-220-222
25	57,0	53,05	19	30	28	56	6	21,8	125-120-925
25	57,0	53,05	22	36	28	56	6	24,8	125-220-225
28	63,4	59,42	19	30	28	56	6	21,8	125-120-928
28	63,4	59,42	22	36	28	56	6	24,8	125-220-228
30	67,7	63,66	22	36	28	56	6	24,8	125-220-230
30	67,7	63,66	30	50	28	60	8	33,3	125-320-030
30	67,7	63,66	32	55	28	65	10	35,3	125-320-230
32	71,9	67,91	22	36	28	56	6	24,8	125-220-232
39	86,8	82,76	32	55	28	65	10	35,3	125-320-239

Stirnräder mit geschliffenen Zahnflanken, geradeverzahnt

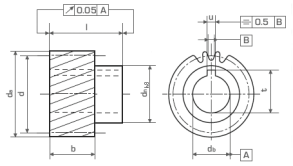
Spur Gears with Straigth Ground Teeth



Modul | module	**3,0**
Verzahnungsqualität | toothing quality geradverzahnt | straigth teeth	**7 e25**
Eingriffswinkel | pressure angle einsatzgehärtet | case hardened	**20°**
Material | material	**1.7131 [16MnCr5]**

Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
18	60,0	54,0	25	36	28	30	8	28,3	113-230-518
20	66,0	60,0	25	36	28	30	8	28,3	113-230-520
20	66,0	60,0	30	45	28	30	8	33,3	113-330-020
20	66,0	60,0	35	48	28	30	10	38,3	113-330-520
22	72,0	66,0	25	36	28	30	8	28,3	113-230-522
22	72,0	66,0	30	45	28	30	8	33,3	113-330-022
22	72,0	66,0	35	48	28	30	10	38,3	113-330-522
25	81,0	75,0	25	36	28	30	8	28,3	113-230-525
25	81,0	75,0	30	45	28	30	8	33,3	113-330-025
25	81,0	75,0	35	48	28	30	10	38,3	113-330-525
25	81,0	75,0	45	58	28	30	14	48,8	113-430-525
28	90,0	84,0	25	36	28	30	8	28,3	113-230-528
28	90,0	84,0	30	45	28	30	8	33,3	113-330-028
28	90,0	84,0	35	48	28	30	10	38,3	113-330-528
28	90,0	84,0	45	58	28	30	14	48,8	113-430-528
32	102,0	96,0	25	36	28	30	8	28,3	113-230-532
32	102,0	96,0	30	45	28	30	8	33,3	113-330-032
32	102,0	96,0	35	48	28	30	10	38,3	113-330-532
32	102,0	96,0	45	58	28	30	14	48,8	113-430-532
36	114,0	108,0	35	48	28	30	10	38,3	113-330-536
36	114,0	108,0	45	58	28	30	14	48,8	113-430-536
40	126,0	120,0	35	48	28	30	10	38,3	113-330-540
40	126,0	120,0	45	58	28	30	14	48,8	113-430-540

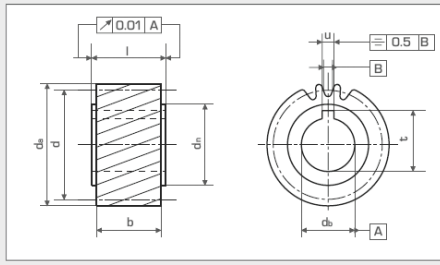
mit Nabe | **with hub**



Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
22	72,0	66,0	22	36	28	56	6	24,8	115-230-222
22	72,0	66,0	25	44	28	60	8	28,3	115-230-522
22	72,0	66,0	30	50	28	60	8	33,3	115-330-022
22	72,0	66,0	32	55	28	65	10	35,3	115-330-222
22	72,0	66,0	35	55	28	65	10	38,3	115-330-522
22	72,0	66,0	40	62	28	65	12	43,3	115-430-022
25	81,0	75,0	32	55	28	65	10	35,3	115-330-225
25	81,0	75,0	40	62	28	65	12	43,3	115-430-025
28	90,0	84,0	22	36	28	56	6	24,8	115-230-228
28	90,0	84,0	25	44	28	60	8	28,3	115-230-528
28	90,0	84,0	30	50	28	60	8	33,3	115-330-028
28	90,0	84,0	32	55	28	65	10	35,3	115-330-228
28	90,0	84,0	35	55	28	65	10	38,3	115-330-528
28	90,0	84,0	40	62	28	65	12	43,3	115-430-028
28	90,0	84,0	45	68	28	65	14	48,8	115-430-528
32	102,0	96,0	32	55	28	65	10	35,3	115-330-232
32	102,0	96,0	40	62	28	65	12	43,3	115-430-032
36	114,0	108,0	45	68	28	65	14	48,8	115-430-536

Stirnräder mit geschliffenen Zahnflanken, schrägverzahnt

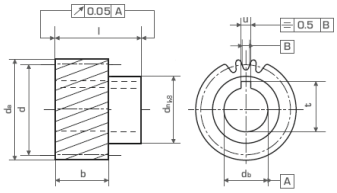
Spur Gears with Ground Teeth, Helical



Modul | module	3,0
Verzahnungsqualität | toothing quality	7 e25
schrägverzahnt, linkssteigend | helical, left hand	
Schrägungswinkel | helix angle	19° 31´42´´
Eingriffswinkel | pressure angle	20°
einsatzgehärtet | case hardened	
Material | material	1.7131 [16MnCr5]

Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	69,7	63,66	30	45	28	30	8	33,3	123-330-020
20	69,7	63,66	35	48	28	30	10	38,3	123-330-520
22	76,0	70,03	25	36	28	30	8	28,3	123-230-522
22	76,0	70,03	30	45	28	30	8	33,3	123-330-022
22	76,0	70,03	35	48	28	30	10	38,3	123-330-522
25	85,6	79,58	25	36	28	30	8	28,3	123-230-525
25	85,6	79,58	30	45	28	30	8	33,3	123-330-025
25	85,6	79,58	35	48	28	30	10	38,3	123-330-525

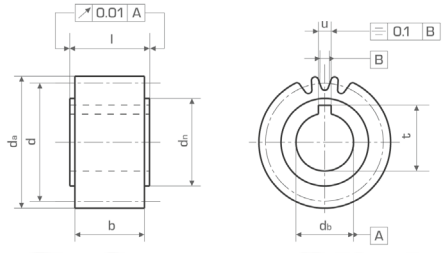
mit Nabe | **with hub**



Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	69,7	63,66	22	36	28	56	6	24,8	125-230-220
20	69,7	63,66	25	44	28	60	8	28,3	125-230-520
20	69,7	63,66	30	50	28	60	8	33,3	125-330-020
20	69,7	63,66	32	55	28	65	10	35,3	125-330-220
22	76,0	70,03	32	55	28	65	10	35,3	125-330-222
22	76,0	70,03	40	62	28	65	12	43,3	125-430-022
25	85,6	79,58	22	36	28	56	6	24,8	125-230-225
25	85,6	79,58	25	44	28	60	8	28,3	125-230-525
25	85,6	79,58	30	50	28	60	8	33,3	125-330-025
25	85,6	79,58	32	55	28	65	10	35,3	125-330-225
25	85,6	79,58	35	55	28	65	10	38,3	125-330-525
25	85,6	79,58	40	62	28	65	12	43,3	125-430-025
28	95,1	89,13	32	55	28	65	10	35,3	125-330-228
28	95,1	89,13	40	62	28	65	12	43,3	125-430-028
32	107,85	101,86	32	55	28	65	10	35,3	125-330-232
32	107,85	101,86	40	62	28	65	12	43,3	125-430-032

Stirnräder mit geschliffenen Zahnflanken, geradeverzahnt

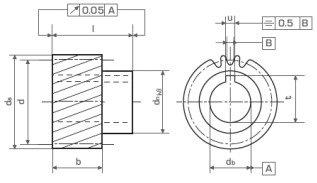
Spur Gears with Straigth Ground Teeth



Modul | module	**4,0**
Verzahnungsqualität | toothing quality	**7 e25**
geradverzahnt | straigth teeth	
Eingriffswinkel | pressure angle	**20°**
einsatzgehärtet | case hardened	
Material | material	**1.7131 [16MnCr5]**

Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	88,0	80,0	35	52	40	50	10	38,3	113-340-520
20	88,0	80,0	45	65	40	50	14	48,8	113-440-520
22	96,0	88,0	35	52	40	50	10	38,3	113-340-522
22	96,0	88,0	45	65	40	50	14	48,8	113-440-522
25	108,0	100,0	35	52	40	50	10	38,3	113-340-525
25	108,0	100,0	45	65	40	50	14	48,8	113-440-525
28	120,0	112,0	35	52	40	50	10	38,3	113-340-528
28	120,0	112,0	45	65	40	50	14	48,8	113-440-528
32	136,0	128,0	35	52	40	50	10	38,3	113-340-532
32	136,0	128,0	45	65	40	50	14	48,8	113-440-532
40	168,0	160,0	45	65	40	50	14	48,8	113-440-540
40	168,0	160,0	60	80	40	50	18	64,3	113-640-040

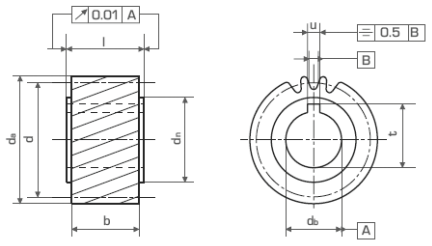
mit Nabe | **with hub**



Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
20	88,0	80,0	32	55	40	75	10	35,3	115-340-220
20	88,0	80,0	35	55	40	75	10	38,3	115-340-520
20	88,0	80,0	40	62	40	75	12	43,3	115-440-020
22	96,0	88,0	45	68	40	75	14	48,8	115-440-522
25	108,0	100,0	32	55	40	75	10	35,3	115-340-225
25	108,0	100,0	35	55	40	75	10	38,3	115-340-525
25	108,0	100,0	40	62	40	75	12	43,3	115-440-025
25	108,0	100,0	55	80	40	80	16	59,3	115-540-525
28	120,0	112,0	45	68	40	75	14	48,8	115-440-528
32	136,0	128,0	55	80	40	80	16	59,3	115-540-532
32	136,0	128,0	75	110	40	100	20	80,4	115-740-532
40	168,0	160,0	75	110	40	100	20	80,4	115-740-540

Stirnräder mit geschliffenen Zahnflanken, schrägverzahnt

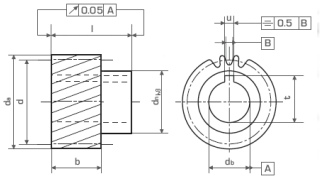
Spur Gears with Ground Teeth, Helical



Modul | module	4,0
Verzahnungsqualität | toothing quality	7 e25
schrägverzahnt, linkssteigend | helical, left hand	
Schrägungswinkel | helix angle	19° 31´42´´
Eingriffswinkel | pressure angle	20°
einsatzgehärtet | case hardened	
Material | material	1.7131 [16MnCr5]

Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
15	71,7	63,66	35	48	40	50	10	38,3	123-340-515
20	92,9	84,88	35	48	40	50	10	38,3	123-340-520
20	92,9	84,88	45	58	40	50	14	48,8	123-440-520
22	101,4	93,37	35	52	40	50	10	38,3	123-340-522
22	101,4	93,37	45	65	40	50	14	48,8	123-440-522
25	114,1	106,10	35	48	40	50	10	38,3	123-340-525
25	114,1	106,10	45	58	40	50	14	48,8	123-440-525

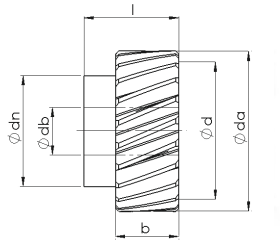
mit Nabe | with hub



Zähnez. No. teeth	d_a	d	d_b H6	d_n	b	l	u	t	Bestell Nr. Part No.
18	84,4	76,39	32	55	40	75	10	35,3	125-340-218
21	97,1	89,13	32	55	40	75	10	35,3	125-340-221
21	97,1	89,13	35	55	40	75	10	38,3	125-340-521
21	97,1	89,13	40	62	40	75	12	43,3	125-440-021
21	97,1	89,13	45	68	40	75	14	48,8	125-440-521
24	109,9	101,86	32	55	40	75	10	35,3	125-340-224
24	109,9	101,86	35	55	40	75	10	38,3	125-340-524
24	109,9	101,86	40	62	40	75	12	43,3	125-440-024
24	109,9	101,86	45	68	40	75	14	48,8	125-440-524
24	109,9	101,86	55	80	40	80	16	59,3	125-540-524
25	114,1	106,10	55	80	40	80	16	59,3	125-540-525

Stirnräder, schrägverzahnt, gefräst

Spur Gears, Helical with Milled Teeth



Modul | module **2,0**

schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
Material | material **1.0503 [C45]**

Zähnez. No. teeth	d_a	d	d_n	d_b	l	b	[kg]	Bestell Nr. Part No.
20	46,4	42,44	30	9	35	28	0,35	126-020-020
25	57,1	53,05	35	12	35	28	0,54	126-020-025
30	67,7	63,66	40	12	35	28	0,76	126-020-030

Modul | module **3,0**

schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
Material | material **1.0503 [C45]**

Zähnez. No. teeth	d_a	d	d_n	d_b	l	b	[kg]	Bestell Nr. Part No.
20	69,7	63,66	45	14	50	30	0,99	126-030-020
25	85,6	79,58	60	14	50	30	1,60	126-030-025

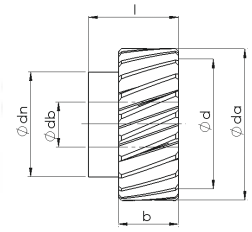
Modul | module **4,0**

schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
Material | material **1.0503 [C45]**

Zähnez. No. teeth	d_a	d	d_n	d_b	l	b	[kg]	Bestell Nr. Part No.
15	71,7	63,66	50	16	60	40	1,10	126-040-015
20	92,9	84,88	60	16	60	40	2,21	126-040-020
25	114,1	106,10	75	16	60	40	3,45	126-040-025

Stirnräder, schrägverzahnt, gefräst

Spur Gears, Helical with Milled Teeth



Modul | module **5,0**

schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
Material | material **1.0503 [C45]**

Zähnez. No. teeth	d_a	d	d_n	d_b	l	b	[kg]	Bestell Nr. Part No.
20	116,1	106,10	70	20	70	50	4,0	126-050-020
25	142,6	132,60	80	20	70	50	6,2	126-050-025

Modul | module **6,0**

schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
Material | material **1.0503 [C45]**

Zähnez. No. teeth	d_a	d	d_n	d_b	l	b	[kg]	Bestell Nr. Part No.
20	139,3	127,30	90	20	80	60	7,0	126-060-020
25	171,2	159,20	110	20	80	60	10,8	126-060-025

Modul | module **8,0**

schrägverzahnt, linkssteigend | helical, left hand
Schrägungswinkel | helix angle **19° 31´42´´**
Eingriffswinkel | pressure angle **20°**
Material | material **1.0503 [C45]**

Zähnez. No. teeth	d_a	d	d_n	d_b	l	b	[kg]	Bestell Nr. Part No.
20	186,0	169,77	120	40	120	80	15,8	126-080-020

Zahnstangen
Racks

Lagerprogramm — Stock Programme

Inhalt — Content

Zahnstangen geschliffen, gerade & schräg, Verzahnungsqualität 5 - NEU
Racks Ground, Straight & Helical, Toothing Quality 5 - NEW
● Seiten | pages B 1 - B 2



Zahnstangen geschliffen, gerade & schräg
Racks Ground, Straight & Helical
● Seiten | pages B 3 - B 6



Zahnstangen vergütet, gerade & schräg
Racks Quenched and Tempered, Straight & Helical
● Seiten | pages B 7 - B 8



Zahnstangen induktiv gehärtet, gerade & schräg - NEUE Serien
Racks Induction Hardened, Straight & Helical - NEW Series
● Seiten | pages B 9 - B 12



Zahnstangen gefräst, gerade & schräg - NEUE Serien
Racks Milled Straight & Helical - NEW Series
● Seiten | pages B13 - B16 & B19 - B20



Zahnstangen rostfrei
Racks Stainless Steel
● Seiten | pages B 17



Montagestücke
Mounting Pieces
● Seiten | pages B 18



Zahnstangen Kunststoff
Racks Synthetic Material
● Seiten | pages B 21



Rundzahnstangen gefräst
Round Racks Milled
● Seiten | pages B 22 & B 24 - B 25



Rundzahnstangen rostfrei
Round Racks Stainless Steel
● Seiten | pages B 23



Führungsbuchsen
Bushes
● Seiten | pages B 26



Zahnstangen für Linearführungen
Racks for Guideways
● Seiten | pages B 27 - B 31



Auswahl Zahnstangenantrieb
Selection Rack and Pinion Drive
● Seiten | pages B 32



Auswahl- und Belastungstabellen
Selection and Load Tables
● Seiten | pages B 33 - B 34

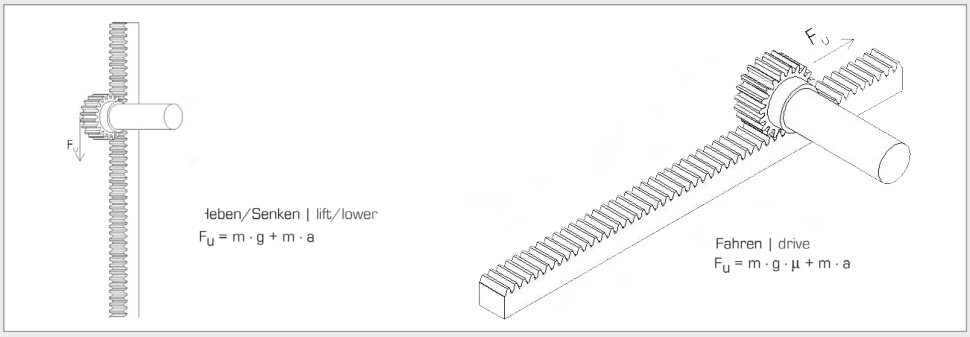


Montageanleitung
Assembly Instruction
● Seiten | pages B 35 - B 36



Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Zahnstangen - Auswahl Zahnstangentrieb
Racks - Selection Rack and Pinion Drive



Allgemein | general

Benennung	Description	Zeichen / Formel Symbol / Formula	Einheit Dimension
Beschleunigung	acceleration	$a = \frac{v}{t} = \frac{2 \cdot s}{t^2}$	m/s^2
Geschwindigkeit	speed	$v = \frac{s}{t} = \sqrt{2 \cdot a \cdot s}$	m/s
Weg	distance	s	m
Zeit	time	t	s
Drehzahl	revolutions per minute, rpm	$n = \frac{v \cdot 60.000}{\pi \cdot d_0}$	1/min
Teilkreisdurchmesser	pitch diameter	d_0	mm
Moment	torque	$M = \frac{F_u \cdot d_0}{2000}$	Nm
Leistung	power	$P = \frac{M \cdot n}{9550} = \frac{F_u \cdot n \cdot d_0}{19100}$	kW

Auf den Seiten B 33 und B 34 sind für verschiedene Zahnstangen/Ritzel-Kombinationen einige Auswahltabellen für die maximal übertragbare Leistung dargestellt.

Die Auslegung erfolgte mit einem
Anwendungsfaktor: 1,0
Sicherheit gegen Grübchenbildung: 1,0
Sicherheit gegen Zahnbruch: 1,4
Lebensdauer: 20.000 h

Wobei für die Dauerfestigkeit Zahnfußspannung $\sigma_{F\,lim}$ und für die Dauerfestigkeit Herz´sche Pressung $\sigma_{H\,lim}$ mit folgenden Werten gerechnet wurde:

On pages B 33 and B 34 are listed some selection tables for rack/pinion drives for the maximum permissible power.

The dimensioning happened with
application factor: 1.0
safety for stress at single tooth contact: 1.0
safety for Tooth root stress: 1.4
service life in hours: 20,000 h

We calculate with following values for rolling load $\sigma_{F\,lim}$ and bending load $\sigma_{H\,lim}$

Material	$\sigma_{F\,lim}$ (N/mm²)	$\sigma_{H\,lim}$ (N/mm²)
C45	440	550
C45 induktiv gehärtet induction hardened	750	1250
16MnCr5 aufgekohlt und gehärtet carburisized and hardened	920	1500
42CrMo4V	600	730

Zahnstangen - Auswahl- und Belastungstabellen
Racks - Selection and Load Tables

Maximal zulässige Drehmomente in Nm bei ausreichender Schmierung mit Sicherheits- und Anwendungsfaktor 1,0; und einer Geschwindigkeit von 1,5 m / s

Maximum permissible torques in Nm with adequate lubrication with safety- and application factor 1.0; and a speed of 1.5 m / s

Modul | module		1 mm b=10 mm				1,5 mm b=15 mm				2 mm b=20 mm				
Zähnezahl | number of teeth		15	20	25	40	15	20	25	40	15	20	25	30	40
Zahnstange | rack Material & Verzahnung material & tooth system	Stirnrad | pinion													
C45 weich | C45 soft gerade | straight	C45 weich C45 soft C45 ind. gehärtet C45 ind.-hardened	0,3 1,2	0,9 2,5	1,1 4,5	10,7 14,7	1,0 2,0	2,8 5,7	8,8 17,7	35,3 60,0	4,4 13,8	14,1 28,1	26,9 48,0	44,2 74,1	98,2 134,7
C45 ind. gehärtet C45 ind.- hardened gerade | straight	C45 ind. gehärtet C45 ind.-hardened	2,0	8,7	14,7	25,3	7,0	28,2	52,9	95,3	29,8	75,0	128,2	151,7	200,2
C45 ind. gehärtet C45 ind.- hardened geschliffen; gerade ground teeth; straight	C45 ind. gehärtet C45 ind.-hardened													
C45 ind. gehärtet C45 ind.- hardened geschliffen; schräg ground teeth; helical	C45 ind. gehärtet C45 ind.-hardened													
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; gerade ground teeth; straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth										159,8	200,0	238,2	320,3
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; schräg ground teeth; helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth										180,9	227,8	270,2	365,2
42CrMo4V vergütet 42CrMo4V quenched & tempered; gerade | straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth										42,8	68,2	100,2	186,7
42CrMo4V vergütet 42CrMo4V quenched & tempered; schräg | helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth										45,9	73,0	104,8	195,1

Modul | module		2,5 mm b=25 mm				3 mm b=30 mm				
Zähnezahl | number of teeth		15	20	25	40	15	20	25	30	40
Zahnstange | rack Material & Verzahnung material & tooth system	Stirnrad | pinion									
C45 weich | C45 soft gerade | straight	C45 weich C45 soft C45 ind. gehärtet C45 ind.-hardened	8,5 15,6	25,1 45,1	52,8 95,0	175,2 245,2	13,0 40,8	46,0 91,9	97,2 168,2	159,6 243,4	339,8 450,3
C45 ind. gehärtet C45 ind.- hardened gerade | straight	C45 ind. gehärtet C45 ind.-hardened	60,0	149,9	255,8	399,7	87,1	215,1	440,0	497,3	780,0
C45 ind. gehärtet C45 ind.- hardened geschliffen; gerade ground teeth; straight	C45 ind. gehärtet C45 ind.-hardened									
C45 ind. gehärtet C45 ind.- hardened geschliffen; schräg ground teeth; helical	C45 ind. gehärtet C45 ind.-hardened									
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; gerade ground teeth; straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth						420,1	530,2		880,0
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; schräg ground teeth; helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth						504,7	605,0		
42CrMo4V vergütet 42CrMo4V quenched & tempered; gerade | straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth						138,0	234,8		620,2
42CrMo4V vergütet 42CrMo4V quenched & tempered; schräg | helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth						145,0	245,1		

Zahnstangen - Auswahl- und Belastungstabellen
Racks - Selection and Load Tables

Maximal zulässige Drehmomente in Nm bei ausreichender Schmierung mit Sicherheits- und Anwendungsfaktor 1,0; und einer Geschwindigkeit von 1,5 m / s

Maximum permissible torques in Nm with adequate lubrication with safety- and application factor 1.0; and a speed of 1.5 m / s

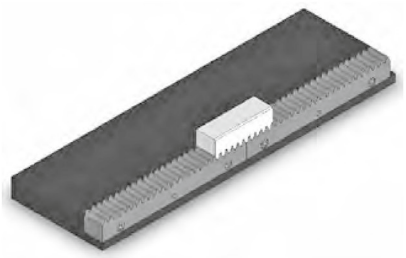
Modul | module		4 mm b=40 mm					5 mm b=50 mm				6 mm b=60 mm		
Zähnezahl | number of teeth		15	20	25	30	40	15	20	25	40	15	20	25
Zahnstange | rack Material & Verzahnung material & tooth system	Stirnrad | pinion												
C45 weich | C45 soft gerade | straight	C45 weich C45 soft C45 ind. gehärtet C45 ind.-hardened	39,9 130,0	115,1 249,9	240,2 415,2	414,1 593,2	850,1 1100,4	89,8 259,7	230,0 499,7	489,7 800,4	800,4 1200,1	170,2 470,0	429,7 810,3	870,4 1400,5
C45 ind. gehärtet C45 ind.- hardened gerade | straight	C45 ind. gehärtet C45 ind.-hardened	220,2	640,1	1070,1	1306,9	1710,4	450,0	1150,0	1660,4	1999,5	794,6	2200,5	2950,0
C45 ind. gehärtet C45 ind.- hardened geschliffen; gerade ground teeth; straight	C45 ind. gehärtet C45 ind.-hardened						1080,0		2060,0				3640,0
C45 ind. gehärtet C45 ind.- hardened geschliffen; schräg ground teeth; helical	C45 ind. gehärtet C45 ind.-hardened						1330,0					3170,0	4180,0
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; gerade ground teeth; straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth		1070,1	1330,4		2000,3							
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; schräg ground teeth; helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth	770,1	1219,7	1530,2									
42CrMo4V vergütet 42CrMo4V quenched & tempered; gerade | straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth		355,2	575,0		1550,4							
42CrMo4V vergütet 42CrMo4V quenched & tempered; schräg | helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth	204,8	370,3	589,9									

Modul | module							8 mm b=80 mm			10 mm b=100 mm
Zähnezahl | number of teeth							15	20	25	20
Zahnstange | rack Material & Verzahnung material & tooth system	Stirnrad | pinion									
C45 weich | C45 soft gerade | straight	C45 weich C45 soft C45 ind. gehärtet C45 ind.-hardened						420,1 1149,5	1050,5 2101,0	2101,0 3398,0	4000,0
C45 ind. gehärtet C45 ind.- hardened gerade | straight	C45 ind. gehärtet C45 ind.-hardened						1898,0	4502,0	7500,0	9900,0
C45 ind. gehärtet C45 ind.- hardened geschliffen; gerade ground teeth; straight	C45 ind. gehärtet C45 ind.-hardened							6870,0		12850,0
C45 ind. gehärtet C45 ind.- hardened geschliffen; schräg ground teeth; helical	C45 ind. gehärtet C45 ind.-hardened									14000,0
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; gerade ground teeth; straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth									
16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen; schräg ground teeth; helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth									
42CrMo4V vergütet 42CrMo4V quenched & tempered; gerade | straight	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth									
42CrMo4V vergütet 42CrMo4V quenched & tempered; schräg | helical	16MnCr5 einsatzgehärtet 16MnCr5 case-hardened Zahnflanken geschliffen ground teeth									

Zahnstangen - Montageanleitung
Racks - Assembly Instruction



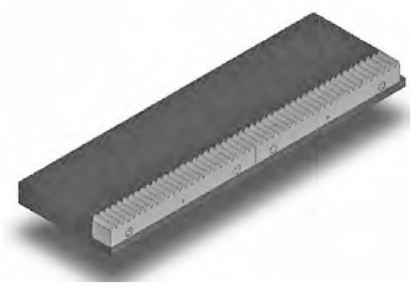
- Zahnstange positionieren und fixieren (z.B. mit Schraubzwingen).
- Zahnstange mit Schrauben gemäß definiertem Drehmoment befestigen.
- Positioning and fixing the rack (for example with clamps).
- Mount the rack with screws accordant to the defined torque.



- Weitere Zahnstange mit Hilfe des Montagestückes verbinden (Montagestücke siehe Seite B 18).
- Zahnstange mit Schrauben gemäß definiertem Drehmoment befestigen.
- Connect another rack with the help of the mounting piece (mounting pieces see on page B 18).
- Mount the rack with screws accordant to the defined torque.

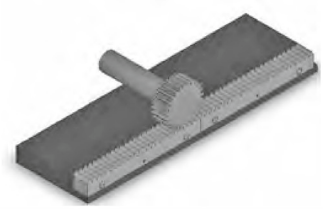


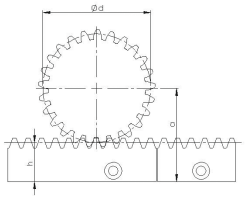
- Nach der Montage ist die Parallelität der Zahnstangen zueinander sowie der Übergang von der einen zur anderen Zahnstange zu überprüfen.
- Ebenso ist das genaue Fluchten der Zahnstangen zu überprüfen.
- After mounting these racks check the parallelism and the connetion from one rack to the other.
- As well check the correct aligning of the racks.



- Nach der Kontrolle werden die Passstifte aufgerieben und die Zahnstangen verstiftet.
- After the checkup the register pins reaming and pin the racks.

Zahnstangen - Achsabstand
Racks - Center Distance

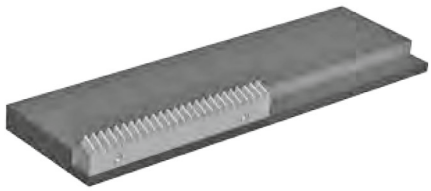




Der Achsabstand a ergibt sich aus dem Abstand der Ritzelmitte zur Rückenfläche der Zahnstange nach folgender Formel:
The center distance a resulting in the distance from the middle of the pinion to the back area of the rack to following formula:

$$a = h + \frac{d}{2}$$

Montageanleitung Zahnstangen
Assembly Instruction Racks

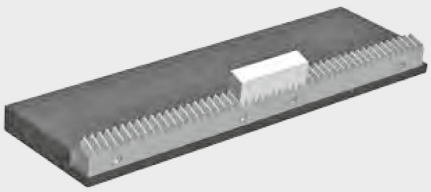


Zahnstange positionieren und fixieren (z.B. mit Schraubzwingen).

Zahnstange mit Schrauben gemäß definiertem Drehmoment befestigen.

Positioning and fixing of the rack (e.g. with screw clamps).

Fixing of the rack with screws according to the defined torque.



Weitere Zahnstange mit Hilfe des Montagestückes verbinden (Montagestücke siehe S. C 30).

Zahnstange mit Schrauben gemäß definiertem Drehmoment befestigen.

Connect another rack by means of a mounting piece (for mounting pieces, please see page C 30).

Fixing of the rack with screws according to the defined torque.

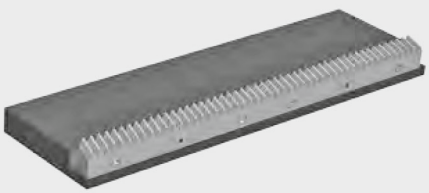


Nach der Montage ist die Parallelität der Zahnstangen zueinander sowie der Übergang von der einen zur anderen Zahnstange zu überprüfen.

Ebenso ist das genaue Fluchten der Zahnstangen zu überprüfen.

After assembly, check the parallelism of the racks to each other and the transition from one to the other rack.

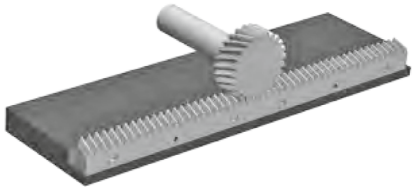
Likewise, the correct alignment of the racks must be checked.



Nach der Kontrolle werden die Passstifte aufgerieben und die Zahnstangen verstiftet.

Following the check, ream the register pins and pin the racks.

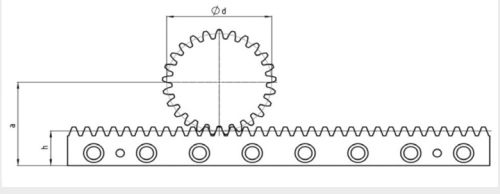
Achsabstand Zahnstangen
Center Distance Racks



Der Achsabstand **a** ergibt sich aus dem Abstand der Ritzelmitte zur Rückenfläche der Zahnstange nach folgender Formel:

The center distance **a** is determined by the distance between the center of the pinion to the back surface of the rack using the following formula:

$$a = \frac{z \cdot m}{2 \cdot \cos\beta} + x \cdot m + h$$



a = Lauf-Achsabstand | running center distance
z = Zähnezahl | number of teeth
m = Modul | module
ß = Schrägungswinkel | helix angle
x = Profilverschiebung | addendum modification
h = Höhe Teillinie zur Rückenfläche | height of pitch line to the back surface

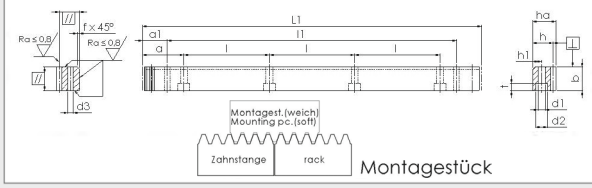
Montagestücke für Zahnstangen – Qualität 5 — Mounting pieces for racks – quality 5

Montagestücke schrägverzahnt Stahl 1.0503 [C45] | mounting pieces, helical teeth, steel 1.0503 [C45]
Schrägungswinkel 19°31´42´´ linkssteigend | helix angle 19°31´42´´ left hand

Modul Module	L_1	b	Bestell Nr. Part No.
2	200,00	24	143-020-002
3	200,00	29	143-030-002
4	200,00	39	143-040-002

NEU! Q5 Zahnstangen für fortlaufende Montage mit geschl. Zahnflanken, geradverzahnt
Rücken - und Seitenflächen geschliffen

NEW! Q5 Racks for Continuous Mounting with Ground Teeth, Straight Teeth
Ground Rear and Side Surface



Montagestück

Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	5 h23

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.	
2	502,65	80	24	24	22	2	62,8	125,66	8	7	11	7	31,3	440,1	5,7	2,1	144-020-405-5	NEU | NEW
2	1005,30	160	24	24	22	2	62,8	125,66	8	7	11	7	31,3	942,7	5,7	4,2	144-020-410-5	NEU | NEW
3	508,93	54	29	29	26	2	63,6	127,23	9	10	15	9	34,4	440,1	7,7	3,0	144-030-405-5	NEU | NEW
3	1017,87	108	29	29	26	2	63,6	127,23	9	10	15	9	34,4	949,1	7,7	6,0	144-030-410-5	NEU | NEW
4	502,65	40	39	39	35	3	62,8	125,66	12	10	15	9	37,5	427,7	7,7	5,3	144-040-405-5	NEU | NEW
4	1005,30	80	39	39	35	3	62,8	125,66	12	10	15	9	37,5	930,3	7,7	10,5	144-040-410-5	NEU | NEW
5	502,65	32	49	39	34	3	62,8	125,66	12	14	20	13	30,1	442,4	11,7	6,7	144-050-405-5	NEU | NEW
5	1005,30	64	49	39	34	3	62,8	125,66	12	14	20	13	30,1	945,0	11,7	13,4	144-050-410-5	NEU | NEW
6	508,93	27	59	49	43	3	63,6	127,23	16	18	26	17	31,4	446,1	15,7	10,4	144-060-405-5	NEU | NEW
6	1017,87	54	59	49	43	3	63,6	127,23	16	18	26	17	31,4	955,0	15,7	20,2	144-060-410-5	NEU | NEW
8	502,65	20	79	79	71	3	62,8	125,66	25	22	33	21	26,6	449,5	19,7	22,4	144-080-405-5	NEU | NEW
8	1005,30	40	79	79	71	3	62,8	125,66	25	22	33	21	26,6	952,0	19,7	44,8	144-080-410-5	NEU | NEW
10	1005,30	32	99	99	89	3	62,8	125,66	32	33	48	32	125,7	754,0	19,7	68,7	144-100-410-5	NEU | NEW

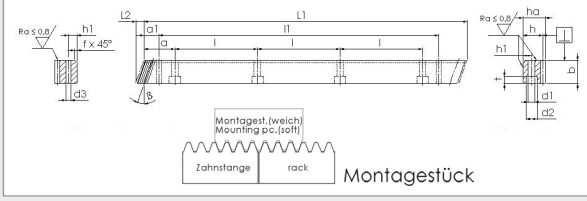
z** ... Zähnezahl | number of teeth

* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstangen sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

NEU! Q5 Zahnstangen für fortlaufende Montage mit geschl. Zahnflanken, schrägverzahnt
Rücken - und Seitenflächen geschliffen

NEW! Q5 Racks for Continuous Mounting with Ground Teeth, Helical Teeth
Ground Rear and Side Surface



Montagestück

Material | material	**1.0503 [C45]**
induktiv gehärtet | induction hardened	**50-55 HRC ***
Schrägungswinkel helix angle	**19°31´42´´ rechtssteigend right hand**
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality	**5 h23**

mit Bohrungen | with bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h f +0,5	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.	
2	500,00	8,5	75	24	24	22	2	62,5	125	8	7	11	7	31,7	436,6	5,7	2,1	143-020-405-5	NEU | NEW
2	1000,00	8,5	150	24	24	22	2	62,5	125	8	7	11	7	31,7	936,6	5,7	4,1	143-020-410-5	NEU | NEW
3	500,00	10,3	50	29	29	26	2	62,5	125	9	10	15	9	35,0	430,0	7,7	2,9	143-030-405-5	NEU | NEW
3	1000,00	10,3	100	29	29	26	2	62,5	125	9	10	15	9	35,0	930,0	7,7	5,9	143-030-410-5	NEU | NEW
4	506,66	13,8	38	39	39	35	3	62,5	125	12	10	15	9	33,3	433,0	7,7	5,4	143-040-405-5	NEU | NEW
4	1000,00	13,8	75	39	39	35	3	62,5	125	12	10	15	9	33,3	933,4	7,7	10,7	143-040-410-5	NEU | NEW
5	500,00	17,4	30	49	39	34	3	62,5	125	12	14	20	13	37,5	425,0	11,7	6,5	143-050-405-5	NEU | NEW
5	1000,00	17,4	60	49	39	34	3	62,5	125	12	14	20	13	37,5	925,0	11,7	13,0	143-050-410-5	NEU | NEW
6	500,00	20,9	25	59	49	43	3	62,5	125	16	18	26	17	37,5	425,0	15,7	9,9	143-060-405-5	NEU | NEW
6	1000,00	20,9	50	59	49	43	3	62,5	125	16	18	26	17	37,5	925,0	15,7	19,8	143-060-410-5	NEU | NEW
8	480,00	28,0	18	79	79	71	3	60,0	120	25	22	33	21	120,0	240,0	19,7	21,0	143-080-405-5	NEU | NEW
8	960,00	28,0	36	79	79	71	3	60,0	120	25	22	33	21	120,0	720,0	19,7	42,5	143-080-410-5	NEU | NEW
10	1000,00	35,1	30	99	99	89	3	62,5	125	32	33	48	32	125,0	750,0	19,7	68,7	143-100-410-5	NEU | NEW

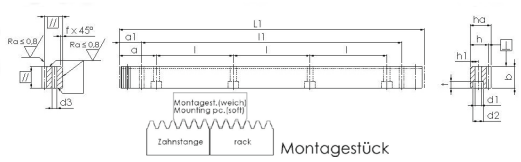
z**... Zähnezahl | number of teeth

* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstangen sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen für fortlaufende Montage mit geschl. Zahnflanken, geradverzahnt
Rücken - und Seitenflächen geschliffen

Racks for Continuous Mounting with Ground Teeth, Straight Teeth
Ground Rear and Side Surface



Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	6 h23
ab | from 2000 mm	6 h24

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b	h_a	h	f +0,5	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2	502,65	80	24	24	22	2	62,8	125,66	8	7	11	7	31,3	440,1	5,7	2,10	144-020-405
2	1005,30	160	24	24	22	2	62,8	125,66	8	7	11	7	31,3	942,7	5,7	4,20	144-020-410
3	508,93	54	29	29	26	2	63,6	127,23	9	10	15	9	34,4	440,1	7,7	3,00	144-030-405
3	1017,87	108	29	29	26	2	63,6	127,23	9	10	15	9	34,4	949,1	7,7	6,00	144-030-410
4	502,65	40	39	39	35	3	62,8	125,66	12	10	15	9	37,5	427,7	7,7	5,25	144-040-405
4	1005,30	80	39	39	35	3	62,8	125,66	12	10	15	9	37,5	930,3	7,7	10,50	144-040-410
4	2010,61	160	39	39	35	3	62,8	125,66	12	10	15	9	37,5	1935,6	7,7	21,00	144-040-420
5	502,65	32	49	39	34	3	62,8	125,66	12	14	20	13	30,1	442,4	11,7	6,70	144-050-405
5	1005,30	64	49	39	34	3	62,8	125,66	12	14	20	13	30,1	945,0	11,7	13,40	144-050-410
5	2010,61	128	49	39	34	3	62,8	125,66	12	14	20	13	30,1	1950,4	11,7	26,80	144-050-420
6	508,93	27	59	49	43	3	63,6	127,23	16	18	26	17	31,4	446,1	15,7	10,40	144-060-405
6	1017,87	54	59	49	43	3	63,6	127,23	16	18	26	17	31,4	955,0	15,7	20,20	144-060-410
6	2035,75	108	59	49	43	3	63,6	127,23	16	18	26	17	31,4	1973,0	15,7	40,40	144-060-420
8	502,65	20	79	79	71	3	62,8	125,66	25	22	33	21	26,6	449,5	19,7	22,38	144-080-405
8	1005,30	40	79	79	71	3	62,8	125,66	25	22	33	21	26,6	952,0	19,7	44,76	144-080-410
8	2010,61	80	79	79	71	3	62,8	125,66	25	22	33	21	26,6	1957,3	19,7	89,50	144-080-420
10	1005,30	32	99	99	89	3	62,8	125,66	32	33	48	32	125,7	754,0	19,7	68,72	144-100-410

ohne Bohrungen | without bores

Modul Module	theor. L_1	z**	b	h_a	h	f +0,5	[kg]	Bestell Nr. Part No.
2	502,65	80	24	24	22	2	2,10	144-020-305
2	1005,30	160	24	24	22	2	4,20	144-020-310
3	508,93	54	29	29	26	2	3,00	144-030-305
3	1017,87	108	29	29	26	2	6,00	144-030-310
4	502,65	40	39	39	35	3	5,25	144-040-305
4	1005,30	80	39	39	35	3	10,50	144-040-310
4	2010,61	160	39	39	35	3	21,00	144-040-320
5	502,65	32	49	39	34	3	6,70	144-050-305
5	1005,30	64	49	39	34	3	13,40	144-050-310
5	2010,61	128	49	39	34	3	26,80	144-050-320
6	508,93	27	59	49	43	3	10,40	144-060-305
6	1017,87	54	59	49	43	3	20,20	144-060-310
6	2035,75	108	59	49	43	3	40,40	144-060-320
8	502,65	20	79	79	71	3	22,38	144-080-305
8	1005,30	40	79	79	71	3	44,76	144-080-310
8	2010,61	80	79	79	71	3	89,50	144-080-320
10	1005,30	32	99	99	89	3	68,72	144-100-310

mit Bohrungen, ohne Stiftbohrungen | with bores, without pin holes — Nicht mehr für Neukonstruktionen verwenden! | not to use for new design!

Modul Module	theor. L_1	z**	b	h_a	h	f +0,5	a	l	h_1	d_1	d_2	t	[kg]	Bestell Nr. Part No.
2	999,02	159	24	24	22	2	99,5	200	8	6,6	11	7	4,20	144-020-410-999
3	999,02	106	29	29	26	2	99,5	200	9	9	15	9	6,00	144-030-410-999
4	1005,30	80	39	39	35	3	102,6	200	12	9	15	9	10,50	144-040-410-999

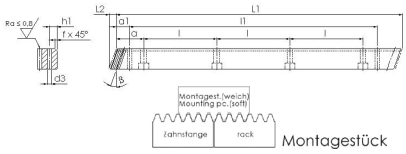
z**... Zähnezahl | number of teeth

* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
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For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen für fortlaufende Montage mit geschl. Zahnflanken, schrägverzahnt
Rücken - und Seitenflächen geschliffen

Racks for Continuous Mounting with Ground Teeth, Helical Teeth
Ground Rear and Side Surface



Montagestück

Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
Schrägungswinkel helix angle	19°31´42´´ rechtssteigend right hand
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality ab | from 2000 mm	6 h23 6 h24

mit Bohrungen | with bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2	500,00	8,5	75	24	24	22	2	62,5	125	8	7	11	7	31,7	436,6	5,7	2,1	143-020-405
2	1000,00	8,5	150	24	24	22	2	62,5	125	8	7	11	7	31,7	936,6	5,7	4,1	143-020-410
3	500,00	10,3	50	29	29	26	2	62,5	125	9	10	15	9	35,0	430,0	7,7	2,9	143-030-405
3	1000,00	10,3	100	29	29	26	2	62,5	125	9	10	15	9	35,0	930,0	7,7	5,9	143-030-410
4	506,66	13,8	38	39	39	35	3	62,5	125	12	10	15	9	33,3	433,0	7,7	5,4	143-040-405
4	1000,00	13,8	75	39	39	35	3	62,5	125	12	10	15	9	33,3	933,4	7,7	10,7	143-040-410
4	2000,00	13,8	150	39	39	35	3	62,5	125	12	10	15	9	33,3	1933,4	7,7	21,4	143-040-420
5	500,00	17,4	30	49	39	34	3	62,5	125	12	14	20	13	37,5	425,0	11,7	6,5	143-050-405
5	1000,00	17,4	60	49	39	34	3	62,5	125	12	14	20	13	37,5	925,0	11,7	13,0	143-050-410
5	2000,00	17,4	120	49	39	34	3	62,5	125	12	14	20	13	37,5	1925,0	11,7	26,0	143-050-420
6	500,00	20,9	25	59	49	43	3	62,5	125	16	18	26	17	37,5	425,0	15,7	9,9	143-060-405
6	1000,00	20,9	50	59	49	43	3	62,5	125	16	18	26	17	37,5	925,0	15,7	19,8	143-060-410
6	2000,00	20,9	100	59	49	43	3	62,5	125	16	18	26	17	37,5	1925,0	15,7	36,2	143-060-420
8	480,00	28,0	18	79	79	71	3	60,0	120	25	22	33	21	120,0	240,0	19,7	21,0	143-080-405
8	960,00	28,0	36	79	79	71	3	60,0	120	25	22	33	21	120,0	720,0	19,7	42,5	143-080-410
8	1920,00	28,0	72	79	79	71	3	60,0	120	25	22	33	21	120,0	1680,0	19,7	85,0	143-080-420
10	1000,00	35,1	30	99	99	89	3	62,5	125	32	33	48	32	125,0	750,0	19,7	68,7	143-100-410

ohne Bohrungen | without bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$										[kg]	Bestell Nr. Part No.
2	500,00	8,5	75	24	24	22	2										2,1	143-020-305
2	1000,00	8,5	150	24	24	22	2										4,1	143-020-310
3	500,00	10,3	50	29	29	26	2										2,9	143-030-305
3	1000,00	10,3	100	29	29	26	2										5,9	143-030-310
4	506,66	13,8	38	39	39	35	3										5,4	143-040-305
4	1000,00	13,8	75	39	39	35	3										10,7	143-040-310
4	2000,00	13,8	150	39	39	35	3										21,4	143-040-320
5	500,00	17,4	30	49	39	34	3										6,5	143-050-305
5	1000,00	17,4	60	49	39	34	3										13,0	143-050-310
5	2000,00	17,4	120	49	39	34	3										26,0	143-050-320
6	500,00	20,9	25	59	49	43	3										9,9	143-060-305
6	1000,00	20,9	50	59	49	43	3										19,8	143-060-310
6	2000,00	20,9	100	59	49	43	3										36,2	143-060-320
8	480,00	28,0	18	79	79	71	3										21,0	143-080-305
8	960,00	28,0	36	79	79	71	3										42,5	143-080-310
8	1920,00	28,0	72	79	79	71	3										85,0	143-080-320
10	1000,00	35,1	30	99	99	89	3										68,7	143-100-310

mit Bohrungen, ohne Stiftbohrungen | with bores, without pin holes — Nicht mehr für Neukonstruktionen verwenden! | not to use for new design!

Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$	a	l	h_1	d_1	d_2	t				[kg]	Bestell Nr. Part No.
2	1000,00	8,5	150	24	24	22	2	91,5	200	8	6,6	11	7				4,2	143-020-410-999
3	1000,00	10,3	100	29	29	26	3	89,7	200	9	9	15	9				6,0	143-030-410-999
4	1000,00	13,8	75	39	39	35	3	86,2	200	12	9	15	9				10,5	143-040-410-999

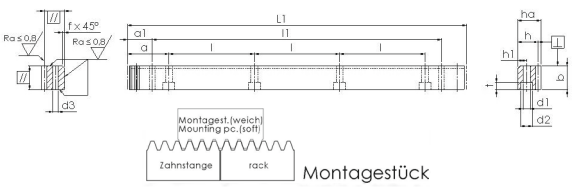
z**... Zähnezahl | number of teeth

* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
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For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen für fortlaufende Montage mit geschl. Zahnflanken, geradverzahnt
Rücken - und Seitenflächen geschliffen

Racks for Continuous Mounting with Ground Teeth, Straight Teeth
Ground Rear and Side Surface



Montagestück

Material | material	1.7131 [16MnCr5]
Verzahnung induktiv gehärtet toothing inductive hardened	60 HRC *
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality ab | from 2000 mm	6 h23 6 h24

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2	502,65	80	24	24	22	2	62,8	125,66	8	7	11	7	31,3	440,1	5,7	2,10	144-020-205
2	1005,30	160	24	24	22	2	62,8	125,66	8	7	11	7	31,3	942,7	5,7	4,20	144-020-210
3	508,93	54	29	29	26	2	63,6	127,23	9	10	15	9	34,4	440,1	7,7	3,00	144-030-205
3	1017,87	108	29	29	26	2	63,6	127,23	9	10	15	9	34,4	949,1	7,7	6,00	144-030-210
4	502,65	40	39	39	35	3	62,8	125,66	12	10	15	9	37,5	427,7	7,7	5,30	144-040-205
4	1005,30	80	39	39	35	3	62,8	125,66	12	10	15	9	37,5	930,3	7,7	10,60	144-040-210

ohne Bohrungen | without bores

Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	[kg]	Bestell Nr. Part No.
2	502,65	80	24	24	22	2	2,10	144-020-105
2	1005,30	160	24	24	22	2	4,20	144-020-110
3	508,93	54	29	29	26	2	3,00	144-030-105
3	1017,87	108	29	29	26	2	6,00	144-030-110
4	502,65	40	39	39	35	3	5,30	144-040-105
4	1005,30	80	39	39	35	3	10,60	144-040-110

z**... Zähnezahl | number of teeth

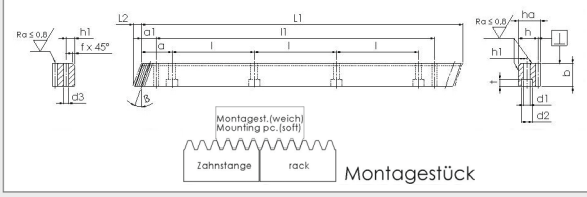
* Einsatzstahl - bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* case hardening steel - module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Zahnstangen für fortlaufende Montage mit geschl. Zahnflanken, schrägverzahnt
Rücken - und Seitenflächen geschliffen

Racks for Continuous Mounting with Ground Teeth, Helical Teeth
Ground Rear and Side Surface



Material | material	**1.7131 [16MnCr5]**
Verzahnung induktiv gehärtet toothing inductive hardened	**60 HRC ***
Schrägungswinkel helix angle	**19°31´42´´ rechtssteigend right hand**
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality ab | from 2000 mm	**6 h23 6 h24**

mit Bohrungen | with bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2	500,00	8,5	75	24	24	22	2	62,5	125	8	7	11	7	31,7	436,6	5,7	2,10	143-020-205
2	1000,00	8,5	150	24	24	22	2	62,5	125	8	7	11	7	31,7	936,6	5,7	4,20	143-020-210
3	500,00	10,30	50	29	29	26	2	62,5	125	9	10	15	9	35	430,0	7,7	3,00	143-030-205
3	1000,00	10,30	100	29	29	26	2	62,5	125	9	10	15	9	35	930,0	7,7	6,00	143-030-210
4	506,66	13,80	38	39	39	35	3	62,5	125	12	10	15	9	33,3	433,0	7,7	5,30	143-040-205
4	1000,00	13,80	75	39	39	35	3	62,5	125	12	10	15	9	33,3	933,4	7,7	10,60	143-040-210

ohne Bohrungen | without bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$	[kg]	Bestell Nr. Part No.
2	500,00	8,5	75	24	24	22	2	2,10	143-020-105
2	1000,00	8,5	150	24	24	22	2	4,20	143-020-110
3	500,00	10,30	50	29	29	26	2	3,00	143-030-105
3	1000,00	10,30	100	29	29	26	2	6,00	143-030-110
4	506,66	13,80	38	39	39	35	3	5,30	143-040-105
4	1000,00	13,80	75	39	39	35	3	10,60	143-040-110

z**... Zähnezahl | number of teeth

* Einsatzstahl - bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* case hardening steel - module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

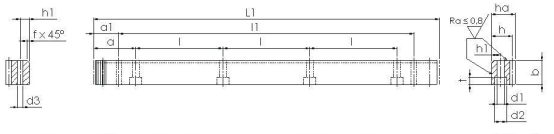
Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen für fortlaufende Montage - vergütet, geradverzahnt

Rücken- u. Anlagefläche geschliffen

Racks for Continuous Mounting - Quenched and Tempered, Straight Teeth

Ground Rear and Contact Surface



Material | material	1.7225 [42 CrMo4 V]
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	8 h27
geschliffene Rücken- u. Anlagefläche ground rear and contact surface	

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2,0	502,65	80	24	24	22	2	62,8	125,66	8	7	11	7	31,3	440,1	5,7	2,20	146-020-205
2,0	1005,30	160	24	24	22	2	62,8	125,66	8	7	11	7	31,3	942,7	5,7	4,30	146-020-210
2,0	2010,61	320	24	24	22	2	62,8	125,66	8	7	11	7	31,3	1948,0	5,7	8,60	146-020-220
3,0	508,93	54	29	29	26	2	63,6	127,23	9	10	15	9	34,4	440,1	7,7	3,10	146-030-205
3,0	1017,87	108	29	29	26	2	63,6	127,23	9	10	15	9	34,4	949,1	7,7	6,20	146-030-210
3,0	2035,75	216	29	29	26	2	63,6	127,23	9	10	15	9	34,4	1967,0	7,7	12,40	146-030-220
4,0	502,65	40	39	39	35	3	62,8	125,66	12	10	15	9	37,5	427,7	7,7	5,50	146-040-205
4,0	1005,30	80	39	39	35	3	62,8	125,66	12	10	15	9	37,5	930,3	7,7	11,00	146-040-210
4,0	2010,61	160	39	39	35	3	62,8	125,66	12	10	15	9	37,5	1935,6	7,7	22,00	146-040-220
5,0	502,65	32	49	39	34	3	62,8	125,66	12	14	20	13	30,2	442,3	11,7	6,80	146-050-205
5,0	1005,30	64	49	39	34	3	62,8	125,66	12	14	20	13	30,2	945,0	11,7	13,60	146-050-210
5,0	2010,61	128	49	39	34	3	62,8	125,66	12	14	20	13	30,2	1950,0	11,7	27,20	146-050-220

ohne Bohrungen | without bores

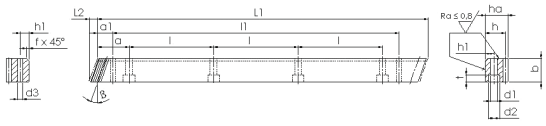
Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	[kg]	Bestell Nr. Part No.
2,0	502,65	80	24	24	22	2	2,20	146-020-105
2,0	1005,30	160	24	24	22	2	4,30	146-020-110
2,0	2010,61	320	24	24	22	2	8,60	146-020-120
3,0	508,93	54	29	29	26	2	3,10	146-030-105
3,0	1017,87	108	29	29	26	2	6,20	146-030-110
3,0	2035,75	216	29	29	26	2	12,40	146-030-120
4,0	502,65	40	39	39	35	3	5,50	146-040-105
4,0	1005,30	80	39	39	35	3	11,00	146-040-110
4,0	2010,61	160	39	39	35	3	22,00	146-040-120
5,0	502,65	32	49	39	34	3	6,80	146-050-105
5,0	1005,30	64	49	39	34	3	13,60	146-050-110
5,0	2010,61	128	49	39	34	3	27,20	146-050-120

z**... Zähnezahl | number of teeth

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen für fortlaufende Montage - vergütet, schrägverzahnt
Rücken- u. Anlagefläche geschliffen

Racks for Continuous Mounting - Quenched and Tempered, Helical Teeth
Ground Rear and Contact Surface



Material | material	1.7225 [42 CrMo4 V]
Schrägungswinkel helix angle	19°31´42´´ rechtssteigend right hand
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	8 h27
geschliffene Rücken- u. Anlagefläche ground rear and contact surface	

mit Bohrungen | with bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2,0	500,00	8,5	75	24	24	22	2	62,5	125,00	8	7	11	7	31,7	436,6	5,7	2,10	143-020-505
2,0	1000,00	8,5	150	24	24	22	2	62,5	125,00	8	7	11	7	31,7	936,6	5,7	4,30	143-020-510
2,0	2000,00	8,5	300	24	24	22	2	62,5	125,00	8	7	11	7	31,7	1936,6	5,7	8,60	143-020-520
3,0	500,00	10,3	50	29	29	26	2	62,5	125,00	9	10	15	9	35,0	430,0	7,7	3,00	143-030-505
3,0	1000,00	10,3	100	29	29	26	2	62,5	125,00	9	10	15	9	35,0	930,0	7,7	6,10	143-030-510
3,0	2000,00	10,3	200	29	29	26	2	62,5	125,00	9	10	15	9	35,0	1930,0	7,7	12,20	143-030-520
4,0	506,66	13,8	38	39	39	35	3	62,5	125,00	12	10	15	9	33,3	433,0	7,7	5,50	143-040-505
4,0	1000,00	13,8	75	39	39	35	3	62,5	125,00	12	10	15	9	33,3	933,4	7,7	10,90	143-040-510
4,0	2000,00	13,8	150	39	39	35	3	62,5	125,00	12	10	15	9	33,3	1933,4	7,7	21,80	143-040-520
5,0	500,00	17,4	30	49	39	34	3	62,5	125,00	12	14	20	13	37,5	425,0	11,7	6,50	143-050-505
5,0	1000,00	17,4	60	49	39	34	3	62,5	125,00	12	14	20	13	37,5	925,0	11,7	13,00	143-050-510
5,0	2000,00	17,4	120	49	39	34	3	62,5	125,00	12	14	20	13	37,5	1925,0	11,7	26,00	143-050-520

ohne Bohrungen | without bores

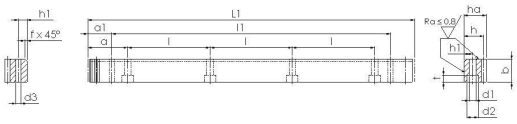
Modul Module	theor. L_1	L_2	z**	b	h_a	h	f $^{+0,5}$	[kg]	Bestell Nr. Part No.
2,0	500,00	8,5	75	24	24	22	2	2,10	143-020-705
2,0	1000,00	8,5	150	24	24	22	2	4,30	143-020-710
2,0	2000,00	8,5	300	24	24	22	2	8,60	143-020-720
3,0	500,00	10,3	50	29	29	26	2	3,00	143-030-705
3,0	1000,00	10,3	100	29	29	26	2	6,10	143-030-710
3,0	2000,00	10,3	200	29	29	26	2	12,20	143-030-720
4,0	506,66	13,8	38	39	39	35	3	5,50	143-040-705
4,0	1000,00	13,8	75	39	39	35	3	10,90	143-040-710
4,0	2000,00	13,8	150	39	39	35	3	21,80	143-040-720
5,0	500,00	17,4	30	49	39	34	3	6,50	143-050-705
5,0	1000,00	17,4	60	49	39	34	3	13,00	143-050-710
5,0	2000,00	17,4	120	49	39	34	3	26,00	143-050-720

z**... Zähnezahl | number of teeth

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen für fortlaufende Montage - induktiv gehärtet, geradverzahnt
Rücken - und Seitenflächen geschliffen

Racks for Continuous Mounting - Induction Hardened, Straight Teeth
Ground Rear and Side Surface



Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	10 h27

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.
2	502,65	80	24	24	22	2	62,8	125,66	8	7	11	7	31,3	440,1	5,7	2,10	144-020-805
2	1005,30	160	24	24	22	2	62,8	125,66	8	7	11	7	31,3	942,7	5,7	4,20	144-020-810
2	2010,61	320	24	24	22	2	62,8	125,66	8	7	11	7	31,3	1948,0	5,7	8,40	144-020-820
3	508,93	54	29	29	26	2	63,6	127,23	9	10	15	9	34,4	440,1	7,7	3,00	144-030-805
3	1017,87	108	29	29	26	2	63,6	127,23	9	10	15	9	34,4	949,1	7,7	6,00	144-030-810
3	2035,75	216	29	29	26	2	63,6	127,23	9	10	15	9	34,4	1967,0	7,7	12,00	144-030-820
4	502,65	40	39	39	35	3	62,83	125,66	12	10	15	9	37,5	427,7	7,7	5,30	144-040-805
4	1005,30	80	39	39	35	3	62,83	125,66	12	10	15	9	37,5	930,3	7,7	10,60	144-040-810
4	2010,61	160	39	39	35	3	62,83	125,66	12	10	15	9	37,5	1935,6	7,7	21,20	144-040-820
5	502,65	32	49	39	34	3	62,83	125,66	12	14	20	13	30,2	442,3	11,7	6,90	144-050-805
5	1005,30	64	49	39	34	3	62,83	125,66	12	14	20	13	30,2	945,0	11,7	13,80	144-050-810
5	2010,61	128	49	39	34	3	62,83	125,66	12	14	20	13	30,2	1950,3	11,7	27,60	144-050-820
6	508,93	27	59	49	43	3	63,62	127,23	16	18	26	17	31,4	446,1	15,7	10,50	144-060-805
6	1017,87	54	59	49	43	3	63,62	127,23	16	18	26	17	31,4	955,0	15,7	21,00	144-060-810
6	2035,75	108	59	49	43	3	63,62	127,23	16	18	26	17	31,4	1972,9	15,7	42,00	144-060-820

ohne Bohrungen | without bores

Modul Module	theor. L_1	z**	b	h_a	h	$f^{+0,5}$	[kg]	Bestell Nr. Part No.
2	502,65	80	24	24	22	2	2,10	144-020-905
2	1005,30	160	24	24	22	2	4,20	144-020-910
2	2010,61	320	24	24	22	2	8,40	144-020-920
3	508,93	54	29	29	26	2	3,00	144-030-905
3	1017,87	108	29	29	26	2	6,00	144-030-910
3	2035,75	216	29	29	26	2	12,00	144-030-920
4	502,65	40	39	39	35	3	5,30	144-040-905
4	1005,30	80	39	39	35	3	10,60	144-040-910
4	2010,61	160	39	39	35	3	21,20	144-040-920
5	502,65	32	49	39	34	3	6,90	144-050-905
5	1005,30	64	49	39	34	3	13,80	144-050-910
5	2010,61	128	49	39	34	3	27,60	144-050-920
6	508,93	27	59	49	43	3	10,50	144-060-905
6	1017,87	54	59	49	43	3	21,00	144-060-910
6	2035,75	108	59	49	43	3	42,00	144-060-920

z** ... Zähnezahl | number of teeth

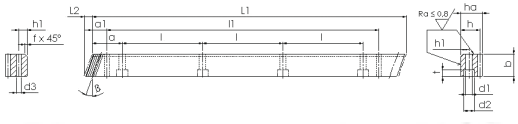
* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Zahnstangen für fortlaufende Montage - induktiv gehärtet, schrägverzahnt
Rücken - und Seitenflächen geschliffen

Racks for Continuous Mounting - Induction Hardened, Helical Teeth
Ground Rear and Side Surface



Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
Schrägungswinkel helix angle	19°31´42´´ rechtssteigend right hand
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	10 h27

mit Bohrungen | with bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h f +0,5		a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.	
2	500,00	8,5	75	24	24	22	2	62,5	125	8	7	11	7	31,7	436,6	5,7	2,10	143-020-805	
2	1000,00	8,5	150	24	24	22	2	62,5	125	8	7	11	7	31,7	936,6	5,7	4,20	143-020-810	
2	2000,00	8,5	300	24	24	22	2	62,5	125	8	7	11	7	31,7	1936,6	5,7	8,40	143-020-820	NEU | NEW
3	500,00	10,30	50	29	29	26	2	62,5	125	9	10	15	9	35,0	430,0	7,7	3,00	143-030-805	
3	1000,00	10,30	100	29	29	26	2	62,5	125	9	10	15	9	35,0	930,6	7,7	6,00	143-030-810	
3	2000,00	10,30	200	29	29	26	2	62,5	125	9	10	15	9	35,0	1930,6	7,7	12,00	143-030-820	NEU | NEW
4	506,66	13,80	38	39	39	35	3	62,5	125	12	10	15	9	33,3	433,0	7,7	5,30	143-040-805	
4	1000,00	13,80	75	39	39	35	3	62,5	125	12	10	15	9	33,3	933,4	7,7	10,60	143-040-810	
4	2000,00	13,80	150	39	39	35	3	62,5	125	12	10	15	9	33,3	1933,4	7,7	21,20	143-040-820	NEU | NEW
5	500,00	17,40	30	49	39	34	3	62,5	125	12	14	20	13	37,5	425,0	11,7	6,50	143-050-805	
5	1000,00	17,40	60	49	39	34	3	62,5	125	12	14	20	13	37,5	925,0	11,7	13,00	143-050-810	
6	500,00	20,90	25	59	49	43	3	62,5	125	16	18	26	17	37,5	425,0	15,7	9,90	143-060-805	
6	1000,00	20,90	50	59	49	43	3	62,5	125	16	18	26	17	37,5	925,0	15,7	19,80	143-060-810	

ohne Bohrungen | without bores

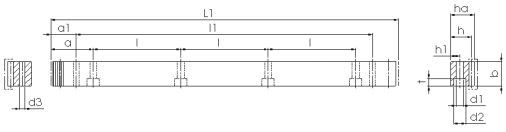
Modul Module	theor. L_1	L_2	z**	b	h_a	h f +0,5											[kg]	Bestell Nr. Part No.	
2	500,00	8,5	75	24	24	22	2										2,10	143-020-905	
2	1000,00	8,5	150	24	24	22	2										4,20	143-020-910	
2	2000,00	8,5	300	24	24	22	2										8,40	143-020-920	NEU | NEW
3	500,00	10,30	50	29	29	26	2										3,00	143-030-905	
3	1000,00	10,30	100	29	29	26	2										6,00	143-030-910	
3	2000,00	10,30	200	29	29	26	2										12,00	143-030-920	NEU | NEW
4	506,66	13,80	38	39	39	35	3										5,30	143-040-905	
4	1000,00	13,80	75	39	39	35	3										10,60	143-040-910	
4	2000,00	13,80	150	39	39	35	3										21,20	143-040-920	NEU | NEW
5	500,00	17,40	30	49	39	34	3										6,50	143-050-905	
5	1000,00	17,40	60	49	39	34	3										13,00	143-050-910	
6	500,00	20,90	25	59	49	43	3										9,90	143-060-905	
6	1000,00	20,90	50	59	49	43	3										19,80	143-060-910	

z**... Zähnezahl | number of teeth

* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

NEU! Zahnstangen für fortlaufende Montage
NEW! Racks for Continuous Mounting



Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	10 h27

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b_{h11}	h_a	h	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.	
2,0	502,65	80	20	19,75	17,75	62,8	125,66	8	7	11	7	31,3	440,1	5,7	1,40	146-020-705	NEU | NEW
2,0	1005,31	160	20	19,75	17,75	62,8	125,66	8	7	11	7	31,3	942,7	5,7	2,80	146-020-710	NEU | NEW
2,0	2010,62	320	20	19,75	17,75	62,8	125,66	8	7	11	7	31,3	1948,0	5,7	5,60	146-020-720	NEU | NEW
3,0	508,94	54	30	29,75	26,75	63,6	127,23	9	10	15	9	34,4	440,1	7,7	3,10	146-030-705	NEU | NEW
3,0	1017,88	108	30	29,75	26,75	63,6	127,23	9	10	15	9	34,4	949,1	7,7	6,20	146-030-710	NEU | NEW
3,0	2035,75	216	30	29,75	26,75	63,6	127,23	9	10	15	9	34,4	1967,0	7,7	12,40	146-030-720	NEU | NEW
4,0	502,65	40	40	39,70	35,70	62,83	125,66	12	10	15	9	37,5	427,7	7,7	5,50	146-040-705	NEU | NEW
4,0	1005,31	80	40	39,70	35,70	62,83	125,66	12	10	15	9	37,5	930,3	7,7	11,00	146-040-710	NEU | NEW
4,0	2010,62	160	40	39,70	35,70	62,83	125,66	12	10	15	9	37,5	1935,6	7,7	22,00	146-040-720	NEU | NEW
5,0	502,65	32	50	49,70	44,70	62,83	125,66	12	14	20	13	30,2	442,3	11,7	8,60	146-050-705	NEU | NEW
5,0	1005,31	64	50	49,70	44,70	62,83	125,66	12	14	20	13	30,2	945,0	11,7	17,20	146-050-710	NEU | NEW
5,0	2010,62	128	50	49,70	44,70	62,83	125,66	12	14	20	13	30,2	1950,3	11,7	34,40	146-050-720	NEU | NEW
6,0	508,94	27	60	59,65	53,65	63,62	127,23	16	18	26	17	31,4	446,1	15,7	12,30	146-060-705	NEU | NEW
6,0	1017,88	54	60	59,65	53,65	63,62	127,23	16	18	26	17	31,4	955,0	15,7	24,50	146-060-710	NEU | NEW
6,0	2035,75	108	60	59,65	53,65	63,62	127,23	16	18	26	17	31,4	1972,9	15,7	49,00	146-060-720	NEU | NEW
8,0	502,65	20	80	79,60	71,60	62,83	125,66	25	22	33	21	26,6	449,5	19,7	21,40	146-080-705	NEU | NEW
8,0	1005,31	40	80	79,60	71,60	62,83	125,66	25	22	33	21	26,6	952,0	19,7	42,70	146-080-710	NEU | NEW
8,0	2010,62	80	80	79,60	71,60	62,83	125,66	25	22	33	21	26,6	1957,3	19,7	85,40	146-080-720	NEU | NEW
10,0	1005,31	32	100	99,60	89,60	62,83	125,66	32	26	48	32	125,7	754,0	19,7	70,60	146-100-710	NEU | NEW

z** ... Zähnezahl | number of teeth

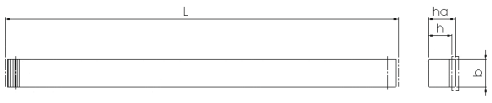
* bis Modul 3 Zahnflanke und Zahnfuß induktiv gehärtet (Allzahnhärtung), ab Modul 4 nur Zahnflanken induktiv gehärtet (Einzelzahnhärtung)
* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

NEU! Zahnstangen für fortlaufende Montage - induktiv gehärtet, geradverzahnt

NEW! Racks for Continuous Mounting - Induction Hardened, Straight Teeth



Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC *
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	10 h27

ohne Bohrungen | without bores

Modul Module	theor. L				z**	b_{h11}	h_a	h	[kg]	Bestell Nr. Part No.	
1,0	499,51				159	10	9,80	8,80	0,34	146-010-305	NEU | NEW
1,0	999,03				318	10	9,80	8,80	0,68	146-010-310	NEU | NEW
1,5	499,51				106	15	14,80	13,30	0,78	146-015-305	NEU | NEW
1,5	999,03				212	15	14,80	13,30	1,55	146-015-310	NEU | NEW
1,5	1998,05				424	15	14,80	13,30	3,10	146-015-320	NEU | NEW
2,0	502,65				80	20	19,75	17,75	1,40	146-020-305	NEU | NEW
2,0	1005,31				160	20	19,75	17,75	2,80	146-020-310	NEU | NEW
2,0	2010,62				320	20	19,75	17,75	5,60	146-020-320	NEU | NEW
2,5	502,65				64	25	24,75	22,25	2,10	146-025-305	NEU | NEW
2,5	1005,31				128	25	24,75	22,25	4,20	146-025-310	NEU | NEW
2,5	2010,62				256	25	24,75	22,25	8,40	146-025-320	NEU | NEW
3,0	508,94				54	30	29,75	26,75	3,10	146-030-305	NEU | NEW
3,0	1017,88				108	30	29,75	26,75	6,20	146-030-310	NEU | NEW
3,0	2035,75				216	30	29,75	26,75	12,40	146-030-320	NEU | NEW
4,0	502,65				40	40	39,70	35,70	5,50	146-040-305	NEU | NEW
4,0	1005,31				80	40	39,70	35,70	11,00	146-040-310	NEU | NEW
4,0	2010,62				160	40	39,70	35,70	22,00	146-040-320	NEU | NEW
5,0	502,65				32	50	49,70	44,70	8,60	146-050-305	NEU | NEW
5,0	1005,31				64	50	49,70	44,70	17,20	146-050-310	NEU | NEW
5,0	2010,62				128	50	49,70	44,70	34,40	146-050-320	NEU | NEW
6,0	508,94				27	60	59,65	53,65	12,30	146-060-305	NEU | NEW
6,0	1017,88				54	60	59,65	53,65	24,50	146-060-310	NEU | NEW
6,0	2035,75				108	60	59,65	53,65	49,00	146-060-320	NEU | NEW
8,0	502,65				20	80	79,60	71,60	21,40	146-080-305	NEU | NEW
8,0	1005,31				40	80	79,60	71,60	42,70	146-080-310	NEU | NEW
8,0	2010,62				80	80	79,60	71,60	85,40	146-080-320	NEU | NEW
10,0	1005,31				32	100	99,60	89,60	70,60	146-100-310	NEU | NEW

z**... Zähnezahl | number of teeth

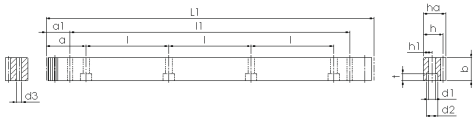
Modul Module	Teilung Pitch	theor. L			l	z**	b_{h11}	h_a	h	[kg]	Bestell Nr. Part No.
1,591	5,0	500,00	499,6	±	0,50	100	15	14,80	13,21	0,78	146-016-305
1,591	5,0	1000,00	999,6	±	0,50	200	15	14,80	13,21	1,55	146-016-310
1,591	5,0	2000,00	1999,6	±	0,50	400	15	14,80	13,21	3,10	146-016-320
3,183	10,0	500,00	499,4	±	0,50	50	30	29,70	26,52	3,10	146-031-305
3,183	10,0	1000,00	999,4	±	0,50	100	30	29,70	26,52	6,20	146-031-310
3,183	10,0	2000,00	1999,4	±	0,50	200	30	29,70	26,52	12,40	146-031-320

z**... Zähnezahl | number of teeth

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* module 1 to 3 tooth flank and tooth root inductive hardened (all-tooth hardening), module 4 to 10 only tooth flank inductive hardened (single-tooth hardening)

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NEU! Zahnstangen für fortlaufende Montage
NEW! Racks for Continuous Mounting



Material | material	1.0503 [C45]
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	9 h27

mit Bohrungen | with bores

Modul Module	theor. L_1	z**	b_{h11}	h_a	h	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.	
2,0	502,65	80	20	19,75	17,75	62,80	125,66	8	7	11	7	31,3	440,1	5,7	1,40	146-020-805	NEU | NEW
2,0	1005,31	160	20	19,75	17,75	62,80	125,66	8	7	11	7	31,3	942,7	5,7	2,80	146-020-810	NEU | NEW
2,0	2010,62	320	20	19,75	17,75	62,80	125,66	8	7	11	7	31,3	1948,0	5,7	5,60	146-020-820	NEU | NEW
3,0	508,94	54	30	29,75	26,75	63,60	127,23	9	10	15	9	34,4	440,1	7,7	3,10	146-030-805	NEU | NEW
3,0	1017,88	108	30	29,75	26,75	63,60	127,23	9	10	15	9	34,4	949,1	7,7	6,20	146-030-810	NEU | NEW
3,0	2035,75	216	30	29,75	26,75	63,60	127,23	9	10	15	9	34,4	1967,0	7,7	12,40	146-030-820	NEU | NEW
4,0	502,65	40	40	39,70	35,70	62,83	125,66	12	10	15	9	37,5	427,7	7,7	5,50	146-040-805	NEU | NEW
4,0	1005,31	80	40	39,70	35,70	62,83	125,66	12	10	15	9	37,5	930,3	7,7	11,00	146-040-810	NEU | NEW
4,0	2010,62	160	40	39,70	35,70	62,83	125,66	12	10	15	9	37,5	1935,6	7,7	22,00	146-040-820	NEU | NEW
5,0	502,65	32	50	49,70	44,70	62,83	125,66	12	14	20	13	30,2	442,3	11,7	8,60	146-050-805	NEU | NEW
5,0	1005,31	64	50	49,70	44,70	62,83	125,66	12	14	20	13	30,2	945,0	11,7	17,20	146-050-810	NEU | NEW
5,0	2010,62	128	50	49,70	44,70	62,83	125,66	12	14	20	13	30,2	1950,3	11,7	34,40	146-050-820	NEU | NEW
6,0	508,94	27	60	59,65	53,65	63,62	127,23	16	18	26	17	31,4	446,1	15,7	12,30	146-060-805	NEU | NEW
6,0	1017,88	54	60	59,65	53,65	63,62	127,23	16	18	26	17	31,4	955,0	15,7	24,50	146-060-810	NEU | NEW
6,0	2035,75	108	60	59,65	53,65	63,62	127,23	16	18	26	17	31,4	1972,9	15,7	49,00	146-060-820	NEU | NEW
8,0	502,65	20	80	79,60	71,60	62,83	125,66	25	22	33	21	26,6	449,5	19,7	21,40	146-080-805	NEU | NEW
8,0	1005,31	40	80	79,60	71,60	62,83	125,66	25	22	33	21	26,6	952,0	19,7	42,70	146-080-810	NEU | NEW
8,0	2010,62	80	80	79,60	71,60	62,83	125,66	25	22	33	21	26,6	1957,3	19,7	85,40	146-080-820	NEU | NEW
10,0	1005,31	32	100	99,60	89,60	62,83	125,66	32	26	48	32	125,7	754,0	19,7	70,60	146-100-810	NEU | NEW

z**... Zähnezahl | number of teeth

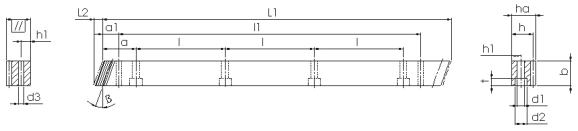
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Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

WMH-Standard Zahnstangen werden mit Überkopfschneider aus Vierkant-Blankstahl 1.0503 [C 45k] nach DIN 178 in Verzahnungsqualität 9 nach DIN 3962, 3963 und 3967 hergestellt

WMH-Standard racks made of material Steel 1.0503 [C 45k] are manufactured according to DIN 178 in tooth quality 9 according to DIN 3962, 3963 and 3967

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Zahnstangen für fortlaufende Montage, schrägverzahnt
Racks for Continuous Mounting, Helical Teeth



Material | material **1.0503 [C45k]**

Schrägungswinkel **19°31´42´´ rechtssteigend**
helix angle **right hand**

Eingriffswinkel | pressure angle **20°**

Verzahnungsqualität | toothing quality **9 h27**

mit Bohrungen | with bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h_0	$f^{+0,5}$	a	l	h_1	d_1	d_2	t	a_1	l_1	d_3	[kg]	Bestell Nr. Part No.	
1,5	1000,00	6,0	200	17	16,80	15,30	1	62,5	125	6	6	10	6	31,7	936,6	5,7	2,0	145-015-210	NEU | NEW
1,5	1500,00	6,0	300	17	16,80	15,30	1	62,5	125	6	6	10	6	31,7	1436,6	5,7	3,0	145-015-215	NEU | NEW
1,5	2000,00	6,0	400	17	16,80	15,30	1	62,5	125	6	6	10	6	31,7	1936,6	5,7	4,0	145-015-220	NEU | NEW
2	500,00	8,9	75	25	24,75	22,75	2	62,5	125	8	7	11	7	31,7	436,6	5,7	2,2	145-020-205	
2	1000,00	8,9	150	25	24,75	22,75	2	62,5	125	8	7	11	7	31,7	936,6	5,7	4,4	145-020-210	
2	1500,00	8,9	225	25	24,75	22,75	2	62,5	125	8	7	11	7	31,7	1436,6	5,7	6,6	145-020-215	NEU | NEW
2	2000,00	8,9	300	25	24,75	22,75	2	62,5	125	8	7	11	7	31,7	1936,6	5,7	8,8	145-020-220	
3	500,00	10,6	50	30	29,75	26,75	2	62,5	125	9	10	15	9	35	430	7,7	3,1	145-030-205	
3	1000,00	10,6	100	30	29,75	26,75	2	62,5	125	9	10	15	9	35	930	7,7	6,2	145-030-210	
3	2000,00	10,6	200	30	29,75	26,75	2	62,5	125	9	10	15	9	35	1930	7,7	12,5	145-030-220	
4	506,66	14,2	38	40	39,70	35,70	3	62,5	125	12	10	15	9	33,3	433	7,7	5,6	145-040-205	
4	1000,00	14,2	75	40	39,70	35,70	3	62,5	125	12	10	15	9	33,3	933,4	7,7	11,1	145-040-210	
4	2000,00	14,2	150	40	39,70	35,70	3	62,5	125	12	10	15	9	33,3	1933,4	7,7	22,2	145-040-220	
5	1000,00	17,7	60	50	39,70	34,70	3	62,5	125	12	14	20	13	37,5	925	11,7	13,26	145-050-210	
5	2000,00	17,7	120	50	39,70	34,70	3	62,5	125	12	14	20	13	37,5	1925	11,7	26,52	145-050-220	
6	1000,00	21,3	50	60	49,70	43,70	3	62,5	125	16	18	26	17	37,5	925	15,7	20,12	145-060-210	
6	2000,00	21,3	100	60	49,70	43,70	3	62,5	125	16	18	26	17	37,5	1925	15,7	40,24	145-060-220	
8	960,00	28,4	36	80	79,60	71,60	3	60	120	25	22	33	21	120	720	19,7	44,85	145-080-210	
8	1920,00	28,4	72	80	79,60	71,60	3	60	120	25	22	33	21	120	1680	19,7	89,71	145-080-220	
10	1000,00	35,5	30	100	99,00	89,00	3	62,5	125	32	33	48	32	125	750,0	19,7	69,80	145-100-210	

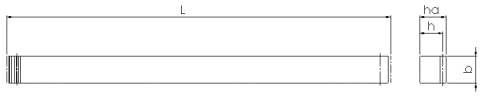
ohne Bohrungen | without bores

Modul Module	theor. L_1	L_2	z**	b	h_a	h_0	$f^{+0,5}$										[kg]	Bestell Nr. Part No.	
1,5	1000,00	6,0	200	17	16,80	15,30	1										2,0	145-015-110	NEU | NEW
1,5	1500,00	6,0	300	17	16,80	15,30	1										3,0	145-015-115	NEU | NEW
1,5	2000,00	6,0	400	17	16,80	15,30	1										4,0	145-015-120	NEU | NEW
2	500,00	8,9	75	25	24,75	22,75	2										2,2	145-020-105	
2	1000,00	8,9	150	25	24,75	22,75	2										4,4	145-020-110	
2	1500,00	8,9	225	25	24,75	22,75	2										6,6	145-020-115	NEU | NEW
2	2000,00	8,9	300	25	24,75	22,75	2										8,8	145-020-120	
3	500,00	10,6	50	30	29,75	26,75	2										3,1	145-030-105	
3	1000,00	10,6	100	30	29,75	26,75	2										6,2	145-030-110	
3	2000,00	10,6	200	30	29,75	26,75	2										12,5	145-030-120	
4	506,66	14,2	38	40	39,70	35,70	3										5,6	145-040-105	
4	1000,00	14,2	75	40	39,70	35,70	3										11,1	145-040-110	
4	2000,00	14,2	150	40	39,70	35,70	3										22,2	145-040-120	
5	1000,00	17,7	60	50	39,70	34,70	3										13,26	145-050-110	
5	2000,00	17,7	120	50	39,70	34,70	3										26,52	145-050-120	
6	1000,00	21,3	50	60	49,70	43,70	3										20,12	145-060-110	
6	2000,00	21,3	100	60	49,70	43,70	3										40,24	145-060-120	
8	960,00	28,4	36	80	79,60	71,60	3										44,85	145-080-110	
8	1920,00	28,4	72	80	79,60	71,60	3										89,71	145-080-120	
10	1000,00	35,5	30	100	99,00	89,00	3										69,80	145-100-110	

z**... Zähnezahl | number of teeth

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

NEU! Zahnstangen für fortlaufende Montage
NEW! Racks for Continuous Mounting



Material | material	1.0503 [C45k]
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	9 h27

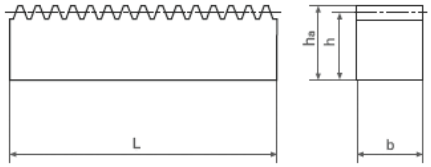
Modul Module	theor. L	z**	b_{h11}	h_a	h	[kg]	Bestell Nr. Part No.	
1,0	499,51	159	10	9,80	8,80	0,34	146-010-905	NEU | NEW
1,0	999,03	318	10	9,80	8,80	0,68	146-010-910	NEU | NEW
1,5	499,51	106	15	14,80	13,30	0,78	146-015-905	NEU | NEW
1,5	999,03	212	15	14,80	13,30	1,55	146-015-910	NEU | NEW
1,5	1998,05	424	15	14,80	13,30	3,10	146-015-920	NEU | NEW
2,0	502,65	80	20	19,75	17,75	1,40	146-020-905	NEU | NEW
2,0	1005,31	160	20	19,75	17,75	2,80	146-020-910	NEU | NEW
2,0	2010,62	320	20	19,75	17,75	5,60	146-020-920	NEU | NEW
2,0	3015,93	480	20	19,75	17,75	8,50	146-020-930	NEU | NEW
2,5	502,65	64	25	24,75	22,25	2,10	146-025-905	NEU | NEW
2,5	1005,31	128	25	24,75	22,25	4,20	146-025-910	NEU | NEW
2,5	2010,62	256	25	24,75	22,25	8,40	146-025-920	NEU | NEW
2,5	3015,93	384	25	24,75	22,25	12,60	146-025-930	NEU | NEW
3,0	508,94	54	30	29,75	26,75	3,10	146-030-905	NEU | NEW
3,0	1017,88	108	30	29,75	26,75	6,20	146-030-910	NEU | NEW
3,0	2035,75	216	30	29,75	26,75	12,40	146-030-920	NEU | NEW
3,0	3053,63	324	30	29,75	26,75	19,32	146-030-930	NEU | NEW
4,0	502,65	40	40	39,70	35,70	5,50	146-040-905	NEU | NEW
4,0	1005,31	80	40	39,70	35,70	11,00	146-040-910	NEU | NEW
4,0	2010,62	160	40	39,70	35,70	22,00	146-040-920	NEU | NEW
4,0	3015,93	240	40	39,70	35,70	33,93	146-040-930	NEU | NEW
5,0	502,65	32	50	49,70	44,70	8,60	146-050-905	NEU | NEW
5,0	1005,31	64	50	49,70	44,70	17,20	146-050-910	NEU | NEW
5,0	2010,62	128	50	49,70	44,70	34,40	146-050-920	NEU | NEW
5,0	3015,93	192	50	49,70	44,70	51,60	146-050-930	NEU | NEW
6,0	508,94	27	60	59,65	53,65	12,30	146-060-905	NEU | NEW
6,0	1017,88	54	60	59,65	53,65	24,50	146-060-910	NEU | NEW
6,0	2035,75	108	60	59,65	53,65	49,00	146-060-920	NEU | NEW
8,0	502,65	20	80	79,60	71,60	21,40	146-080-905	NEU | NEW
8,0	1005,31	40	80	79,60	71,60	42,70	146-080-910	NEU | NEW
8,0	2010,62	80	80	79,60	71,60	85,40	146-080-920	NEU | NEW
10,0	1005,31	32	100	99,60	89,60	70,60	146-100-910	NEU | NEW

Modul Module	Teilung Pitch	theor. L	l			z**	b_{h11}	h_a	h	[kg]	Bestell Nr. Part No.
1,591	5,0	500,00	499,6	±	0,30	100	15	14,80	13,21	0,78	146-016-905
1,591	5,0	1000,00	999,6	±	0,30	200	15	14,80	13,21	1,55	146-016-910
1,591	5,0	2000,00	1999,6	±	0,30	400	15	14,80	13,21	3,10	146-016-920
3,183	10,0	500,00	499,4	±	0,30	50	30	29,70	26,52	3,10	146-031-905
3,183	10,0	1000,00	999,4	±	0,30	100	30	29,70	26,52	6,20	146-031-910
3,183	10,0	2000,00	1999,4	±	0,30	200	30	29,70	26,52	12,40	146-031-920

z**... Zähnezahl | number of teeth

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Zahnstangen
Racks



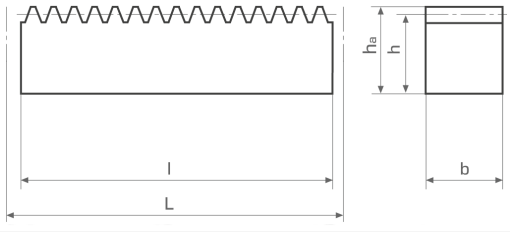
Material | material	1.0503 [C45]
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	9 h27

Modul Module		L*	b_{h11}	h_a	h	[kg]	Bestell Nr. Part No.
1,0		250	10	9,80	8,80	0,17	140-010-002
1,0		500	10	9,80	8,80	0,34	140-010-005
1,0		1000	10	9,80	8,80	0,68	140-010-010
1,5		250	15	14,80	13,30	0,39	140-015-002
1,5		500	15	14,80	13,30	0,78	140-015-005
1,5		1000	15	14,80	13,30	1,55	140-015-010
1,5		2000	15	14,80	13,30	3,10	140-015-020
2,0		500	20	19,75	17,75	1,40	140-020-005
2,0		1000	20	19,75	17,75	2,80	140-020-010
2,0		2000	20	19,75	17,75	5,60	140-020-020
2,0		3000	20	19,75	17,75	8,40	140-020-030
2,5		500	25	24,75	22,25	2,10	140-025-005
2,5		1000	25	24,75	22,25	4,20	140-025-010
2,5		2000	25	24,75	22,25	8,40	140-025-020
2,5		3000	25	24,75	22,25	12,60	140-025-030
3,0		500	30	29,75	26,75	3,10	140-030-005
3,0		1000	30	29,75	26,75	6,20	140-030-010
3,0		2000	30	29,75	26,75	12,40	140-030-020
3,0		3000	30	29,75	26,75	18,60	140-030-030
4,0		500	40	39,70	35,70	5,50	140-040-005
4,0		1000	40	39,70	35,70	11,00	140-040-010
4,0		2000	40	39,70	35,70	22,00	140-040-020
4,0		3000	40	39,70	35,70	33,00	140-040-030
5,0		500	50	49,70	44,70	8,60	140-050-005
5,0		1000	50	49,70	44,70	17,20	140-050-010
5,0		2000	50	49,70	44,70	34,40	140-050-020
5,0		3000	50	49,70	44,70	51,60	140-050-030
6,0		500	60	59,65	53,65	12,30	140-060-005
6,0		1000	60	59,65	53,65	24,50	140-060-010
6,0		2000	60	59,65	53,65	49,00	140-060-020
8,0		500	80	79,60	71,60	21,40	140-080-005
8,0		1000	80	79,60	71,60	42,70	140-080-010
8,0		2000	80	79,60	71,60	85,40	140-080-020
10,0		1000	100	99,60	89,60	70,60	140-100-010

Modul Module	Teilung Pitch	L*	b_{h11}	h_a	h	[kg]	Bestell Nr. Part No.
1,591	5,0	250	15	14,80	13,21	0,39	140-016-002
1,591	5,0	500	15	14,80	13,21	0,78	140-016-005
1,591	5,0	1000	15	14,80	13,21	1,55	140-016-010
1,591	5,0	2000	15	14,80	13,21	3,10	140-016-020
3,183	10,0	250	30	29,70	26,52	1,55	140-031-002
3,183	10,0	500	30	29,70	26,52	3,10	140-031-005
3,183	10,0	1000	30	29,70	26,52	6,20	140-031-010
3,183	10,0	2000	30	29,70	26,52	12,40	140-031-020

L *: bitte beachten - bei den angegebenen Maßen handelt es sich um Mindestlängen.
L *: please note that the specified lengths are minimum lengths.

Zahnstangen für fortlaufende Montage - rostfrei
Racks for Continuous Mounting - Stainless Steel



Material | material	1.4305 [X8 CrNiS 18-9]
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	8 h27

Modul Module		theor. L			l	z**	b	h_a	h	[kg]	Bestell Nr. Part No.
1,0		499,51	499,0	±	0,3	159	10	9,80	8,80	0,34	146-010-605
1,0		999,02	998,5	±	0,3	318	10	9,80	8,80	0,68	146-010-610
1,5		499,51	499,1	±	0,3	106	15	14,80	13,30	0,78	146-015-605
1,5		999,02	998,6	±	0,3	212	15	14,80	13,30	1,55	146-015-610
2,0		502,65	502,1	±	0,3	80	20	19,75	17,75	1,40	146-020-605
2,0		999,02	998,5	±	0,3	159	20	19,75	17,75	2,80	146-020-610
2,0		1998,05	1997,5	±	0,3	318	20	19,75	17,75	5,60	146-020-620
3,0		499,51	498,9	±	0,3	53	30	29,75	26,75	3,10	146-030-605
3,0		999,02	998,4	±	0,3	106	30	29,75	26,75	6,20	146-030-610
3,0		1998,05	1997,4	±	0,3	212	30	29,75	26,75	12,40	146-030-620
4,0		1005,30	1004,6	±	0,3	80	40	39,70	35,70	11,00	146-040-610
4,0		1998,05	1997,3	±	0,3	159	40	39,70	35,70	22,00	146-040-620

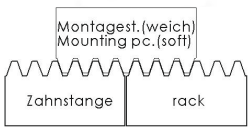
Modul Module	Teilung Pitch	theor. L			l	z**	b	h_a	h	[kg]	Bestell Nr. Part No.
1,591	5,0	250,00	249,6	±	0,3	50	15	14,80	13,21	0,39	146-016-602
1,591	5,0	500,00	499,6	±	0,3	100	15	14,80	13,21	0,78	146-016-605
1,591	5,0	1000,00	999,6	±	0,3	200	15	14,80	13,21	1,55	146-016-610
3,183	10,0	250,00	249,4	±	0,3	25	30	29,70	26,52	1,55	146-031-602
3,183	10,0	500,00	499,4	±	0,3	50	30	29,70	26,52	3,10	146-031-605
3,183	10,0	1000,00	999,4	±	0,3	100	30	29,70	26,52	6,20	146-031-610
3,183	10,0	2000,00	1999,4	±	0,3	200	30	29,70	26,52	12,40	146-031-620

z**... Zähnezahl | number of teeth

Beide Enden der Zahnstange sind so ausgeführt, dass diese in beliebiger Länge aneinander gereiht werden können.
Für die Montage empfehlen wir den Einsatz von Montagestücken wie auf Seite B 18 beschrieben!
Both ends of the rack are manufactured in such a way that they can be joint together in any length.
For the mounting we propose the use of mounting pieces as described on page B 18.

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Montagestücke
Mounting Pieces



Montagestück

Material | material **1.0503 [C45]**

geradverzahnt | straight teeth

oder | or

schrägverzahnt | helical teeth

Schrägungswinkel
helix angle **19°31´42´´ linkssteigend left hand**

Montagestücke geradverzahnt | mounting piece, straight teeth

		Verzahnungsqualität | toothing quality 8				Verzahnungsqualität | toothing quality 5			
Modul Module		**L_1**	**b**	**Bestell Nr. Part No.**		**L_1**	**b**	**Bestell Nr. Part No.**	
1		200,00	10	144-010-001					
1,5		200,00	15	144-015-001					
2		200,00	25	144-020-001		200,00	24	144-020-002	NEU | NEW
2,5		200,00	25	144-025-001					
3		200,00	30	144-030-001		200,00	29	144-030-002	NEU | NEW
4		200,00	40	144-040-001		200,00	39	144-040-002	NEU | NEW
5		200,00	50	144-050-001		200,00	49	144-050-002	NEU | NEW
6		200,00	60	144-060-001		200,00	59	144-060-002	NEU | NEW
8		200,00	80	144-080-001		200,00	79	144-080-002	NEU | NEW
10		220,00	100	144-100-001		220,00	99	144-100-002	NEU | NEW

Modul Module	**Teilung Pitch**	**L_1**	**b**	**Bestell Nr. Part No.**
1,591	5 mm	200,00	15	144-016-001
3,183	10 mm	200,00	30	144-031-001

Montagestücke schrägverzahnt | mounting piece, helical teeth

		Verzahnungsqualität | toothing quality 8				Verzahnungsqualität | toothing quality 5			
Modul Module		**L_1**	**b**	**Bestell Nr. Part No.**		**L_1**	**b**	**Bestell Nr. Part No.**	
2		200,00	25	143-020-001		200,00	24	143-020-002	NEU | NEW
3		200,00	30	143-030-001		200,00	29	143-030-002	NEU | NEW
4		200,00	40	143-040-001		200,00	39	143-040-002	NEU | NEW
5		200,00	50	143-050-001		200,00	49	143-050-002	NEU | NEW
6		200,00	60	143-060-001		200,00	59	143-060-002	NEU | NEW
8		200,00	80	143-080-001		200,00	79	143-080-002	NEU | NEW
10		235,00	100	143-100-001		235,00	99	143-100-002	NEU | NEW

Hinweis:
Auf Seite B 35 finden Sie eine Anleitung zur fortlaufenden Montage von Zahnstangen mit Hilfe von Montagestücken.

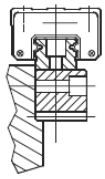
Note:
Please see page B 35 for a tutorial, describing the continuous mounting of racks using mounting pieces.

Führungszahnstangen für fortlaufende Montage

mit geschl. Zahnflanken, geradverzahnt, Rücken - und Seitenflächen geschliffen

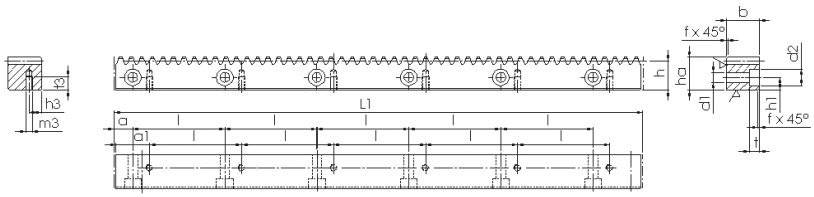
Racks for Guideways, for Continuous Mounting

with Ground Teeth, Straight Teeth, Ground Rear and Side Surface



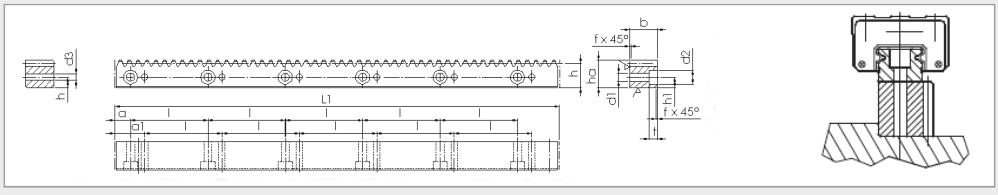
Ausführung | execution **180°**

Material | material	**1.0503 [C45]**
induktiv gehärtet | induction hardened	**50-55 HRC**
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality	**6 h23**



Modul Module	Teilung Pitch	theor. L_1	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	m_3	h_3	t_3	[kg]	Bestell Nr. Part No.
1,591	5,0	960	192	19	19,50	17,91	1	10	60	16	7,5	5,8	10	6	30	M4	7,5	8,0	2,7	144-816-110
1,591	5,0	960	192	24	24,50	22,91	1	10	60	16	10,0	7,0	11	7	30	M5	10,0	11,0	4,2	144-816-210
3,183	10,0	960	96	29	29,75	26,57	2	10	60	16	11,5	10,0	15	9	30	M6	11,5	13,5	5,6	144-831-210

Ausführung | execution **90°**



Modul Module	Teilung Pitch	theor. L_1	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	d_3			[kg]	Bestell Nr. Part No.
1,591	5,0	960	192	19	19,50	17,91	1	10	60	16	7,5	4,5	7,5	5,3	30	4,5			2,7	144-916-110
1,591	5,0	960	192	24	24,50	22,91	1	10	60	16	10,0	6,0	9,5	8,5	30	6,0			4,2	144-916-210
3,183	10,0	960	96	29	29,75	26,57	2	10	60	16	11,5	7,0	11,0	9,0	30	7,0			5,6	144-931-210

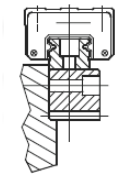
z** ... Zähnezahl | number of teeth

Führungszahnstangen für fortlaufende Montage

mit geschl. Zahnflanken, schrägverzahnt, Rücken - und Seitenflächen geschliffen

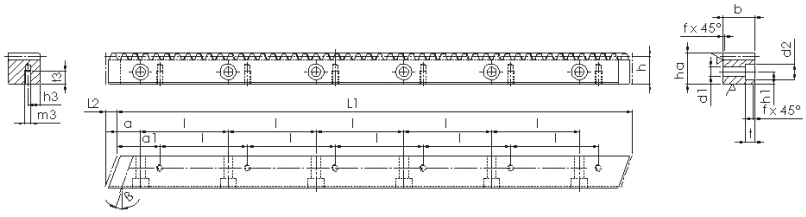
Racks for Guideways, for Continuous Mounting

with Ground Teeth, Helical Teeth, Ground Rear and Side Surface



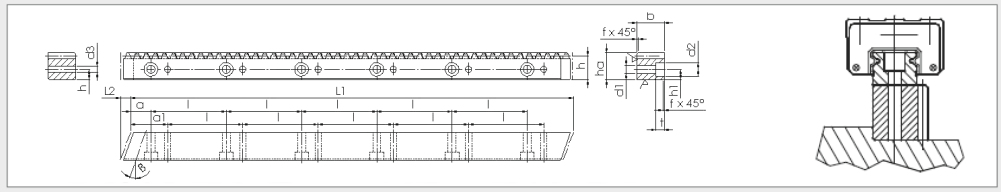
Ausführung | execution **180°**

Material | material	1.0503 [C45]
induktiv gehärtet | induction hardened	50-55 HRC
Schrägungswinkel helix angle	19°31´42´´ rechtssteigend 19°31´42´´ right hand
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	6 h23



Modul Module	Teilung Pitch	theor. L_1	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	m_3	h_3	t_3	[kg]	Bestell Nr. Part No.
2	960	6,70	144	19	19,50	17,50	1	10	60	16	7,5	5,8	10	6	30	M4	7,5	8,0	2,7	143-820-110
2	960	8,50	144	24	24,50	22,50	1	10	60	16	10,0	7,0	11	7	30	M5	10,0	11,0	4,2	143-820-210
3	960	10,30	96	29	29,75	26,75	2	10	60	16	11,5	10,0	15	9	30	M6	11,5	13,5	5,6	143-830-210
4	960	13,83	72	39	39,75	35,75	2	20	80	12	14,0	12,0	18	12	40	M8	14,0	16,0	10,5	143-840-310
4	960	13,83	72	39	48,75	44,75	2	20	80	12	17,0	12,0	18	12	40	M8	17,0	16,0	13,0	143-840-410
4	840	17,38	63	49	58,00	54,00	2	30	105	8	22,5	14,0	20	13	60	M12	22,5	25,0	17,3	143-840-510

Ausführung | execution **90°**



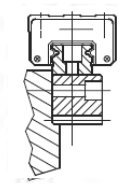
Modul Module	Teilung Pitch	theor. L_1	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	d_3			[kg]	Bestell Nr. Part No.
2	960	6,70	144	19	19,50	17,50	1	10	60	16	7,5	4,5	7,5	5,3	30	4,5			2,7	143-920-110
2	480	6,70	72	19	19,50	17,50	1	10	60	8	7,5	4,5	7,5	5,3	30	4,5			1,3	143-920-105
2	960	8,50	144	24	24,50	22,50	1	10	60	16	10,0	6,0	9,5	8,5	30	6,0			4,2	143-920-210
2	480	8,50	72	24	24,50	22,50	1	10	60	8	10,0	6,0	9,5	8,5	30	6,0			2,1	143-920-205
3	960	10,30	96	29	29,75	26,75	2	10	60	16	11,5	7,0	11,0	9,0	30	7,0			5,6	143-930-210
3	480	10,30	48	29	29,75	26,75	2	10	60	8	11,5	7,0	11,0	9,0	30	7,0			2,8	143-930-205
4	960	13,83	72	39	39,75	35,75	2	20	80	12	14,0	10,0	15,0	9,0	40	10,0			10,5	143-940-310
4	480	13,83	36	39	39,75	35,75	2	20	80	6	14,0	10,0	15,0	9,0	40	10,0			5,2	143-940-305
4	960	13,83	72	39	48,75	44,75	2	20	80	12	17,0	10,0	15,0	9,0	40	10,0			13,0	143-940-410
4	480	13,83	36	39	48,75	44,75	2	20	80	6	17,0	10,0	15,0	9,0	40	10,0			6,5	143-940-405
4	840	17,38	63	49	58,00	54,00	2	30	105	8	22,5	14,0	20,0	13,0	60	14,0			17,3	143-940-510

z** ... Zähnezahl | number of teeth

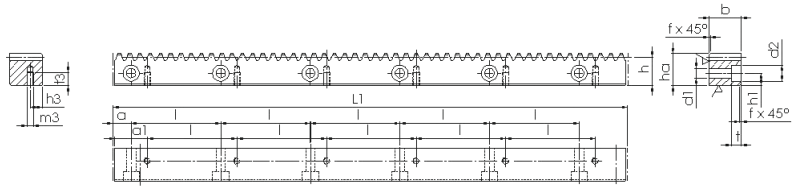
Führungszahnstangen für fortlaufende Montage - gefräst, geradverzahnt

Racks for Guideways, for Continuous Mounting - with Milled Teeth, Straight Teeth

Ausführung | execution **180°**

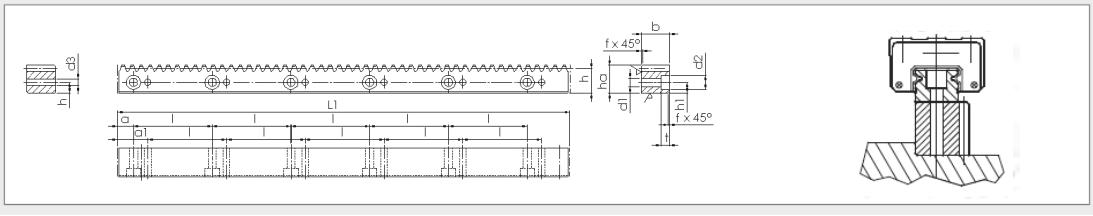


Material | material	1.0503 [C45]
weich | soft	
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Verzahnungsqualität | toothing quality	9 h27



Modul Module	Teilung Pitch	theor. L_1	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	m_3	h_3	t_3	[kg]	Bestell Nr. Part No.
1,591	5,0	1920	384	20	19,50	17,91	1	10	60	32	7,5	5,8	10	6	30	M4	7,5	8,0	5,4	146-816-120
1,591	5,0	1920	384	25	24,50	22,91	1	10	60	32	10,0	7,0	11	7	30	M5	10,0	11,0	8,4	146-816-220
3,183	10,0	1920	192	30	29,75	26,57	2	10	60	32	11,5	10,0	15	9	30	M6	11,5	13,5	11,2	146-831-220

Ausführung | execution **90°**



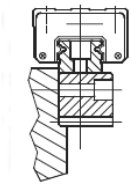
Modul Module	Teilung Pitch	theor. L_1	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	d_3			[kg]	Bestell Nr. Part No.
1,591	5,0	1920	384	20	19,50	17,91	1	10	60	32	7,5	4,5	7,5	5,3	30	4,5			5,4	146-916-120
1,591	5,0	1920	384	25	24,50	22,91	1	10	60	32	10,0	6,0	9,5	8,5	30	6,0			8,4	146-916-220
3,183	10,0	1920	192	30	29,75	26,57	2	10	60	32	11,5	7,0	11,0	9,0	30	7,0			11,2	146-931-220

z**... Zähnezahl | number of teeth

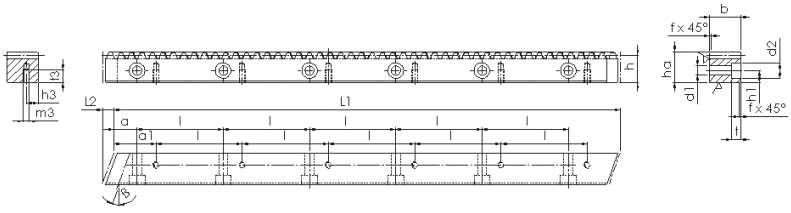
Führungszahnstangen für fortlaufende Montage - gefräst, schrägverzahnt

Racks for Guideways, for Continuous Mounting - with Milled Teeth, Helical Teeth

Ausführung | execution **180°**

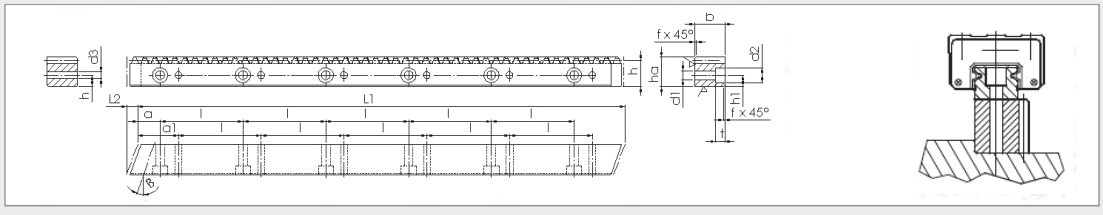


Material | material	**1.0503 [C45]**
weich | soft	
Schrägungswinkel helix angle	**19°31´42´´ rechtssteigend** **19°31´42´´ right hand**
Eingriffswinkel | pressure angle	**20°**
Verzahnungsqualität | toothing quality	**9 h27**



Modul Module	theor. L_1	L_2	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	m_3	h_3	t_3	[kg]	Bestell Nr. Part No.
2	1920	7,1	288	20	19,50	17,50	1	10	60	32	7,5	5,8	10	6	30	M4	7,5	8,0	5,4	145-820-120
2	1920	8,9	288	25	24,50	22,50	1	10	60	32	10,0	7,0	11	7	30	M5	10,0	11,0	8,4	145-820-220
3	1920	10,6	192	30	29,75	26,75	2	10	60	32	11,5	10,0	15	9	30	M6	11,5	13,5	11,2	145-830-220
4	1920	14,2	144	40	39,75	35,75	2	20	80	24	14,0	12,0	18	12	40	M8	14,0	16,0	21,5	145-840-320

Ausführung | execution **90°**



Modul Module	theor. L_1	L_2	z**	b	h_a	h	f	a	l	Anz. Bohr. No. of holes	h_1	d_1	d_2	t	a_1	d_3			[kg]	Bestell Nr. Part No.
2	1920	7,1	288	20	19,50	17,50	1	10	60	32	7,5	4,5	7,5	5,3	30	4,5			5,4	145-920-120
2	1920	8,9	288	25	24,50	22,50	1	10	60	32	10,0	6,0	9,5	8,5	30	6,0			8,4	145-920-220
3	1920	10,6	192	30	29,75	26,75	2	10	60	32	11,5	7,0	11,0	9,0	30	7,0			11,2	145-930-220
4	1920	14,2	144	40	39,75	35,75	2	20	80	24	14,0	10,0	15,0	9,0	40	10,0			21,5	145-940-320

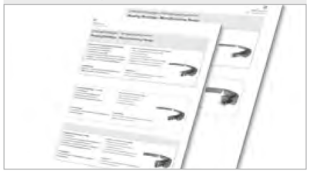
z** ... Zähnezahl | number of teeth

Drehverbindungen
Slewing Bearings

Lagerprogramm — Stock Programme

Inhalt — Content

Typenübersicht - Lieferprogramm Drehverbindungen
Type Overview - Product Range Slewing Bearings
● Seiten | pages D 1 - D 2



Kugeldrehverbindung; 1-reihig, Flanschlager
Single-row Ball Slewing Bearing, Flange Bearing
● Seiten | pages D 3 - D 4



Kugeldrehverbindung; 1-reihig, Vierpunktlager
Single-row Ball Slewing Bearing, Four Point Contact Bearing
● Seiten | pages D 5 - D 8



Kreuzrollen-Drehverbindung; 1-reihig
Single-row Crossed-roller Slewing Bearing
● Seiten | pages D 9 - D 10



Technischer Fragebogen
Technical Inquiry Form
● Seiten | pages D 11 - D 12



Drehverbindungen - Nummernschlüssel — Slewing Bearings - Configuration

181 - 020 - 1094

Bauform Model	Verzahnung Gear	Wälzkörper Ø Rolling element Ø	Laufkreis Ø Raceway Ø
180 = Kugeldrehverbindung (Flanschlager), einreihig Ball slewing bearing (flange bearing), single-row	0 = ohne without gear	Kugeldurchmesser oder Rollendurchmesser in mm Ball diameter or roller diameter in mm	Durchmesser des Laufkreises in mm Diameter of the raceway in mm
181 = Kugeldrehverbindung, einreihig Ball slewing bearing, single-row	1 = außen gerade outer straight gear		
182 = Kugeldrehverbindung, zweireihig * Ball slewing bearing, double-row *	2 = innen gerade inner straight gear		
183 = Rollen-Drehverbindung * Roller slewing bearing *	3 = außen schräg * outer helical gear *		
184 = Kreuzrollen-Drehverbindung Crossed-roller slewing bearing	4 = innen schräg * inner helical gear *		

* Kein Katalog-Standard - wir bitten um Ihre Anfrage.
* No standard catalogue item - please send your inquiry.

Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Drehverbindungen
Slewing Bearings

Sonderbauformen — **Special Designs**

Inhalt

Unser Lieferprogramm im Bereich der Drehverbindungen umfasst unter anderem folgende Sonderbauformen:

Für spezielle Einsatzbedingungen und Anwendungen (z.B. extreme Temperaturen, Gefahr durch Verunreinigungen, eine hängende Einbaulage, oder besonders hohe Kräfte, Momente oder Drehzahlen) können Sonderkonstruktionen angefertigt werden. Einzelheiten dazu können jederzeit mit unseren Konstrukteuren besprochen werden.

Unsere Sonderlösungen im Überblick:

- Genaulager mit Zentrierungen
- Lager mit Vorspannung
- Varianten mit erhöhter Schraubenzahl
- Abstandshalter und Käfige aus Stahl oder Messing
- Spezielle Oberflächenbehandlung wie Farbgebung, Verzinken oder Chromatieren
- Sonderdichtungen (chemikalienbeständige Ausführungen, Stahllabyrinthdichtungen, Hoch- und Niedrigtemperatur-varianten)
- Spezialfette



Content

Our slewing bearing delivery program comprises the following special designs (among others):

Individual, non-standard designs can be produced for special conditions and applications (e.g. extreme temperatures, exposure to dust and dirt, slewing bearings with suspended fittings, as well as high loads, torque, or rotational speeds). All requirements can be discussed in detail with our design engineers.

Overview of our special solutions:

- Precision bearings with centerings
- Preloaded bearings
- Types with increased number of screws
- Steel or brass cages and spacers
- Special surface treatment such as paint coating, zinc coating or chromating)
- Special sealings (chemical resistant types, steel labyrinth sealings, high and low temperature versions)
- Special greases



Fertigungsprogramm - Allgemeine Informationen
Manufacturing Range - General Information

- Werkstoffe für Standard-Bauteile sind vergütete Stähle - 42CrMo4 und andere; für Sonderanfertigungen werden auch verschiedene Edelstähle - beispielsweise X45Cr13 - verarbeitet

- Außen- und Innenverzahnung Modul 3 - 24
- Gerad- und schrägverzahnt
- Drehen, Bohren, Verzahnen und Härten standardmäßig bis 5000 mm
- Verzahnungsqualitäten 8 - 12 (gefräst)
- Verzahnungstoleranzfeld 27
- Dichtung: bei Standard-Bauteilen werden einfache Lippendichtungsprofile an der Ober- und Unterseite der Drehverbindung eingesetzt; bei Sonderanfertigungen und sehr widrigen Umgebungsbedingungen sind auch mehrlippige Dichtungsprofile möglich
- Härtetiefenprüfung mit Ultraschallmessung
- Qualitätssicherung durch Simulation und Probelauf nach Komplettmontage im Werk
- 100%-Prüfung

Weitere Module und größere Durchmesser auf Anfrage.

- Materials for standard parts are quenched and tempered steels
- 42CrMo4 and others; for customized solutions we also process various stainless steels - such as X45Cr13 - for example

- External and internal gear module: 3 - 24
- Straight and helical teeth
- Turning, drilling, gear-cutting and hardening generally up to 5000 mm
- Gear quality: 8 - 12 (milled)
- Gear tolerance block: 27
- Sealing: standard parts are fitted with simple lip-seal profiles at both upper and under side of the slewing bearing; for custom made slewing bearings and use in very harsh environments, multi-lipped seal profiles are also available
- Testing of hardening depth with ultrasonic measurement
- Quality assurance through simulation and test run after complete assembly at the factory
- 100% testing

Other modules and larger diameters on request.

Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Drehverbindungen - Fertigungsprogramm
Slewing Bearings - Manufacturing Range

Kugeldrehverbindung; 1-reihig, Flanschlager
- Vierpunktlager, leichte Bauform
- Kostenoptimierte Ausführung
- Für Standardanwendungen
- Zur Übertragung moderater Kräfte und Momente
- Geeignet für Anschlusskonstruktionen mit geringen Anforderungen an Genauigkeit und Steifigkeit

Anwendungen:
Allgemeiner Maschinenbau, leichte Schwenktische, Materialhandling, Schienenfahrzeuge

Single-row ball slewing bearing, flange bearing
- Four-point contact bearing, light design
- Cost optimized type
- For standard applications
- Transmission of moderate loads and torques
- Suitable for connecting structures with low requirements on accuracy and stiffness

Applications:
General mechanical engineering, light turntables, materials handling, railed vehicles



Kugeldrehverbindungen - 1-reihig
- Vierpunktlager
- Für robuste Einsatzbedingungen
- Kostenoptimierte Ausführung
- Unempfindlich gegenüber Vibrationen

Anwendungen:
Krane, Baumaschinen, Maschinen- und Anlagenbau, Windkraftanlagen

Single-row ball slewing bearings
- Four-point contact bearing
- For tough service conditions
- Cost optimized type
- Insensible to vibrations

Applications:
Cranes, building machinery, plant and mechanical engineering, wind turbines



Kugeldrehverbindungen - 2-reihig
- Achtpunktlager
- Für hohe statische und dynamische Belastungen
- Unempfindlich gegenüber Vibrationen
- Gut geeignet für grobe Anschlusskonstruktionen
- Auch als Doppel-Axialkugellager lieferbar

Anwendungen:
Windkraftanlagen, Umschlagtechnik, allgemeiner Maschinenbau

Double-row ball slewing bearings
- Eight-point contact bearing
- For high static and dynamic loads
- Insensible to vibrations
- Suitable for rough connecting structures
- Also available as double axial ball bearing

Applications:
Wind turbines, transshipment technology, general mechanical engineering



Drehverbindungen - Fertigungsprogramm
Slewing Bearings - Manufacturing Range

Kreuzrollen-Drehverbindungen
- Hohe Genauigkeit
- Hohe Steifigkeit
- Gleichmäßiger Drehwiderstand bei wechselnder Belastung

Crossed-roller slewing bearings
- High accuracy
- High stiffness
- Uniform rotational resistance despite changing loads



Anwendungen:
Werkzeugmaschinenbau, Tunnelvortriebsmaschinen, Positioniereinrichtungen

Applications:
Machine tool engineering, tunnelling machinery, positioning systems

Rollen-Drehverbindungen
- Hohe Genauigkeit und Steifigkeit
- Besonders hohe statische und dynamische Tragfähigkeit
- Geeignet für höchste axiale Lasten und Kippmomente

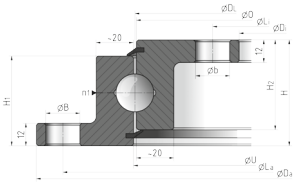
Roller slewing bearings
- High accuracy and stiffness
- Very high static and dynamic load capability
- Suitable for highest axial loads and tilting moments



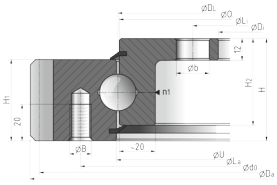
Anwendungen:
Offshore-Technik, Umschlagtechnik, Hafenkrane, Bandabsetzer, Großantennenanlagen

Applications:
Offshore technology, transshipment technology, wharf cranes, belt stackers, large antenna systems

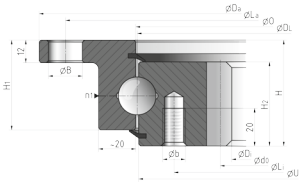
Kugeldrehverbindung; 1-reihig, Flanschlager
Single-row Ball Slewing Bearing, Flange Bearing



180-0 (unverzahnt | without gear)



180-1 (außenverzahnt | external gear)



180-2 (innenverzahnt | internal gear)

unverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	D_a* [mm]	D_i* [mm]	Bestell Nr. Part No.
518	304	56	47,5	47,5	412,5	415,5	24	490	8	18	332	12	18	516	306	180-020-0414
648	434	56	47,5	47,5	542,5	545,5	31	620	10	18	462	14	18	646	436	180-020-0544
748	534	56	47,5	47,5	642,5	645,5	37	720	12	18	562	16	18	746	536	180-020-0644
848	634	56	47,5	47,5	742,5	745,5	43	820	12	18	662	16	18	846	636	180-020-0744
948	734	56	47,5	47,5	842,5	845,5	48	920	14	18	762	18	18	946	736	180-020-0844
1048	834	56	47,5	47,5	942,5	945,5	54	1020	16	18	862	20	18	1046	836	180-020-0944
1198	984	56	47,5	47,5	1092,5	1095,5	63	1170	16	18	1012	20	18	1196	986	180-020-1094

außenverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	U* [mm]	D_i* [mm]	Bestell Nr. Part No.
503,3	304	56	44,5	47,5	412,5	415,5	30	455	10	M12	332	12	18	417	306	180-120-0414
640,3	434	56	44,5	47,5	542,5	545,5	42	585	14	M12	462	14	18	547	436	180-120-0544
742,3	534	56	44,5	47,5	642,5	645,5	49	685	16	M12	562	16	18	647	536	180-120.0644
838,1	634	56	44,5	47,5	742,5	745,5	55	785	18	M12	662	16	18	747	636	180-120-0744
950,1	734	56	44,5	47,5	842,5	845,5	66	885	18	M12	762	18	18	847	736	180-120-0844
1046,1	834	56	44,5	47,5	942,5	945,5	72	985	20	M12	862	20	18	947	836	180-120-0944
1198,1	984	56	44,5	47,5	1092,5	1095,5	84	1135	22	M12	1012	20	18	1097	986	180-120-1094

innenverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	D_a* [mm]	U* [mm]	Bestell Nr. Part No.
518	325	56	47,5	44,5	415,5	412,5	28	490	8	18	375	12	M12	516	411	180-220-0414
648	444	56	47,5	44,5	545,5	542,5	38	620	10	18	505	16	M12	646	541	180-220-0544
748	546	56	47,5	44,5	645,5	642,5	45	720	12	18	605	18	M12	746	641	180-220-0644
848	648	56	47,5	44,5	745,5	742,5	52	820	12	18	705	20	M12	846	741	180-220-0744
948	736	56	47,5	44,5	845,5	842,5	62	920	14	18	805	20	M12	946	841	180-220-0844
1048	840	56	47,5	44,5	945,5	942,5	68	1020	16	18	905	22	M12	1046	941	180-220-0944
1198	984	56	47,5	44,5	1095,5	1092,5	82	1170	16	18	1055	24	M12	1196	1091	180-220-1094

* Lager optional mit Zentrierung lieferbar; Außendurchmesser mit -IT8 und Innendurchmesser mit +IT8 toleriert;
* Bearings available with optional centering; outer diameter tolerance -IT8; inner diameter tolerance +IT8;

* * Lager auch mit eingeengtem Spiel oder Vorspannung lieferbar
* * Bearings available with restricted internal clearance or preload

Kugeldrehverbindung; 1-reihig, Flanschlager
Single-row Ball Slewing Bearing, Flange Bearing

Abmessungen | dimensions
siehe Zeichnung | see drawing

Verzahnungsdaten | gear data

d_0	Teilkreisdurchmesser | pitch circle diameter
m	Modul | module
z	Zähnezahl | number of teeth
x	Profilverschiebungsfaktor | addendum modification coefficient
fz	Zahnkraft | gear tooth force

Tragzahlen | load ratings

C_{0a}	axial statisch | static
C_{0r}	radial statisch | static
C_a	axial dynamisch | dynamic
C_r	radial dynamisch | dynamic

Sonstige Daten | other data

G	Gewicht | weight
n_i / n_a	Bohrungsanzahl | number of boreholes
n_1	Anzahl der Schmiernippel | number of grease nipples

Lagerspiel | clearance

axial	0...0,7 mm**
radial	0...0,5 mm**

without gear

d_0 [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
-	-	-	-	-	-	295	110	169	111	4
-	-	-	-	-	-	385	145	188	123	4
-	-	-	-	-	-	455	171	200	131	4
-	-	-	-	-	-	530	198	211	138	4
-	-	-	-	-	-	600	224	222	145	4
-	-	-	-	-	-	670	250	231	151	4
-	-	-	-	-	-	770	290	244	160	4

external gear

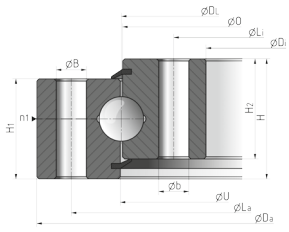
d_0 [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
495	5	99	0	16	24	295	110	169	111	4
630	6	105	0	21	32	385	145	188	123	4
732	6	122	0	21	32	455	171	200	131	4
828	6	138	0	21	32	530	198	211	138	4
936	8	117	0	28	42	600	224	222	145	4
1032	8	129	0	28	42	670	250	231	151	4
1184	8	148	0	28	42	770	290	244	160	4

internal gear

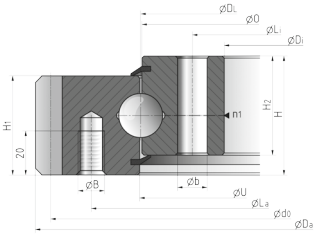
d_0 [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
335	5	67	0	18	26	295	110	169	111	4
456	6	76	0	24	35	385	145	188	123	4
558	6	93	0	24	35	455	171	200	131	4
660	6	110	0	24	35	530	198	211	138	4
752	8	94	0	31	47	600	224	222	145	4
856	8	107	0	31	47	670	250	231	151	4
1000	8	125	0	31	47	770	290	244	160	4

Zentrierhöhen für D_a* und D_i* min. 12 mm, für U* min. 4,4 mm
centering height for D_a* and D_i* min. 12 mm, for U* min. 4,4 mm

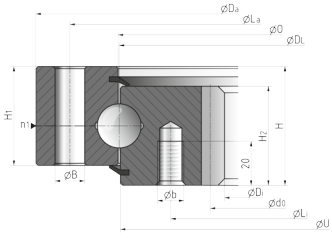
Kugeldrehverbindung; 1-reihig, Vierpunktlager
Single-row Ball Slewing Bearing, Four Point Contact Bearing



181-0 (unverzahnt | without gear)



181-1 (außenverzahnt | external gear)



181-2 (innenverzahnt | internal gear)

unverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	D_a* [mm]	D_i* [mm]	Bestell Nr. Part No.
486	342	56	44,5	44,5	412,5	415,5	29	460	24	14	368	24	14	484	344	181-020-0414
616	472	56	44,5	44,5	542,5	545,5	37	590	32	14	498	32	14	614	474	181-020-0544
716	572	56	44,5	44,5	642,5	645,5	44	690	36	14	598	36	14	714	574	181-020-0644
816	672	56	44,5	44,5	742,5	745,5	52	790	40	14	698	40	14	814	674	181-020-0744
916	772	56	44,5	44,5	842,5	845,5	60	890	40	14	798	40	14	914	774	181-020-0844
1016	872	56	44,5	44,5	942,5	945,5	67	990	44	14	898	44	14	1014	874	181-020-0944
1166	1022	56	44,5	44,5	1092,5	1095,5	77	1140	48	14	1048	48	14	1164	1024	181-020-1094

außenverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	U* [mm]	D_i* [mm]	Bestell Nr. Part No.
503,3	342	56	44,5	44,5	412,5	415,5	31	455	20	M12	368	24	14	417	344	181-120-0414
640,3	472	56	44,5	44,5	542,5	545,5	43	585	28	M12	498	32	14	547	474	181-120-0544
742,3	572	56	44,5	44,5	642,5	645,5	52	685	32	M12	598	36	14	647	574	181-120-0644
838,1	672	56	44,5	44,5	742,5	745,5	59	785	36	M12	698	40	14	747	674	181-120-0744
950,1	772	56	44,5	44,5	842,5	845,5	71	885	36	M12	798	40	14	847	774	181-120-0844
1046,1	872	56	44,5	44,5	942,5	945,5	77	985	40	M12	898	44	14	947	874	181-120-0944
1198,1	1022	56	44,5	44,5	1092,5	1095,5	91	1135	44	M12	1048	48	14	1097	1024	181-120-1094

innenverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	D_a* [mm]	U * [mm]	Bestell Nr. Part No.
486	325	56	44,5	44,5	415,5	412,5	31	460	24	14	375	24	M12	484	411	181-220-0414
616	444	56	44,5	44,5	545,5	542,5	42	590	32	14	505	32	M12	614	541	181-220-0544
716	546	56	44,5	44,5	645,5	642,5	50	690	36	14	605	36	M12	714	641	181-220-0644
816	648	56	44,5	44,5	745,5	742,5	58	790	40	14	705	40	M12	814	741	181-220-0744
916	736	56	44,5	44,5	845,5	842,5	69	890	40	14	805	40	M12	914	841	181-220-0844
1016	840	56	44,5	44,5	945,5	942,5	76	990	44	14	905	44	M12	1014	941	181-220-0944
1166	984	56	44,5	44,5	1095,5	1092,5	91	1140	48	14	1055	48	M12	1164	1091	181-220-1094

* Lager optional mit Zentrierung lieferbar; Außendurchmesser mit -IT8 und Innendurchmesser mit +IT8 toleriert;
* Bearings available with optional centering; outer diameter tolerance -IT8; inner diameter tolerance +IT8;

* * Lager auch mit eingeengtem Spiel oder Vorspannung lieferbar
* * Bearings available with restricted internal clearance or preload

Kugeldrehverbindung; 1-reihig, Vierpunktlager

Single-row Ball Slewing Bearing, Four Point Contact Bearing

Abmessungen | dimensions
siehe Zeichnung | see drawing

Verzahnungsdaten | gear data

d_o	Teilkreisdurchmesser | pitch circle diameter
m	Modul | module
z	Zähnezahl | number of teeth
x	Profilverschiebungsfaktor | addendum modification coefficient
fz	Zahnkraft | gear tooth force

Tragzahlen | load ratings

C_{0a}	axial statisch | static
C_{0r}	radial statisch | static
C_a	axial dynamisch | dynamic
C_r	radial dynamisch | dynamic

Sonstige Daten | other data

G	Gewicht | weight
n_i / n_a	Bohrungsanzahl | number of boreholes
n_1	Anzahl der Schmiernippel | number of grease nipples

Lagerspiel | clearance

axial	0...0,53 mm**
radial	0...0,3 mm**

without gear

d_o [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
-	-	-	-	-	-	560	248	169	111	4
-	-	-	-	-	-	740	325	188	123	4
-	-	-	-	-	-	880	385	200	131	4
-	-	-	-	-	-	1010	445	211	138	4
-	-	-	-	-	-	1150	510	222	145	4
-	-	-	-	-	-	1280	570	231	151	4
-	-	-	-	-	-	1490	660	244	160	4

external gear

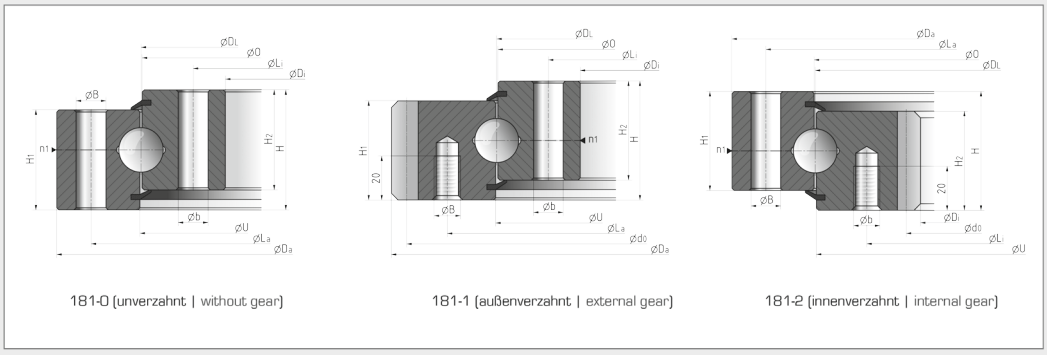
d_o [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
495	5	99	0	16	24	560	248	169	111	4
630	6	105	0	21	32	740	325	188	123	4
732	6	122	0	21	32	880	385	200	131	4
828	6	138	0	21	32	1010	445	211	138	4
936	8	117	0	28	42	1150	510	222	145	4
1032	8	129	0	28	42	1280	570	231	151	4
1184	8	148	0	28	42	1490	660	244	160	4

internal gear

d_o [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
335	5	67	0	18	26	560	248	169	111	4
456	6	76	0	24	35	740	325	188	123	4
558	6	93	0	24	35	880	385	200	131	4
660	6	110	0	24	35	1010	445	211	138	4
752	8	94	0	31	47	1150	510	222	145	4
856	8	107	0	31	47	1280	570	231	151	4
1000	8	125	0	31	47	1490	660	244	160	4

Zentrierhöhen für D_a* und D_i* min. 10 mm, für U* min. 4,5 mm
centering height for D_a* and D_i* min. 10 mm, for U* min. 4,5 mm

Kugeldrehverbindung; 1-reihig, Vierpunktlager
Single-row Ball Slewing Bearing, Four Point Contact Bearing



181-0 (unverzahnt | without gear) 181-1 (außenverzahnt | external gear) 181-2 (innenverzahnt | internal gear)

unverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	D_a* [mm]	D_i* [mm]	Bestell Nr. Part No.
855	655	63	54	54	757	753	90	815	24	22	695	24	22	853	657	181-025-0755
955	755	63	54	54	857	853	101	915	28	22	795	28	22	953	757	181-025-0855
1055	855	63	54	54	957	953	115	1015	30	22	895	30	22	1053	857	181-025-0955
1155	955	63	54	54	1057	1053	128	1115	30	22	995	30	22	1153	957	181-025-1055

außenverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	U* [mm]	D_i* [mm]	Bestell Nr. Part No.
898	655	80	71	54	757	753	128	816	24	M20	695	24	22	755	657	181-125-0755
997	755	80	71	54	857	853	145	916	28	M20	795	28	22	855	757	181-125-0855
1096	855	80	71	54	957	953	155	1016	30	M20	895	30	22	955	857	181-125-0955
1198	955	80	71	54	1057	1053	171	1116	30	M20	995	30	22	1055	957	181-125-1055

innenverzahnt

D_a [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	D_a* [mm]	U * [mm]	Bestell Nr. Part No.
855	610	80	54	71	753	757	119	815	24	22	694	24	M20	853	755	181-225-0755
955	710	80	54	71	853	857	137	915	28	22	794	28	M20	953	855	181-225-0855
1055	810	80	54	71	953	957	149	1015	30	22	894	30	M20	1053	955	181-225-0955
1155	910	80	54	71	1053	1057	165	1115	30	22	994	30	M20	1153	1055	181-225-1055

* Lager optional mit Zentrierung lieferbar; Außendurchmesser mit -IT8 und Innendurchmesser mit +IT8 toleriert;
* Bearings available with optional centering; outer diameter tolerance -IT8; inner diameter tolerance +IT8;

* * Lager auch mit eingeengtem Spiel oder Vorspannung lieferbar
* * Bearings available with restricted internal clearance or preload

Kugeldrehverbindung; 1-reihig, Vierpunktlager

Single-row Ball Slewing Bearing, Four Point Contact Bearing

Abmessungen | dimensions

siehe Zeichnung | see drawing

Verzahnungsdaten | gear data

d_0	Teilkreisdurchmesser | pitch circle diameter
m	Modul | module
z	Zähnezahl | number of teeth
x	Profilverschiebungsfaktor | addendum modification coefficient
fz	Zahnkraft | gear tooth force

Tragzahlen | load ratings

C_{0a}	axial statisch | static
C_{0r}	radial statisch | static
C_a	axial dynamisch | dynamic
C_r	radial dynamisch | dynamic

Sonstige Daten | other data

G	Gewicht | weight
n_i / n_a	Bohrungsanzahl | number of boreholes
n_1	Anzahl der Schmiernippel | number of grease nipples

Lagerspiel | clearance

axial	0,05...0,24 mm**
radial	0,03...0,13 mm**

without gear

d_0 [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
-	-	-	-	-	-	2250	1010	460	300	4
-	-	-	-	-	-	2550	1150	485	315	4
-	-	-	-	-	-	2850	1280	500	330	4
-	-	-	-	-	-	3150	1410	520	340	4

external gear

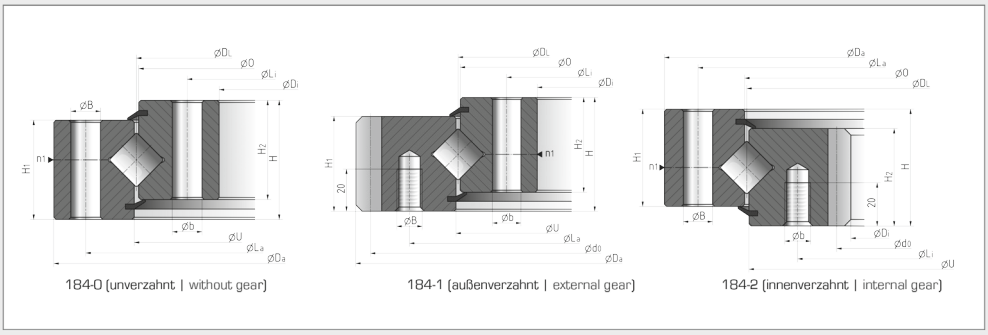
d_0 [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
882	9	98	0	55	80	2250	1010	460	300	4
981	9	109	0	55	80	2550	1150	485	315	4
1080	9	120	0	55	80	2850	1280	500	330	4
1180	10	118	0	61	89	3150	1410	520	340	4

internal gear

d_0 [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
630	10	63	0	68	99	2250	1010	460	300	4
730	10	73	0	68	99	2550	1150	485	315	4
830	10	83	0	68	99	2850	1280	500	330	4
930	10	93	0	68	99	3150	1410	520	340	4

Zentrierhöhen für D_a* , D_i* und U* min. 15 mm
centering height for D_a* , D_i* and U* min. 15 mm

Kreuzrollen-Drehverbindung; 1-reihig
Single-row Crossed-roller Slewing Bearing



184-0 (unverzahnt | without gear) 184-1 (außenverzahnt | external gear) 184-2 (innenverzahnt | internal gear)

unverzahnt

D_a * [mm]	D_i * [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	axial [mm]	radial [mm]	Bestell Nr. Part No.
484	344	56	44,5	44,5	413	415	28	460	24	14	368	24	14	0,04	0,06	184-014-0414
614	474	56	44,5	44,5	543	545	38	590	32	14	498	32	14	0,04	0,07	184-014-0544
714	574	56	44,5	44,5	643	645	44	690	36	14	598	36	14	0,05	0,08	184-014-0644
814	674	56	44,5	44,5	743	745	52	790	40	14	698	40	14	0,05	0,09	184-014-0744
914	774	56	44,5	44,5	843	845	60	890	40	14	798	40	14	0,06	0,09	184-014-0844
1014	874	56	44,5	44,5	943	945	67	990	44	14	898	44	14	0,06	0,11	184-014-0944
1164	1024	56	44,5	44,5	1093	1095	77	1140	48	14	1048	48	14	0,07	0,11	184-014-1094

außenverzahnt

D_a [mm]	D_i * [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U* [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	axial [mm]	radial [mm]	Bestell Nr. Part No.
503,3	344	56	44,5	44,5	413	417	32	455	20	M12	368	24	14	0,04	0,06	184-114-0414
640,3	474	56	44,5	44,5	543	547	44	585	28	M12	498	32	14	0,04	0,07	184-114-0544
742,3	574	56	44,5	44,5	643	647	52	685	32	M12	598	36	14	0,05	0,08	184-114-0644
838,1	674	56	44,5	44,5	743	747	59	785	36	M12	698	40	14	0,05	0,08	184-114-0744
950,1	774	56	44,5	44,5	843	847	71	885	36	M12	798	40	14	0,05	0,09	184-114-0844
1046,1	874	56	44,5	44,5	943	947	77	985	40	M12	898	44	14	0,06	0,09	184-114-0944
1198,1	1024	56	44,5	44,5	1093	1097	91	1135	44	M12	1048	48	14	0,07	0,11	184-114-1094

innenverzahnt

D_a * [mm]	D_i [mm]	H [mm]	H_1 [mm]	H_2 [mm]	O [mm]	U* [mm]	G [kg]	L_a [mm]	n_a [-]	B [mm]	L_i [mm]	n_i [-]	b [mm]	axial [mm]	radial [mm]	Bestell Nr. Part No.
484	325	56	44,5	44,5	415	411	31	460	24	14	375	24	M12	0,04	0,06	184-214-0414
614	444	56	44,5	44,5	545	541	43	590	32	14	505	32	M12	0,04	0,07	184-214-0544
714	546	56	44,5	44,5	645	641	50	690	36	14	605	36	M12	0,05	0,08	184-214-0644
814	648	56	44,5	44,5	745	741	58	790	40	14	705	40	M12	0,05	0,09	184-214-0744
914	736	56	44,5	44,5	845	841	69	890	40	14	805	40	M12	0,06	0,09	184-214-0844
1014	840	56	44,5	44,5	945	941	76	990	44	14	905	44	M12	0,06	0,11	184-214-0944
1164	984	56	44,5	44,5	1095	1091	91	1140	48	14	1055	48	M12	0,07	0,11	184-214-1094

* Lager grundsätzlich mit Zentrierung; Außendurchmesser mit -IT7 und Innendurchmesser mit +IT7 toleriert;
* Bearings always with centering; outer diameter tolerance -IT7; inner diameter tolerance +IT7;

Lager grundsätzlich vorgespannt
Bearings generally preloaded

Kreuzrollen-Drehverbindung; 1-reihig
Single-row Crossed-roller Slewing Bearing

Abmessungen | dimensions
siehe Zeichnung | see drawing

Verzahnungsdaten | gear data

d_o	Teilkreisdurchmesser | pitch circle diameter
m	Modul | module
z	Zähnezahl | number of teeth
x	Profilverschiebungsfaktor | addendum modification coefficient
fz	Zahnkraft | gear tooth force

Sonstige Daten | other data

G	Gewicht | weight
n_i / n_a	Bohrungsanzahl | number of boreholes
n_1	Anzahl der Schmiernippel | number of grease nipples

Tragzahlen | load ratings

C_{0a}	axial statisch | static
C_{0r}	radial statisch | static
C_a	axial dynamisch | dynamic
C_r	radial dynamisch | dynamic

without gear

d_o [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
-	-	-	-	-	-	520	250	229	146	4
-	-	-	-	-	-	680	330	270	170	4
-	-	-	-	-	-	800	395	290	185	4
-	-	-	-	-	-	930	455	315	200	4
-	-	-	-	-	-	1050	510	340	215	4
-	-	-	-	-	-	1170	580	360	227	4
-	-	-	-	-	-	1360	670	390	246	4

external gear

d_o [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
495	5	99	0	16	24	520	250	229	146	4
630	6	105	0	21	32	680	330	270	170	4
732	6	122	0	21	32	800	395	290	185	4
828	6	138	0	21	32	930	455	315	200	4
936	8	117	0	28	42	1050	510	340	215	4
1032	8	129	0	28	42	1170	580	360	227	4
1184	8	148	0	28	42	1360	670	390	246	4

internal gear

d_o [mm]	m [mm]	z [-]	x [-]	fz_{norm} [kN]	fz_{max} [kN]	C_{0a} [kN]	C_{0r} [kN]	C_a [kN]	C_r [kN]	n_1 [-]
335	5	67	0	18	26	520	250	229	146	4
456	6	76	0	24	35	680	330	270	170	4
558	6	93	0	24	35	800	395	290	185	4
660	6	110	0	24	35	930	455	315	200	4
752	8	94	0	31	47	1050	510	340	215	4
856	8	107	0	31	47	1170	580	360	227	4
1000	8	125	0	31	47	1360	670	390	246	4

Zentrierhöhen für D_a* und D_i* min. 10 mm, für U* min. 4,5 mm
centering height for D_a* and D_i* min. 10 mm, for U* min. 4,5 mm

Trapezgewindespindeln & -muttern
Lead Screws & Threaded Nuts

Lagerprogramm — Stock Programme

Inhalt — Content

Trapezgewindespindel gerollt rechts / links
Lead Screws Rolled Finish Right Hand / Left Hand
● Seiten | pages F 1 - F 2



Trapezgewindespindel gewirbelt rechts / links
Lead Screws Whirled Finish Right Hand / Left Hand
● Seiten | pages F 3 - F 4



Trapezgewindespindel rostfrei, gerollt rechts / links - NEU
Lead Screws Stainless Steel, Rolled Finish, Right Hand / Left Hand - NEW
● Seiten | pages F 5 - F 6



Trapezgewindespindel rostfrei, gewirbelt rechts
Lead Screws Stainless Steel, Whirled Finish, Right Hand
● Seiten | pages F 7



Trapezgewindemuttern rechts / links
Threaded Nuts Right Hand / Left Hand
● Seiten | pages F 8 - F 9 & F 11 - F 12



Trapezgewindemuttern einbaufertig bearbeitet rechts / links - NEU
Threaded Nuts Ready-to-Install Right Hand / Left Hand - NEW
● Seiten | pages F 10 & F 13



Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Trapezgewindespindeln & -muttern
Lead Screws & Threaded Nuts

Zeichnungsteile & Sonderlösungen — Drawing Parts & Customized Solutions

Inhalt — Content

Trapezgewindespindeln und -muttern werden nach individuellem Kundenwunsch und Zeichnung gefertigt:

Zu unseren Lösungen zählen unter anderem:

- Trapezgewindespindeln und -muttern in Sonderabmessungen, weiteren Steigungen, Toleranzklassen sowie Materialien
- Trapezgewindespindeln in gerollter, gewirbelter oder geschliffener Ausführung; auch einbaufertig bearbeitet nach Ihren Wünschen sowie nach Zeichnung
- Rechts- und Linksgewinde sowie mehrgängige Gewinde
- Trapezgewindespindeln mit kombiniertem Rechts-/ Links-Gewinde
- Trapezgewindespindeln in rostfreier Ausführung
- Trapezgewindespindeln mit Endenbearbeitung für Lagersitze
- Max. Spindellänge 12.000 mm
- Standard-Trapezgewindespindeln auf Zwischenlängen zugeschnitten

Lead screws are manufactured according to individual customer requirements and drawings:

Our solutions include:

- Lead screws and threaded nuts in special dimensions, additional pitches, tolerance classes and materials
- Lead screws in rolled, whirled or ground design; also machined ready to be installed according to your order or drawing
- Right and left hand threads and multiple threads
- Lead screws with combined right hand/left hand thread
- Lead screws in stainless steel
- Lead screws with machined ends for mounting with support units
- Max. screw length 12,000 mm
- Standard lead screws cut to intermediate lengths

Spindelendenbearbeitung

Entsprechend den Ausführungen auf den Seiten G 6 und G 7 dieses Katalogs oder nach Ihren Zeichnungen und individuellen Wünschen.

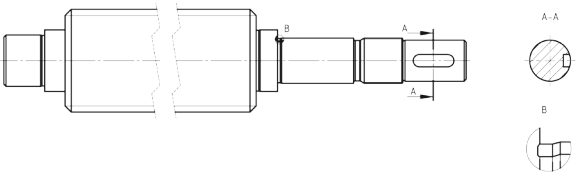
Machined Shaft Ends

Corresponding to the designs on pages G 6 and G 7 of this catalogue or according to your drawings and individual requirements.





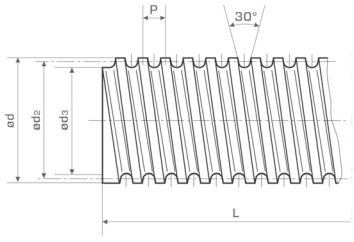




Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Trapezgewindespindeln - gerollt rechtsgängig

Lead Screws - Rolled Finish, Right Hand



DIN | DIN 103

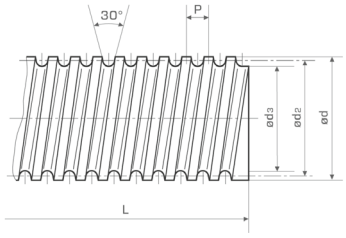
Qualität | quality 7e
Material | material 1.0501 [C35]

Tr d x p	$d_{2\ min}$	$d_{2\ max}$	$d_{3\ min}$	L	[kg]	Bestell Nr. Part No.
12 x 3	10,191	10,415	7,8	1 000	0,75	500-012-010
12 x 3	10,191	10,415	7,8	2 000	1,50	500-012-020
12 x 3	10,191	10,415	7,8	3 000	2,25	500-012-030
14 x 3	12,191	12,415	9,8	1 000	1,04	500-014-010
14 x 3	12,191	12,415	9,8	2 000	2,08	500-014-020
14 x 3	12,191	12,415	9,8	3 000	3,12	500-014-030
16 x 4	13,640	13,905	10,8	1 000	1,20	500-016-010
16 x 4	13,640	13,905	10,8	2 000	2,40	500-016-020
16 x 4	13,640	13,905	10,8	3 000	3,60	500-016-030
18 x 4	15,640	15,905	12,8	1 000	1,58	500-018-010
18 x 4	15,640	15,905	12,8	2 000	3,16	500-018-020
18 x 4	15,640	15,905	12,8	3 000	4,74	500-018-030
20 x 4	17,640	17,905	14,8	1 000	2,00	500-020-010
20 x 4	17,640	17,905	14,8	2 000	4,00	500-020-020
20 x 4	17,640	17,905	14,8	3 000	6,00	500-020-030
22 x 5	19,114	19,394	15,5	1 000	2,23	500-022-010
22 x 5	19,114	19,394	15,5	2 000	4,46	500-022-020
22 x 5	19,114	19,394	15,5	3 000	6,69	500-022-030
24 x 5	21,094	21,394	17,5	1 000	2,70	500-024-010
24 x 5	21,094	21,394	17,5	2 000	5,40	500-024-020
24 x 5	21,094	21,394	17,5	3 000	8,10	500-024-030
26 x 5	23,094	23,394	19,5	1 000	3,26	500-026-010
26 x 5	23,094	23,394	19,5	2 000	6,52	500-026-020
26 x 5	23,094	23,394	19,5	3 000	9,78	500-026-030
28 x 5	25,094	25,394	21,5	1 000	3,85	500-028-010
28 x 5	25,094	25,394	21,5	2 000	7,70	500-028-020
28 x 5	25,094	25,394	21,5	3 000	11,55	500-028-030
30 x 6	26,547	26,882	21,9	1 000	4,50	500-030-010
30 x 6	26,547	26,882	21,9	2 000	9,00	500-030-020
30 x 6	26,547	26,882	21,9	3 000	13,50	500-030-030
32 x 6	28,547	28,882	23,9	1 000	5,18	500-032-010
32 x 6	28,547	28,882	23,9	2 000	10,36	500-032-020
32 x 6	28,547	28,882	23,9	3 000	15,54	500-032-030
36 x 6	32,547	32,882	27,9	1 000	6,70	500-036-010
36 x 6	32,547	32,882	27,9	2 000	13,40	500-036-020
36 x 6	32,547	32,882	27,9	3 000	20,10	500-036-030
40 x 7	36,020	36,375	30,5	1 000	8,00	500-040-010
40 x 7	36,020	36,375	30,5	2 000	16,00	500-040-020
40 x 7	36,020	36,375	30,5	3 000	24,00	500-040-030
44 x 7	40,020	40,375	34,5	1 000	9,87	500-044-010
44 x 7	40,020	40,375	34,5	2 000	19,74	500-044-020
44 x 7	40,020	40,375	34,5	3 000	29,61	500-044-030
48 x 8	43,468	43,868	37,8	1 000	11,95	500-048-010
48 x 8	43,468	43,868	37,8	2 000	23,90	500-048-020
48 x 8	43,468	43,868	37,8	3 000	35,85	500-048-030
50 x 8	45,468	45,868	39,3	1 000	13,00	500-050-010
50 x 8	45,468	45,868	39,3	2 000	26,00	500-050-020
50 x 8	45,468	45,868	39,3	3 000	39,00	500-050-030
60 x 9	54,935	55,360	48,1	1 000	18,00	500-060-010
60 x 9	54,935	55,360	48,1	2 000	36,00	500-060-020
60 x 9	54,935	55,360	48,1	3 000	54,00	500-060-030

Steigungsgenauigkeit | lead tolerance 0,1/ 300 mm
Geradheit | straightness 0,3/ 300 mm

Trapezgewindespindeln - gerollt, linksgängig

Lead Screws - Rolled Finish, Left Hand

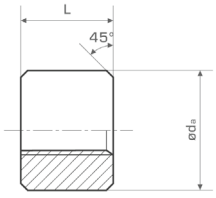


DIN | DIN	**103**
Qualität | quality	7e
Material | material	1.0501 [C35]

Tr d x p	$d_{2\ min}$	$d_{2\ max}$	$d_{3\ min}$	L	[kg]	Bestell Nr. Part No.
12 x 3	10,191	10,415	7,8	1 000	0,75	505-012-010
12 x 3	10,191	10,415	7,8	2 000	1,50	505-012-020
12 x 3	10,191	10,415	7,8	3 000	2,25	505-012-030
14 x 3	12,191	12,415	9,8	1 000	1,04	505-014-010
14 x 3	12,191	12,415	9,8	2 000	2,08	505-014-020
14 x 3	12,191	12,415	9,8	3 000	3,12	505-014-030
16 x 4	13,640	13,905	10,8	1 000	1,20	505-016-010
16 x 4	13,640	13,905	10,8	2 000	2,40	505-016-020
16 x 4	13,640	13,905	10,8	3 000	3,60	505-016-030
18 x 4	15,640	15,905	12,8	1 000	1,58	505-018-010
18 x 4	15,640	15,905	12,8	2 000	3,16	505-018-020
18 x 4	15,640	15,905	12,8	3 000	4,74	505-018-030
20 x 4	17,640	17,905	14,8	1 000	2,00	505-020-010
20 x 4	17,640	17,905	14,8	2 000	4,00	505-020-020
20 x 4	17,640	17,905	14,8	3 000	6,00	505-020-030
22 x 5	19,114	19,394	15,5	1 000	2,23	505-022-010
22 x 5	19,114	19,394	15,5	2 000	4,46	505-022-020
22 x 5	19,114	19,394	15,5	3 000	6,69	505-022-030
24 x 5	21,094	21,394	17,5	1 000	2,70	505-024-010
24 x 5	21,094	21,394	17,5	2 000	5,40	505-024-020
24 x 5	21,094	21,394	17,5	3 000	8,10	505-024-030
26 x 5	23,094	23,394	19,5	1 000	3,26	505-026-010
26 x 5	23,094	23,394	19,5	2 000	6,52	505-026-020
26 x 5	23,094	23,394	19,5	3 000	9,78	505-026-030
28 x 5	25,094	25,394	21,5	1 000	3,85	505-028-010
28 x 5	25,094	25,394	21,5	2 000	7,70	505-028-020
28 x 5	25,094	25,394	21,5	3 000	11,55	505-028-030
30 x 6	26,547	26,882	21,9	1 000	4,50	505-030-010
30 x 6	26,547	26,882	21,9	2 000	9,00	505-030-020
30 x 6	26,547	26,882	21,9	3 000	13,50	505-030-030
32 x 6	28,547	28,882	23,9	1 000	5,18	505-032-010
32 x 6	28,547	28,882	23,9	2 000	10,36	505-032-020
32 x 6	28,547	28,882	23,9	3 000	15,54	505-032-030
36 x 6	32,547	32,882	27,9	1 000	6,70	505-036-010
36 x 6	32,547	32,882	27,9	2 000	13,40	505-036-020
36 x 6	32,547	32,882	27,9	3 000	20,10	505-036-030
40 x 7	36,020	36,375	30,5	1 000	8,00	505-040-010
40 x 7	36,020	36,375	30,5	2 000	16,00	505-040-020
40 x 7	36,020	36,375	30,5	3 000	24,00	505-040-030
44 x 7	40,020	40,375	34,5	1 000	9,87	505-044-010
44 x 7	40,020	40,375	34,5	2 000	19,74	505-044-020
44 x 7	40,020	40,375	34,5	3 000	29,61	505-044-030
48 x 8	43,468	43,868	37,8	1 000	11,95	505-048-010
48 x 8	43,468	43,868	37,8	2 000	23,90	505-048-020
48 x 8	43,468	43,868	37,8	3 000	35,85	505-048-030
50 x 8	45,468	45,868	39,3	1 000	13,00	505-050-010
50 x 8	45,468	45,868	39,3	2 000	26,00	505-050-020
50 x 8	45,468	45,868	39,3	3 000	39,00	505-050-030
60 x 9	54,935	55,360	48,1	1 000	18,00	505-060-010
60 x 9	54,935	55,360	48,1	2 000	36,00	505-060-020
60 x 9	54,935	55,360	48,1	3 000	54,00	505-060-030

Steigungsgenauigkeit | lead tolerance	0,1/ 300 mm
Geradheit | straightness	0,3/ 300 mm

Trapezgewindemuttern - rechtsgängig
Threaded Nuts - Right Hand



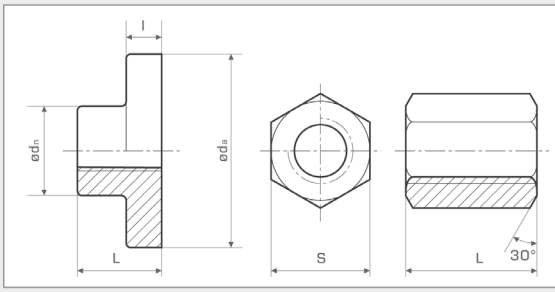
DIN | DIN 103

Qualität | quality 8 H

Gewindemuttern-Rohlinge, rund — cast finish, round

			Bestell Nr.					Part No.
			● 1.0715	● PETP	● GG 25	● Rg 7	● 1.0715	
Tr d x p	d_a	L	[9 S Mn 28 K] St	synt. mat.	cast iron	Bronze	L	[9 S Mn 28 K] St
10 x 3	22	20	511-010-100		511-010-500	511-010-600	15	511-010-110
12 x 3	26	24	511-012-100	511-012-800	511-012-500	511-012-600	18	511-012-110
14 x 3	30	28	511-014-100		511-014-500	511-014-600	21	511-014-110
16 x 4	36	32	511-016-100	511-016-800	511-016-500	511-016-600	24	511-016-110
18 x 4	40	36	511-018-100		511-018-500	511-018-600	27	511-018-110
20 x 4	45	40	511-020-100	511-020-800	511-020-500	511-020-600	30	511-020-110
22 x 5	45	44	511-022-100		511-022-500	511-022-600	33	511-022-110
24 x 5	50	48	511-024-100	511-024-800	511-024-500	511-024-600	36	511-024-110
26 x 5	55	52	511-026-100		511-026-500	511-026-600	39	511-026-110
28 x 5	60	56	511-028-100		511-028-500	511-028-600	42	511-028-110
30 x 6	60	60	511-030-100	511-030-800	511-030-500	511-030-600	45	511-030-110
32 x 6	60	64	511-032-100		511-032-500	511-032-600	48	511-032-110
36 x 6	75	72	511-036-100	511-036-800	511-036-500	511-036-600	54	511-036-110
40 x 7	80	80	511-040-100	511-040-800	511-040-500	511-040-600	60	511-040-110
44 x 7	80	88	511-044-100		511-044-500	511-044-600	66	511-044-110
48 x 8	90	96	511-048-100		511-048-500	511-048-600	72	511-048-110
50 x 8	90	100	511-050-100	511-050-800	511-050-500	511-050-600	75	511-050-110
60 x 9	100	120	511-060-100		511-060-500	511-060-600	90	511-060-110
70 x 10	110	140	511-070-100		511-070-500	511-070-600	105	511-070-110

Trapezgewindemuttern - rechtsgängig
Threaded Nuts - Right Hand



DIN | DIN 103

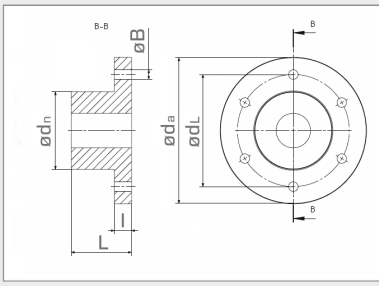
Qualität | quality 8H

Gewindemuttern-Rohlinge **cast finish**

					Flansch | flange Bestell Nr.		sechskant | hexagonal Part No.		
					GG 25	Rg 7			1.0715
Tr d x p	L	l	d_a	d_n	cast iron	Bronze	L	S	[9 S Mn 28 K] St
10 x 3	15	6	35	20	511-010-570	511-010-670	15	17	511-010-150
12 x 3	20	7	42	24	511-012-570	511-012-670	18	19	511-012-150
14 x 3	24	10	52	30	511-014-570	511-014-670	21	22	511-014-150
16 x 4	24	10	52	30	511-016-570	511-016-670	24	27	511-016-150
18 x 4	26	11	62	38	511-018-570	511-018-670	27	27	511-018-150
20 x 4	26	11	62	38	511-020-570	511-020-670	30	30	511-020-150
22 x 5	33	13	77	50	511-022-570	511-022-670	33	32	511-022-150
24 x 5	33	13	77	50	511-024-570	511-024-670	36	36	511-024-150
26 x 5	33	13	77	50	511-026-570	511-026-670	42	41	511-026-150
28 x 5	48	15	90	58	511-028-570	511-028-670	42	41	511-028-150
30 x 6	48	15	90	58	511-030-570	511-030-670	45	46	511-030-150
32 x 6	60	20	115	80	511-032-570	511-032-670	48	46	511-032-150
36 x 6	60	20	115	80	511-036-570	511-036-670	54	55	511-036-150
40 x 7	65	20	140	80	511-040-570	511-040-670	60	65	511-040-150
44 x 7	65	20	140	80	511-044-570	511-044-670	66	65	511-044-150
48 x 8	70	20	170	90	511-048-570	511-048-670	72	75	511-048-150
50 x 8	70	20	170	90	511-050-570	511-050-670	75	75	511-050-150
60 x 9							90	90	511-060-150
70 x 10							105	90	511-070-150

NEU! Einbaufertige Trapezgewindemuttern - rechtsgängig

NEW! Ready-to-Install Threaded Nuts - Right Hand

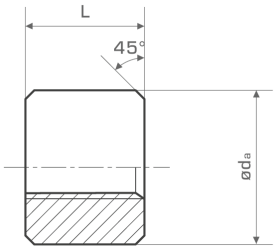


DIN | DIN	**103**
Qualität | quality	**8H**

Flanschmuttern, einbaufertig bearbeitet | **flange nuts, ready-to-install**

Tr d x p	L	l	d_a	d_n	6xØB	Ød_L	Bestell Nr. Part No. Rg 7 Bronze
12 x 3	20	7	42	24	4,5	33	511-012-673
14 x 3	24	10	52	30	5,5	41	511-014-673
16 x 4	24	10	52	30	5,5	41	511-016-673
18 x 4	26	11	62	38	6,6	50	511-018-673
20 x 4	26	11	62	38	6,6	50	511-020-673
22 x 5	33	13	77	50	6,6	65	511-022-673
24 x 5	33	13	77	50	6,6	65	511-024-673
26 x 5	33	13	77	50	6,6	65	511-026-673
28 x 5	48	15	90	58	6,6	75	511-028-673
30 x 6	48	15	90	58	6,6	75	511-030-673
32 x 6	60	20	115	80	6,6	100	511-032-673
36 x 6	60	20	115	80	6,6	100	511-036-673
40 x 7	65	20	140	80	11	110	511-040-673
44 x 7	65	20	140	80	11	110	511-044-673
48 x 8	70	20	170	90	11	130	511-048-673
50 x 8	70	20	170	90	11	130	511-050-673

Trapezgewindemuttern - linkssgängig
Threaded Nuts - Left Hand



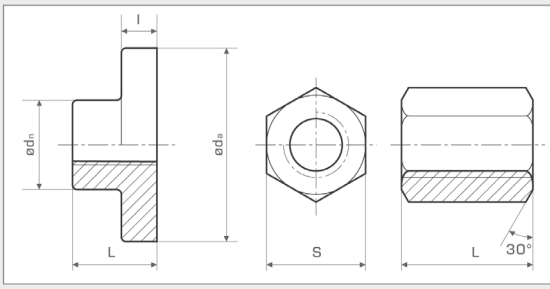
DIN | DIN	**103**
Qualität | quality	**8H**

Gewindemuttern-Rohlinge, rund — **cast finish, round**

			Bestell Nr.				Part No.
			● 1.0715	● GG 25	● Rg 7		● 1.0715
Tr d x p	d_a	L	[9 S Mn 28 K] St	cast iron	Bronze	L	[9 S Mn 28 K] St
10 x 3	22	20	516-010-100	516-010-500	516-010-600	15	516-010-110
12 x 3	26	24	516-012-100	516-012-500	516-012-600	18	516-012-110
14 x 3	30	28	516-014-100	516-014-500	516-014-600	21	516-014-110
16 x 4	36	32	516-016-100	516-016-500	516-016-600	24	516-016-110
18 x 4	40	36	516-018-100	516-018-500	516-018-600	27	516-018-110
20 x 4	45	40	516-020-100	516-020-500	516-020-600	30	516-020-110
22 x 5	45	44	516-022-100	516-022-500	516-022-600	33	516-022-110
24 x 5	50	48	516-024-100	516-024-500	516-024-600	36	516-024-110
26 x 5	55	52	516-026-100	516-026-500	516-026-600	39	516-026-110
28 x 5	60	56	516-028-100	516-028-500	516-028-600	42	516-028-110
30 x 6	60	60	516-030-100	516-030-500	516-030-600	45	516-030-110
32 x 6	60	64	516-032-100	516-032-500	516-032-600	48	516-032-110
36 x 6	75	72	516-036-100	516-036-500	516-036-600	54	516-036-110
40 x 7	80	80	516-040-100	516-040-500	516-040-600	60	516-040-110
44 x 7	80	88	516-044-100	516-044-500	516-044-600	66	516-044-110
48 x 8	90	96	516-048-100	516-048-500	516-048-600	72	516-048-110
50 x 8	90	100	516-050-100	516-050-500	516-050-600	75	516-050-110
60 x 9	100	120	516-060-100	516-060-500	516-060-600	90	516-060-110
70 x 10	110	140	516-070-100	516-070-500	516-070-600	105	516-070-110

Trapezgewindemuttern - linkssgängig

Threaded Nuts - Left Hand



DIN | DIN 103

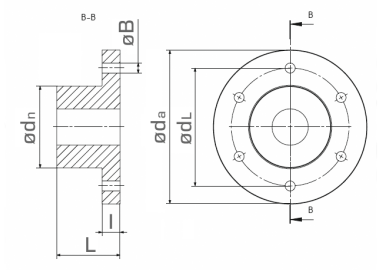
Qualität | quality 8H

Gewindemuttern-Rohlinge — cast finish

Tr d x p	L	l	d_a	d_n	Flansch | flange Bestell Nr. GG 25 cast iron	Rg 7 Bronze	sechskant | hexagonal Part No. 1.0715 [9 S Mn 28 K] L	S	St
10 x 3	15	6	35	20	516-010-570	516-010-670	15	17	516-010-150
12 x 3	20	7	42	24	516-012-570	516-012-670	18	19	516-012-150
14 x 3	24	10	52	30	516-014-570	516-014-670	21	22	516-014-150
16 x 4	24	10	52	30	516-016-570	516-016-670	24	27	516-016-150
18 x 4	26	11	62	38	516-018-570	516-018-670	27	27	516-018-150
20 x 4	26	11	62	38	516-020-570	516-020-670	30	30	516-020-150
22 x 5	33	13	77	50	516-022-570	516-022-670	33	32	516-022-150
24 x 5	33	13	77	50	516-024-570	516-024-670	36	36	516-024-150
26 x 5	33	13	77	50	516-026-570	516-026-670	42	41	516-026-150
28 x 5	48	15	90	58	516-028-570	516-028-670	42	41	516-028-150
30 x 6	48	15	90	58	516-030-570	516-030-670	45	46	516-030-150
32 x 6	60	20	115	80	516-032-570	516-032-670	48	46	516-032-150
36 x 6	60	20	115	80	516-036-570	516-036-670	54	55	516-036-150
40 x 7	65	20	140	80	516-040-570	516-040-670	60	65	516-040-150
44 x 7	65	20	140	80	516-044-570	516-044-670	66	65	516-044-150
48 x 8	70	20	170	90	516-048-570	516-048-670	72	75	516-048-150
50 x 8	70	20	170	90	516-050-570	516-050-670	75	75	516-050-150
60 x 9							90	90	516-060-150

NEU! Einbaufertige Trapezgewindemuttern - linksgängig

NEW! Ready-to-Install Threaded Nuts - Left Hand



DIN | DIN 103

Qualität | quality 8H

Flanschmuttern, einbaufertig bearbeitet | **flange nuts, ready-to-install**

Tr d x p	L	l	d_a	d_n	6xØB	Ød_L	Bestell Nr. Part No. Rg 7 Bronze
12 x 3	20	7	42	24	4,5	33	516-012-673
14 x 3	24	10	52	30	5,5	41	516-014-673
16 x 4	24	10	52	30	5,5	41	516-016-673
18 x 4	26	11	62	38	6,6	50	516-018-673
20 x 4	26	11	62	38	6,6	50	516-020-673
22 x 5	33	13	77	50	6,6	65	516-022-673
24 x 5	33	13	77	50	6,6	65	516-024-673
26 x 5	33	13	77	50	6,6	65	516-026-673
28 x 5	48	15	90	58	6,6	75	516-028-673
30 x 6	48	15	90	58	6,6	75	516-030-673
32 x 6	60	20	115	80	6,6	100	516-032-673
36 x 6	60	20	115	80	6,6	100	516-036-673
40 x 7	65	20	140	80	11	110	516-040-673
44 x 7	65	20	140	80	11	110	516-044-673
48 x 8	70	20	170	90	11	130	516-048-673
50 x 8	70	20	170	90	11	130	516-050-673

Kegelräder
Bevel Gears

Lagerprogramm — **Stock Programme**

Inhalt — Content

Verzahnungsgeometrie
Toothing Geometrie
● Seiten | pages H 1



Kegelräder - i = 1:1
Bevel Gears - i = 1:1
● Seiten | pages H 2 - H 3



Kegelräder - i = 1:1,5
Bevel Gears - i = 1:1.5
● Seiten | pages H 4



Kegelräder - i = 1:2
Bevel Gears - i = 1:2
● Seiten | pages H 5



Kegelräder - i = 1:2,5
Bevel Gears - i = 1:2.5
● Seiten | pages H 6



Kegelräder - i = 1:3
Bevel Gears - i = 1:3
● Seiten | pages H 7



Kegelräder - i = 1:4
Bevel Gears - i = 1:4
● Seiten | pages H 8



Kegelräder Acetalharz gespritzt - i = 1:1 bis 1:4
Moulded Bevel Gears - i = 1:1 up to 1:4
● Seiten | pages H 9 - H 10



Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Kegelräder
Bevel Gears

Sonderanfertigungen — **Custom Made Parts**

Inhalt — Content

Unsere Fertigungsmöglichkeiten für Kegelräder entsprechend Ihren individuellen Anforderungen:

Our manufacturing capabilities for bevel gears to suit your individual requirements:

Bogenverzahnte Kegelräder

- Max. Werkstück-Ø 2 000 mm
- Module bis 33, auch Sondermodule
- Einbaufertig bearbeitet
- Einbaumaße sowie Übersetzungsverhältnis und Wärmebehandlung entsprechend Ihren Vorgaben und Zeichnungen

Spiral Bevel Gears

- Max. diameter 2 000 mm
- Modules up to 33, special modules also
- Ready to be installed
- Dimensions and ratio as well heat treatments acc. to your specifications and drawings

Kegelräder

- gerad- und schrägverzahnt, ballige Zahnflanken
- Rad-Ø bis 2 000 mm
- Module bis 33, auch Sondermodule
- Einbaufertig bearbeitet
- Einbaumaße sowie Übersetzungsverhältnis und Wärmebehandlung entsprechend Ihren Vorgaben und Zeichnungen

Bevel Gears

- Straight and helical teeth, crowned tooth flanks
- Gear-Ø up to 2 000 mm
- Modules up to 33, special modules also
- Ready to be installed
- Dimensions and ratio as well heat treatments acc. to your specifications and drawings

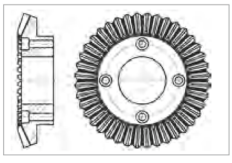
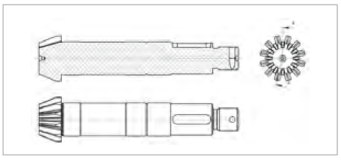
Kegelräder

Weiterbearbeitung unseres Standard-Sortiments nach Zeichnung und entsprechend Kundenwunsch:
- Fertigbohrung nach ISO-Passung H7
- Passfedernut nach DIN 6885 Bl.1
- Feststellgewinde und Befestigungsbohrung
- Wärmebehandlungen

Bevel Gears

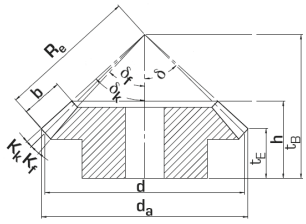
Customizing of our standard products acc. to drawing and customer requirements:
- Finished bore acc. to ISO fit H7
- Keyway according to DIN 6885/1
- Thread for set screw and fixing hole
- Heat treatments




Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Kegelräder - Verzahnungsgeometrie
Bevel Gears - Toothing Geometrie



Bezugsgrößen und Formeln mit Achswinkel
δA = 90° und Null- und V-Null-Verzahnung

reference data and formulae with shaft angle δA = 90°
and equal addendum or long and short addendum teeth

Kopfkreisabstand
t_E = Kopfkreisabstand zur Bezugsfläche | crown to back

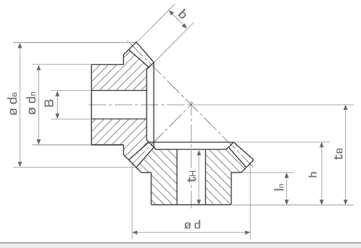
Spitzenabstand
t_B = Entfernung der Teilkegelspitze von der Bezugsfläche | pitch apex to back

Benennung	Description	Zeichen / Formel Symbol / Formula	Einheit Dimension
Modul	module	$m = \frac{d}{z}$	mm
Zähnezahl	number of teeth	$z = \frac{d}{m}$	
Teilkreisdurchmesser	pitch diameter	$d = z \cdot m$	mm
Eingriffswinkel	pressure angle	$\alpha = 20°$ (DIN 687)	
Übersetzungsverhältnis	ratio	$i = \frac{z_2}{z_1} = \frac{d_2}{d_1} = \frac{n_1}{n_2}$	
Achsenwinkel	shaft angle	$\delta_A = \delta_1 + \delta_2$	
Zahnbreite	width of tooth	$b \approx \frac{m \cdot z}{6 \sin \delta}$	mm
Äußere Teilkegellänge	external cone distance	$R_e \approx \frac{d}{2 \sin \delta}$	mm
Teilkegelwinkel	dedendum angle	$\tan \delta = \frac{z_1}{z_2}$	
Kopfkegelwinkel	face angle	$\delta_k = \delta + K_k$	
Kopfkreisdurchmesser	outside diameter	$d_a = d + 2h_a \cdot \cos\delta$	mm
Fußkegelwinkel	root (cone) angle	$\delta_f = \delta - K_f$	
Zahnkopfwinkel	addendum angle	$\tan K_k = \frac{2}{\sqrt{z_1^2 + z_2^2}}$ (für $\delta_a = 90°$)	
Zahnfußwinkel	dedendum angle	$\tan K_f = \frac{h_f}{R_e}$	
Zahnkopfhöhe	addendum height	h_a	mm
Zahnfußhöhe	dedendum height	h_f	mm

WMH-Standard Kegelräder aus Werkstoff 1.0503 (C45) werden mit längsballigen Zahnflanken in Qualität 9 nach DIN 3962, 3963 und 3967 hergestellt. Die Kegelräder sind austauschbar. Für höhere Beanspruchungen können diese Kegelräder nachträglich auf 52±2 HRC induktiv gehärtet oder auf 850 - 900 [N/mm²] vergütet werden. Beim Einbau ist darauf zu achten, dass die Axialdrücke mit entsprechend tragfähigen Lagern aufgefangen werden.

WMH-Standard Bevel gears made of material steel 1.0503 (C45) are manufactured with crowned flanks in quality classified as no 9 acc. to DIN 3962, 3963 and 3967. The bevel gears are interchangeable. For higher loads, the bevel gears can be heat treated to 850 - 900 [N/mm²] or induction-hardened to 52±2 HRC. When installing take care, that the axial pressures will be absorbed with appropriate carrying bearings.

Kegelräder
Bevel Gears



Übersetzung | ratio — **i = 1:1**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — **20°**
Achsenwinkel | shaft angle — **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material — **1.0503 [C45]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
1,0	16	17,41	16,0	4,0	8,0	14,0	5,0	17,0	12,3	11,0	9,71	0,012	151-110-016
	19	20,41	19,0	4,5	8,0	16,0	6,0	19,0	13,2	12,0	10,21	0,018	151-110-019
	22	23,41	22,0	5,0	9,5	19,0	6,0	22,0	15,0	13,5	11,71	0,027	151-110-022
	26	27,41	26,0	6,0	10,0	22,0	8,0	25,0	16,7	15,5	12,71	0,042	151-110-026
	30	31,41	30,0	7,0	10,5	25,0	8,0	28,0	18,4	17,0	13,71	0,061	151-110-030
1,5	16	26,11	24,0	6,0	10,0	20,0	8,0	24,0	16,9	15,0	13,06	0,032	151-115-016
	19	30,62	28,5	6,5	10,5	24,0	8,0	27,0	18,0	16,0	13,81	0,053	151-115-019
	22	35,12	33,0	7,5	11,0	26,0	8,0	31,0	20,5	18,5	15,56	0,077	151-115-022
	26	41,12	39,0	8,5	13,0	28,0	10,0	35,0	22,2	20,5	16,56	0,105	151-115-026
	30	47,12	45,0	10,0	13,5	30,0	10,0	39,0	24,3	22,5	17,56	0,150	151-115-030
2,0	16	34,83	32,0	8,0	12,0	26,0	10,0	31,0	21,5	19,0	16,41	0,072	151-120-016
	19	40,83	38,0	9,0	12,0	30,0	10,0	35,0	23,3	21,0	17,41	0,115	151-120-019
	22	46,83	44,0	10,0	13,0	32,0	12,0	39,0	25,0	23,0	18,41	0,155	151-120-022
	26	54,83	52,0	11,5	14,0	36,0	12,0	45,0	28,1	26,0	20,41	0,242	151-120-026
	30	62,83	60,0	13,5	15,0	40,0	14,0	50,0	30,5	28,0	21,41	0,340	151-120-030
2,5	16	43,54	40,0	10,0	13,0	32,0	12,0	37,0	25,2	22,0	18,77	0,132	151-125-016
	19	51,04	47,5	11,0	14,5	38,0	12,0	43,0	28,2	25,0	21,02	0,220	151-125-019
	22	58,54	55,0	12,5	16,0	40,0	14,0	48,0	30,5	28,0	22,27	0,298	151-125-022
	26	68,54	65,0	14,5	17,0	45,0	16,0	54,0	33,0	30,0	23,27	0,433	151-125-026
	30	78,54	75,0	16,5	18,0	50,0	18,0	60,0	35,4	32,0	24,27	0,602	151-125-030
3,0	16	52,24	48,0	12,0	14,0	38,0	14,0	43,0	28,9	25,0	21,12	0,218	151-130-016
	19	61,24	57,0	13,5	16,0	40,0	14,0	49,0	31,4	28,0	22,62	0,315	151-130-019
	22	70,24	66,0	15,0	18,0	45,0	16,0	56,0	35,0	31,0	25,12	0,457	151-130-022
	26	82,24	78,0	17,0	20,0	52,0	18,0	65,0	39,5	36,0	28,12	0,737	151-130-026
	30	94,24	90,0	19,5	22,0	60,0	20,0	73,0	43,3	39,0	30,12	1,08	151-130-030
3,5	16	60,95	56,0	14,0	16,5	45,0	16,0	50,0	33,5	29,0	24,48	0,353	151-135-016
	19	71,45	66,5	16,0	18,0	50,0	16,0	57,0	36,7	32,0	26,22	0,540	151-135-019
	22	81,95	77,0	17,5	20,0	55,0	18,0	64,0	39,6	35,0	27,98	0,745	151-135-022
	26	95,95	91,0	20,0	21,0	60,0	20,0	73,0	43,4	39,0	29,98	1,11	151-135-026
	30	109,95	105,0	23,0	23,0	70,0	22,0	83,0	48,5	44,0	32,98	1,70	151-135-030

Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4".

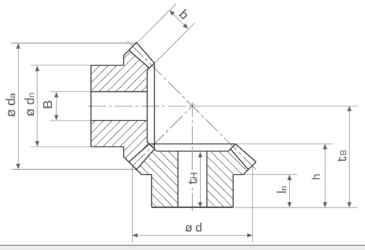
Bestellbeispiel: gehärtetes Kegelrad Modul 2, Übersetzung 1:1, 22 Zähne: 151-120-**4**22

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 2, ratio 1:1, 22 teeth: 151-120-**4**22

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Kegelräder
Bevel Gears



Übersetzung | ratio **i = 1:1**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle **20°**
Achsenwinkel | shaft angle **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material **1.0503 [C45]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_h	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
4,0	16	69,66	64,0	16,0	18,0	50,0	18,0	57,0	38,1	33,0	27,83	0,512	151-140-016
	19	81,66	76,0	18,0	20,0	55,0	18,0	65,0	41,6	37,0	29,83	0,775	151-140-019
	22	93,66	88,0	20,0	22,0	60,0	20,0	73,0	45,0	40,0	31,83	1,08	151-140-022
	26	109,66	104,0	23,0	23,0	70,0	22,0	82,0	48,2	44,0	32,83	1,65	151-140-026
	30	125,66	120,0	26,0	25,0	80,0	25,0	92,0	52,4	48,0	34,83	2,41	151-140-030
4,5	16	78,36	72,0	18,0	21,0	58,0	20,0	64,0	42,8	38,0	31,18	0,755	151-145-016
	19	91,86	85,5	20,0	21,0	60,0	22,0	72,0	45,5	40,0	32,43	1,02	151-145-019
	22	105,36	99,0	22,5	23,0	70,0	25,0	81,0	49,6	44,0	34,68	1,54	151-145-022
	26	123,36	117,0	25,5	25,0	80,0	28,0	92,0	53,7	48,0	36,68	2,32	151-145-026
	30	141,36	135,0	29,0	28,0	85,0	30,0	104,0	59,2	54,0	39,68	3,26	151-145-030
5,0	16	87,07	80,0	20,0	22,5	65,0	22,0	70,0	46,4	41,0	33,54	1,03	151-150-016
	19	102,07	95,0	22,0	23,0	70,0	25,0	79,0	49,4	44,0	35,04	1,44	151-150-019
	22	117,07	110,0	25,0	25,0	80,0	28,0	89,0	54,1	48,0	37,54	2,12	151-150-022
	26	137,07	130,0	29,0	29,0	85,0	30,0	103,0	60,9	55,0	41,54	3,14	151-150-026
	30	157,07	150,0	32,0	32,0	90,0	35,0	116,0	66,1	60,0	44,54	4,25	151-150-030
6,0	16	104,49	96,0	22,5	24,0	80,0	25,0	80,0	50,7	44,0	36,24	1,69	151-160-016
	19	122,49	114,0	26,0	25,0	85,0	28,0	90,0	54,2	48,0	37,24	2,77	151-160-019
	22	140,49	132,0	30,0	26,0	95,0	30,0	100,0	58,1	51,0	38,24	4,10	151-160-022
	26	164,49	156,0	35,0	30,0	105,0	35,0	116,0	65,6	58,0	42,24	6,08	151-160-026
	30	188,49	180,0	40,0	33,0	120,0	40,0	132,0	73,2	66,0	46,24	9,16	151-160-030

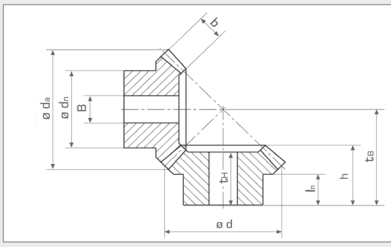
Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4".

Bestellbeispiel: gehärtetes Kegelrad Modul 6, Übersetzung 1:1, 30 Zähne: 151-160-**4**30

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 6, ratio 1:1, 30 teeth: 151-160-**4**30

Kegelräder
Bevel Gears



Übersetzung | ratio — **i = 1:1,5**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — **20°**
Achsenwinkel | shaft angle — **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material — **1.0503 [C45]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
1,0	16	17,66	16,0	4,5	7,2	13,5	5,0	20,0	12,1	11,0	8,55	0,011	151-210-016
	24	25,11	24,0	4,5	9,7	21,0	6,0	20,0	15,1	13,5	12,83	0,035	151-210-024
1,5	16	26,50	24,0	7,0	10,6	20,0	8,0	30,0	18,4	17,0	12,83	0,036	151-215-016
	24	37,66	36,0	7,0	12,0	26,0	8,0	27,0	19,7	17,5	16,25	0,080	151-215-024
2,0	16	35,33	32,0	10,0	12,0	26,0	10,0	38,0	23,0	21,0	15,11	0,080	151-220-016
	24	50,22	48,0	10,0	15,0	35,0	12,0	35,0	25,6	23,0	20,66	0,185	151-220-024
2,5	16	44,16	40,0	12,5	13,3	32,0	12,0	46,0	27,3	25,0	17,39	0,146	151-225-016
	24	62,77	60,0	12,5	16,0	42,0	14,0	42,0	30,2	27,0	24,08	0,340	151-225-024
3,0	16	53,00	48,0	14,5	15,3	40,0	14,0	54,0	31,2	28,0	19,66	0,255	151-230-016
	24	75,33	72,0	14,5	18,0	50,0	16,0	49,0	34,7	30,0	27,50	0,555	151-230-024
3,5	16	61,82	56,0	17,0	17,0	47,0	16,0	62,0	35,4	32,0	21,94	0,400	151-235-016
	24	87,88	84,0	17,0	21,0	58,0	18,0	57,0	40,3	36,0	31,91	0,905	151-235-024
4,0	16	70,66	64,0	19,0	18,7	54,0	18,0	70,0	39,3	35,0	24,22	0,584	151-240-016
	24	100,44	96,0	19,0	24,0	66,0	20,0	65,0	45,8	40,0	36,33	1,330	151-240-024
4,5	16	79,49	72,0	21,5	21,0	60,0	20,0	79,0	44,5	40,0	27,50	0,833	151-245-016
	24	113,00	108,0	21,5	26,0	75,0	25,0	73,0	51,4	45,0	40,74	1,88	151-245-024
5,0	16	88,32	80,0	24,0	23,0	65,0	22,0	88,0	49,8	45,0	30,77	1,13	151-250-016
	24	25,55	120,0	24,0	28,0	85,0	30,0	80,0	56,1	49,0	44,16	2,55	151-250-024
6,0	16	105,98	96,0	28,5	24,7	80,0	25,0	102,0	55,9	50,0	33,33	2,05	151-260-016
	24	150,66	144,0	28,5	32,0	105,0	35,0	90,0	61,1	52,5	46,99	4,18	151-260-024

Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4".

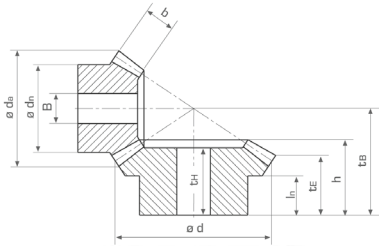
Bestellbeispiel: gehärtetes Kegelrad Modul 4,
Übersetzung 1:1,5, 16 Zähne: 151-240-**4**16

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 4,
ratio 1:1,5, 16 teeth: 151-240-**4**16

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Kegelräder
Bevel Gears



Übersetzung | ratio — i = 1:2

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — 20°
Achsenwinkel | shaft angle — 90°
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material — 1.0503 [C45]

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
1,0	15	16,79	15,0	5,0	7,4	12,5	5,0	23,0	12,8	12,0	8,45	0,010	151-310-015
	30	30,89	30,0	5,0	9,0	22,0	8,0	20,0	15,4	14,0	13,40	0,044	151-310-030
1,5	15	25,18	22,5	8,0	10,6	19,0	8,0	34,0	19,1	18,0	12,17	0,032	151-315-015
	30	46,34	45,0	8,0	13,0	32,0	10,0	28,0	21,2	19,0	18,09	0,133	151-315-030
2,0	15	33,58	30,0	11,5	11,8	25,0	10,0	43,0	23,9	22,0	13,89	0,071	151-320-015
	30	61,79	60,0	11,5	15,0	40,0	14,0	35,0	26,3	23,0	21,79	0,278	151-320-030
2,5	15	41,97	37,5	14,5	13,9	31,0	12,0	53,0	29,2	27,0	16,62	0,140	151-325-015
	30	77,24	75,0	14,5	17,0	50,0	18,0	42,0	31,2	27,0	25,49	0,510	151-325-030
3,0	15	50,37	45,0	17,0	16,3	38,0	14,0	63,0	34,1	32,0	19,34	0,245	151-330-015
	30	92,68	90,0	17,0	19,0	60,0	20,0	49,0	35,9	31,0	29,18	0,880	151-330-030
3,5	15	58,76	52,5	19,5	18,4	44,0	16,0	73,0	39,0	36,0	22,06	0,38	151-335-015
	30	108,13	105,0	19,5	22,0	70,0	22,0	57,0	41,6	36,0	33,88	1,41	151-335-030
4,0	15	67,16	60,0	22,0	20,5	50,0	18,0	83,0	43,9	41,0	24,79	0,56	151-340-015
	30	123,58	120,0	22,0	25,0	80,0	25,0	65,0	47,2	42,0	38,58	2,13	151-340-030
4,5	15	75,55	67,5	25,0	22,4	55,0	20,0	93,0	49,2	46,0	27,51	0,78	151-345-015
	30	139,02	135,0	25,0	28,0	90,0	30,0	73,0	53,1	47,0	43,27	2,99	151-345-030
5,0	15	83,94	75,0	28,0	24,3	60,0	22,0	103,0	54,5	51,0	30,23	1,06	151-350-015
	30	154,47	150,0	28,0	30,0	100,0	35,0	80,0	58,0	51,0	46,97	3,98	151-350-030
6,0	15	100,73	90,0	32,5	26,3	75,0	25,0	120,0	60,9	56,0	32,68	1,82	151-360-015
	30	185,37	180,0	32,5	33,0	120,0	40,0	90,0	63,2	54,0	50,37	5,84	151-360-030

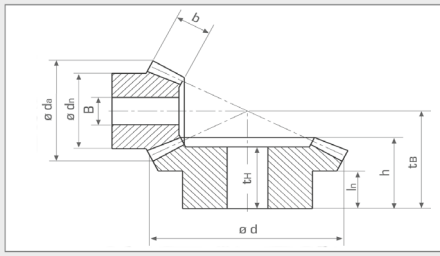
Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4".

Bestellbeispiel: gehärtetes Kegelrad Modul 5, Übersetzung 1:2, 30 Zähne: 151-350-**4**30

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 5, ratio 1:2, 30 teeth: 151-350-**4**30

Kegelräder
Bevel Gears



Übersetzung | ratio i = 1:2,5

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle 20°
Achsenwinkel | shaft angle 90°
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material 1.0503 [C45]

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
1,0	16	17,86	16,0	6,0	7,5	13,5	5,0	28,0	13,8	13,0	8,37	0,013	151-410-016
	40	40,74	40,0	6,0	9,0	25,0	8,0	21,0	15,9	14,0	13,93	0,075	151-410-040
1,5	16	26,79	24,0	9,0	11,2	20,0	8,0	42,0	20,8	19,5	12,56	0,041	151-415-016
	40	61,11	60,0	9,0	13,5	38,0	12,0	30,0	22,3	20,0	19,39	0,232	151-415-040
2,0	16	35,71	32,0	13,5	13,8	26,0	12,0	55,0	28,0	26,0	15,74	0,091	151-420-016
	40	81,49	80,0	13,5	18,0	50,0	18,0	39,0	29,3	26,0	24,86	0,515	151-420-040
2,5	16	44,64	40,0	17,0	15,4	32,0	14,0	67,0	33,4	32,0	17,93	0,174	151-425-016
	40	101,86	100,0	17,0	20,0	60,0	20,0	46,0	33,9	30,0	28,32	0,930	151-425-040
3,0	16	53,57	48,0	20,0	17,4	40,0	16,0	79,0	38,3	36,0	20,11	0,305	151-430-016
	40	122,23	120,0	20,0	23,0	70,0	22,0	55,0	40,3	36,0	33,78	1,63	151-430-040
3,5	16	62,50	56,0	23,5	18,8	45,0	18,0	91,0	43,7	41,0	22,30	0,47	151-435-016
	40	142,60	140,0	23,5	26,0	80,0	25,0	62,0	45,0	40,0	37,25	2,37	151-435-040
4,0	16	71,43	64,0	27,0	21,6	52,0	20,0	104,0	50,1	47,0	25,49	0,72	151-440-016
	40	162,97	160,0	27,0	30,0	90,0	30,0	72,0	52,6	46,0	43,71	3,56	151-440-040
4,5	16	80,36	72,0	30,0	23,6	60,0	22,0	116,0	55,0	52,0	27,67	1,04	151-445-016
	40	183,34	180,0	30,0	34,0	100,0	35,0	81,0	59,0	52,0	49,18	4,98	151-445-040
5,0	16	89,28	80,0	33,0	26,0	65,0	25,0	129,0	60,9	58,0	30,86	1,37	151-450-016
	40	203,71	200,0	33,0	36,0	110,0	40,0	88,0	63,5	56,0	52,64	6,60	151-450-040
6,0	16	107,14	96,0	36,5	26,8	80,0	25,0	150,0	65,5	62,0	32,23	2,48	151-460-016
	40	244,46	240,0	36,5	34,0	125,0	40,0	95,0	64,5	55,0	52,57	12,35	151-460-040

Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4"".

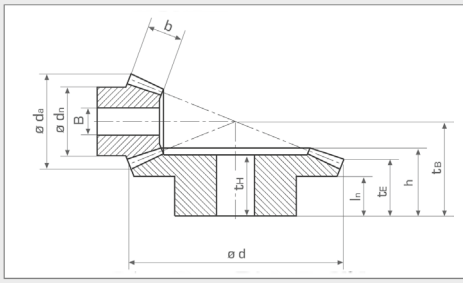
Bestellbeispiel: gehärtetes Kegelrad Modul 3, Übersetzung 1:2,5, 40 Zähne: 151-430-**4**40

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 4, ratio 1:2,5, 40 teeth: 151-430-**4**40

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

Kegelräder
Bevel Gears



Übersetzung | ratio — **i = 1:3**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — **20°**
Achsenwinkel | shaft angle — **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material — **1.0503 [C45]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
1,0	15	16,90	15,0	7,0	8,1	12,5	5,0	31,0	15,4	14,5	8,82	0,012	151-510-015
	45	45,63	45,0	7,0	10,0	28,0	10,0	22,0	17,4	15,5	15,45	0,102	151-510-045
1,5	15	25,35	22,5	10,0	11,7	19,0	8,0	46,0	22,1	21,0	12,72	0,039	151-515-015
	45	68,45	67,5	10,0	14,5	40,0	14,0	31,0	23,9	21,5	21,17	0,300	151-515-045
2,0	15	33,79	30,0	14,0	14,2	25,0	12,0	60,0	28,7	27,0	15,63	0,082	151-520-015
	45	91,26	90,0	14,0	20,0	50,0	18,0	41,0	31,8	28,0	27,90	0,632	151-520-045
2,5	15	42,24	37,5	17,5	15,7	31,0	14,0	73,0	33,9	32,0	17,54	0,155	151-525-015
	45	114,08	112,5	17,5	22,0	60,0	20,0	48,0	36,4	32,0	31,62	1,15	151-525-045
3,0	15	50,69	45,0	21,0	17,3	38,0	16,0	86,0	39,1	37,0	19,45	0,275	151-530-015
	45	136,90	135,0	21,0	25,0	70,0	22,0	56,0	42,1	37,0	36,35	1,90	151-530-045
3,5	15	59,14	52,5	24,5	19,8	44,0	18,0	100,0	45,3	43,0	22,36	0,44	151-535-015
	45	159,71	157,5	24,5	28,0	80,0	25,0	64,0	47,8	42,0	41,07	2,95	151-535-045
4,0	15	67,59	60,0	28,0	22,3	50,0	20,0	114,0	51,4	49,0	25,26	0,65	151-540-015
	45	182,53	180,0	28,0	32,0	90,0	30,0	73,0	54,5	48,0	46,79	4,32	151-540-045
4,5	15	76,04	67,5	31,0	24,7	55,0	22,0	128,0	57,2	54,0	28,17	0,91	151-545-015
	45	205,35	202,5	31,0	35,0	105,0	35,0	81,0	60,1	53,0	51,52	6,18	151-545-045
5,0	15	84,49	75,0	34,0	27,0	60,0	25,0	142,0	62,9	60,0	31,08	1,21	151-550-015
	45	228,16	225,0	34,0	38,0	120,0	40,0	89,0	65,6	58,0	56,24	8,66	151-550-045
6,0	15	101,38	90,0	41,0	27,5	75,0	25,0	165,0	70,3	66,0	31,90	2,42	151-560-015
	45	273,79	270,0	41,0	35,0	140,0	45,0	98,0	70,0	60,0	58,69	17,51	151-560-045

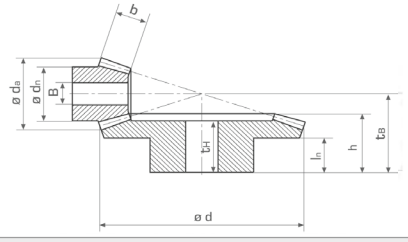
Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4".

Bestellbeispiel: gehärtetes Kegelrad Modul 6, Übersetzung 1:3, 15 Zähne: 151-560-**4**15

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 6, ratio 1:3, 15 teeth: 151-560-**4**15

Kegelräder
Bevel Gears



Übersetzung | ratio — **i = 1:4**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — **20°**
Achsenwinkel | shaft angle — **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Material | material — **1.0503 [C45]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	t_E	[kg]	Bestell Nr. Part No.
1,0	15	16,94	15,0	9,0	7,7	12,5	5,0	38,0	16,9	16,5	8,24	0,012	151-710-015
	60	60,49	60,0	9,0	10,0	35,0	12,0	23,0	18,1	16,5	16,47	0,195	151-710-060
1,5	15	25,41	22,5	12,0	11,6	19,0	8,0	57,0	23,9	23,0	12,36	0,042	151-715-015
	60	90,73	90,0	12,0	15,5	50,0	16,0	33,0	25,7	23,0	23,21	0,570	151-715-060
2,0	15	33,88	30,0	16,0	14,4	25,0	12,0	75,0	30,9	30,0	15,48	0,092	151-720-015
	60	120,97	120,0	16,0	22,0	65,0	20,0	45,0	35,3	32,0	31,94	1,335	151-720-060
2,5	15	42,35	37,5	20,0	17,2	31,0	14,0	93,0	37,9	36,0	18,60	0,180	151-725-015
	60	151,21	150,0	20,0	25,0	80,0	22,0	53,0	40,9	36,0	36,68	2,37	151-725-060
3,0	15	50,82	45,0	24,0	20,1	38,0	16,0	111,0	44,8	43,0	21,73	0,325	151-730-015
	60	181,46	180,0	24,0	28,0	95,0	28,0	62,0	47,5	42,0	42,41	4,06	151-730-060
3,5	15	59,29	52,5	28,0	22,9	44,0	18,0	129,0	51,8	50,0	24,85	0,515	151-735-015
	60	211,70	210,0	28,0	30,0	110,0	32,0	69,0	52,1	46,0	46,15	6,16	151-735-060
4,0	15	67,76	60,0	32,0	23,5	48,0	20,0	145,0	56,8	55,0	25,97	0,860	151-740-015
	60	241,94	240,0	32,0	35,0	125,0	35,0	80,0	60,6	53,0	53,88	9,06	151-740-060
4,5	15	76,23	67,5	36,0	25,4	55,0	22,0	162,0	62,7	60,0	28,09	1,24	151-745-015
	60	272,18	270,0	36,0	37,0	140,0	40,0	88,0	66,2	57,0	58,62	12,95	151-745-060
5,0	15	84,70	75,0	40,0	28,1	60,0	25,0	180,0	69,7	67,0	31,21	1,76	151-750-015
	60	302,42	300,0	40,0	38,0	160,0	45,0	95,0	70,8	62,0	62,35	17,82	151-750-060
6,0	15	101,64	90,0	45,0	28,1	75,0	25,0	210,0	74,7	71,0	31,45	2,42	151-760-015
	60	362,91	360,0	45,0	38,0	180,0	50,0	103,0	73,3	62,0	63,82	25,15	151-760-060

Auf Wunsch erhalten Sie unsere Kegelräder auch in gehärteter Ausführung (HRC 52±2): für Anfragen und Bestellungen ersetzen Sie bitte die drittletzte Ziffer "0" durch "4"".

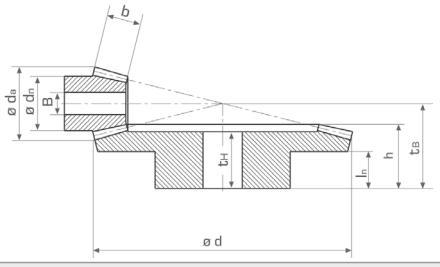
Bestellbeispiel: gehärtetes Kegelrad Modul 4,
Übersetzung 1:4, 60 Zähne: 151-740-**4**60

Upon request, our bevel gears are also available in hardened design (HRC 52±2): for inquiries and orders please replace the third last digit "0" with "4".

Order example: hardened bevel gear module 4,
ratio 1:4, 60 teeth: 151-740-**4**60

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
If you need other dimensions - please contact our engineering department.

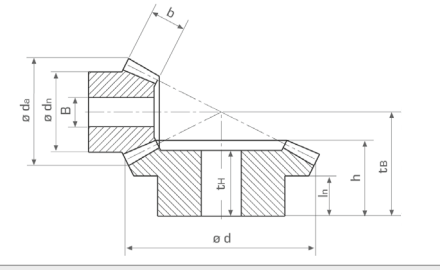
Kegelräder Kunststoff gespritzt
Moulded Bevel Gears



Übersetzung | ratio — i = 1:1

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — 20°
Achsenwinkel | shaft angle — 90°
mit balligtragenden Zahnflanken
with crowned tooth bearing
Azetalharz gespritzt
injection moulded acetal resin — [Hostaform C]

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	[kg]	Bestell Nr. Part No.
0,5	16	8,7	8,0	2,0	6,0	7,0	3,0	10,5	8,0	8,0	0,001	159-105-016
1,0	16	17,6	16,0	4,7	8,0	12,0	5,0	18,4	13,6	13,6	0,002	159-110-016
	30	31,4	30,0	7,4	7,4	15,0	6,0	24,8	15,3	12,9	0,006	159-110-030
1,5	16	26,4	24,0	7,0	10,0	18,5	8,0	25,8	18,4	16,2	0,006	159-115-016
2,0	16	34,9	32,0	10,0	9,6	21,9	10,0	30,4	21,2	18,3	0,011	159-120-016
2,5	16	43,5	40,0	12,3	11,5	25,2	12,0	37,0	25,5	22,9	0,019	159-125-016
3,0	16	52,3	48,0	13,8	13,2	28,8	14,0	43,0	29,2	25,8	0,030	159-130-016
3,5	16	61,4	56,0	15,8	14,4	33,3	18,0	49,5	33,1	28,1	0,048	159-135-016

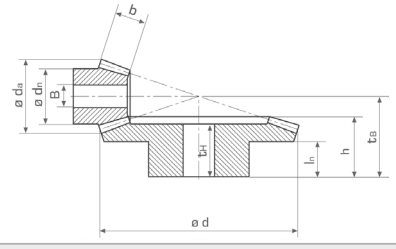


Übersetzung | ratio — i = 1:2

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — 20°
Achsenwinkel | shaft angle — 90°
mit balligtragenden Zahnflanken
with crowned tooth bearing
Azetalharz gespritzt
injection moulded acetal resin — [Hostaform C]

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	[kg]	Bestell Nr. Part No.
1,0	15	16,8	15,0	6,6	10,6	12,2	5,0	26,4	17,0	17,0	0,002	159-310-015
	30	31,1	30,0	6,6	9,1	18,0	8,0	20,9	16,2	14,8	0,007	159-310-030
1,5	15	25,4	22,5	10,5	11,5	17,0	8,0	35,8	22,8	22,8	0,007	159-315-015
	30	46,4	45,0	10,5	9,6	23,4	10,0	26,2	19,5	17,5	0,018	159-315-030
2,0	15	33,6	30,0	14,6	11,8	22,5	10,0	44,2	27,0	26,0	0,013	159-320-015
	30	62,2	60,0	14,6	11,8	30,2	12,0	32,6	24,2	22,6	0,040	159-320-030
2,5	15	42,0	37,5	17,3	13,0	26,5	12,0	53,3	31,2	29,6	0,023	159-325-015
	30	77,3	75,0	17,3	15,0	36,1	16,0	40,5	29,5	27,5	0,077	159-325-030
3,0	15	50,3	45,0	20,5	14,8	31,2	14,0	63,3	36,3	35,0	0,037	159-330-015
	30	93,0	90,0	20,5	19,0	45,0	18,0	49,5	37,0	34,2	0,135	159-330-030

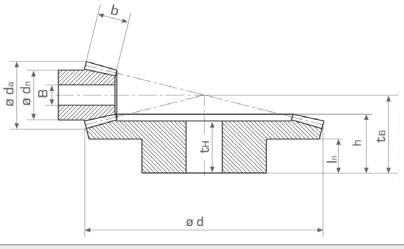
Kegelräder Kunststoff gespritzt
Moulded Bevel Gears



Übersetzung | ratio — **i = 1:3**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — **20°**
Achsenwinkel | shaft angle — **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Azetalharz gespritzt
injection moulded acetal resin — **[Hostaform C]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	[kg]	Bestell Nr. Part No.
1,0	15	16,6	15,0	9,2	11,0	12,3	5,0	34,3	20,4	20,4	0,003	159-510-015
	45	46,1	45,0	9,2	9,6	23,4	10,0	22,7	18,2	16,5	0,018	159-510-045
1,5	15	25,1	22,5	14,0	12,5	17,2	8,0	47,9	26,8	26,8	0,008	159-515-015
	45	68,8	67,5	14,0	11,5	30,4	12,0	29,4	23,0	21,5	0,048	159-515-045
2,0	10	24,0	20,0	12,5	12,0	16,6	6,0	43,7	25,0	25,0	0,006	159-520-010
	30	61,7	60,0	12,5	11,5	30,3	12,0	28,0	22,5	20,2	0,038	159-520-030
2,5	10	29,7	25,0	15,7	13,0	18,8	8,0	52,4	28,8	28,8	0,010	159-525-010
	30	77,2	75,0	15,7	15,5	36,1	18,0	35,7	29,0	25,2	0,067	159-525-030



Übersetzung | ratio — **i = 1:4**

geradverzahnt | straight teeth
Eingriffswinkel | pressure angle — **20°**
Achsenwinkel | shaft angle — **90°**
mit balligtragenden Zahnflanken
with crowned tooth bearing
Azetalharz gespritzt
injection moulded acetal resin — **[Hostaform C]**

Modul Module	Zähnezahl No. teeth	d_a	d	b	l_n	d_n	B	t_B	h	t_H	[kg]	Bestell Nr. Part No.
1,0	10	12,0	10,0	8,2	9,3	7,8	4,0	30,1	17,7	17,7	0,001	159-710-010
	40	40,8	40,0	8,2	10,8	23,4	10,0	20,1	17,0	15,7	0,013	159-710-040
1,5	10	18,0	15,0	12,3	10,9	11,3	5,0	41,7	23,5	23,5	0,003	159-715-010
	40	61,2	60,0	12,3	12,8	30,4	12,0	26,2	21,7	20,0	0,031	159-715-040
2,0	10	23,8	20,0	16,3	12,8	14,3	6,0	54,0	28,9	28,9	0,006	159-720-010
	40	81,5	80,0	16,3	16,6	36,0	18,0	32,5	27,0	24,7	0,062	159-720-040

Sollten Sie andere Abmessungen benötigen, helfen Ihnen unsere Konstrukteure gerne weiter.
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Keilwellen & Muffen

Splined Shafts & Sleeves

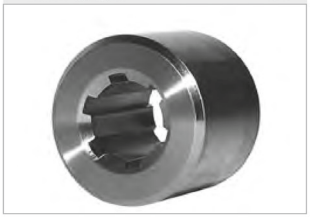
Lagerprogramm — Stock Programme

Inhalt — Content

Keilwellen
Splined Shafts
● Seiten | pages J 1



Keilwellen-Muffen - rund
Splined Sleeves - Round
● Seiten | pages J 1



Keilwellen-Muffen - Flansch
Splined Sleeves - Flange
● Seiten | pages J 2



Keilwellen-Muffen - Flansch, gebohrt
Splined Sleeves - Flange, with Holes
● Seiten | pages J 2



Unsere Konstrukteure beraten Sie gerne bei der Realisierung Ihrer Anwendung - Fordern Sie uns heraus!
We offer more than competitive prices - contact our engineering department!

Keilwellen & Muffen
Splined Shafts & Sleeves

Sonderanfertigungen — Custom Made Parts

Inhalt — Content

Nach Zeichnung und Kundenwunsch fertigen wir Wellen und Naben in zahlreichen Ausführungen:

Acc. to drawing and customer requirement, we manufacture shafts and hubs in numerous designs:

Wellen und Naben

- Mit Mehrkeilprofilen, Kerbverzahnungen, Einzelnuten
- Außen-Profile bis max. Ø 180 mm
- Länge bis max. 1 600 mm
- Gefräst und geschliffen

Shafts and Hubs

- With multi-spline profiles, serrations, single groove
- Outer profile up to max. Ø 180 mm
- Length up to max. 1 600 mm
- Milled and ground

Wellen und Naben

Innen-Profile, Räumen:
- Werkzeug-Ø max. 90 mm
- Werkstück-Ø max. 400 mm
- Räumlänge max. 200 mm

Shafts and Hubs

Inner profile, broaching:
- Tool-Ø max. 90 mm
- Work-piece-Ø max. 400 mm
- Broaching length max. 200 mm

Wellen und Naben

Innen-Profile, Ziehen:
- Werkstück-Ø max. 1 500 mm
- Bohrungs-Ø max. 400 mm
- Nutlänge max. 425 mm
- Nutbreite max. 50 mm

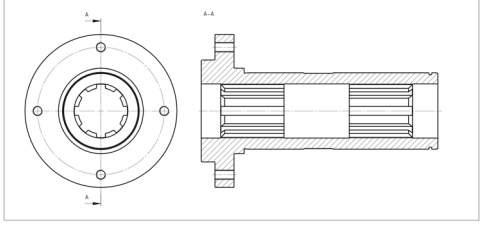
Shafts and Hubs

Inner profile, drawn:
- Work-piece-Ø max. 1 500 mm
- Bore-Ø max. 400 mm
- Groove length max. 425 mm
- Groove width max. 50 mm





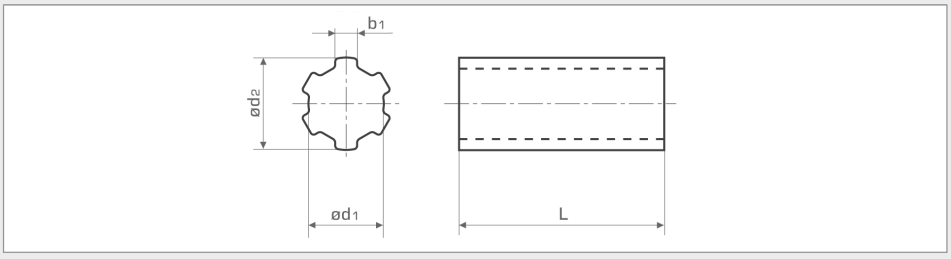




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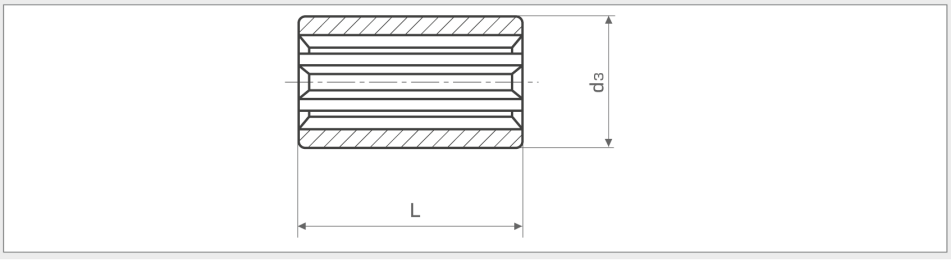
Keilwellen und Muffen nach DIN 5463/ISO 14

Splined Shafts and Sleeves acc. to DIN 5463/ISO 14



Keilwelle gezogen Werkstoff: 1.0511 (C40) | splined shafts drawn material: steel 1.0511 (C40)

a* x d_1 x d_2		b_1		Bestell Nr. / Part No.					
	0 -0,07	0	kg/m						
-0,08	-0,27	-0,08		L = 250	L = 500	L = 1 000	L = 2 000	L = 3 000	L = 4 500 [mm]
6 x 11	x 14	3	0,95	294-111-025	294-111-050	294-111-100	294-111-200	294-111-300	294-111-450
6 x 13	x 16	3,5	1,29	294-113-025	294-113-050	294-113-100	294-113-200	294-113-300	294-113-450
6 x 16	x 20	4	1,91	294-116-025	294-116-050	294-116-100	294-116-200	294-116-300	294-116-450
6 x 18	x 22	5	2,45	294-118-025	294-118-050	294-118-100	294-118-200	294-118-300	294-118-450
6 x 21	x 25	5	3,24	294-121-025	294-121-050	294-121-100	294-121-200	294-121-300	294-121-450
6 x 23	x 28	6	3,96	294-123-025	294-123-050	294-123-100	294-123-200	294-123-300	294-123-450
6 x 26	x 32	6	5,01	294-126-025	294-126-050	294-126-100	294-126-200	294-126-300	294-126-450
6 x 28	x 34	7	5,82	294-128-025	294-128-050	294-128-100	294-128-200	294-128-300	294-128-450
6 x 28,14	x 34,94	8,64	6,72	294-129-025	294-129-050	294-129-100	294-129-200	294-129-300	294-129-450
8 x 32	x 38	6	7,43	294-132-025	294-132-050	294-132-100	294-132-200	294-132-300	294-132-450
8 x 36	x 42	7	9,30	294-136-025	294-136-050	294-136-100	294-136-200	294-136-300	294-136-450
8 x 42	x 48	8	12,34	294-142-025	294-142-050	294-142-100	294-142-200	294-142-300	294-142-450
8 x 46	x 54	9	15,30	294-146-025	294-146-050	294-146-100	294-146-200	294-146-300	294-146-450



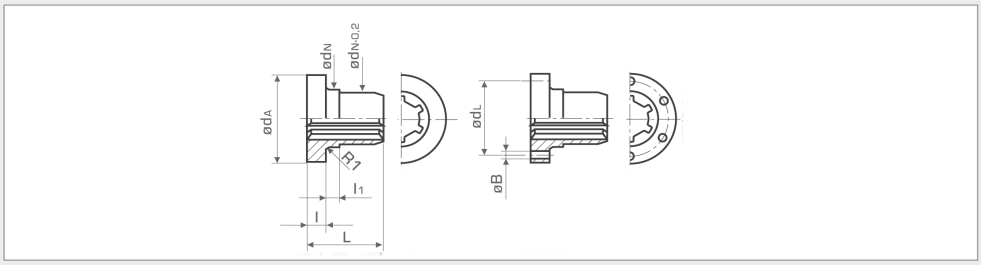
Muffen Werkstoff: 1.0727 (45 S 20 K) | splined sleeves material: steel 1.0727 (45 S 20 K)

a* x d_1	x d_2	L	d_3	[kg]	Bestell Nr. / Part No. rund | round
6 x 11	x 14	40	30	0,18	294-011-004
6 x 13	x 16	40	35	0,24	294-013-004
6 x 16	x 20	40	40	0,30	294-016-004
6 x 18	x 22	40	42	0,31	294-018-004
6 x 21	x 25	40	45	0,36	294-021-004
6 x 21	x 25	60	38	0,32	294-021-006
6 x 23	x 28	60	50	0,60	294-023-006
6 x 26	x 32	60	60	1,00	294-026-006
6 x 28	x 34	60	70	1,40	294-028-006
6 x 29,7	x 34,93	60	75	1,65	294-029-006
6 x 29,7	x 34,93	80	50,8	0,65	294-029-008
8 x 32	x 38	60	75	1,50	294-032-006
8 x 36	x 42	60	80	1,75	294-036-006
8 x 42	x 48	60	90	2,20	294-042-006
8 x 46	x 54	60	90	2,05	294-046-006

a*: Anzahl der Keile | number of keys

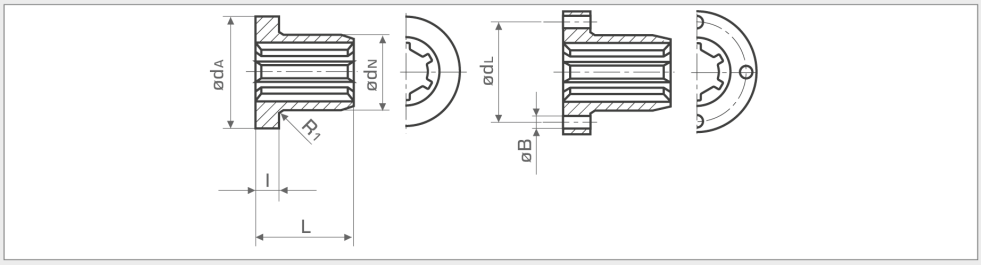
Keilwellen - Muffen nach DIN 5463/ISO 14

Splined Sleeves acc. to DIN 5463/ISO 14



Werkstoff: Spezialbronze — material: phospher-bronze

a* x d_1	x d_2	ød_A	ød_N (h7)	L	l	l_1	[kg]	Flansch Flange Bestell Nr. Part No.	ød_L	6xøB	[kg]	Flansch, gebohrt Flange with holes Bestell Nr. Part No.
6 x 11	x 14	43	24	35	10	6	0,19	294-611-603	32	4,3	0,18	294-611-703
6 x 13	x 16	43	24	35	10	8	0,17	294-613-603	32	4,3	0,16	294-613-703
6 x 16	x 20	48	28	45	12	8	0,26	294-616-604	38	5,3	0,24	294-616-704
6 x 18	x 22	55	32	45	12	10	0,35	294-618-604	45	6,4	0,32	294-618-704
6 x 21	x 25	55	32	45	12	10	0,32	294-621-604	45	6,4	0,30	294-621-704
6 x 23	x 28	62	38	50	14	10	0,50	294-623-605	50	6,4	0,47	294-623-705
6 x 26	x 32	62	38	50	14	10	0,44	294-626-605	50	6,4	0,42	294-626-705
6 x 28	x 34	75	48	60	15	11	0,84	294-628-606	62	8,4	0,80	294-628-706
6 x 29,7	x 34,93	75	48	60	15	11	0,80	294-629-606	62	8,4	0,78	294-629-706
8 x 32	x 38	75	48	60	15	11	0,70	294-632-606	62	8,4	0,68	294-632-706
8 x 36	x 42	95	63	80	16	12	1,82	294-636-608	78	8,4	1,75	294-636-708
8 x 42	x 48	95	63	80	16	12	1,50	294-642-608	78	8,4	1,48	294-642-708
8 x 46	x 54	110	72	80	18	12	2,20	294-646-610	90	10,5	2,10	294-646-710

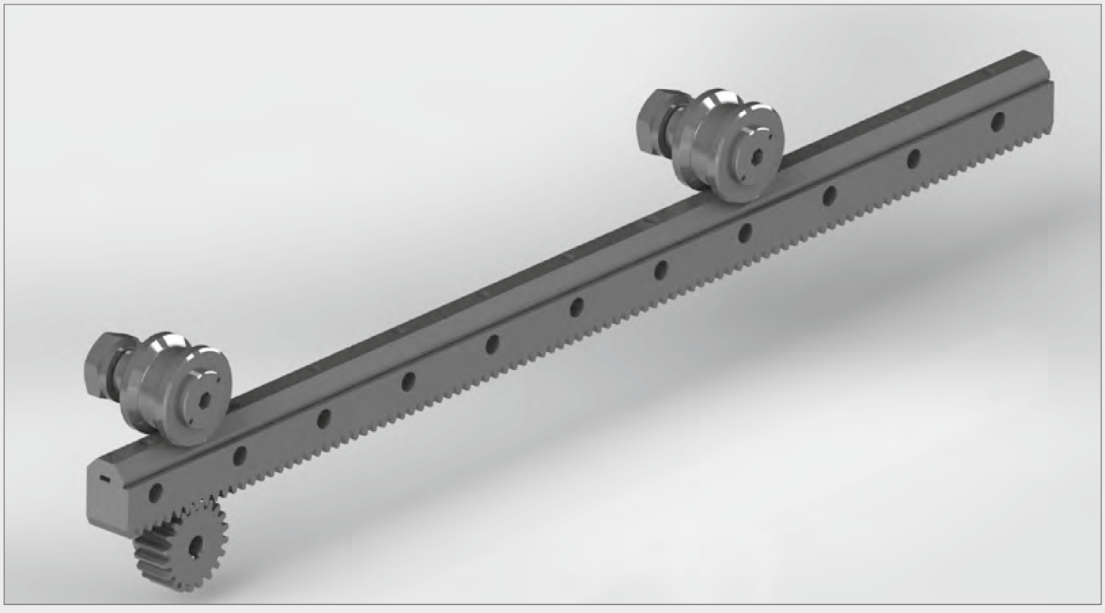


Werkstoff: 1.0503 (C45) — material: steel 1.0503 (C45)

a* x d_1	x d_2	ød_A	ød_N (h7)	L	l	[kg]	Flansch Flange Bestell Nr. Part No.	ød_L	4xøB	[kg]	Flansch, gebohrt Flange with holes Bestell Nr. Part No.
6 x 11	x 14	41	22	30	8	0,19	294-011-603	30	4,3	0,18	294-011-703
6 x 13	x 16	43	24	30	8	0,17	294-013-603	32	4,3	0,16	294-013-703
6 x 16	x 20	52	28	40	9	0,21	294-016-604	38	5,3	0,20	294-016-704
6 x 18	x 22	60	32	50	9	0,31	294-018-605	46	5,3	0,29	294-018-705
6 x 21	x 25	62	34	50	10	0,36	294-021-605	48	6,4	0,33	294-021-705
6 x 23	x 28	68	40	60	10	0,53	294-023-606	54	6,4	0,50	294-023-706
6 x 26	x 32	70	42	60	10	0,50	294-026-606	56	6,4	0,48	294-026-706
6 x 28	x 34	78	48	70	12	0,80	294-028-607	63	8,4	0,78	294-028-707
6 x 29,7	x 34,93	80	50	70	12	0,85	294-029-607	65	8,4	0,82	294-029-707
8 x 32	x 38	80	50	70	12	0,80	294-032-607	65	8,4	0,78	294-032-707
8 x 36	x 42	93	58	80	14	1,32	294-036-608	73	8,4	1,30	294-036-708
8 x 42	x 48	95	60	80	16	1,30	294-042-609	75	10,5	1,25	294-042-709
8 x 46	x 54	99	65	80	16	1,40	294-046-610	80	10,5	1,30	294-046-710

a*: Anzahl der Keile | number of keys

Zahnstangen mit GU-Führungsschiene, GUR-Baureihe
Racks with GU Guide Rails, GUR Series



Die Baureihe GUR zeichnet sich durch Robustheit, hohe Tragfähigkeit sowie Genauigkeit aus - dies macht sie zu einer vielseitig einsetzbaren Zahnstangenführung.

Als Komponenten kommen bewährte, qualitativ hochwertige Standard-Zahnstangen und Stirnräder sowie die auch unter schwierigsten Umgebungsbedingungen einsetzbare Heavy-Line Linearführung GU zum Einsatz.

The GUR series is characterized by robustness, high load capacity and accuracy - which makes this rack guide very versatile in their application.

Proven, high-quality standard racks and spur gears as well as the Heavy-Line linear guide GU (usable also in harsh environments) are combined in this rack guide series.

Besondere Eigenschaften der GUR-Baureihe:

- Kompakte Bauform
- Einbaufertig montiert
- Fortlaufende Montage
- Lange Hübe realisierbar
- Laufbahnen induktiv gehärtet
- Verzahnung weich oder induktiv gehärtet
- Hohe übertragbare Drehmomente
- Hohe Nutzlast auf den Führungsrollen
- Kombinierbar mit Heavy-Line-Führungsrollen
- Führungsschienen der Baugrößen GU 28 und GU 35
- Kundenindividuelle Sonderlösungen
- Standardbauteile für kurze Lieferzeiten

Special characteristics of the GUR series:

- Compact design
- Ready to install
- Continuous mounting
- Long strokes realizable
- Induction hardened raceways
- Teeth soft or induction hardened
- High transmissible torques
- High payload on the guide rollers
- Combined with Heavy-Line guide rollers
- Guide rail sizes GU 28 and GU 35
- Customized special solutions
- Standard components for short delivery time

Anwendungsbeispiele:
Be- und Entladeportale, Gantry-Systeme

Applications:
Loading and unloading portals, Gantry systems

Führungsschiene mit Zahnstange
Guide Rail with Rack

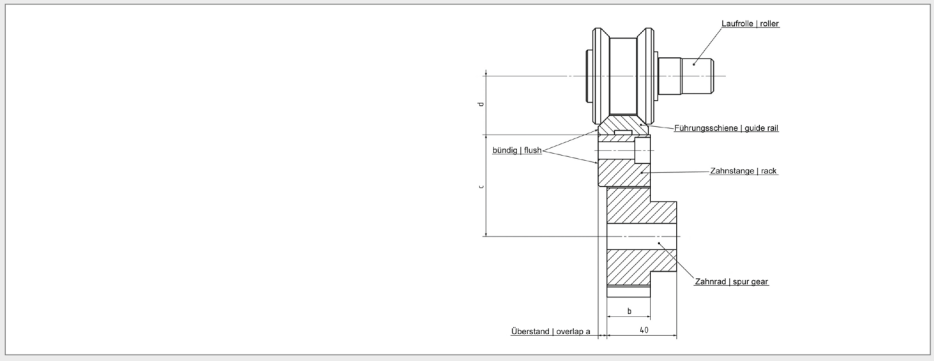


Tabelle 1.1: Abmessungen und Eigenschaften — table 1.1: dimensions and performance

Schiene Rail	Laufrolle Roller	Zahnrad | spur gear					c	d	$a_{max.}$
		Typ Type	Modul Module	Teilung Pitch	Zähnezahl No. teeth	Qualität Quality	[mm]	[mm]	[mm]
GU28MT	RKU55	111-031-020	3,183	10	20	8 e27	58,348	33,6	5
		111-031-420				9 e27	57,648		4
GU35MT	RKU65	111-031-020				8 e27	68,348	41,9	15
	RKU75							47,6	
	RKU65	111-031-420				9 e27	67,648	41,9	14
	RKU75							47,6	

Tabelle 1.2: Leistungsdaten — table 1.2: performance data

Ausführung Design	Zeichen Symbol	Einheit Unit	Ungehärtete Ausführung Soft design			Gehärtete Ausführung Hardened design		
Leistungsdaten bei Zahnradbreite Performance data at width of spur gear	b	[mm]	25	30	40	25	29	39
Tangentialkraft an der Zahnstange Tangential force at a rack	F_t	[N]	723	848	1131	3456	4398	5655
Drehmoment am Zahnrad Torque at a spur gear	M_t	[Nm]	23	27	36	110	140	180
Max. Verfahrgeschwindigkeit Max. movement speed	v	[m/s]	2	2	2	2	2	2
Max. Leistung bei n_1 = 600 min $^{-1}$ Max. power for n_1 = 600 min $^{-1}$	P	[KW]	1,45	1,7	2,26	6,91	8,8	11,3
Überstand Overlap	a	[mm]	Tab. 1.1	0	0	Tab. 1.1	0	0

Bestellschlüssel
Order key

GU R 28 MT 2800 - M3,18 - H - SB

GU: Typ Führungsschiene
Guide rail type

R: mit Zahnstange
with rack

Baugröße | rail size
-28
-35

Ausführung der Führungsschiene | design of the guide rail
MT: gezogen, induktiv gehärtete und sandgestrahlte Laufflächen
Cold drawn, induction hardened and sand blasted running surface

Gesamtlänge | total length [mm]

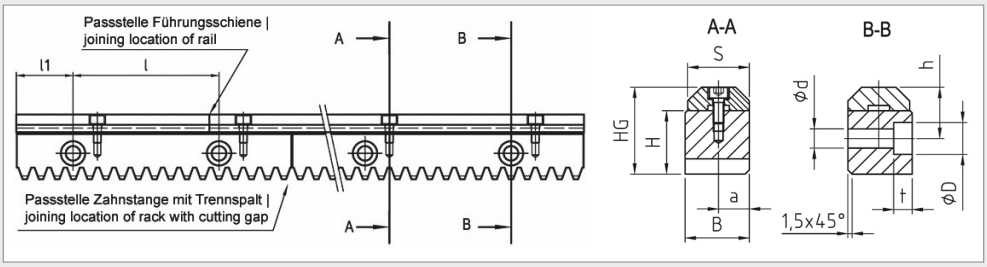
Modul | module 3,183

Ausführung der Zahnstange | design of rack
H: induktivgehärtet | induction hardened
NH: weich | soft

Befestigungsbohrungen | fastening bores
SB: Lochbild nach Katalog | standard drilling
NZ: Lochbild nach Zeichnung | finished to drawing
NF: ohne Bohrung | without holes

Optionen | options
R: eine Stirnseite geschliffen
One ground end
RR: beide Stirnseiten geschliffen
Ground ends both sides

Führungsschiene mit Zahnstange
Guide Rail with Rack



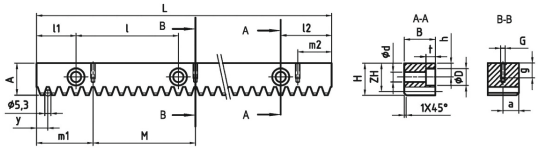
	GU	RKU	R	HG	H	B	S	a	h	t	D	d	wl[1]	l	[kg/m]
GUR 28 MT	GU28 MT	RKU55	R28H	40	29	29 js12	28,8	14,4	9	9	15	10	30	90	7,51
			R28NH	40,7	29,7	30 h11									7,87
GUR 35 MT	GU35 MT	RKU65	R35H	54,7	39	39 js12	35,5	17,75	12						13,82
		RKU75	R35NH	55,4	39,7	40 h11									14,37

1) Länge der Schienen werden angepasst mit geschliffenen Stoßstellen | length of the rails are supplied with ground butt joints

Zahnstange
Rack

Modul | module	3,183
Teilung | pitch	10 mm
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Material | material	1.0503 [C45]
Qualität | quality	- weich | soft 8 h27 - gehärtet | hardened 9 h27

Verzahnung weich | gearing soft (NH)
Verzahnung induktivgehärtet | gearing induction hardened HRC 50 + 5 (H)



Abmessungen
Dimensions
[mm]

Typ Type	Modul Module	$a^{\pm 0,2}$	g	c	G	h	t	$A^{-0,2}$	B	$ZH^{0,2}$	H	D	d	$l_1^{\pm 0,2}$	l_2	$l^{\pm 0,2}$	$L^{\pm 0,3}$	$y^{\pm 0,15}$	$m_1^{\pm 0,2}$	m_2	M	[kg/m]
R28H	3,183	14,4	12	16	M5	9	9	29,35	29 js12	25,82	29	15	10	29,7	59,7	90	989,4	9,7	44,7	44,7	90	5,48
R35H	3,183	17,75	12	17	M6	12	9	39,35	39 js12	35,82	39	15	10	29,7	59,7	90	989,4	9,7	44,7	44,7	90	10,42
R28NH	3,183	14,4	12	16	M5	9	9	30,05	30 h11	26,52	29,7	15	10	29,7	59,7	90	989,4	9,7	44,7	44,7	90	5,83
R35NH	3,183	17,75	12	17	M6	12	9	40,05	40 h11	36,52	39,7	15	10	29,7	59,7	90	989,4	9,7	44,7	44,7	90	10,91

Teilungs - Einzelabweichung 22 µm (16 µm), Gesamtabweichung 100 µm (71 µm) auf 1.000 mm Länge (Werte in Klammern für weiche Ausführung).

Max. Geradheitstoleranz 0,22 mm auf 300 mm Länge.

Bitte beachten Sie die max. Grenzlast der Befestigungsschrauben.

Berechnungsbeispiel für eine Antriebslänge von 8.530 mm unter Verwendung einer Zahnstange mit einer Standardlänge von 990 mm.
8.530 mm / 990 mm = 8.6....
8.530 mm - (8x990 mm) = 610 mm

Individual pitch variation 22 µm (16 µm), total pitch 100 µm (71 µm) on 1,000 mm length (values in brackets for soft version).

Max. straightness tolerance 0.22 mm on 300 mm length.

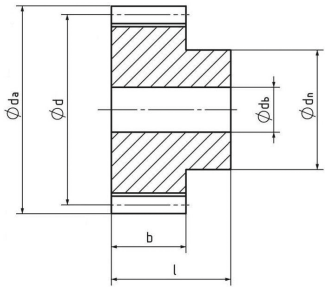
Please note the max. limit load of the fixing bolt.

Calculation example for a driving length of 8,530 mm, using a rack with a standard length of 990 mm.
8,530 mm / 990 mm = 8.6....
8,530 mm - (8x990 mm) = 610 mm

Stirnräder mit einseitiger Nabe
Spur gears with hub

Modul | module	3,183
Teilung | pitch	10 mm
geradverzahnt | straight teeth	
Eingriffswinkel | pressure angle	20°
Material | material	1.0503 (C45)
Qualität | quality	- weich | soft 8 e27 - gehärtet | hardened 9 e27

Verzahnung weich | gearing soft (NH)
Verzahnung induktivgehärtet | gearing induction hardened HRC 50 + 5 (H)



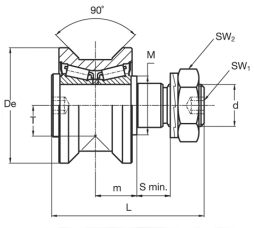
Typ Type	Zähnezahl No. teeth	d_a	d	d_n	d_b	l	b	[kg]
111-031-420 (H)	20	70,0	63,7	40	15	40	25	0,60
111-031-020 (NH)	20	70,0	63,7	40	15	40	25	0,60

Eine größere Auswahl passender Standard-Stirnräder finden Sie in Kapitel A dieses Katalogs.
Für Sonderanfertigungen bitten wir um Ihre Anfrage!

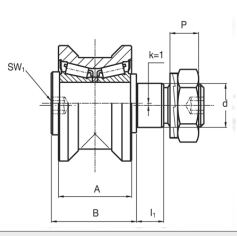
A larger selection of suitable spur gears can be found in chapter A of this catalogue.
For custom designs, please send your request!

Führungsrolle RKU
Roller RKU

konzentrisch | concentric



exzentrisch | eccentric



Nutflanken sind ballig ausgeführt mit einem Radius R = 400

Groove flanks with crowned shape and radius R = 400

Typ Type		Abmessungen Dimensions [mm]														
konzentrisch concentric	exzentrisch eccentric	De	D_1 [1]	d	T	m	$S_{min.}$	P	L	A	B	l_1	M	SW_1	SW_2	k
RKU 55	RKUR 55	55	21	M 20 x 1,5	14,6	19,8	15	13,4	73	35	41	14	28	8	30	1
RKU 65	RKUR 65	65	27	M 24 x 1,5	18	20,8	19	15,4	83	37	44	18	35	10	36	1
RKU 75	RKUR 75	75	36	M 30 x 1,5	23,7	27	19	21,6	100	45	55	18	44	12	46	1

1) Toleranzen der Aufnahmebohrung h7 | tolerance of a supporting bore h7

Typ Type		Tragzahlen Load rating			Grenzlasten Load limit		Faktoren für Lebensdauer Factors of useful live				Anziehmoment Tightening torque	Gewicht Weight
		dyn.	stat.		[N]		Pa / Pr ≤ 0,1		Pa / Pr > 0,1			
konzentrisch concentric	exzentrisch eccentric	C_W [3]	radial C_{or}	axial C_{oa}	radial F_r	axial F_a	X	Y	X	Y	[Nm] [2]	[kg]
RKU 55	RKUR 55	41 650	44 000	12 400	11 900	4 250	1	4,67	0,77	6,98	80	0,6
RKU 65	RKUR 65	46 800	50 400	12 750	22 100	6 800	1	3,93	0,74	6,55	160	0,9
RKU 75	RKUR 75	66 700	72 000	18 900	31 300	10 100	1	4,67	0,77	6,98	300	1,6

2) Die Anziehmomente gelten für nicht geschmierte Gewinde, für geschmierte Gewindesind die Werte mit 0,8 zu multiplizieren
The tightening torques apply for smearless thread, for lubricated threads multiply value with factor 0.8
3) C_W = Belastung für 100 km Lebensdauer | load for 100 km operating life

NOTES:

Inhalt, Bestellschlüssel · Content, Ordering Code 377

KDL-Lager leichte Baureihe · KDL bearings light series

KDL.U unverzahnt · no gear 378
KDL.I innenverzahnt · internal gear 379
KDL.A außenverzahnt · external gear 380

KDM-Lager mittlere Baureihe · KDM bearings medium series

KDM.U unverzahnt · no gear 381
KDM.I innenverzahnt · internal gear 382
KDM.A außenverzahnt · external gear 383

KDLH-Lager leichte Baureihe hoch · KDLH bearings light series high

KDLH.U unverzahnt · no gear 384
KDLH.I innenverzahnt · internal gear 385
KDLH.A außenverzahnt · external gear 386

KDMH-Lager mittlere Baureihe hoch · KDMH bearings medium series high

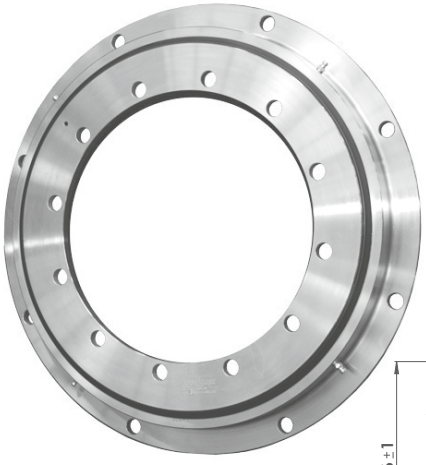
KDMH.U unverzahnt · no gear 387
KDMH.I innenverzahnt · internal gear 388
KDMH.A außenverzahnt · external gear 389

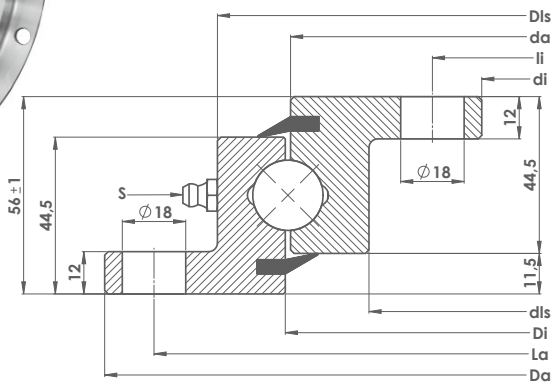
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Bestellschlüssel · Ordering Code

KDL.	U.	0414.	00	10.
Baureihe Ausführung Series **KDL** Leichte Baureihe Light Series **KDM** Mittlere Baureihe Medium Series **KDLH** Leichte Baureihe Hoch Light Series High **KDMH** Mittlere Baureihe Hoch Medium Series High	**Type** **U** Unverzahnt No gear **I** Innenverzahnt Internal Gear **A** Außenverzahnt External gear	**Laufkreisdurchmesser Ball track P.C.D.**	**Lagerspiel / Bearing Internal Fit** **Leichte Baureihe / Light Series** **00** Standard Spiel / Standard clearance radial ≤ 0,5 / axial ≤ 0,7 **01** Eingeengtes Spiel / Reduced clearance radial ≤ 0,1 bis 0,3 / axial ≤ 0,17 bis 0,53 **02** Vorspannung / Preload **Mittlere Baureihe / Medium Series** **00** Standard Spiel / Standard clearance radial ≤ 0,3 / axial ≤ 0,53 **01** Eingeengtes Spiel / Reduced clearance radial ≤ 0,1 bis 0,3 / axial ≤ 0,17 bis 0,53 **02** Vorspannung / Preload **Leichte Baureihe Hoch / Light Series High** **00** Standard Spiel / Standard clearance radial ≤ 0,37 / axial ≤ 0,45 **01** Eingeengtes Spiel / Reduced clearance radial ≤ 0 bis 0,15 / axial ≤ 0 bis 0,15 **02** Vorspannung / Preload **Mittlere Baureihe Hoch / Medium Series High** **00** Standard Spiel / Standard clearance radial ≤ 0,3 / axial ≤ 0,36 **01** Eingeengtes Spiel / Reduced clearance radial ≤ 0 bis 0,15 / axial ≤ 0 bis 0,15 **02** Vorspannung / Preload	**Werkstoff / Material Sonstige interne Kenndaten / Other internal characteristics** **10** 50Mn, C45

KDL.U Leichte Baureihe / unverzahnt
Light Series / no gear





Abmessungen in mm · Dimensions in mm

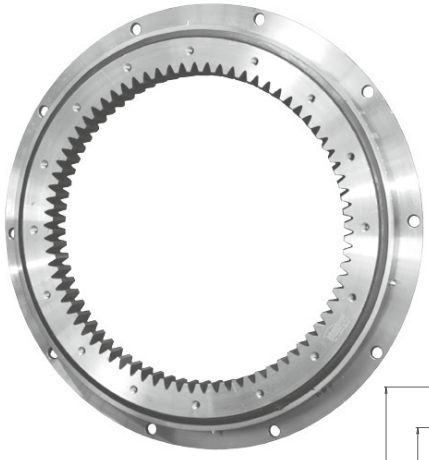
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	Dls	dls	Gewicht Weight [Kg]
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KDL.U.0544.00.10	648	434	620	462	10	14	4	542,5	545,5	584	498	33
KDL.U.0644.00.10	748	534	720	562	12	16	4	642,5	645,5	684	598	39
KDL.U.0744.00.10	848	634	820	662	12	16	4	742,5	745,5	784	698	45
KDL.U.0844.00.10	948	734	920	762	14	18	4	842,5	845,5	884	798	51
KDL.U.0944.00.10	1048	834	1020	862	16	20	4	942,5	945,5	984	898	56
KDL.U.1094.00.10	1198	984	1170	1012	16	20	4	1092,5	1095,5	1134	1048	65

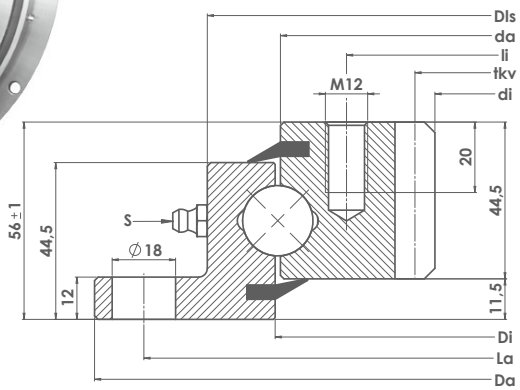
Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

Leichte Baureihe / innenverzahnt
Light Series / internal gear

KDL.I





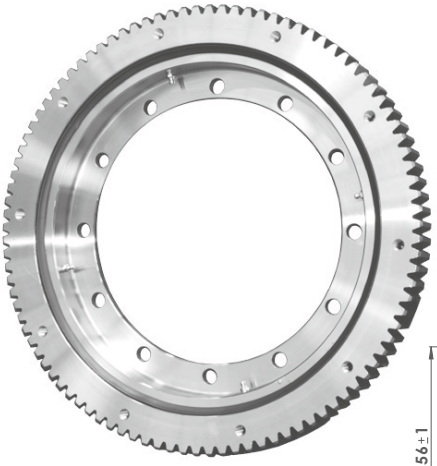
Abmessungen in mm · Dimensions in mm

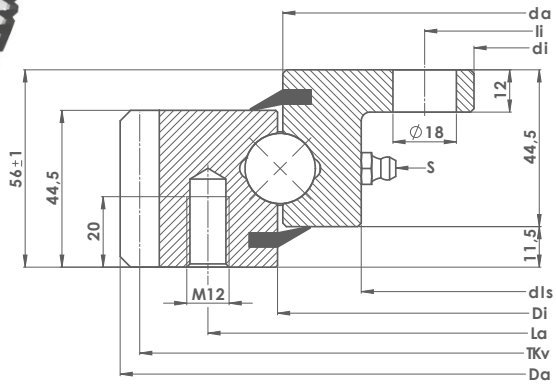
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	Dls	tkv	m	z	k x m	Gewicht Weight [Kg]	Ufnom [N]	Ufmax [N]
KDL.I.0414.00.10	518	325	490	375	8	12	4	412,5	415,5	454	335	5	67	-	30	12320	24640
KDL.I.0544.00.10	648	445	620	505	10	16	4	542,5	545,5	584	456	6	76	0,5	40	14790	29580
KDL.I.0644.00.10	748	546	720	605	12	18	4	642,5	645,5	684	558	6	93	-	47	14790	29580
KDL.I.0744.00.10	848	649	820	705	12	20	4	742,5	745,5	784	660	6	110	0,5	54	14790	29580
KDL.I.0844.00.10	948	736	920	805	14	20	4	842,5	845,5	884	752	8	94	-	62	19790	39440
KDL.I.0944.00.10	1048	840	1020	905	16	22	4	942,5	945,5	984	856	8	107	-	70	19790	39440
KDL.I.1094.00.10	1198	986	1170	1055	16	24	4	1092,5	1095,5	1134	1000	8	125	1	80	19790	39440

Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

KDL.A Leichte Baureihe / außenverzahnt
Light Series / external gear





Abmessungen in mm · Dimensions in mm

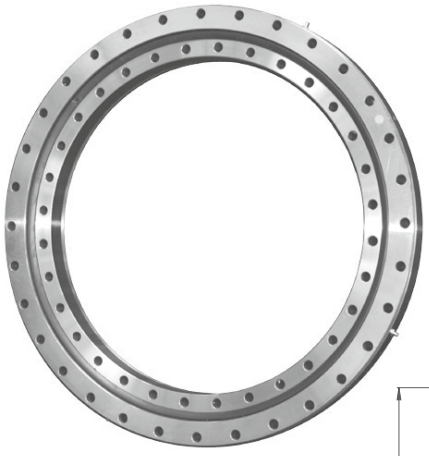
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	dls	TKv	m	z	k x m	Gewicht Weight [Kg]	Ufnom [N]	Ufmax [N]
KDL.A.0414.00.10	505	304	455	332	10	12	4	412,5	415,5	368	495	5	99	-	31	11830	23660
KDL.A.0544.00.10	640	434	585	462	14	14	4	542,5	545,5	498	630	6	105	-1	43	14200	28400
KDL.A.0644.00.10	742	534	685	562	16	16	4	642,5	645,5	598	732	6	122	-1	51	14200	28400
KDL.A.0744.00.10	840	634	785	662	18	16	4	742,5	745,5	698	828	6	138	-	59	14200	28400
KDL.A.0844.00.10	950	734	885	762	18	18	4	842,5	845,5	798	936	8	117	-1	67	18930	37860
KDL.A.0944.00.10	1046	834	985	862	20	20	4	942,5	945,5	898	1032	8	129	-1	75	18930	37860
KDL.A.1094.00.10	1198	984	1135	1012	22	20	4	1092,5	1095,5	1048	1184	8	148	-1	85	18930	37860

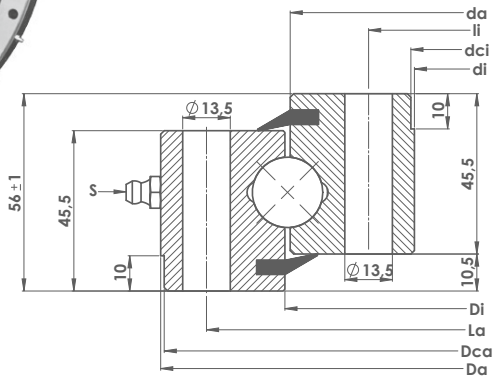
Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

Mittlere Baureihe / unverzahnt
Medium Series / no gear

KDM.U





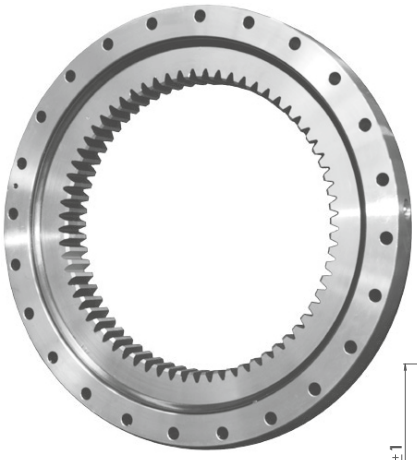
Abmessungen in mm · Dimensions in mm

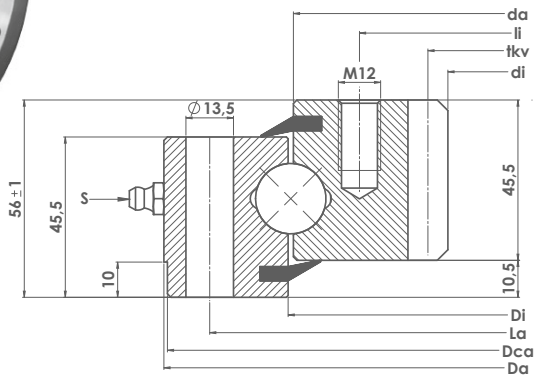
Artikel-Nr. Part No.	Da	Dca	di	dci	La	li	nBa	nBi	nS	da	Di	Gewicht Weight [Kg]
KDM.U.0414.00.10	486	484	342	344	460	368	24	24	4	412,5	415,5	29
KDM.U.0544.00.10	616	614	472	474	590	498	32	32	4	542,5	545,5	37
KDM.U.0644.00.10	716	714	572	574	690	598	36	36	4	642,5	645,5	44
KDM.U.0744.00.10	816	814	672	674	790	698	40	40	4	742,5	745,5	52
KDM.U.0844.00.10	916	914	772	774	890	798	40	40	4	842,5	845,5	60
KDM.U.0944.00.10	1016	1014	872	874	990	898	44	44	4	942,5	945,5	67
KDM.U.1094.00.10	1166	1164	1022	1024	1140	1048	48	48	4	1092,5	1095,5	77

Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

KDM.I Mittlere Baureihe / innenverzahnt
Medium Series / internal gear





Abmessungen in mm · Dimensions in mm

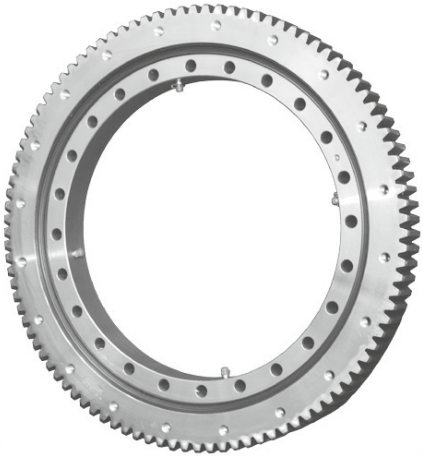
Artikel-Nr. Part No.	Da	Dca	di	La	li	nBa	nBi	nS	da	dci	Di	tkv	m	z	k x m	Gewicht Weight [Kg]	Ufnom [N]	Ufmax [N]
KDM.I.0414.00.10	486	484	326,5	460	375	24	24	4	412,5	411	415,5	335	5	67	0,75	13	12320	24640
KDM.I.0544.00.10	616	614	445,2	590	505	32	32	4	542,5	541	545,5	456	6	76	0,6	42	14790	29580
KDM.I.0644.00.10	716	714	547,2	690	605	36	36	4	642,5	641	645,5	558	6	93	0,6	50	14790	29580
KDM.I.0744.00.10	816	814	649,2	790	705	40	40	4	742,5	741	745,5	660	6	110	0,6	58	14790	29580
KDM.I.0844.00.10	916	914	737,6	890	805	40	40	4	842,5	841	845,5	752	8	94	0,8	69	19720	39440
KDM.I.0944.00.10	1016	1014	841,6	990	905	44	44	4	942,5	941	945,5	856	8	107	0,8	76	19720	39440
KDM.I.1094.00.10	1166	1164	985,6	1140	1055	48	48	4	1092,5	1091	1095,5	1000	8	125	0,8	91	19720	39440

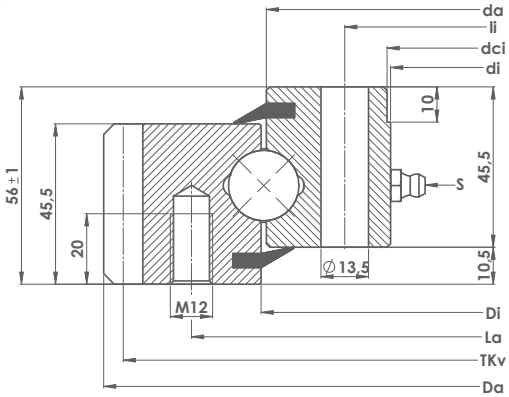
Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

Mittlere Baureihe / außenverzahnt
Medium Series / external gear

KDM.A





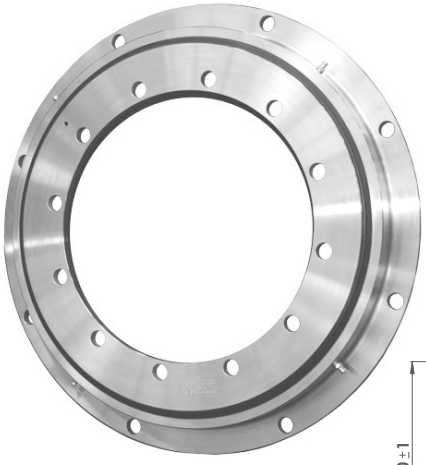
Abmessungen in mm · Dimensions in mm

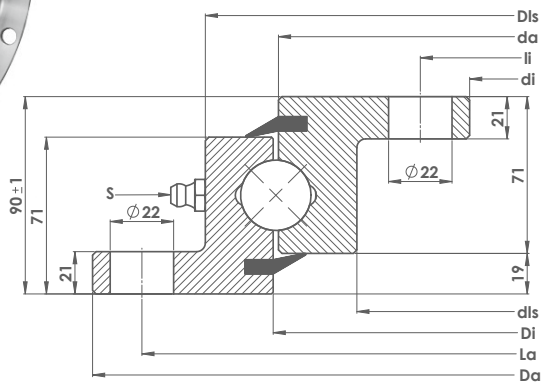
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	TKv	m	z	k x m	Gewicht Weight [Kg]	Ufnom [N]	Ufmax [N]
KDM.A.0414.00.10	505	342	455	368	20	24	4	412,5	415,5	495	5	99	-	31	11830	23660
KDM.A.0544.00.10	642	472	585	498	28	32	4	542,5	545,5	630	6	105	-	43	14200	28400
KDM.A.0644.00.10	744	572	685	598	32	36	4	642,5	645,5	732	6	122	-	52	14200	28400
KDM.A.0744.00.10	840	672	785	698	36	40	4	742,5	745,5	828	6	138	-	59	14200	28400
KDM.A.0844.00.10	952	772	885	798	36	40	4	842,5	845,5	936	8	117	-	71	18930	37860
KDM.A.0944.00.10	1048	872	985	898	40	44	4	942,5	945,5	1032	8	129	-	77	18930	37860
KDM.A.1094.00.10	1200	1022	1135	1048	44	48	4	1092,5	1095,5	1184	8	148	-	91	18930	37860

Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

KDLH.U Leichte Baureihe hoch / unverzahnt
Light Series high / no gear





Abmessungen in mm · Dimensions in mm

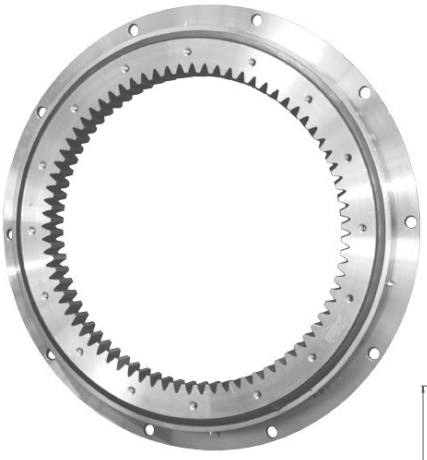
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	Dls	dls	Gewicht Weight [Kg]
KDLH.U.0955.00.10	1100	805	1060	845	30	30	6	956,5	953,5	1017	893	131
KDLH.U.1055.00.10	1200	905	1160	945	30	30	6	1056,5	1053,5	1117	993	145
KDLH.U.1155.00.10	1300	1005	1260	1045	36	36	6	1156,5	1153,5	1217	1093	159
KDLH.U.1255.00.10	1400	1105	1360	1145	42	42	6	1256,5	1253,5	1317	1193	172
KDLH.U.1355.00.10	1500	1205	1460	1245	42	42	6	1356,5	1353,5	1417	1293	186
KDLH.U.1455.00.10	1600	1305	1560	1345	48	48	6	1456,5	1453,5	1517	1393	200

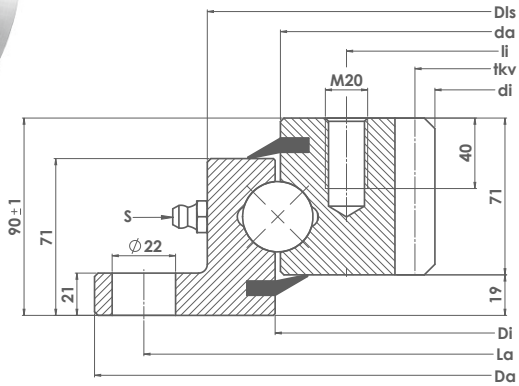
Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
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Di	Innendurchmesser Außenring · Inner diameter outer ring
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dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
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m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

Leicht Baureihe hoch / innenverzahnt
Light Series high / internal gear

KDLH.I





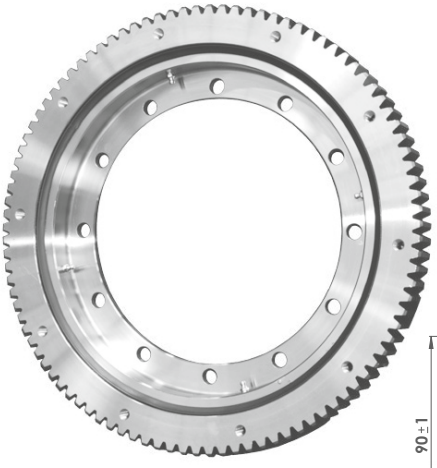
Abmessungen in mm · Dimensions in mm

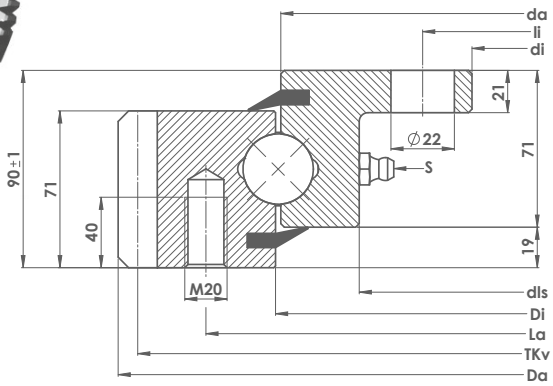
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	Dls	tkv	m	z	k x m	Gewicht Weight [Kg]
KDLH.I.0955.00.10	1100	812	1060	894	30	30	6	956,5	953,5	1017	830	10	83	-1	159
KDLH.I.1055.00.10	1200	912	1160	994	30	30	6	1056,5	1053,5	1117	930	10	93	-1	176
KDLH.I.1155.00.10	1300	1012	1260	1094	36	36	6	1156,5	1153,5	1217	1030	10	103	-1	192
KDLH.I.1255.00.10	1400	1112	1360	1194	42	42	6	1256,5	1253,5	1317	1130	10	113	-1	208
KDLH.I.1355.00.10	1500	1212	1460	1294	42	42	6	1356,5	1353,5	1417	1230	10	123	-1	226
KDLH.I.1455.00.10	1600	1310	1560	1394	48	48	6	1456,5	1453,5	1517	1330	10	133	-	243

Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
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La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
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KDLH.A Leichte Baureihe hoch / außenverzahnt
Light Series high / external gear





Abmessungen in mm · Dimensions in mm

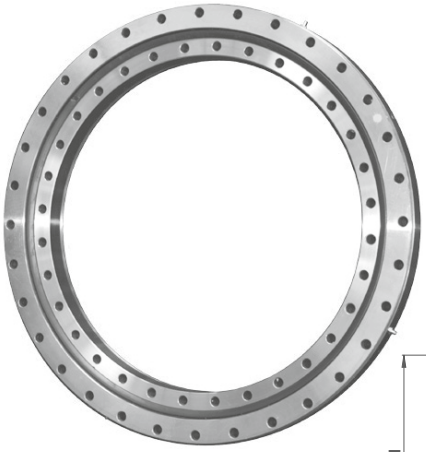
Artikel-Nr. Part No.	Da	di	La	li	nBa	nBi	nS	da	Di	dls	TKv	m	z	k x m	Gewicht Weight [Kg]
KDLH.A.0955.00.10	1098	805	1016	845	30	30	6	956,5	953,5	893	1080	9	120	-	165
KDLH.A.1055.00.10	1200	905	1116	945	30	30	6	1056,5	1053,5	993	1180	10	118	-	183
KDLH.A.1155.00.10	1300	1005	1216	1045	36	36	6	1156,5	1153,5	1093	1280	10	128	-	200
KDLH.A.1255.00.10	1400	1105	1316	1145	42	42	6	1256,5	1253,5	1193	1380	10	138	-	216
KDLH.A.1355.00.10	1500	1205	1416	1245	42	42	6	1356,5	1353,5	1293	1480	10	148	-	234
KDLH.A.1455.00.10	1600	1305	1516	1345	48	48	6	1456,5	1453,5	1393	1580	10	158	-	250

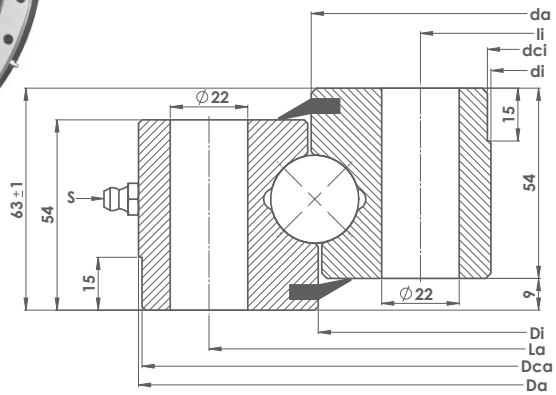
Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

Mittlere Baureihe hoch / unverzahnt
Medium Series high / no gear

KDMH.U





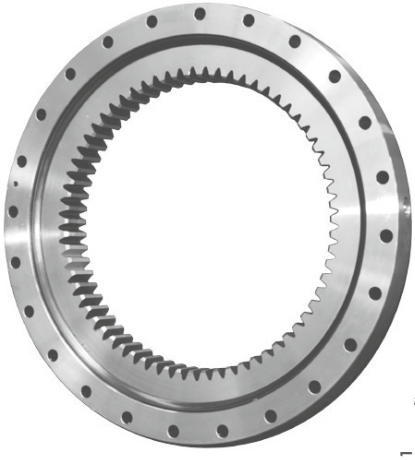
Abmessungen in mm · Dimensions in mm

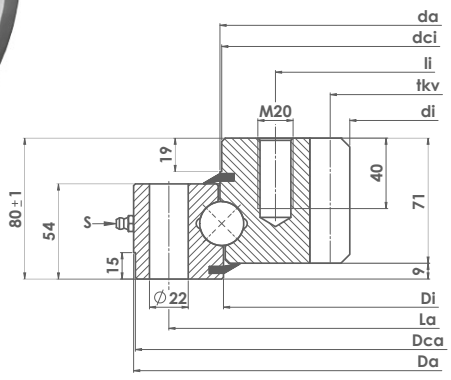
Artikel-Nr. Part No.	Da	Dca	di	dci	La	li	nBa	nBi	nS	da	Di	Gewicht Weight [Kg]
KDMH.U.0755.00.10	855	853 $^{0}_{-0,14}$	655	657 $^{+0,13}_{0}$	815	695	24	24	4	757	753	90
KDMH.U.0855.00.10	955	953 $^{0}_{-0,14}$	755	757 $^{+0,13}_{0}$	915	795	28	28	4	857	853	101
KDMH.U.0955.00.10	1055	1053 $^{0}_{-0,17}$	855	857 $^{+0,14}_{0}$	1015	895	30	30	4	957	953	115
KDMH.U.1055.00.10	1155	1153 $^{0}_{-0,17}$	955	957 $^{+0,14}_{0}$	1115	995	30	30	4	1057	1053	128
KDMH.U.1155.00.10	1255	1253 $^{0}_{-0,20}$	1055	1057 $^{+0,17}_{0}$	1215	1095	36	36	6	1157	1153	139
KDMH.U.1255.00.10	1355	1353 $^{0}_{-0,20}$	1155	1157 $^{+0,17}_{0}$	1315	1195	42	42	6	1257	1253	148
KDMH.U.1355.00.10	1455	1453 $^{0}_{-0,20}$	1255	1257 $^{+0,20}_{0}$	1415	1295	42	42	6	1357	1353	161
KDMH.U.1455.00.10	1555	1553 $^{0}_{-0,20}$	1355	1357 $^{+0,20}_{0}$	1515	1395	48	48	6	1457	1453	171

Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
da	Außendurchmesser Innenring · Outer diameter inner ring
Di	Innendurchmesser Außenring · Inner diameter outer ring
Dls	Lagersitz Durchmesser Außenring · Bearing seat diameter outer ring
dls	Lagersitz Durchmesser Innenring · Bearing seat diameter inner ring
TKv	Teilkreisdurchmesser Außenverzahnung · External gear P.C.D.
tkv	Teilkreisdurchmesser Innenverzahnung · Internal gear P.C.D.
m	Modul
z	Anzahl der Zähne · Number of teeth
k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

KDMH.I Mittlere Baureihe hoch / innenverzahnt
Medium Series high / internal gear





Abmessungen in mm · Dimensions in mm

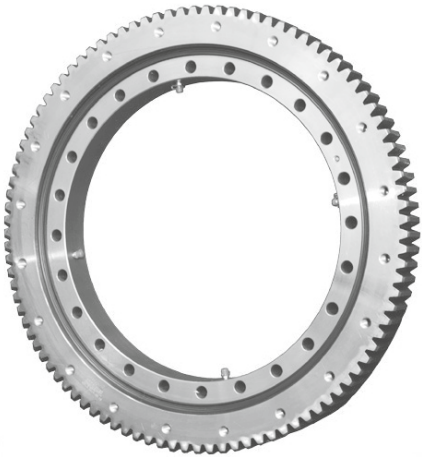
Artikel-Nr. Part No.	Da	Dca	di	dci	La	li	nBa	nBi	nS	da	Di	tkv	m	z	k x m	Gewicht Weight [Kg]
KDMH.I.0755.00.10	855	853 $^{0}_{-0,14}$	610	755 $^{0}_{-0,13}$	815	694	24	24	4	753	757	630	10	63	-	119
KDMH.I.0855.00.10	955	953 $^{0}_{-0,14}$	710	855 $^{0}_{-0,14}$	915	794	28	28	4	853	857	730	10	73	-	137
KDMH.I.0955.00.10	1055	1053 $^{0}_{-0,17}$	810	955 $^{0}_{-0,14}$	1015	894	30	30	4	953	957	830	10	83	-	149
KDMH.I.1055.00.10	1155	1153 $^{0}_{-0,17}$	910	1055 $^{0}_{-0,17}$	1115	994	30	30	4	1053	1057	930	10	93	-	165
KDMH.I.1155.00.10	1255	1253 $^{0}_{-0,20}$	1010	1155 $^{0}_{-0,17}$	1215	1094	36	36	6	1153	1157	1030	10	103	-	180
KDMH.I.1255.00.10	1355	1353 $^{0}_{-0,20}$	1110	1255 $^{0}_{-0,20}$	1315	1194	42	42	6	1253	1257	1130	10	113	-	198
KDMH.I.1355.00.10	1455	1453 $^{0}_{-0,20}$	1210	1355 $^{0}_{-0,20}$	1415	1294	42	42	6	1353	1357	1230	10	123	-	215
KDMH.I.1455.00.10	1555	1553 $^{0}_{-0,20}$	1310	1455 $^{0}_{-0,20}$	1515	1394	48	48	6	1453	1457	1330	10	133	-	229

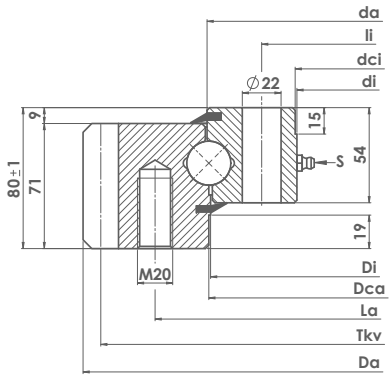
Legende

Dl	Laufkreisdurchmesser · Ball track P.C.D.
Da	Außendurchmesser · Outer diameter
Dca	Passung Außendurchmesser · Fit outer diameter
di	Innendurchmesser · Inner diameter
dci	Passung Innendurchmesser · Fit Inner diameter
La	Lochkreisdurchmesser außen · External bolt P.C.D.
li	Lochkreisdurchmesser innen · Internal bolt P.C.D.
nBa	Bohrungszahl Außenring · Number of holes outer ring
nBi	Bohrungszahl Innenring · Number of holes inner ring
nS	Anzahl der Schmiernippel · Number of lubrication nipples
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Mittlere Baureihe hoch / außenverzahnt
Medium Series high / external gear

KDMH.A





Abmessungen in mm · Dimensions in mm

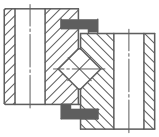
Artikel-Nr. Part No.	Da	Dca	di	dci	La	li	nBa	nBi	nS	da	Di	TKv	m	z	k x m	Gewicht Weight [Kg]
KDMH.A.0755.00.10	898	755	655	657	816	695	24	24	4	757	753	882	9	98	-1	128
KDMH.A.0855.00.10	997	855	755	757	916	795	28	28	4	857	853	981	9	109	-1	145
KDMH.A.0955.00.10	1096	955	855	857	1016	895	30	30	4	957	953	1080	9	120	-1	155
KDMH.A.1055.00.10	1198	1055	955	957	1116	995	30	30	4	1057	1053	1180	10	118	-1	171
KDMH.A.1155.00.10	1298	1155	1055	1057	1216	1095	36	36	6	1157	1153	1280	10	128	-1	190
KDMH.A.1255.00.10	1398	1255	1155	1157	1316	1195	42	42	6	1257	1253	1380	10	138	-1	204
KDMH.A.1355.00.10	1498	1355	1255	1257	1416	1295	42	42	6	1357	1353	1480	10	148	-1	222
KDMH.A.1455.00.10	1598	1455	1355	1357	1516	1395	48	48	6	1457	1453	1580	10	158	-1	236

Legende

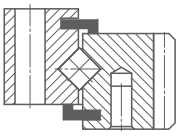
Dl	Laufkreisdurchmesser · Ball track P.C.D.
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k x m	Kopfhöhenänderung · Addendum modification
UFnom	zul. Umfangkräfte normal · Permissible tangential forces normal
UFmax	zul. Umfangkräfte maximal · Permissible tangential forces maximum

Kreuzrollenlager bis 1200 mm · Cross roller bearing up to 1200 mm

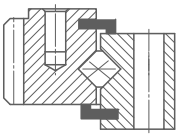
Größere Abmessungen auf Anfrage · Bigger dimensions on request



Unverzahnt · no gear



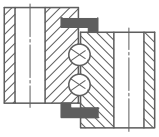
Innenverzahnt · internal gear



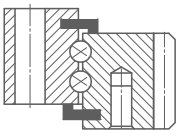
Außenverzahnt · external gear

8-Punkt Lager bis 2900 mm · 8-Point-Contact bearing up to 2900 mm

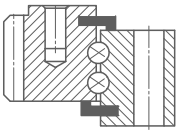
Größere Abmessungen auf Anfrage · Bigger dimensions on request



Unverzahnt · no gear



Innenverzahnt · internal gear



Außenverzahnt · external gear

NOTES:

NOTES:

DLS

SCHMIERSYSTEME

DIRECT LUBRICATION SYSTEMS



2.1 FlexxPump 400 & 500 DLS

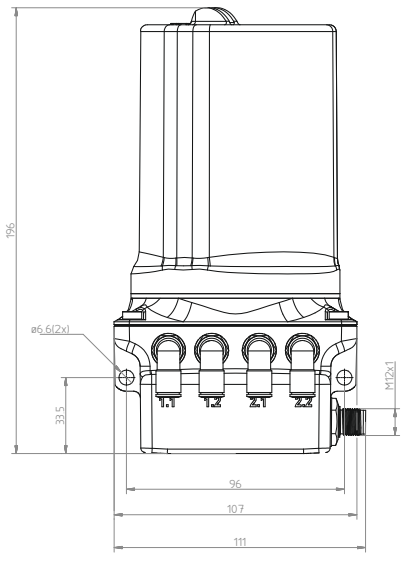
FlexxPump 400 & 500 DLS

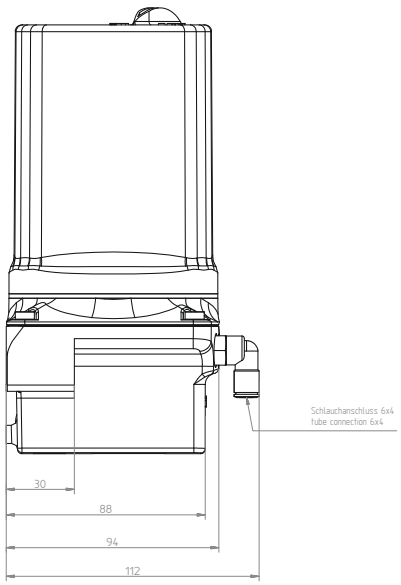
kontrollierte Minimalmengenschmierung für Fett oder Oel

- ✓ automatischer, impulsgesteuerter Nachschmiergeber
  automatical, puls-driven relubrication unit
- ✓ direkte Steuerung / differenzierte Fehlermeldung über SPS
  direct controlled by PLC (incl. error-monitoring)
- ✓ kompakte Kolbenschmierpumpe (1-2 Pumpenkörper)
  piston-pump (1-2 pumpbodies)
- ✓ Fette bis NLGI Kl. 3 (auch mit Feststoffanteilen)
  greases up to NIGI 3 (also solid particels)
- ✓ 1-4 Auslässe; max. 16 Schmierstellen
  1-4 outlets
- ✓ unterschiedliche Schmiermengen & -zeitpunkte
  different times and/or quantities of lubricant
- ✓ Förderdruck: max. 70 bar
  pressure: max. 70 bar
- ✓ 400cm³ Schmierstoffvorrat in fester Kartusche
  400cc grease in cartridge
- ✓ geringes Gewicht und minimale Stromaufnahme
  low weigth and minimal current consumption
- ✓ ideal für die kombinierte Nachschmierung von:
  suitabel for combinend relubrication of:
  + (Wälz-) Lager | (ball-) bearings
  + Linearführungen | linear blocks
  + Kugelgewindetriebe | ball screw nuts
  + Zahnstangen/offene Verzahnungen | racks & pinions
  + Kugeldrehverbinder | rotary joints
  + ...



FlexxPump 400 DLS: impulsgesteuerter Nachschmiergeber für bis zu 16 Schmierstellen; 400 cm³ Kartusche; 24 VDC (abgebildet: Typ 404)





2.1 FlexxPump 400 & 500 DLS

FlexxPump 400 & 500 DLS

Technische Daten | **Technical data**

Abmessungen | Dimensions		112 x 196 x 94 [mm] B x H x T | W x H x D
Gewicht (ohne Schmierstoff) | Wight (without lubricant)		ca. 1100 g
Funktionsweise | Function/principle		Kolbenpumpe | piston pump
Schmierstoffvolumen | volume of lubricant	Fett | grease	400 cm³ (in Kartusche | 400 cc in cartridge)
	Oel | oil	500 cm³
Dosiervolumen pro Hub/Impuls | delivered volume per stroke/pulse	1 Auslass | outlet	0,15 cm³ - Typen: 401/501 | type: 401/501
	2 Auslässe | outlets	0,15 cm³ - Typen: 402/422/502/522 | types: 402/422/502/522
	3 Auslässe | outlets	0,15 cm³ - Typen: 403/503 | types: 403/503
	4 Auslässe | outlets	0,15 cm³ - Typen: 404/504 | types: 404/504
Anzahl der Pumpenhübe / Kartusche 400 cm³ | number of pump hubs / cartridge 400 cc		ca. 2700
Betriebsdruck | operation pressure		max. 70 bar
Schmiermedium | lubricant	Öl oder Fett oil or grease	bis NLGI 3, mit Feststoffanteilen möglich | up to NLGI 3, with solid parts possible
Betriebstemperatur | operating temperature		-25°C...+70°C
Auslasszahl | number of outlets		max. 4 rechtwinklig und drehbar | rightangeld and turnable
Anzahl Schmierstellen | number of lubrication points		max. 16 */**
Verbindung | Lube-connection		PA-Schlauch | PA-tube
Betriebsspannung | operating voltage		24V DC (über Kabel | via cable)
Anschlußstecker | connecting plug		M12 x 1, 4-polig | M12 x 1, 4-pin
Stromaufnahme bei 24V DC | current consumption at 24V DC		$I_{max} \leq 350$ mA
Einbaulage | installation position	Fett | grease	beliebig | any
	Öl | oil	senkrecht | upright
Steuerung | control	integriert | integrated	mikroelektronisch | microelectronic
	extern | external	SPS | PLC
Drucküberwachung | pressure monitoring		integriert, elektronisch | integrated, electronic
Füllstandsüberwachung | fill level monitoring		integriert, Reedkontakt | integrated, reed contact
Fehlermeldung | error-signal	SPS | PLC	differenziert: Leerstand/Gegendruck/interner Fehler | sophisticated: bellow empty/backpressure/internal error
	optisch | optical	optional: Winkelstecker mit LED-Anzeigen (134-002-014 / -015) optional: LED-Connector 90° (134-002-014 / -015)
Schutzklasse | IP class		IP 65
Material Gehäuse | material housing		Zink, Polyamid | zinc, polyamide

Typenübersicht FlexxPump 400 & 500 DLS | **Types of FlexxPump 400 & 500 DLS**

Variante	Fett / Oel	Type Flexx-Pump	Anzahl Auslässe	Anzahl Doppelpum-penkörper	Anzahl Schmier-stellen*/**	unterschiedli-che Schmier-mengen	Überwachung & Steuerung via...	Firmware FlexxPump	**Artikel-Nr.**
Variants	grease / oil	Type Flexx-Pump	number of outlets	number of twin-pump-bodies	number of lubri-cation points*/**	combination different quantities lubricant	Controlling & monitoring by ...	Firmware FlexxPump	**Part No.**
impulsgesteuert | pulse-controlled	Fett | Grease	401 DLS	1	1	max. 4	--	SPS | PLC	D2	135-140-210
		402 DLS	2	1	max. 8	--	SPS | PLC	D2	135-240-210
		422 DLS	2 (1+1)	2	max. 8	++ (1/1)	SPS | PLC	D2	135-240-212
		403 DLS	3 (1+2)	2	max. 12	++ (2/1)	SPS | PLC	D2	135-340-210
		404 DLS	4 (2+2)	2	max. 16	++ (2/2)	SPS | PLC	D2	135-440-210
	Oel | Oil	501 DLS	1	1	max. 4	--	SPS | PLC	D2	135-150-210
		502 DLS	2	1	max. 8	--	SPS | PLC	D2	135-250-210
		522 DLS	2 (1+1)	2	max. 8	++ (1/1)	SPS | PLC	D2	135-250-212
		503 DLS	3 (1+2)	2	max. 12	++ (2/1)	SPS | PLC	D2	135-350-210
		504 DLS	4 (2+2)	2	max. 16	++ (2/2)	SPS | PLC	D2	135-450-210

* bei der Verwendung von Mengenteilern/Splittern | by using splitters

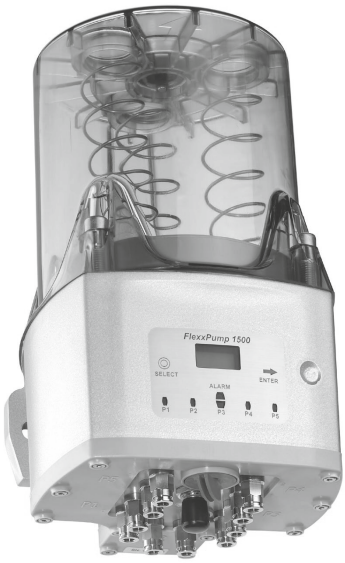
** bei Verwendung von Progressivverteilern sind mehr Schmierstellen möglich! | more lubrication-points by using progressive-distributors.

2.2 FlexxPump 1500 & 2000 DLS

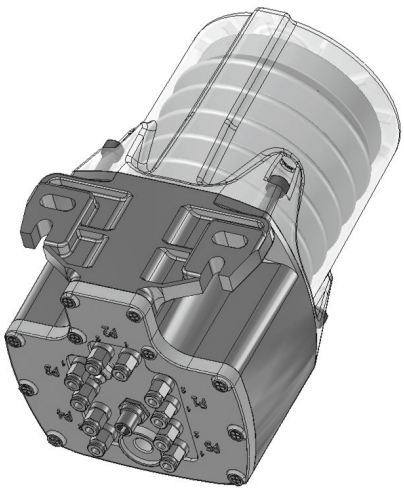
FlexxPump 1500 & 2000 DLS

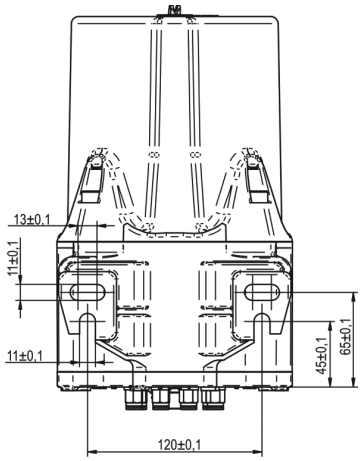
kontrollierte Minimalmengenschmierung für Fett oder Oel

- ✓ zeit- oder impulsgesteuerter Nachschmiergeber
  time-controlled or puls-driven relubrication unit
- ✓ direkte Steuerung / differenzierte Fehlermeldung über SPS
  direct controlled by PLC (incl. error-monitoring)
- ✓ kompakte Kolbenschmierpumpe (1-5 Pumpenkörper)
  piston-pump (1-5 pumpbodies)
- ✓ Fette bis NLGI Kl. 2 (auch mit Feststoffanteilen)
  greases up to NIGI 2 (also solid particels)
- ✓ 2-10 Auslässe
  2-10 outlets
- ✓ unterschiedliche Schmiermengen und/oder -zeitpunkte
  different times and/or quantities of lubricant
- ✓ Förderdruck: max. 70 bar
  pressure: max. 70 bar
- ✓ 1500cm³ Schmierstoffvorrat im Faltenbalg
  1500cc grease in bellow/pouch
- ✓ geringes Gewicht und minimale Stromaufnahme
  low weigth and minimal current consumption
- ✓ ideal für die kombinierte Nachschmierung von:
  suitabel for combinend relubrication of:
  + (Wälz-) Lager | (ball-) bearings
  + Linearführungen | linear blocks
  + Kugelgewindetriebe | ball screw nuts
  + Zahnstangen/offene Verzahnungen | racks & pinions
  + Kugeldrehverbinder | rotary joints
  + ...



FlexxPump 1500: automatischer Nachschmiergeber; für 1500 cm³ Fett-Faltenbalg; 24 VDC (abgebildet: Typ 1510)





2.2 FlexxPump 1500 & 2000 DLS

FlexxPump 1500 & 2000 DLS

Technische Daten | **Technical data**

Abmessungen | dimensions		162 x 255 x 165 [mm] B x H x T | W x H x D
Gewicht (ohne Schmierstoff) | weight (without lubricant)		ca. 4000 g
Funktionsweise | function/principle		Kolbenpumpe | piston pump
Schmierstoffvolumen | volume of lubricant	Fett | grease	1500 cm³ (in bellow | 1500 cc in bellow)
	Öl | oil	2000 ml
Dosiervolumen pro Hub/Impuls | delivered volume per stroke/pulse	2 Auslässe | outlets	0,15 cm³ - Typen: 1502/2002 | types: 1502/2002
	4 Auslässe | outlets	0,15 cm³ - Typen: 1504/2004 | types: 1504/2004
	6 Auslässe | outlets	0,15 cm³ - Typen: 1506/2006 | types: 1506/2006
	8 Auslässe | outlets	0,15 cm³ - Typen: 1508/2008 | types: 1508/2008
	10 Auslässe | outlets	0,15 cm³ - Typen: 1510/2010 | types: 1510/2010
Anzahl der Pumpenhübe / Faltenbalg 1500 cm³ | number of pump hubs / bellow 1500 cm³		~ 10000
Betriebsdruck | operation pressure		max. 70 bar
Schmiermedium | lubricant	Öl oder Fett	bis NLGI 2, mit Feststoffanteilen möglich | oil or grease up to NLGI 2, with solid parts possible
Betriebstemperatur | operating temperature		-20°C…+70°C
Auslasszahl | number of outlets		max. 10 gerade | straigth
Anzahl Schmierstellen | number of lubrication points		max. 40 */**
Verbindung | Lube-connection		PA-Schlauch, T=6x4 | PA-tube, t=6x4
Betriebsspannung | operating voltage		24V DC (über Kabel | via cable)
Anschlußstecker | connecting plug		M12 x 1, 4-polig | M12 x 1, 4-pin
Stromaufnahme bei 24V DC | current consumption at 24V DC		$I_{max} \leq 350$ mA
Einbaulage | installation position	Fett | grease	beliebig | any
	Öl | oil	senkrecht | upright
Steuerung | control	integriert | integrated	mikroelektronisch | microelectronic
	intern / extern | internal / external	intern: Zeitsteuerung; extern: SPS | internal: time-controlled; external: PLC
Drucküberwachung | pressure monitoring		integriert, elektronisch | integrated, electronic
Füllstandsüberwachung | fill level monitoring		integriert, Reedkontakt | integrated, reed contact
Fehlermeldung | error-signal	SPS | PLC	differenziert: Leerstand/Gegendruck/interner Fehler | sophisticated: bellow empty/backpressure/internal error
	optisch | optical	LCD-Display | LCD-display
Schutzklasse | IP class		IP 54
Material Gehäuse | material housing		Aluminium, Polyamid | aluminium, polyamide

Typenübersicht FlexxPump 1500 & 2000 | **Types of FlexxPump 1500 & 2000**

Variante	Fett / Öl	Type Flexx-Pump	Anzahl Auslässe	Anzahl Doppelpum-penkörper	Anzahl Schmier-stellen*/**	unterschiedli-che Schmier-mengen	Überwachung via...	Steuerung via ...	**Artikel-Nr.**
Variants	grease / oil	Type Flexx-Pump	number of outlets	number of twin-pump-bodies	number of lubri-cation points*/**	combination different quantities lubricant	Monitoring by ...	Controlled by ...	**Part No.**
impulsgesteuert | pulse-controlled zeitgesteuert | time-controlles	Fett | Grease	1502	2	1	max. 8	1	SPS | PLC	SPS | PLC	540-202-100
		1504	4	2	max. 16	2	SPS | PLC	SPS | PLC	540-404-200
		1506	6	3	max. 24	3	SPS | PLC	SPS | PLC	540-606-300
		1508	8	4	max. 32	4	SPS | PLC	SPS | PLC	540-808-400
		1510	10	5	max. 40	5	SPS | PLC	SPS | PLC	541-010-500
	Öl | Oil	2002	2	1	max. 8	1	SPS | PLC	SPS | PLC	550-202-100
		2004	4	2	max. 16	2	SPS | PLC	SPS | PLC	550-404-200
		2006	6	3	max. 24	3	SPS | PLC	SPS | PLC	550-606-300
		2008	8	4	max. 32	4	SPS | PLC	SPS | PLC	550-808-400
		2010	10	5	max. 40	5	SPS | PLC	SPS | PLC	501-010-500

Zusammenfassen von Auslässen mit Y-Schlauchverbinder 134-002-000 möglich! | Merging outlets with Y-tube-connector 134-002-000!

* bei der Verwendung von Mengenteilern/Splittern | by using splitters

** bei Verwendung von Progressivverteilern sind mehr Schmierstellen möglich! | more lubrication-points by using progressive-distributors.

3. PU-Schmierstirnrad
PU-Lubrication Pinion

Schmierung von offenen Zahnradantrieben und Zahnstangen

Verzahnungen offener Antriebe sollten vorzugsweise automatisch nachgeschmiert werden. Nur bei sehr kleinen Modulen, langsamen Geschwindigkeiten <1m/s und geringen Verfahrbewegungen ist keine Nachschmierung erforderlich. Hierzu bieten wir das Haftfett F01 an oder im Lebensmittelbereich (H1-Zulassung) den Verzahnungsschmierstoff F02.

Automatische Nachschmierung mit Polyurethan-Stirnrädern

Die wesentlich bessere technische Lösung zur Nachschmierung der Verzahnung stellt das automatische und kontinuierliche Aufbringen des Schmierstoffes über PU-Schmierstirnräder dar. Dazu wird ein spezielles Schmierstirnrad mit dem Antriebsstirnrad oder der Zahnstange in Kontakt gebracht. Das PU-Schmierstirnrad überträgt dabei kein Moment, sondern übergibt nur den Schmierstoff auf die in Kontakt befindliche Verzahnung.

Die erforderlichen Nachschmiermengen bei unterschiedlichen Verzahnungen unter unterschiedlichen Betriebsbedingungen sind dem unten aufgeführten Diagramm zu entnehmen. Voraussetzung für die Gültigkeit des Diagramms ist die Verwendung der entsprechenden PU-Schmierstirnräder und eines geeigneten Verzahnungsschmierstoffes wie F01 oder F02.

Vor Erstinbetriebnahme sind die PU-Schmierritzel mit geeignetem Schmiermittel vorzufüllen.

Lubrication of open spur gear drives and racks

For tooth systems in open drives, an automatic lubrication supply should be preferred. Exceptions are possible, in the case of very small modules, slow speed <1m/s and little proceeding movements; one-time manual lubrication is adequate here. Therefore, we offer an adhering grease - F01 - as well as the lubricant F02 (for an application in the food industry (with H1-approval)).

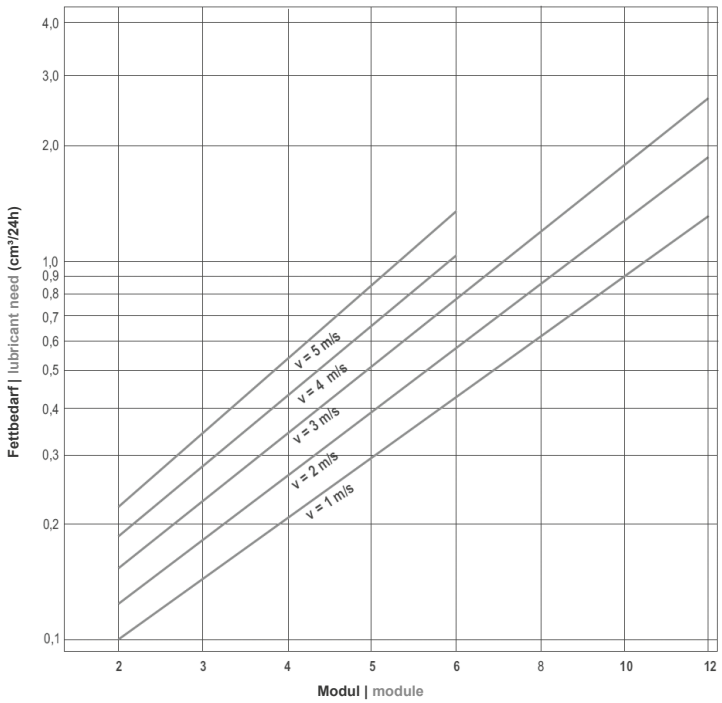
Automatic relubrication with polyurethane foamed pinions

A far better technical solution to relubricate the tooth system is an automatical and continuous spreading of the lubricant with polyurethane foamed pinions, which is brought into contact with the drive gear or rack. The lubrication pinion does not transmit a torque. - It only transfers grease to the tooth flank.

The necessary relubrication quantities for different tooth systems with different running conditions is shown in the diagram below. Conditions for the validity of the values shown in the table below are the use of a suitable polyurethane foamed pinion and a proper lubricant like F01 or F02.

Initial operation: PU-Pinions has to be pre-filled with lubricant.

Fettbedarf bei Schmierung mit PU Schmierstirnrädern
Lubricant need for Lubrication with PU lubrication pinion



3. PU-Schmierstirnrad
PU-Lubrication Pinion

Technische Daten Schmierstirnrad

Die Schmierstirnräder bestehen aus einem offenzelligen Polyurethan-Schaum (Temperaturbereich -30° C….+150° C) und sind aus mehreren Segmenten zusammengesetzt.
Bei der Auswahl muss konstruktiv entschieden werden, ob das Schmierstirnrad an der Verzahnung der Zahnstange oder des Antriebsstirnrades angeordnet werden soll. Vorzugsweise
erfolgt der Anbau am Antriebsstirnrad, da hierbei die Schmierstoffverteilung gegenüber der Zahnstangenschmierung verbessert ist.

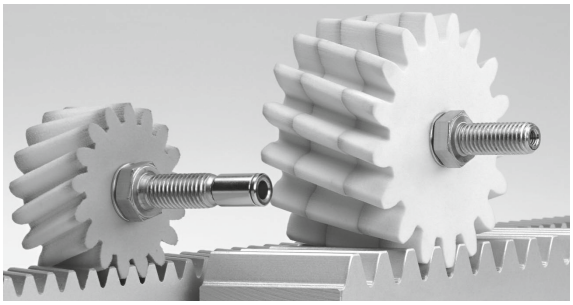
Durch das verwendete offenzellige Polyurethan-Schaummaterial der Schmierstirnräder wird eine optimale Versorgung der Verzahnung über sehr lange Zeiträume hin sichergestellt. Das Material speichert teilweise den Schmierstoff und gibt ihn in kleinsten Dosiermengen wieder ab. Eine Überschmierung wird dabei genauso vermieden wie ein Verschleiß durch Mangelschmierung.

Technical specification lubrication pinion

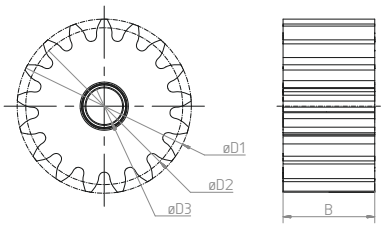
The lubrication pinions are made of open cellular polyurethane foam (temperature range -30° C…+150° C). Pinions are put together with segments.

To choose the correct lubrication pinion it has to be decided by design, if the lubrication pinion should be mounted on a rack or drive pinion. Lubrication at drive-pinion should be prefered.

Using lubrication pinions of an open-cell polyurethane foam material ensures an optimal supply of the tooth system over long term distances. The material stores the lubricant and abrasive it in smallest quantities. This avoids over-lubrication as well as wear (as a consequence of insufficient lubrication).



3.1 PU-Schmierstirnrad - geradverzahnt
PU-Lubrication Pinion - straight teeth



Ausführung:
PU-Schmierzahnrad; geradeverzahnt; inkl. Hülse und Gleitlager; Verzahnung nach DIN 867

Material:
offenzelliger PU-Schaum; Stahl

Version:
PU-Pinion; straight teeth; incl. bushing and sleeve-bearing; toothing acc. DIN 867

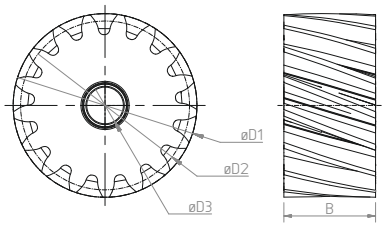
Material:
Open celluar PU-Foam; steel

Modul / Module	z	D1	D2	D3	B	α	Flankenrichtung / Flank direction	Artikel-Nr. / Part-No.
1,5	24	39	36	12	15	20°	geradeverzahnt | straight	130-015-024
2	17	38	34	12	20	20°	geradeverzahnt | straight	130-020-017
3	17	57	51	12	30	20°	geradeverzahnt | straight	130-030-017
4	17	76	68	12	40	20°	geradeverzahnt | straight	130-040-017
5	17	95	85	20	50	20°	geradeverzahnt | straight	130-050-017
6	17	114	102	20	60	20°	geradeverzahnt | straight	130-060-017
8	17	152	136	20	80	20°	geradeverzahnt | straight	130-080-017
10	17	190	170	20	100	20°	geradeverzahnt | straight	130-100-017

Sonderanfertigungen bis Modul 60 - auf Anfrage - möglich; alle Parameter frei wählbar! |
On demand: Special design up to module 60 and all parameters disposabel!

3.2 PU-Schmierstirnrad - schrägverzahnt
PU-Lubrication Pinion - helical teeth

PU-Schmierstirnrad - rechtssteigend
PU-Lubrication Pinion - helical RH



Ausführung:
PU-Schmierzahnrad; schrägverzahnt rechtsteigend; inkl. Hülse und Gleitlager; Verzahnung nach DIN 867

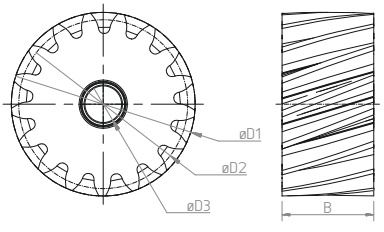
Material:
offenzelliger PU-Schaum; Stahl

Version:
PU-Pinion; helical teeth RH; incl. bushing and sleeve-bearing; toothing acc. DIN 867

Material:
Open celluar PU-Foam; steel

Modul / Module	z	D1	D2	D3	B	α	β	Flankenrichtung / Flank direction	Artikel-Nr. / Part-No.
1,5	24	41,2	38,2	12	15	20°	19°31'42"	rechts | RH	131-015-024
2	17	40,1	36,1	12	20	20°	19°31'42"	rechts | RH	131-020-017
3	17	60,1	54,1	12	30	20°	19°31'42"	rechts | RH	131-030-017
4	17	80,2	72,2	12	40	20°	19°31'42"	rechts | RH	131-040-017
5	17	100,2	90,2	20	50	20°	19°31'42"	rechts | RH	131-050-017
6	17	120,2	108,2	20	60	20°	19°31'42"	rechts | RH	131-060-017
8	17	160,3	144,3	20	80	20°	19°31'42"	rechts | RH	131-080-017
10	17	200,4	180,4	20	100	20°	19°31'42"	rechts | RH	131-100-017

PU-Schmierstirnrad - linkssteigend
PU-Lubrication Pinion - helical LH



Ausführung:
PU-Schmierzahnrad; schrägverzahnt linkssteigend; inkl. Hülse und Gleitlager; Verzahnung nach DIN 867

Material:
offenzelliger PU-Schaum; Stahl

Version:
PU-Pinion; helical teeth LH; incl. bushing and sleeve-bearing; toothing acc. DIN 867

Material:
Open celluar PU-Foam; steel

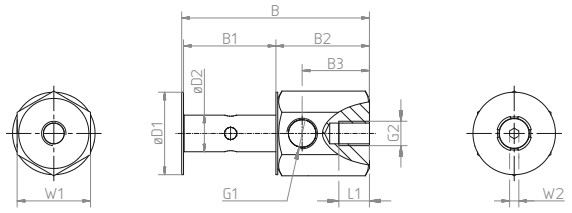
Modul / Module	z	D1	D2	D3	B	α	β	Flankenrichtung / Flank direction	Artikel-Nr. / Part-No.
1,5	24	41,2	38,2	12	15	20°	19°31'42"	links | LH	132-015-024
2	17	40,1	36,1	12	20	20°	19°31'42"	links | LH	132-020-017
3	17	60,1	54,1	12	30	20°	19°31'42"	links | LH	132-030-017
4	17	80,2	72,2	12	40	20°	19°31'42"	links | LH	132-040-017
5	17	100,2	90,2	20	50	20°	19°31'42"	links | LH	132-050-017
6	17	120,2	108,2	20	60	20°	19°31'42"	links | LH	132-060-017
8	17	160,3	144,3	20	80	20°	19°31'42"	links | LH	132-080-017
10	17	200,4	180,4	20	100	20°	19°31'42"	links | LH	132-100-017

Sonderanfertigungen bis Modul 60 - auf Anfrage - möglich; alle Parameter frei wählbar! |
On demand: Special design up to module 60 and all parameters disposabel!

3.3 Befestigungsachsen für PU-Schmierstirnräder
Mounting-axis for PU-Lubrication Pinion

radiale Zuführung Schmierstoff

Fluid rigth-angeled



Ausführung:
Befestigungsachse für PU-Schmierstirnrad; Fluid: radial (gewinkelt);

Material:
Stahl; vernickelt

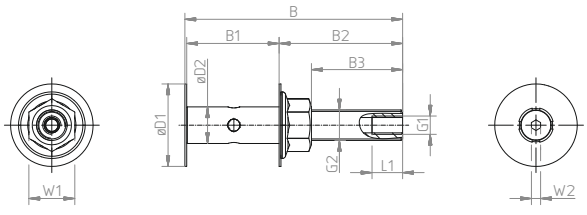
Version:
Mounting-axes fur PU-Lubrication pinion; Fluid: radial (rigth-angeled)

Material:
Steel; nickel-plated

für Modul / for Module	W1	B	B1	B2	B3	D1	D2	G1	G2	L1	W2	Artikel-Nr. / Part-No.
1,5	24	46,4	15,2	30,6	22	27	12	G1/8x10mm tief | deep	M8	10	3	133-015-001
2	24	54,4	20,2	30,6	22	27	12	G1/8x10mm tief | deep	M8	10	3	133-020-001
3	24	61,4	30,2	30,6	22	27	12	G1/8x10mm tief | deep	M8	10	3	133-030-001
4	24	71,4	40,2	30,6	22	27	12	G1/8x10mm tief | deep	M8	10	3	133-040-001
5	24	81,4	50,2	30,6	22	60	20	G1/8x10mm tief | deep	M8	10	4	133-050-001
6	24	91,4	60,2	30,6	22	60	20	G1/8x10mm tief | deep	M8	10	4	133-060-001
8	24	111,4	80,2	30,6	22	60	20	G1/8x10mm tief | deep	M8	10	4	133-080-001
10	24	131,4	100,2	30,6	22	100	20	G1/8x10mm tief | deep	M8	10	4	133-100-001

axiale Zuführung Schmierstoff

Fluid axial



Ausführung:
Befestigungsachse für PU-Schmierstirnrad; Fluid: axial (gerade)

Material:
Stahl; vernickelt

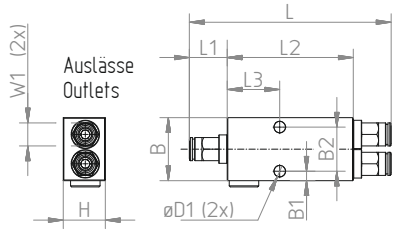
Version:
Mounting-axes fur PU-Lubrication pinion; Fluid: axial (straight)

Material:
Steel; nickel-plated

für Modul / for Module	W1	B	B1	B2	B3	D1	D2	G1	L1	G2	W2	Artikel-Nr. / Part-No.
1,5	15	60,2	15,2	44,6	34,2	27	12	M6	10	M10	3	133-015-002
2	15	61,2	20,2	41,2	30,6	27	12	M6	10	M10	3	133-020-002
3	15	71,2	30,2	40,4	30	27	12	M6	10	M10	3	133-030-002
4	15	81,2	40,2	40,4	30	27	12	M6	10	M10	3	133-040-002
5	24	116,4	50,2	65,6	49,1	60	20	G1/8	10	M16	4	133-050-002
6	24	126,4	60,2	65,6	49,1	60	20	G1/8	10	M16	4	133-060-002
8	24	146,4	80,2	65,6	49,1	60	20	G1/8	10	M16	4	133-080-002
10	24	166,4	100,2	65,6	49,1	100	20	G1/8	10	M16	4	133-100-002

Sonderanfertigungen bis Modul 60 - auf Anfrage - möglich; alle Parameter frei wählbar!
Ausführungen der Befestitungsachsen in Edelstahl auf Anfrage.
On demand: Special design up to module 60 and all parameters disposabel!

4.1 Verteiler - Splitter
Distributors - Splitter



Ausführung:
Passive Mengenteiler (Splitter) zur Erweiterung von FlexxPump; mit Einschraubverschraubungen für Schlauch 6x4

Material:
Aluminium; Anschlüsse: Messing, vernickelt

Version:
Splitter to extend FlexxPump; with connectors for tube 6x4

Material:
Aluminium; Fittings: brass nickel-plated

Anzahl Auslässe Number Outlets	Schmierstoff Lubricant	L	L1	L2	L3	B	B1	B2	H	D1	W1	Artikel-Nr. Part-No.
2	Fett | Grease	96	(18)	60	25	30	4,5	21	20	5.5	11	134-005-002
3	Fett | Grease	96	(18)	60	25	48	18	15	20	6,5	11	134-005-003
4	Fett | Grease	96	(18)	60	25	60	17,5	25	20	6,5	11	134-005-004
2	Oel | Oil	96	(18)	60	25	30	4,5	21	20	5.5	11	134-005-006
3	Oel | Oil	96	(18)	60	25	48	18	15	20	6,5	11	134-005-007
4	Oel | Oil	96	(18)	60	25	60	17,5	25	20	6,5	11	134-005-008

Hinweise:

Der Einsatz und Gebrauch der Splitter ist ausschließlich gemäß der jeweiligen Spezifizierung zulässig.

Die Splitter sind mit Schläuchen 6mm Außendurchmesser möglichst nahe an den Auslässen der FlexxPump anzuschließen. Die Splitter funktionieren nur in Verbindung mit den Kolbenpumpen der Reihe FlexxPump.
An jeden Auslass der FlexxPump kann genau ein Splitter installiert werden. So können - je nach Typ der FlexxPump - maximal 16 (FlexxPump 400/500) bzw. 40 FlexxPump 1500/2000 Schmierstellen mit einer Nachschmiereinrichtung versorgt werden.
Es ist **nicht** möglich, durch Kombination von zwei oder mehreren Splittern an einem Pumpenauslass diese zu betrieben (keine Kaskade von Verteilern).
Es ist auf möglichst geringe Unterschiede beim Anschluss der Schmierstellen an den Auslässen zu achten! Druckdifferenzen zwischen den Auslässen sollen 8 bar nicht überschreiten. Daher beim Anschluss der Auslässe möglichst gleich lange Schläuche mit gleichen Querschnitten verwenden.

Die Splitter sind für Öle und Fette bis NLGI 2 einsetzbar.

Temperatureinsatzbereich: +10°C…+60°C

Die in den Einlass des Splitters geförderte Schmierstoffmenge wird gleichmäßig auf die jeweiligen Auslässe aufgeteilt.

Die Splitter können bei der Verwendung von Schmierstoffen mit Feststoffanteil **nicht** eingesetzt werden.

In Abhängigkeit von den vorliegenden Druckdifferenzen an den Auslässen können etwas unterschiedliche Dosiermengen während der Spenden auftreten.

Notes:

Using splitters only according to specification for each splitter-type.

Splitters are to deliverd with tube-connectors for hoses 6mm outer diameter; the distance to the outlets of the FlexxPump should be as small as possible. Each outlet of FlexxPump can be connected with exactly one splitter. Depending of FlexxPump type max. 16 (FlexxPump 400/500) or max. 40 (FlexxPump 1500/2000) lubrication points can be fed with one FlexxPump.
To connect splitters in a row is not possible.
Pressure differences between the outlets should not exceed 8 bar. Therefore, the hoses used should preferably have similar length and same profile.

Splitters are applicable for oil and grease up to NLGI 2.

Temperature range +10°C...+60°C

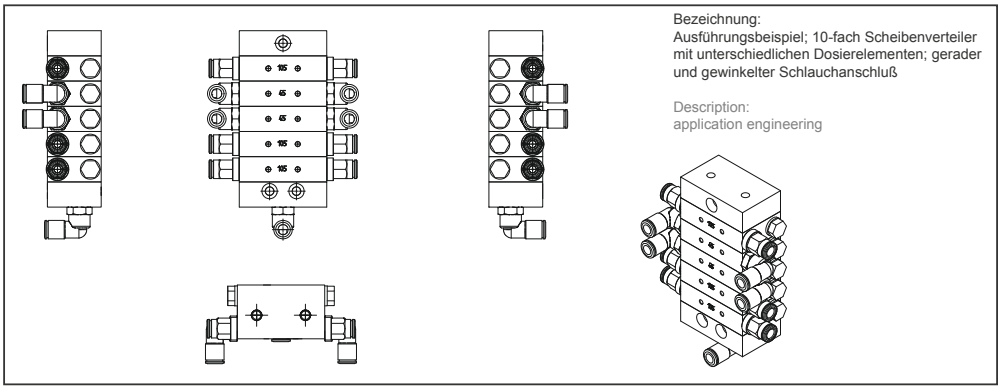
The amount of lubricant is evenly divided between the outlets.

When using lubricant with solid-particles: **No** use of Splitters!

Depending on the present pressure differences at the outlets, the supplied amounts of lubricant can be slightly different.

Weitere Ausführungen auf Anfrage.
Special design on demand.

4.2 Verteiler - Progressivverteiler
Distributors - Progressive distributors



Bezeichnung:
Ausführungsbeispiel; 10-fach Scheibenverteiler mit unterschiedlichen Dosierelementen; gerader und gewinkelter Schlauchanschluß

Description:
application engineering

Anzahl Auslässe Number Outlets	Einlass Inlet	Schlauch tube	Auslässe outlets	Schlauch tube	Artikel-Nr. Part-No.
2	gerade | straight	6x4	gerade | straight	6x4	
3	gerade | straight	6x4	gerade | straight	6x4	
4	gerade | straight	6x4	gerade | straight	6x4	
5	gerade | straight	6x4	gerade | straight	6x4	
6	gerade | straight	6x4	gerade | straight	6x4	
7	gerade | straight	6x4	gerade | straight	6x4	
8	gerade | straight	6x4	gerade | straight	6x4	auf Anfrage | on demand
9	gerade | straight	6x4	gerade | straight	6x4	
10	gerade | straight	6x4	gerade | straight	6x4	
11	gerade | straight	6x4	gerade | straight	6x4	
12	gerade | straight	6x4	gerade | straight	6x4	
13	gerade | straight	6x4	gerade | straight	6x4	
14	gerade | straight	6x4	gerade | straight	6x4	

Hinweise:

- modular aufgebaute Scheibenverteiler
- 2 bis 14 Auslässe pro Verteiler möglich; größere Typen: nach Auslegung
- Scheibenelemente mit unterschiedlichem Dosiervolumen (45 / 105)
- Schlauchanschluss in verschiedenen Bauformen (gerade / gewinkelt) und für unterschiedliche Schlauchdimensionen (4 / 6 / 8) an Ein- bzw. Auslaß möglich
- In Verbindung mit Nachschmiergeber des Typs FlexxPump 400 / 1500 nicht in Reihe verwendbar (keine Haupt- und Nebenverteiler)
- Nur geeigneten Schmierstoff (ohne Feststoffanteile) verwendbar!
- optional mit Näherungsschalter überwachbar

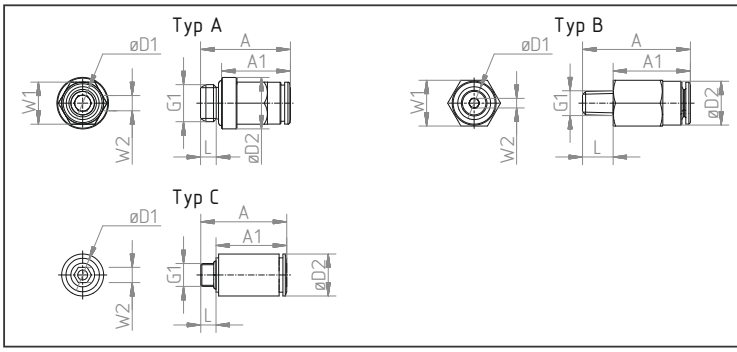
Material:
Stahl
Edelstahl

Notes:

- modular progressive distributor
- from 2 up to 14 outlets
- washers with different metered volume
- tube-connectors with varying design (staight / elbow) for tubes with diverse dimensions (4 / 6 / 8) for inlet and/or outlets
- By using FlexxPump 400 / 1500: connecting splitters in a row is not possible
- Use of adapted lubricant, only!
- optional: inductive proximity switch

Material:
steel
stainless-steel

5.1 Einschraubverschraubungen gerade
Tube-connectors straight



Ausführung:
Einschraubverschraubung (Schlauchanschluss) gerade

Material:
Messing, vernickelt

Version:
Tube-connector straight

Material:
Brass, nickel-plated

Typ / Type	D1	D2	A	A1	G	L1	Form G1 / Profile G1	W1	W2	Artikel-Nr. / Part-No.
C	6	11	22,5	18,5	M6	4	DIN 13-1	-	2,5	134-000-001
A	6	13,5	24	18,5	G1/8	5	ISO 228-1	11	4	134-000-002
A	6	12	26	18	R1/8 BSPT	8	DIN 2999-5	13	4	134-000-003
A	6	17	24	16	G1/4	8	ISO 228-1	11	4	134-000-004
B	6	11	25,8	17,8	M8x1	8	DIN 158-1	11	4	134-000-005
C	4	9	23,5	16,5	M6	7	DIN 13-1	-	2,5	134-000-006
A	8	11	26,5	20,5	G1/8	6	ISO 228-1	13	5	134-000-008
C	4	9	23,5	16,5	M6x0,75	5	DIN 13-2	-	2,5	134-000-009
C	6	11	22,5	17,8	M6x0,75	5	DIN 13-2	-	2,5	134-000-010
A	6	13,5	24	18	M10x1	6	DIN 13-3	11	4	134-000-011
A	4	13,5	24	18	G1/8	5	ISO 228-1	9	2,5	134-000-012
B	6	11,5	28,2	20	M6	8	DIN 158-1	12	2,5	134-000-014
C	6	11	22,5	17,8	M5	4	DIN 13-1	-	2,5	134-000-015
C	4	9	20,5	16,5	M5	4	DIN 13-1	-	2,5	134-000-016
C	4	9	21,3	16,3	M3	5	DIN 13-1	-	1,5	134-000-017
A	8	17	23,5	17	G1/4	6,5	ISO 228-1	13	6	134-000-018
A	8	13	26,5	20,5	M10x1	6	DIN 13-2	13	5	134-000-019

Hinweise:

Anwendung: Verbindung der Schmierstellen mit den Kunststoffschläuchen von FlexxPump.

Technische Daten:
- Betriebsdruck: max. 80 bar
- Betriebstemperatur: -30° C…+100° C
- Medium: Öle, Fette
- Werkstoff: Ms 58 (vernickelt), NBR, Edelstahl

Merkmale:
- voller Durchgang für das Fluid
- einfachste Abdichtung an der Anschlußstelle durch integrierte O-Ringe
- einfache Montage und Demontage der Schläuche
- alle geraden Steckverschraubungen mit zusätzlichem Innensechskant
- alle Winkelverschraubungen sind auch unter Druck leicht schwenkbar

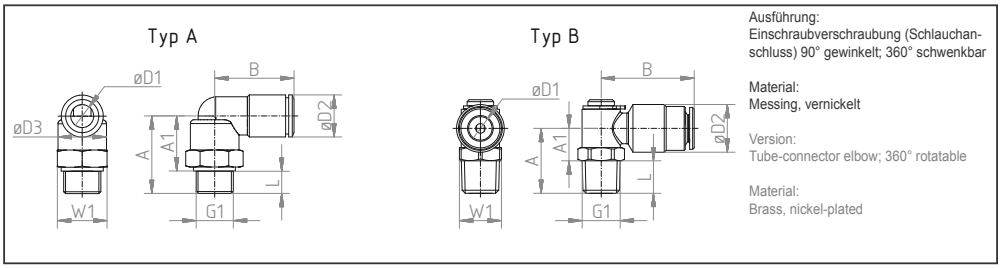
Notes:

Application:connection between lubrication points and plastic tubes from FlexxPump.

Technical data:
- working pressure: max. 80 bar
- working temperature: -30° C…+100° C
- fluid: oil, grease
- material: nickel-plated brass 58, NBR, stainless steel

Features:
- full flow for the fluid
- very simple seal function through integrated O-rings with own seat
- can be inserted and extracted
- all straight connectors with integrated hexagon socket
- all rotary elbow male adaptors can be also rotated under pressure

5.2 Einschraubverschraubungen 90° gewinkelt
Tube-connectors 90° rigth-engeld



Ausführung:
Einschraubverschraubung (Schlauchanschluss) 90° gewinkelt; 360° schwenkbar

Material:
Messing, vernickelt

Version:
Tube-connector elbow; 360° rotatable

Material:
Brass, nickel-plated

Typ Type	D1	D2	A	A1	B	G	L1	Form G1 Profile G1	W1	Artikel-Nr. Part-No.
A	6	11	15,5	10,5	20,5	M6	5	DIN 13-1	9	134-001-001
A	6	11	20,3	14,4	20,8	G1/8	5,9	ISO 228-1	13	134-001-002
A	6	11	20,3	14,4	20,8	M10x1	5,9	DIN 13-2	13	134-001-006
A	4	9	15,8	10,8	17,2	M6	5	DIN 13-1	9	134-001-007
A	6	11	24	16	21,5	G1/4	7	ISO 228-1	13	134-001-009
B	6	11	17,8	11	17,2	M8x1	6,8	DIN 13-2	9	134-001-010
A	4	9	15,8	10,8	18	M6x0,75	5	DIN 13-2	9	134-001-011
A	6	11	15,8	10,8	20,8	M6x0,75	5	DIN 13-2	9	134-001-012
B	6	11	16,5	8,5	24,3	M6	8	DIN 13-1	11	134-001-014
B	6	11,5	17	8,5	24,3	R1/8	8,5	DIN 2999-5	11	134-001-016
A	6	11	24	18	20,5	M10x1	6	DIN 13-2	13	134-001-017
A	4	9	14,8	8,9	20	G1/8	5,9	ISO 228-1	13	134-001-018
A	6	11	14,8	10,8	21	M5	4	DIN 13-1	9	134-001-019
A	4	9	14,8	10,8	18	M5	4	DIN 13-1	9	134-001-020
A	4	9,1	16	11	18,2	M3	5	DIN 13-1	6	134-001-021
A	8	13	23,3	16,8	23,5	G1/4	6,5	ISO 228-1	13	134-001-022
A	8	13	24,5	18,5	23,5	M10x1	6	DIN 13-2	13	134-001-023
A	8	13	20,3	14,3	24	G1/8	6	ISO 228-1	13	134-001-024

Hinweise:

Anwendung: Verbindung der Schmierstellen mit den Kunststoffschläuchen von FlexxPump.

Technische Daten:
- Betriebsdruck — max. 80 bar
- Betriebstemperatur — -30° C…+100° C
- Medium — Öle, Fette
- Werkstoff — Ms 58 (vernickelt), NBR, Edelstahl

Merkmale:
- voller Durchgang für das Fluid
- einfachste Abdichtung an der Anschlußstelle durch integrierte O-Ringe
- einfache Montage und Demontage der Schläuche
- alle geraden Steckverschraubungen mit zusätzlichem Innensechskant
- alle Winkelverschraubungen sind auch unter Druck leicht schwenkbar

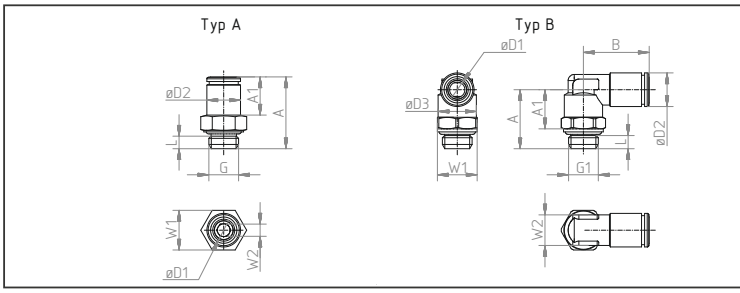
Notes:

Application:connection between lubrication points and plastic tubes from FlexxPump.

Technical data:
- working pressure — max. 80 bar
- working temperature — -30° C…+100° C
- fluid — oil, grease
- material — nickel-plated brass 58, NBR, stainless steel

Features:
- full flow for the fluid
- very simple seal function through integrated O-rings with own seat
- can be inserted and extracted
- all straight connectors with integrated hexagon socket
- all rotary elbow male adaptors can be also rotated under pressure

5.3 Einschraubverschraubungen - Edelstahl
Tube-connectors - stainless steel



Ausführung:
Einschraubverschraubungen (Schlauchanschluß) 90° gewinkelt; 360° schwenkbar; zylindrisches Gewinde;

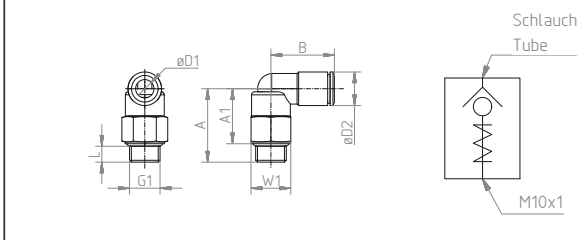
Material:
1.4401; Dichtung: FKM;

Version:
Tube-connector elbow; 360° rotatable; thread: cylindic

Material:
Stainless steel; sealing: FKM

Typ Type	D1	D2	A	A1	B	G1	L1	W1	W2	Artikel-Nr. Part-No.
A	4	9	20,5	7	-	M5	4	9	2,5	134-000-901
A	4	9	19	9	-	G1/8	5,5	13	3	134-000-902
A	6	11	22,5	17,5	-	M5	4	-	2,5	134-000-904
A	6	11	23,5	12,5	-	G1/8	5,5	13	4	134-000-905
A	6	11	20	13,5	-	G1/4	6,5	16	4	134-000-906
A	8	13	26	21,5	-	G1/8	5,5	13	5	134-000-907
A	8	13	26	20,5	-	G1/4	6,5	13	5	134-000-908
B	4	9	14,8	10,8	18,2	M5	4	13	9	134-001-901
B	4	9	19,3	13,8	20	G1/8	5,5	13	10	134-001-902
B	4	9	20,5	14	20	G1/4	6,5	16	10	134-001-903
B	6	11	17,6	13,6	20,5	M5	4	9	9	134-001-904
B	6	11	19,3	13,8	21,5	G1/8	5,5	13	10	134-001-905
B	6	11	20,5	14	21,5	G1/4	6,5	16	10	134-001-906
B	8	13	19,3	14,6	23,5	G1/8	4,7	13	10	134-001-907
B	8	13	20,5	14	23,5	G1/4	6,5	16	10	134-001-908

5.4 Verschraubung - 90° gewinkelt mit Rückschlagventil
Tube-connectors - 90° rigth-engeld with non-return valve



Ausführung:
Einschraubverschraubungen (Schlauchanschluß) mit integriertem Rückschlagventil; 90° gewinkelt; 360° schwenkbar; zylindrisches, metrisches Gewinde

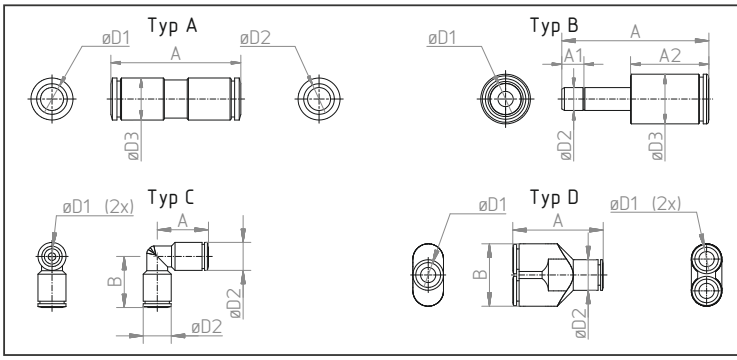
Material:
Messing, vernickelt; Dichtung: NBR

Version:
Tube-connector elbow; 360° rotatable; thread: cylindic

Material:
Brass, nickel-plated; sealing: NBR

D1	D2	A	A1	B	G1	L1	W1		Artikel-Nr. Part-No.
4	9	24	18	20	M10x1	5,5	13		134-001-200
6	11	24	18	20,5	M10x1	5,5	13		134-001-201
8	13	25	19	23,5	M10x1	5,5	13		134-001-202

5.5 Verbindungen & Reduzierungen
Connectors & Reductions



Ausführung:
Verbindungen und Reduzierungen; gerade bzw. gewinkelt

Material:
Messing, vernickelt;

Version:
Connector and reducers; straight and 90° elbow

Material:
Brass, nickel-plated

Typ Type	D1	D2	D3	A	A1	A2	B	Artikel-Nr. Part-No.
A	6	6	11	34	-	-	-	134-000-104
A	6	8	13	39	-	-	-	134-000-105
A	4	6	11	34	-	-	-	134-000-106
A	4	4	9	32	-	-	-	134-000-111
B	8	6	13	38,5	11,6	20,5	-	134-000-108
B	6	4	11	35	10,8	17,8	-	134-000-109
B	4	6	9	30,5	5,1	12,5	-	134-000-110
C	6	11	-	20,1	-	-	20,1	134-001-104
C	4	9	-	17,5	-	-	17,5	134-001-106
D	6	12	-	35,5	-	-	24,5	134-002-000
D	8	14	-	37,9	-	-	28,5	134-002-023

5.6 Gewindeadapter & Verlängerungen
Ex thread adapter

G1	G2	L	W	Artikel-Nr. Part-No.
G1/8 (a)	G1/4 (i)	35	17	134-000-700
G1/4 (a)	G1/4 (a)	85	17	134-000-701
G1/4 (a)	G1/4 (a)	104	17	134-000-702
G1/8 (a)	G1/8 (i)	50	17	134-000-703
M6 (a)	M10x1 (i)	21	13	134-000-704
M6 (a)	G1/8 (i)	21	13	134-000-705
M8 (a)	M6 (i)	19,2	10	134-000-706
M4 (a)	M3 (i)	-	-	134-000-707
M4 (a)	M6 (i)	-	-	134-000-708
M3 (a)	M6 (i)	-	-	134-000-709
M8 (a)	G1/4 (i)	24	17	134-000-710
M10x1 (a)	G1/4 (i)	24	17	134-000-711

(a) Außengewinde | external thread ; (i) Innengewinde | internal thread

6.1 Schmierstoffe - Fett
Lubricants - Grease

Standardfett für offene Verzahnungen

Fett F01 | DIN 51825 OGP0N-30 | NLGI-Klasse 0...1

- Lithium/Calcium-Komplex mit Hochdruckzusätzen, die mit der Seifenstruktur verbunden sind und somit sicheren Zugang zur Metalloberfläche haben.
- hitzebeständig, hat gute Korrosionsschutzeigenschaften und enthält keine festen Schmierstoffe.

Einsatz:
- entwickelt als Schmierfett für hochbelastete offene Zahnrad-antriebe.
- durch die Hochtemperatureigenschaften geeignet für einen breiten Bereich von Anwendungen, wo hohe Temperaturen in Verbindung mit extremen Belastungen herrschen.
- kann auch empfohlen werden für Gleitlager/Buchsen.

Temperatureinsatzbereich -30°C bis +150°C

Standard grease for open gears

grease F01 | DIN 51825 OGP0N-30 | NLGI-Claas 0...1

- based on lithium/calcium complex with extrem pressure additives, which are combined with the soap structure so that an optium adhesiveness to the metal surface is possible.
- heat-resistant, good corrosion protection attributes, contains no firm components.

application:
- had been developed as special grease for high loaded open gears.
- due to the high temperature properties usable for a wide range of applications, where high temperatures and high loads exist.
- also recommended for slide bearings/bushes.

temperature range -30°C to +150°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400; befüllt mit 400 cm³ Fett F01 cartridge for FlexxPump, pre-filled with 400 cc of grease F01	000-101-105
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F01 grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F01	000-105-115
Fett F01, 1 kg Dose grease F01, 1 kg tin	000-101-210
Fett F01, 400 cm³, Standardkartusche für Handpresse (DIN 1284) grease F01, 400 cc, cartridge for handpress	000-101-220

Mit H1-Zulassung

Fett F02 | DIN 51502 KP2R-25 | NLGI-Klasse 2

- synthetisches Spezialschmierfett für hohe spezifische Belastungen.
- Eine spezielle Additivierung verleiht diesem Spezialfett hohe thermische und oxidative Stabilität und gute Korrosions- und Verschleißschutzeigenschaften.
- NSF/H1-Zulassung

Einsatz:
kalt-, heißwasser- und dampfbeständig; hohe Oxidations- und thermische Stabilität; hohes Lasttragevermögen, guter Verschleiß-schutz; hohe Gebrauchsdauer und weiter Gebrauchstemperaturbereich; hohe Schmierwirkung bei geringen Reibzahlen

Temperatur-Einsatzbereich -40° C bis +140° C

With H1-approval

grease F02 | DIN 51502 KP2R-20 | NLGI-Claas 2

- synthetic special grease for high temperatures based on synthetic hydrocarbons with a partial special thickener of high metal affinity.
- NSF/H1-registration

application:
water (cold, hot) and steam resistant; high thermal and oxidation stability; for high load; very good wear-protection; high service life and wide temperature range; optimum lubricating effect at low friction values

temperature range -40° C to +140° C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F02 cartridge for FlexxPump, pre-filled with 400 cc of grease F02	000-102-105
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F02 grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F02	000-102-115
Fett F02, 1 kg Dose grease F02, 1 kg tin	000-102-210
Fett F02, 400 cm³, Standardkartusche für Handpresse (DIN 1284) grease F02, 400 cc, cartridge for handpress	000-102-220

6.1 Schmierstoffe - Fett
Lubricants - Grease

Spezialfett für Linearführungen & Kugelgewindetriebe

Fett F03 | DIN 51825 KP2K-20 | NLGI-Klasse 2

- sehr kurzfaseriges und homogenes lithiumverseiftes Universalfett mit einem Mineralöl, das zur Schmierung von Wälz- und Gleitlagern verwendet und bei mittleren bis hohen Belastungen eingesetzt werden kann.
- sehr haftfähig; für Kurzhub-Anwendungen geeignet.
- wasserbeständig und korrosionsschützend.

Einsatz:
- Schmierung von Linearlagern (Kugelumlaufführungen, Rollenführungen und Kugelgewindetrieben).
- kann zusammen mit einem Schmierritzel und kontinuierlicher Nachschmierung für offene Verzahnungen verwendet werden.
- sehr gute Förderfähigkeit in Nachschmiereinrichtungen

Temperatureinsatzbereich -20°C bis +120°C

Special grease for linear guideways & ball screws

grease F03 | DIN 51825 KP2K-20 | NLGI-Claas 2

- short-fibred and homogeneous lithium-saponified universal grease based on mineral oil. It can be used for roller and slide bearing lubrication and is appropriate for medium and high load applications.
- very adhesive; appropriate for short-stroke applications.
- water resistant and protective against corrosion.

application:
- lubrication of linear bearings (recirculating ball bearing guides, roller guides and ballscrews)
- in combination with a lubrication pinion and continuous re-lubrication suitable for open gear lubrication
- very well pumpable in relubrication units

temperature range -20°C to +120°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F03 cartridge for FlexxPump, pre-filled with 400 cc of grease F03	000-103-105
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F03 grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F03	000-103-115
Fett F03, 1 kg Dose grease F03, 1 kg tin	000-103-210
Fett F03, 400 cm³, Standardkartusche für Handpresse (DIN 1284) grease F03, 400 cm³, cartridge for handpress	000-103-220

Spezialfett für Lagerschmierung

Fett F04 | DIN 51502 KP2K-20 | NLGI-Klasse 2

- Llithium-calciumverseiftes Mehrzweckfett mit einem Mineralöl, das zur Schmierung von Wälz- und Gleitlagern verwendet und bei mittleren Belastungen eingesetzt werden kann.
- für teils stoßartige Belastungen geeignet; wasserbeständig und korrosionsschützend

Einsatz:
- Schmierung von Kugel- und Wälzlager; Kugelgewindetriebe
- kann zusammen mit einem Schmierritzel und kontinuierlicher Nachschmierung für offene Verzahnungen verwendet werden.
- gute Förderfähigkeit in Nachschmiereinrichtungen und Verteiler

Temperatureinsatzbereich -30°C bis +130°C

Special grease for bearings

grease F04 | DIN 51502 KP2K-20 | NLGI-Claas 2

- multipurpose graese based on lithiums-calcium-soap with EP additivies
- suitabel for bearings with middle-range loads

application:
- lubrication of bearings and ballscrews
- in combination with a lubrication pinion and continuous re-lubrication suitable for open gear lubrication
- well pumpable in relubrication units and distributors

temperature range -30°C to +130°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F04 cartridge for FlexxPump, pre-filled with 400 cc of grease F04	000-104-105
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F04 grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F04	000-104-115
Fett F04, 1 kg Dose grease F04, 1 kg tin	000-104-210
Fett F04, 400 cm³, Standardkartusche für Handpresse (DIN 1284) grease F04, 400 cm³, cartridge for handpress	000-104-220

6.1 Schmierstoffe - Fett
Lubricants - Grease

Spezialfett für offene Verzahnungen

Fett F05 | DIN 51502 KPF2-P | NLGI-Klasse 2

- Aluminiumkomplexseife mit Graphit-Zusätzen
- hochviskoses Mineralöl
- hitzebeständig und korrosionsschützend

Einsatz:
- Schmierung von hochbelasteten Verzahnungen
- Bis 0°C sehr gut förderbar

Temperatureinsatzbereich -20°C bis +150°C

Special grease for rack and bearings

grease F05 | DIN 51502 KPF2-P | NLGI-Claas 2

- aluminium complex soap and graphite
- based on a high quality mineraloil
- optimum adhesiveness and good corrosion protection

application:
- lubrication of extrem loaded open racks
- up to 0°C very good pumpable

temperature range -20°C to +150°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F05 cartridge for FlexxPump, pre-filled with 400 cc of grease F05	000-105-105
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F05 grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F05	000-105-115
Fett F05, 1 kg Dose grease F05, 1 kg tin	000-105-210
Fett F05, 400 cm³, Standardkartusche für Handpresse (System „Reiner“) grease F05, 400 cm³, cartridge for handpress (System „Reiner“)	000-105-220

Hochleistungshaftschmierstoff

Fett F06

- synthetischer, hochviskoser Schmierstoff
- herrvorragender Korrosionsschutz
- sehr großer Temperaturbereich

Einsatz:
- Schmierung hochbelasteter Reibstellen (z.B. Verzahnungen, Ketten)
- Wasserbeständigkeit
- sehr hohe Haftneigung verhindert Abschleudern
- Förderbarkeit in Schmiersystemen: 0°C...+80°C

Temperatureinsatzbereich: -15°C ... +250°C

Special adhesion lubricant

grease F06

- synthetic highly viscous lubricant
- execellent corrosion protection
- very wide temperature range

application:
- lubrication of highly stressed wear points (e.g. racks/pinions, chains)
- water resistance
- very high adhesion prohibits centrifuge of lubricant
- pumpable in lubrication systems: 0°C ... +80°C

temperature range: -15°C .... +250°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F06 cartridge for FlexxPump, pre-filled with 400 cc of grease F06	000-106-105
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F06 grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F06	000-106-115
Fett F06, 1 kg Dose grease F06, 1 kg tin	000-106-210

6.1 Schmierstoffe - Fett
Lubricants - Grease

Hochtemperatur-Spezialfett für Lager

Fett F07 | DIN 51825 KPHC2P-40 | NLGI-Klasse 2

- synthetischer (Polyalphaolefin) Hochleistungsfett
- geringe Anteile PTFE als Festschmierstoff
- großer Temperaturbereich

Einsatz:
- Gleit- und Wälzlager; KGT-Muttern; Kugelumlaufführungswagen
- Förderbarkeit in Schmiersystemen: -40°C ... +80°C

Temperatureinsatzbereich: -40°C ... +160°C

special high-temperature grease for bearings

grease F07 | DIN 51825 KPHC2P-40 | NLGI-Claas 2

- synthetic grease
- sligth content of PTFE as solid-particels
- wide temperature range

application:
- sleeve and/or roller bearing; jackscrews; linear guidways
- pumpable in lubrication systems: -40°C ... +80°C

temperature range: -40°C .... +160°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F07	000-107-105
cartridge for FlexxPump, pre-filled with 400 cc of grease F07	
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F07	000-107-115
grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F07	
Fett F07, 1 kg Dose	000-107-210
grease F07, 1 kg tin	
Fett F07, 400 cm³, Standardkartusche für Handpresse (DIN 1284)	000-107-220
grease F07, 400 cm³, cartridge for handpress	

Tieftemperatur-Spezialfett für Lager

Fett F08 | DIN 51502 KP HC 2 P-40 | NLGI-Klasse 2

- vollsynthetisches Fett
- sehr guter Verschleiß- und Korrosionsschutz
- bei tiefen Temperaturen gut förderbar

Einsatz:
- Gleit- und Wälzlager; KGT-Muttern; Kugelumlaufführungswagen
- Förderbarkeit in Schmiersystemen: -25°C ... +80°C

Temperatureinsatzbereich: -40°C ... +180°C

low-temperature special grease for bearings

grease F08 | DIN 51502 KP HC 2 P-40 | NLGI-Claas 2

- synthetic grease
- execellent wear and corrosion protection
- wide temperature range

application:
- sleeve and/or roller bearing; jackscrews; linear guidways
- pumpable in lubrication systems: -25°C ... +80°C

temperature range: -40°C .... +180°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F08	000-108-105
cartridge for FlexxPump, pre-filled with 400 cc of grease F08	
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F08	000-108-115
grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F08	
Fett F08, 1 kg Dose	000-108-210
grease F08, 1 kg tin	
Fett F08, 400 cm³, Standardkartusche für Handpresse (DIN 1284)	000-108-220
grease F08, 400 cm³, cartridge for handpress	

6.1 Schmierstoffe - Fett
Lubricants - Grease

Spezialfett für schnelldrehnde Wälzlager

Fett F09 | DIN 51502 KP 2K-30 | NLGI-Klasse 2

- Lithium-Spezialseife
- Mineralöl basiert mit Additiven

Einsatz:
- Schmierung von Hochgeschwindigkeitslagern und Verzahnungen Spindel- und Gleitlager
- Förderbarkeit in Schmiersystemen: -15°C ... +80°C

Temperatureinsatzbereich -15°C bis +80°C

Special grease for highspeed roller bearings

grease F09 | DIN 51502 KP 2K-30 | NLGI-Claas 2

- special lithium complex soap
- based on mineral oil

operative range:
- sleeve and/or roller bearing; jackscrews; linear guidways
- conveying in lubrication systems: -15°C ... +80°C

temperature range: -10°C .... +180°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F09	000-109-105
cartridge for FlexxPump, pre-filled with 400 cc of grease F09	
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F09	000-109-115
grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F09	
Fett F09, 1 kg Dose	000-109-210
grease F09, 1 kg tin	
Fett F09, 400 cm³, Standardkartusche für Handpresse (DIN 1284)	000-109-220
grease F09, 400 cm³, cartridge for handpress	

Langzeitfett für Wälz- und Gleitlager

Fett F10 | NLGI-Klasse 2

- Lithiumverseiftes, teilsynthetischer Fettschmierstoff
- bester Verschleißschutz
- sehr guter Buntmetall- und Alterungsschutz
- optimales Hoch- und Tieftemperaturverhalten

Einsatz:
- Gleit- und Wälzlager; KGT-Muttern; Kugelumlaufführungswagen
- Förderbarkeit in Schmiersystemen: -20°C ... +80°C

Temperatureinsatzbereich: -40°C ... +140°C

Longterm grease for bearings

grease F10 | NLGI-Claas 2

- lithium soap
- excellent wear protection
- good protection for deterioration/weathering
- best performance for high- and low-temperature applications

operative range:
- sleeve and/or roller bearing; jackscrews; linear guidways
- conveying in lubrication systems: -10°C ... +80°C

temperature range: -10°C .... +140°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F10	000-110-105
cartridge for FlexxPump, pre-filled with 400 cc of grease F10	
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F10	000-110-115
grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F10	
Fett F010, 1 kg Dose	000-110-210
grease F10, 1 kg tin	

6.1 Schmierstoffe - Fett
Lubricants - Grease

Spezialfett für Wälzlager bei hohen Wechsellasten

Fett F11 | DIN 51825 KP 1 K-20 | NLGI-Klasse 1

- Lithium-Spezialseife
- teilsynthetisches Hochgeschwindigkeitsfett
- HD-Zusätze und Notlaufeigenschaften
- sehr gute Förderbarkeit in Schmiersystemen

Einsatz:
- Schmierung von Wältlagern, Kugelumlaufführungen, Spindeln und KGT
- Förderbarkeit in Schmiersystemen: -20°C ... +80°C

Temperatureinsatzbereich -20°C bis +120°C

Special grease for highspeed bearings

grease F11 | DIN 51825 KP 1 K-20 | NLGI-Claas 1

- special lithium soap
- excellent wear protection
- good emergency running properties
- best performance in lubrication systems

operative range:
- sleeve and/or roller bearing; jackscrews; linear guidways
- conveying in lubrication systems: -20°C ... +80°C

temperature range: -20°C .... +120°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Fett F11	000-111-105
cartridge for FlexxPump, pre-filled with 400 cc of grease F11	
Fett-Faltenbalg für FlexxPump 1500; befüllt mit 1500 cm³ Fett F11	000-111-115
grease-bellow for FlexxPump 1500; pre-filled with 1500 cc of grease F11	
Fett F11, 1 kg Dose	000-111-210
grease F11, 1 kg tin	
Fett F11, 400 cm³, Standardkartusche für Handpresse (DIN 1284)	000-111-220
grease F11, 400 cm³, cartridge for handpress	

Weitere Gebinde mit Schmierstoff auf Anfrage.
Other hoops with lubricant on demand.



6.2 Schmierstoffe - Oel
Lubricants - Oil

Kriechfähiges Oel für Ketten — **capable of creep oil for chains**

Oel OE1

- hochviskoser, sehr kriechfähiger Haftschmierstoff
- synthetisches Weißoel
- druck- und haftfester Schmierstoff mit EP- und Grenzschmiereigenschaften

Einsatz:
- Schmierung von Ketten und Gleitlagerbuchsen
- Förderbarkeit in Schmiersystemen: +5°C ... +65°C

Temperatureinsatzbereich: -10°C bis +80°C

oil OE1

- highly visscous and very capable of creep
- synthetic white oil
- adherent with good EP and boundary lubrication capabilities

operative range:
- lubrication of chains and sleeve-bearings
- conveying in lubrication systems: +5°C ... +65°C

temperature range: -10°C .... +80°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Oel OE1	000-201-105
cartridge for FlexxPump, pre-filled with 400 cc of oil OE1	
Gebinde 5 Liter; Oel OE 1	000-201-503
5 liter; oil OE1	

Weitere Gebinde mit Schmierstoff auf Anfrage.
Other hoops with lubricant on demand.

Kettenoel mit H1-Zulassung — **oil with H1-approval**

Oel OE3

- Paraffinoelbasierter Schmierstoff
- H1-Zulassung
- sehr guter Verschleiß- und Korrosionsschutz

Einsatz:
- Schmierung von Ketten und Gleitlager
- Förderbarkeit in Schmiersystemen: -5°C ... +80°C

Temperatureinsatzbereich: -15°C ... +120°C

oil OE3

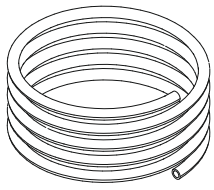
- paraffin oil
- H1 approval
- excellent protection for deterioration/weathering

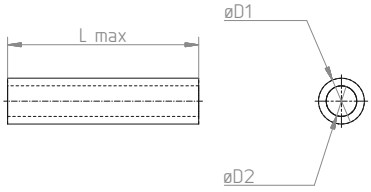
operative range:
- lubrication of chains and sleeve-bearings
- conveying in lubrication systems: +5°C ... +80°C

temperature range: -15°C .... +120°C

Beschreibung Description	Artikel-Nr. Part No.
feste Kartusche für FlexxPump 400, befüllt mit 400 cm³ Oel OE3	000-203-105
cartridge for FlexxPump, pre-filled with 400 cc of oil OE3	
Gebinde 5 Liter; Oel OE 3	000-203-503
5 liter; oil OE3	
Gebinde 20 Liter; Oel OE 3	000-203-507
20 liter; oil OE3	

6.3 Schläuche
Tubes





Ausführung:
Schlauchleitung mit Schmierstoff vorbefüllt;

Material:
PA; schwarz

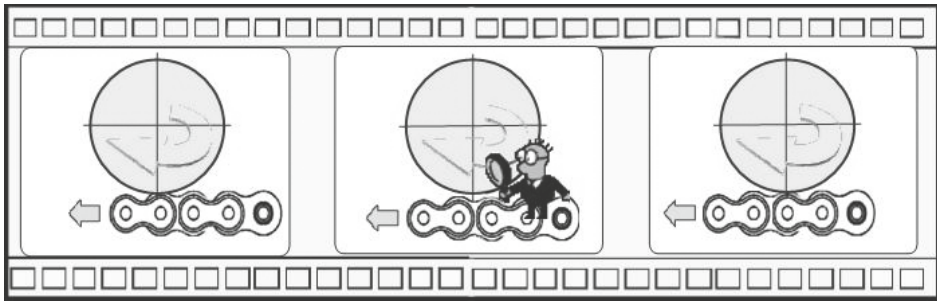
Version:
Tube; pre-filled with lubricant;

Material:
PA; black

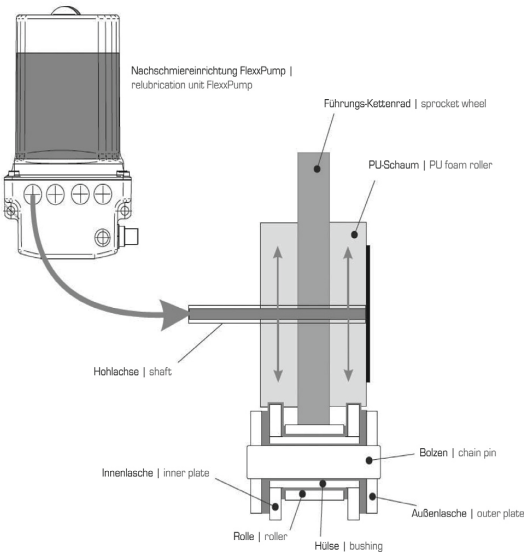
Schmierstoff Lubricant	D1	D2	L max.	Hinweise Notes	Artikel-Nr. Part-No.
F01	6	4	10000	schwarz; Meterware; L max. gibt die größte Länge einer Verpackungseinheit an | black; per meter; L max. means maximum length per unit	134-003-001
	8	5	10000		134-008-001
F02	6	4	5000		134-003-002
	8	5	5000		134-008-002
F03	4	2,5	5000		102-011-013
	6	4	10000		134-003-003
	8	5	10000		134-008-003
F04	6	4	5000		134-003-004
	8	5	5000		134-008-004
F05	6	4	5000		134-003-005
	8	5	5000		134-008-005
F06	6	4	5000		134-003-006
	8	5	5000		134-008-006
F07	6	4	10000		134-003-007
	8	5	10000		134-008-007
F08	6	4	10000		134-003-008
	8	5	10000		134-008-008
F09	6	4	10000		134-003-009
	8	5	10000		134-008-009
F10	6	4	5000		134-003-010
	8	5	10000		134-008-010
F11	6	4	10000		134-003-011
	8	5	10000		134-008-011
leer | empty	4	2,5	25000	schwarz; Meterware | black; per meter	134-004-003
	6	3	50000	transparent; nur für Oel | transparent; per meter; only oil	134-004-002
	6	4	50000	schwarz; Meterware | black; per meter	134-004-001
	6	4	50000	schwarz; 50m-Bund | black; per meter	200373791
	8	5	50000	schwarz; Meterware | black; per meter	134-004-005

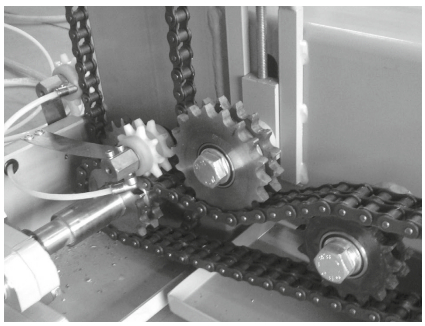
7 PU-Kettenschmierritzel
PU-Lubrication sprocklet

perfekte Schmierung von Ketten aller Arten und Größe: PU-Kettenschmierritzel

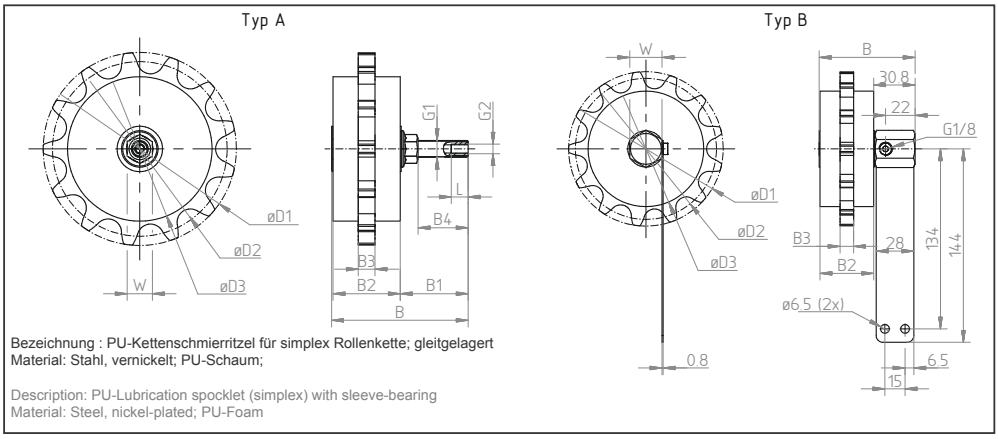


- ✓ ideale Ergänzung: FlexxPump 500 / 2000
  suitabel for use with FlexxPump 500 / 2000
- ✓ kontrollierte Minimalmengenschmierung Öl
  controlled minimal-lubircation of oil
- ✓ Kettenschmierritzel aus offenporigem PU-Schaum
  Lub-sprocket made of open-cell PU-foam
- ✓ geeignet für Öle (auch mit Feststoffanteilen)
  suitabel for oils (also solid particels)
- ✓ stets perfekte Schmierstelle durch Kapillarwirkung der PU-Schmierritzel
  perfect lube-points
- ✓ verschleißfrei und langlebig
  nonwearing and long-lasting
- ✓ momentfreies Ritzel durch integriertes Gleitlager
  integrated sleev-bearing
- ✓ sehr hohe Anlagen- und Maschinensauberkeit
  high cleanliness
- ✓ geringes Gewicht
  leigthweigth
- ✓ Standardprogramm für Simplex- und Duplex-Rollenketten
  Standard for simplex- and duplex roller chain
- ✓ Sonderanfertigungen möglich
  (alle Parameter frei wählbar)
  special designs possible





7.1 PU-Kettenschmierritzel simplex
PU-Lubrication sprocklet simplex

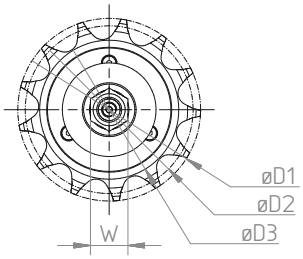


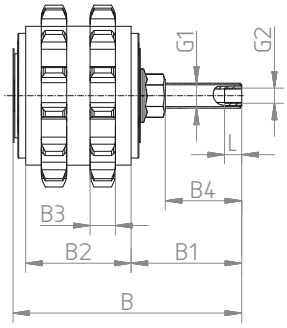
Bezeichnung : PU-Kettenschmierritzel für simplex Rollenkette; gleitgelagert
Material: Stahl, vernickelt; PU-Schaum;

Description: PU-Lubrication spocklet (simplex) with sleeve-bearing
Material: Steel, nickel-plated; PU-Foam

Typ / Type	DIN 8187	z	Ritzel / chain pinion	D1	D2	D3	W	B	B1	B2	B3	B4	G1	G2	L	Artikel-Nr. / Part-No.
A	08B-1	12	PA	53	49,1	39	15	71,2	39,8	30	6	29,8	M10	M6	10	136-201-012
		9	Stahl | steel	41	37,1	26		65,2		24	7,3					136-211-009
		13		57,4	53,1	43										136-211-013
	10B-1	10	PA	55	51,4	39	15	71,2	39,8	30	6	29,8	M10	M6	10	136-301-010
		9	Stahl | steel	52,6	46,4	33		65,2		24	9,1					136-311-009
		13		73	66,3	54										136-311-013
	12B-1	8	PA	58	49,8	39	15	71,2	39,8	30	6	29,8	M10	M6	10	136-401-008
		9	Stahl | steel	62	55,7	41					11,1					136-411-009
		13		87,5	79,6	66										136-411-013
	16B-1	8	PA	75	66,4	48	15	83,4	39,8	40	10	29,8	M10	M6	10	136-501-008
		9	Stahl | steel	85	74,3	55	24	116,3	64,9	50	16,2	48,9	M16	G1/8	10	136-511-009
		13		117	106,1	89										136-511-013
	20B-1	9	Stahl | steel	108	92,8	69	24	116,3	64,9	50	18,5	48,9	M16	G1/8	10	136-611-009
		13		147,8	132,7	110										136-611-013
	24B-1	9	Stahl | steel	126,4	111,4	81	24	136,3	64,9	70	24,1	48,9	M16	G1/8	10	136-711-009
		13		174,2	159,2	130										136-711-013
B	08B-1	12	PA	53	49,1	39	24	61,4	-	30	6	-	-	-	-	136-201-112
		9	Stahl | steel	41	37,1	26		55,4	-	24	7,3	-	-	-	-	136-211-109
		13		57,4	53,1	43			-			-	-	-	-	136-211-113
	10B-1	10	PA	55	54,4	39	24	61,4	-	30	6	-	-	-	-	136-301-110
		9	Stahl | steel	52,6	46,4	33		55,4	-	24	9,1	-	-	-	-	136-311-109
		13		73	66,3	54			-			-	-	-	-	136-311-113
	12B-1	8	PA	58	49,8	39	24	61,4	-	30	6	-	-	-	-	136-401-108
		9	Stahl | steel	62	55,7	41			-		11,1	-	-	-	-	136-411-109
		13		87,5	79,6	66			-			-	-	-	-	136-411-113
	16B-1	8	PA	75	66,4	48	24	71,4	-	40	10	-	-	-	-	136-501-108
		9	Stahl | steel	85	74,3	55		81,4	-	50	16,2	-	-	-	-	136-511-109
		13		117	106,1	89			-			-	-	-	-	136-511-113
	20B-1	9	Stahl | steel	108	92,8	69	24	81,4	-	50	18,5	-	-	-	-	136-611-109
		13		147,8	132,7	110			-			-	-	-	-	136-611-113
	24B-1	9	Stahl | steel	126,4	111,4	81	24	101,4	-	70	24,1	-	-	-	-	136-711-109
		13		174,2	159,2	130			-			-	-	-	-	136-711-113

7.2 PU-Kettenschmierritzel duplex
PU-Lubrication sprocklet duplex





Bezeichnung:
PU-Kettenschmierritzel für duplex Rollenkette; an gerader Aufnahme; gleitgelagert

Material: PA 6 / Stahl, vernickelt; PU-Schaum

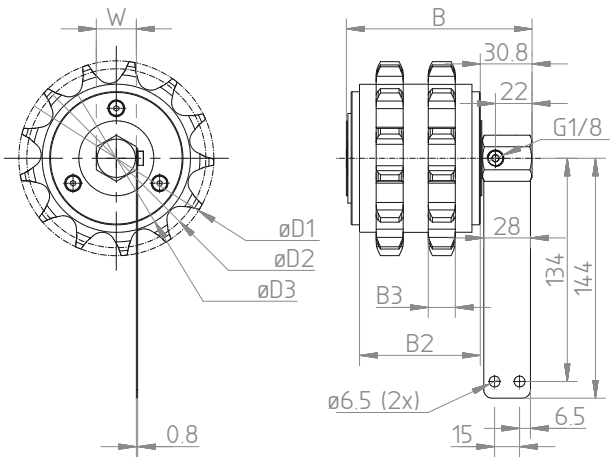
Description: PU-Lubrication spocklet duplex; mounted at straight axis; incl. sleeve-bearing

Material: PA 6 / Steel, nickel-plated; PU-Foam

DIN 8187	z	Ritzel chain pinion	D1	D2	D3	W	B	B1	B2	B3	B4	G1	G2	L	Artikel-Nr. Part-No.
08B-2	12	PA	53	49,1	39	15	81,2	39,8	40	6	29,8	M10	M6	10	136-202-012
	9	Stahl | steel	41	37,1	26					7,3					136-212-009
	13		57,4	53,1	43										136-212-013
10B-2	10	PA	55	51,4	39	15	81,2	39,8	40	6	29,8	M10	M6	10	136-302-010
	9	Stahl | steel	52,6	46,4	33		86,2	39,8	45	9,1					136-312-009
	13		73	66,3	54										136-312-013
12B-2	8	PA	58	49,8	39	15	86,2	39,8	45	6	29,8	M10	M6	10	136-402-008
	9	Stahl | steel	62	55,7	41	24	116,3	64,9	50	11,1	48,9	M16	G1/8	10	136-412-009
	13		87,5	79,6	66										136-412-013
16B-2	8	PA	75	66,4	48	15	146,3	64,9	80	10	48,9	M16	G1/8	10	136-502-008
	9	Stahl | steel	85	74,3	55	24				16,2					136-512-009
	13		117	106,1	89										136-512-013
20B-2	9	Stahl | steel	108	92,8	69	24	156,3	64,9	90	18,5	48,9	M16	G1/8	10	136-612-009
	13		147,8	132,7	110										136-612-013
24B-2	9	Stahl | steel	126,4	111,4	81	24	186,3	64,9	120	24,1	48,9	M16	G1/8	10	136-712-009
	13		174,2	159,2	130										136-712-013

Sonderanfertigungen - auch in Edelstahl - möglich; auf Anfrage.
Special design on demand.

7.2 PU-Kettenschmierritzel duplex
PU-Lubrication sprocklet duplex



Bezeichnung:
PU-Kettenschmierritzel für duplex Rollenkette; an gewinkelter Aufnahme mit Federblech montiert; gleitgelagert

Material:
PA 6 / Stahl, vernickelt; PU-Schaum

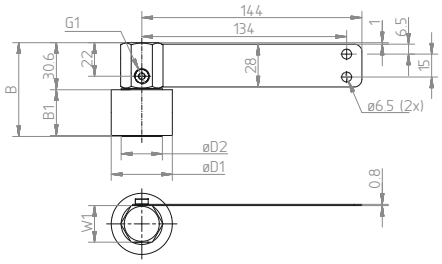
Description:
PU-Lubrication spocklet duplex; with sleeve-bearing; with radial fluid connection; mounted at spring steel sheet

Material:
PA 6 / Steel, nickel-plated; PU-Foam

DIN 8187	z	Ritzel chain pinion	D1	D2	D3	W	B	B2	B3	Artikel-Nr. Part-No.
08B-2	12	PA	53	49,1	39	24	71,4	40	6	136-202-112
	9	Stahl | steel	41	37,1	26				7,3	136-212-109
	13		57,4	53,1	43					136-212-113
10B-2	10	PA	55	51,4	39	24	76,4	45	6	136-302-110
	9	Stahl | steel	52,6	46,4	33				9,1	136-312-109
	13		73	66,3	54					136-312-113
12B-2	8	PA	58	49,8	39	24	81,4	50	6	136-402-108
	9	Stahl | steel	62	55,7	41				11,1	136-412-109
	13		87,5	79,6	66					136-412-113
16B-2	8	PA	75	66,4	48	24	111,4	80	10	136-502-108
	9	Stahl | steel	85	74,3	55				16,2	136-512-109
	13		117	106,1	89					136-512-113
20B-2	9	Stahl | steel	108	92,8	69	24	121,4	90	18,5	136-612-109
	13		147,8	132,7	110					136-612-113
24B-2	9	Stahl | steel	126,4	111,4	81	24	151,4	120	24,1	136-712-109
	13		174,2	159,2	130					136-712-113

Sonderanfertigungen - auch in Edelstahl - möglich; auf Anfrage.
Special design on demand.

8.1 PU-Schmierrolle einseitig aufgenommen
PU-Lubrication-Roll single-sided



Ausführung:
PU-Schmierrolle; gleitgelagert; mit Aufnahme für radiale (gewinkelte) Schmierstoffzuführung; an Federblech montiert

Material:
offenzelliger PU-Schaum; Stahl, vernickelt; Federblech in 1.4310

Version:
PU-Lubrication-Roll; incl. sleeve-bearing; with radial fluid connection; mounted at spring steel sheet

Material:
open cellular polyurethane foam; steel

B1	B	D1	D2	W1	G1		Artikel-Nr. / Part-No.
20	51,4	30	27	24	M10x1 10mm tief | deep		137-020-303
20	51,4	40	27	24	M10x1 10mm tief | deep		137-020-403
20	51,4	60	45	24	M10x1 10mm tief | deep		137-020-603
24	55,4	30	27	24	M10x1 10mm tief | deep		137-024-303
24	55,4	40	27	24	M10x1 10mm tief | deep		137-024-403
24	55,4	60	45	24	M10x1 10mm tief | deep		137-024-603
30	61,4	30	27	24	M10x1 10mm tief | deep		137-030-303
30	61,4	40	27	24	M10x1 10mm tief | deep		137-030-403
30	61,4	60	45	24	M10x1 10mm tief | deep		137-030-603
40	71,4	30	27	24	M10x1 10mm tief | deep		137-040-303
40	71,4	40	27	24	M10x1 10mm tief | deep		137-040-403
40	71,4	60	45	24	M10x1 10mm tief | deep		137-040-603
45	76,4	30	27	24	M10x1 10mm tief | deep		137-045-303
45	76,4	40	27	24	M10x1 10mm tief | deep		137-045-403
45	76,4	60	45	24	M10x1 10mm tief | deep		137-045-603
50	81,4	50	45	24	M10x1 10mm tief | deep		137-050-503
50	81,4	65	45	24	M10x1 10mm tief | deep		137-050-653
50	81,4	80	60	24	M10x1 10mm tief | deep		137-050-803
60	91,4	50	45	24	M10x1 10mm tief | deep		137-060-503
60	91,4	65	45	24	M10x1 10mm tief | deep		137-060-803
60	91,4	80	60	24	M10x1 10mm tief | deep		137-060-803
70	101,4	50	45	24	M10x1 10mm tief | deep		137-070-503
70	101,4	65	45	24	M10x1 10mm tief | deep		137-070-653
70	101,4	80	60	24	M10x1 10mm tief | deep		137-070-803
80	111,4	50	45	24	M10x1 10mm tief | deep		137-080-503
80	111,4	65	45	24	M10x1 10mm tief | deep		137-080-653
80	111,4	80	60	24	M10x1 10mm tief | deep		137-080-803

Hinweise:

PU-Schmierrolle mit Federblech leicht vorspannen (federnd anstellen).
Vor Erstinbetriebnahme sind die PU-Schmierrollen mit geeignetem Schmiermittel vorzufüllen.

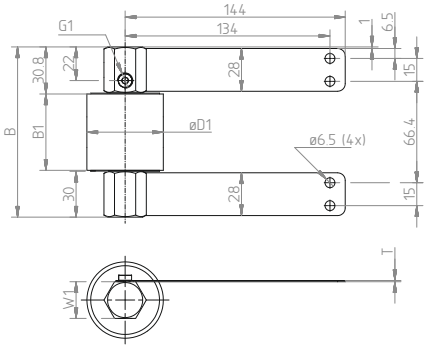
Passende Einschraubverschraubungen für Schlauchanschluß ans Schmiersystem - mit oder ohne Funktion - finden Sie ab Seite 14.

Notes:

PU-Lubrication-Roll with spring steel sheet can be pre-loaded.
nitial operation: PU-Pinions has to be pre-filled with lubricant.

Sonderanfertigungen z.B. für Fett-Schmierung oder in Edelstahl, auf Anfrage, möglich;
alle Parameter frei wählbar!
On demand: Special design all parameters disposabel!

8.2 PU-Schmierrolle doppelseitig aufgenommen
PU-Lubrication-Roll two-sided



Ausführung:
PU-Schmierrolle; gleitgelagert; mit beidseitiger Aufnahme für einseitige radiale (gewinkelte) Schmierstoffzuführung; an Federblechen montiert;

Material:
offenzelliger PU-Schaum; Stahl, vernickelt; Federblech in 1.4310

Version:
PU-Lubrication-Roller; incl. sleeve-bearing; with radial fluid connection; mounted at spring steel sheet

Material:
open cellular polyurethane foam; steel

B1	B	D1	W1	G1	T	Artikel-Nr. / Part-No.
50	111,4	50	24	M10x1 10mm tief | deep	0,8	137-050-504
50	111,4	65	24	M10x1 10mm tief | deep	0,8	137-050-654
50	111,4	80	24	M10x1 10mm tief | deep	0,8	137-050-804
60	121,4	50	24	M10x1 10mm tief | deep	0,8	137-060-504
60	121,4	65	24	M10x1 10mm tief | deep	0,8	137-060-804
60	121,4	80	24	M10x1 10mm tief | deep	0,8	137-060-804
70	131,4	50	24	M10x1 10mm tief | deep	0,8	137-070-504
70	131,4	65	24	M10x1 10mm tief | deep	0,8	137-070-654
70	131,4	80	24	M10x1 10mm tief | deep	0,8	137-070-804
80	141,4	50	24	M10x1 10mm tief | deep	0,8	137-080-504
80	141,4	65	24	M10x1 10mm tief | deep	0,8	137-080-654
80	141,4	80	24	M10x1 10mm tief | deep	0,8	137-080-804
90	151,4	50	24	M10x1 10mm tief | deep	0,8	137-090-504
90	151,4	65	24	M10x1 10mm tief | deep	0,8	137-090-654
90	151,4	80	24	M10x1 10mm tief | deep	0,8	137-090-804
100	161,4	50	24	M10x1 10mm tief | deep	0,8 / 1,6	137-100-504
100	161,4	65	24	M10x1 10mm tief | deep	0,8 / 1,6	137-100-654
100	161,4	80	24	M10x1 10mm tief | deep	0,8 / 1,6	137-100-804
110	171,4	50	24	M10x1 10mm tief | deep	0,8 / 1,6	137-110-504
110	171,4	65	24	M10x1 10mm tief | deep	0,8 / 1,6	137-110-654
110	171,4	80	24	M10x1 10mm tief | deep	0,8 / 1,6	137-110-804
120	181,4	50	24	M10x1 10mm tief | deep	0,8 / 1,6	137-120-504
120	181,4	65	24	M10x1 10mm tief | deep	0,8 / 1,6	137-120-654
120	181,4	80	24	M10x1 10mm tief | deep	0,8 / 1,6	137-120-804

Hinweise:

PU-Schmierrolle mit Federblech leicht vorspannen (federnd anstellen).
Vor Erstinbetriebnahme sind die PU-Schmierrollen mit geeignetem Schmiermittel vorzufüllen.

Passende Einschraubverschraubungen für Schlauchanschluß ans Schmiersystem - mit oder ohne Funktion - finden Sie auf Seite 14.

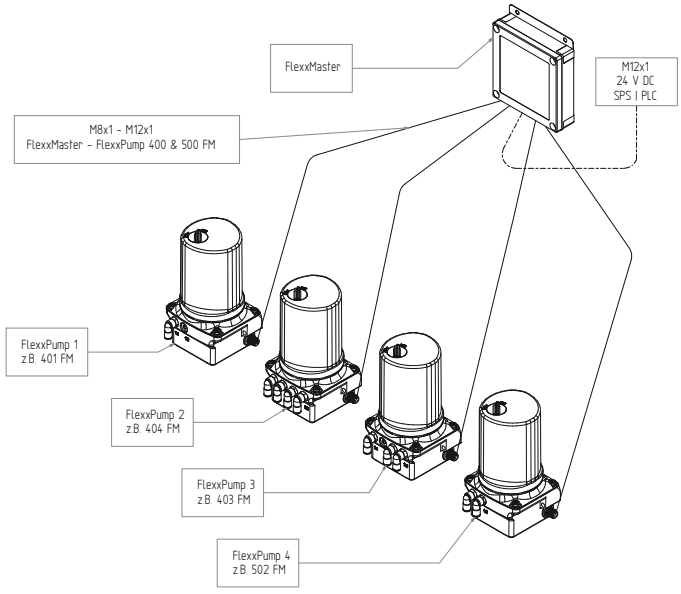
Notes:

PU-Lubrication-Roll with spring steel sheet can be pre-loaded.
nitial operation: PU-Pinions has to be pre-filled with lubricant.

Sonderanfertigungen z.B. für Fett-Schmierung - auf Anfrage - möglich; alle Parameter frei wählbar!
On demand: Special design all parameters disposabel!

9.1 FlexxPump 400 & 500 FM (FlexxMaster)

FlexxPump 400 & 500 FM (FlexxMaster)



Beschreibung:
FlexxMaster; externe Steuerungs- und Überwachsungselektronik für bis zu 4 FlexxPump 400 & 500 FM; Spannungsversorgung 24V DC mit Fehlerüberwachung durch SPS möglich; Steuerungseinheit FlexxMaster nur in Verbindung mit FlexxPump 400 & 500 FM betriebsfähig; Einstellmöglichkeiten über Nachschmiermenge und -frist für jede Pumpe / Pumpenkörper zentral an FlexxMaster; jede FlexxPump 400 & 500 FM kann individuellen Schmierstoff fördern

Description:
FlexxMaster; external controll-unit for up to 4 FlexxPump 400 & 500 FM; external power-supply 24V DC needed; FlexxMaster works only with FlexxPump 400 & 500 FM; adjustements for each FlexxPump 400 & 500 FM seperately; each FlexxPump 400 & 500 FM can provide single lubricant

Typenübersicht FlexxPump 400 & 500 FM

Types of FlexxPump 400 & 500 FM

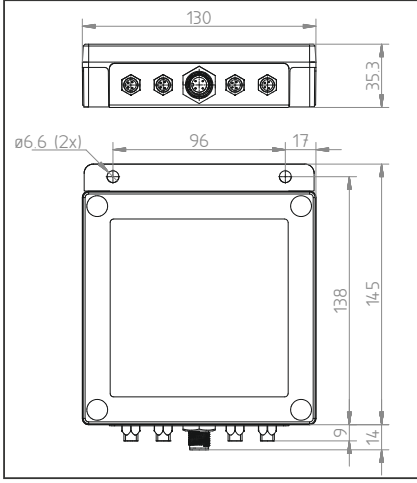
Variante	Fett / Oel	Type Flexx-Pump	Anzahl Auslässe	Anzahl Doppelpum-penkörper	Anzahl Schmier-stellen*/**	unterschiedli-che Schmier-mengen	Überwachung & Steuerung via...	**Artikel-Nr.**
Variants	grease / oil	Type Flexx-Pump	number of outlets	number of twin-pump-bodies	number of lubri-cation points*/**	combination different quantities lubricant	Controlling & monitoring by ...	**Part No.**
		FlexxMaster	-	-	-	-	-	135-000-200
FlexxMaster | FlexxMaster	Fett | grease	401 FM	1	1	max. 4	--	FlexxMaster | FlexxMaster	135-140-200
		402 FM	2	1	max. 8	--	FlexxMaster | FlexxMaster	135-240-200
		422 FM	2 (1+1)	2	max. 8	++ (1/1)	FlexxMaster | FlexxMaster	135-240-202
		403 FM	3 (1+2)	2	max. 12	++ (2/1)	FlexxMaster | FlexxMaster	135-340-200
		404 FM	4 (2+2)	2	max. 16	++ (2/2)	FlexxMaster | FlexxMaster	135-440-200
	Oel | oil	501 FM	1	1	max. 4	--	FlexxMaster | FlexxMaster	135-150-200
		502 FM	2	1	max. 8	--	FlexxMaster | FlexxMaster	135-250-200
		522 FM	2 (1+1)	2	max. 8	++ (1/1)	FlexxMaster | FlexxMaster	135-250-202
		503 FM	3 (1+2)	2	max. 12	++ (2/1)	FlexxMaster | FlexxMaster	135-350-200
		504 FM	4 (2+2)	2	max. 16	++ (2/2)	FlexxMaster | FlexxMaster	135-450-200

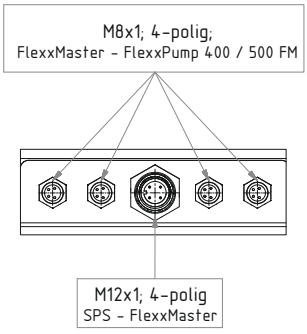
* bei der Verwendung von Mengenteilern/Splittern | by using splitters

** bei Verwendung von Progressivverteilern sind mehr Schmierstellen möglich! | more lubrication-points by using progressive-distributors.

9.1 FlexxPump 400 & 500 FM (FlexxMaster)

FlexxPump 400 & 500 FM (FlexxMaster)





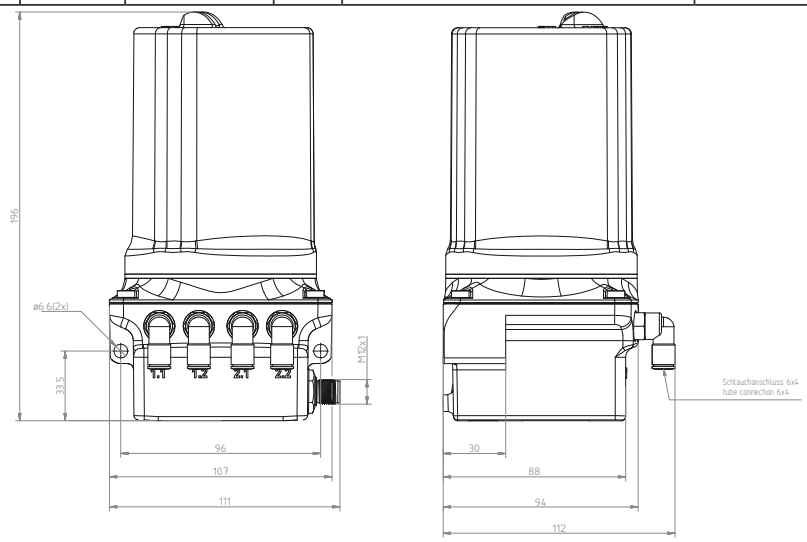
Beschreibung:
Steuer- und Überwachungseinheit FlexxMaster; Einbindung an externe Spannungsversorgung bzw. SPS über M12x1-Schnittstelle; Einbindung von FlexxPump 400 & 500 FM über M8x1 Schnittstellen; Pumpenseitig sind M12x1 Schnittstellen vorgesehen

Description:
Control unit FlexxMaster; connection to power supply / PLC by 4-pole connection with M12x1-plug; from FlexxMaster to FlexxPump 400 & 500 FM 4-pole connection M8x1 (FlexxMaster) and M12x1 (FlexxPump 400 & 500 FM)

Konfektionierte Kabel für FlexxMaster

Cabel for FlexxMaster

		Anzahl Pole number of wires	L	Anwendung Application	Artikel-Nr. Part-No.
M12x1	M8x1	4	5000	FlexxMaster - FlexxPump 400 & 500 FM	134-002-008
M12x1	M8x1		10000		134-000-105
M12x1	offen | open	4	5000	FlexxMaster - SPS | PLC	134-002-003
M12x1			10000		134-002-007
M12x1			15000		auf Anfrage | on demand
M12x1			20000		
M12x1			30000		
M12x1			50000		134-002-013



9.2 FlexxPump 400 B (Batterie)
FlexxPump 400 B (Battery)

autarker, zeitgesteuerter Nachschmiergeber für Fette

- ✓ automatischer, autarker, zeitgesteuerter Nachschmiergeber
  automatical, time-controlled relubrication unit
- ✓ einfache Programmierung / differenzierte Fehlermeldung über LCD-Display
  easy programmable by LCD-Display (incl. error-monitoring)
- ✓ kompakte Kolbenschmierpumpe (1 Pumpenkörper)
  piston-pump (1 pumpbodie)
- ✓ Fette bis NLGI Kl. 3 (auch mit Feststoffanteilen)
  greases up to NlGI 3 (also solid particels)
- ✓ 1-2 Auslässe
  1-2 outlets
- ✓ Laufzeit und Abgabemenge pro Zeiteinheit einstellbar
  running time and quantity per time-unit programmable
- ✓ Förderdruck: max. 70 bar
  pressure: max. 70 bar
- ✓ 400cm³ Schmierstoffvorrat in fester Kartusche
  400cc grease in cartridge
- ✓ geringes Gewicht und lange Lebensdauer der Batterie
  low weigth and long lifetime of battery
- ✓ ideal für die autarke Nachschmierung von:
  suitabel for autarkic relubrication of:
  + (Wälz-) Lager | (ball-) bearings
  + Linearführungen | linear blocks
  + Kugelgewindetriebe | ball screw nuts
  + Zahnstangen/offene Verzahnungen | racks & pinions
  + Kugeldrehverbinder | rotary joints
  + ...



FlexxPump 401 B: autarker, zeitgesteuerter Nachschmiergeber Fett; für 400 cm³ Kartusche; PA Gehäuse-Abdeckung (grau); ohne M12x1-Stecker; 3V Batteriebetrieb; (abgebildet: 135-140-000)

Typenübersicht FlexxPump 400 B — **Types of FlexxPump 400 B**

Variante	Fett / Oel	Type Flexx-Pump	Anzahl Auslässe	Anzahl Schmier-stellen*/**	unterschiedliche Schmiermengen	Ausführung Gehäuseabdeckung	M12x1 Stecker	IP-Klasse	**Artikel-Nr.**
Variants	grease / oil	Type Flexx-Pump	number of outlets	number of lubri-cation points*/**	combination dif-ferent quantities lubricant	model housingcover	M12x1 plug	IP degree of protection of enclosure	**Part No.**
Batterie | Battery zeitgesteuert | time-controlled	Fett | Grease	401 B	1	max. 4	1	grau | grey	-	54	135-140-000
		401 B	1	max. 4	1	Metall | metal	-	67	135-140-001
		401 B	1	max. 4	1	grau | grey	+	54	135-140-010
		401 B	1	max. 4	1	Metall | metal	+	67	135-140-011
		402 B	2	max. 8	1	grau | grey	-	54	135-240-000
		402 B	2	max. 8	1	Metall | metal	-	67	135-240-001
		402 B	2	max. 8	1	grau | grey	+	54	135-240-010
		402 B	2	max. 8	1	Metall | metal	+	67	135-240-011

Hinweise | marks: - Gewicht und Abmessungen: siehe Seite 4 | Weigth and dimensions: see page 4
- Für den Betrieb von FlexxPump 401 B / 402 B wird die Batterie 134-002-004 benötigt! | For use of FlexxPump 401 B / 402 B battery 134-002-004 is needed!
- Kabel mit roter LED 134-002-016 (5m Länge) oder 134-002-017 (10m Länge) als optionales Zubehör für FlexxPump 401 B / 402 B mit M12x1-Stecker erhältlich. | Cable with red LED 134-002-016 (5m length) od 134-002-017 (10m length) as optional accessory for FlexxPump 401 B / 402 B with M12x1-plug disposable.

* bei der Verwendung von Mengenteilern/Splittern | by using splitters

** bei Verwendung von Progressivverteilern sind mehr Schmierstellen möglich! | more lubrication-points by using progressive-distributors.

9.3 FlexxPump 400 & 500

FlexxPump 400 & 500

zeitgesteuerter 24V Nachschmiergeber für Fette und Öle

- ✓ automatischer, zeitgesteuerter Nachschmiergeber
  automatical, time-controlled relubrication unit
- ✓ einfache Programmierung / differenzierte Fehlermeldung über LCD-Display
  easy programmable by LCD-Display (incl. error-monitoring)
- ✓ kompakte Kolbenschmierpumpe (1 Pumpenkörper)
  piston-pump (1 pumpbodie)
- ✓ Fette und Oele bis NLGI Kl. 3 (auch mit Feststoffanteilen)
  greases and oils up to NIGI 3 (also solid particels)
- ✓ 1-2 Auslässe
  1-2 outlets
- ✓ Laufzeit und Abgabemenge pro Zeiteinheit einstellbar
  running time and quantity per time-unit programmable
- ✓ Förderdruck: max. 70 bar
  pressure: max. 70 bar
- ✓ 400cm³ Schmierstoffvorrat in fester Kartusche (500ml Öl)
  400cc grease in cartridge or 500ml oil
- ✓ geringes Gewicht und geringe Stromaufnahme
  low weigth and low current-cumsumption
- ✓ ideal für die Nachschmierung von:
  suitabel for relubrication of:
  - + (Wälz-) Lager | (ball-) bearings
  - + Linearführungen | linear blocks
  - + Kugelgewindetriebe | ball screw nuts
  - + Zahnstangen/offene Verzahnungen | racks & pinions
  - + Kugeldrehverbinder | rotary joints
  - + ...



FlexxPump 401 zeitgesteuerter 24V DC Nachschmiergeber Fett; für 400 cm³ Kartusche; Metall Gehäuse-Abdeckung; (abgebildet: 135-140-101)

Typenübersicht FlexxPump 400 & 500

Types of FlexxPump 400 & 500

Variante	Fett / Oel	Type Flexx-Pump	Anzahl Auslässe	Anzahl Schmier-stellen*/**	unterschiedliche Schmiermengen	Ausführung Gehäuseabdeckung	M12x1 Stecker	IP-Klasse	**Artikel-Nr.**
Variants	grease / Oil	Type Flexx-Pump	number of outlets	number of lubri-cation points*/**	combination dif-ferent quantities lubricant	model housingcover	M12x1 plug	IP degree of protection of enclosure	**Part No.**
24V DC | zeitgesteuert | 24V DC | time-controlled	Fett | Grease	401	1	max. 4	1	PA grau | PA grey	+	54	135-140-100
		401	1	max. 4	1	Metall | metal	+	67	135-140-101
		402	2	max. 8	1	PA grau | PA grey	+	54	135-240-100
		402	2	max. 8	1	Metall | metal	+	67	135-240-101
	Oel | Oil	501	1	max. 4	1	PA grau | PA grey	+	54	135-150-100
		501	1	max. 4	1	Metall | metal	+	67	135-150-101
		502	2	max. 8	1	PA grau | PA grey	+	54	135-250-100
		502	2	max. 8	1	Metall | metal	+	67	135-250-101

Hinweise | marks: - Gewicht und Abmessungen: siehe Seite 4 | Weigth and dimensions: see page 4
- Zeitgesteuerte 24V Nachschmiergeber FlexxPump 400 / 500 können vom Anwender selbst einfach programmiert und eingestellt werden. | Time-controlled 24V FlexxPump 400 / 500 is easy to programm by user.

* bei der Verwendung von Mengenteilern/Splittern | by using splitters

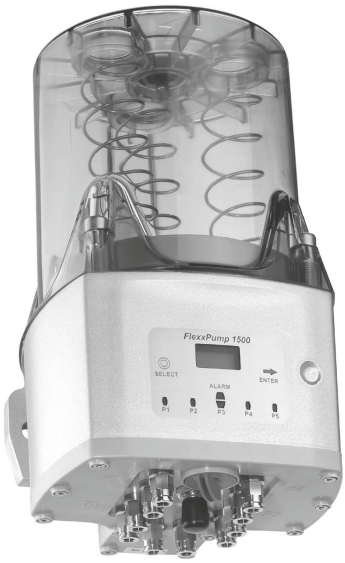
** bei Verwendung von Progressivverteilern sind mehr Schmierstellen möglich! | more lubrication-points by using progressive-distributors.

9.4 FlexxPump 1500 & 2000

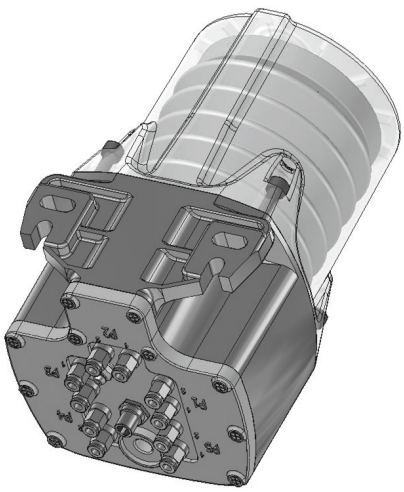
FlexxPump 1500 & 2000

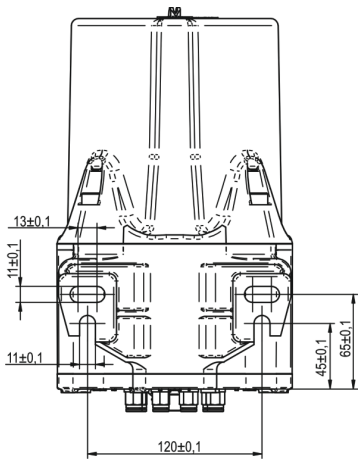
kontrollierte Minimalmengenschmierung für Fett oder Oel

- ✓ zeit- oder impulsgesteuerter Nachschmiergeber
  time-controlled or puls-driven relubrication unit
- ✓ direkte Steuerung / differenzierte Fehlermeldung über SPS
  direct controlled by PLC (incl. error-monitoring)
- ✓ kompakte Kolbenschmierpumpe (1-5 Pumpenkörper)
  piston-pump (1-5 pumpbodies)
- ✓ Fette bis NLGI Kl. 2 (auch mit Feststoffanteilen)
  greases up to NIGI 2 (also solid particels)
- ✓ 2-10 Auslässe
  2-10 outlets
- ✓ unterschiedliche Schmiermengen und/oder -zeitpunkte
  different times and/or quantities of lubricant
- ✓ Förderdruck: max. 70 bar
  pressure: max. 70 bar
- ✓ 1500cm³ Schmierstoffvorrat im Faltenbalg
  1500cc grease in bellow/pouch
- ✓ geringes Gewicht und minimale Stromaufnahme
  low weigth and minimal current consumption
- ✓ ideal für die kombinierte Nachschmierung von:
  suitabel for combinend relubrication of:
  + (Wälz-) Lager | (ball-) bearings
  + Linearführungen | linear blocks
  + Kugelgewindetriebe | ball screw nuts
  + Zahnstangen/offene Verzahnungen | racks & pinions
  + Kugeldrehverbinder | rotary joints
  + ...



FlexxPump 1500: automatischer Nachschmiergeber; für 1500 cm³ Fett-Faltenbalg; 24 VDC (abgebildet: Typ 1510)





9.4 FlexxPump 1500 & 2000

FlexxPump 1500 & 2000

Technische Daten | **Technical data**

Abmessungen | dimensions		162 x 255 x 165 [mm] B x H x T | W x H x D
Gewicht (ohne Schmierstoff) | weight (without lubricant)		ca. 4000 g
Funktionsweise | function/principle		Kolbenpumpe | piston pump
Schmierstoffvolumen | volume of lubricant	Fett | grease	1500 cm³ (in bellow | 1500 cc in bellow)
	Öl | oil	2000 ml
Dosiervolumen pro Hub/Impuls | delivered volume per stroke/pulse	2 Auslässe | outlets	0,15 cm³ - Typen: 1502/2002 | types: 1502/2002
	4 Auslässe | outlets	0,15 cm³ - Typen: 1504/2004 | types: 1504/2004
	6 Auslässe | outlets	0,15 cm³ - Typen: 1506/2006 | types: 1506/2006
	8 Auslässe | outlets	0,15 cm³ - Typen: 1508/2008 | types: 1508/2008
	10 Auslässe | outlets	0,15 cm³ - Typen: 1510/2010 | types: 1510/2010
Anzahl der Pumpenhübe / Faltenbalg 1500 cm³ | number of pump hubs / bellow 1500 cm³		~ 10000
Betriebsdruck | operation pressure		max. 70 bar
Schmiermedium | lubricant	Öl oder Fett	bis NLGI 2, mit Feststoffanteilen möglich | oil or grease up to NLGI 2, with solid parts possible
Betriebstemperatur | operating temperature		-20°C…+70°C
Auslasszahl | number of outlets		max. 10 gerade | straigth
Anzahl Schmierstellen | number of lubrication points		max. 40 */**
Verbindung | Lube-connection		PA-Schlauch, T=6x4 | PA-tube, t=6x4
Betriebsspannung | operating voltage		24V DC (über Kabel | via cable)
Anschlußstecker | connecting plug		M12 x 1, 4-polig | M12 x 1, 4-pin
Stromaufnahme bei 24V DC | current consumption at 24V DC		$I_{max} \leq 350$ mA
Einbaulage | installation position	Fett | grease	beliebig | any
	Öl | oil	senkrecht | upright
Steuerung | control	integriert | integrated	mikroelektronisch | microelectronic
	intern / extern | internal / external	intern: Zeitsteuerung; extern: SPS | internal: time-controlled; external: PLC
Drucküberwachung | pressure monitoring		integriert, elektronisch | integrated, electronic
Füllstandsüberwachung | fill level monitoring		integriert, Reedkontakt | integrated, reed contact
Fehlermeldung | error-signal	SPS | PLC	differenziert: Leerstand/Gegendruck/interner Fehler | sophisticated: bellow empty/backpressure/internal error
	optisch | optical	LCD-Display | LCD-display
Schutzklasse | IP class		IP 54
Material Gehäuse | material housing		Aluminium, Polyamid | aluminium, polyamide

Typenübersicht FlexxPump 1500 & 2000 | **Types of FlexxPump 1500 & 2000**

Variante	Fett / Öl	Type Flexx-Pump	Anzahl Auslässe	Anzahl Doppelpumpenkörper	Anzahl Schmierstellen*/**	unterschiedliche Schmiermengen	Überwachung via...	Steuerung via ...	**Artikel-Nr.**
Variants	grease / oil	Type Flexx-Pump	number of outlets	number of twin-pump-bodies	number of lubrication points*/**	combination different quantities lubricant	Monitoring by ...	Controlled by ...	**Part No.**
impulsgesteuert | pulse-controlled zeitgesteuert | time-controlles	Fett | Grease	1502	2	1	max. 8	1	SPS | PLC	SPS | PLC	540-202-100
		1504	4	2	max. 16	2	SPS | PLC	SPS | PLC	540-404-200
		1506	6	3	max. 24	3	SPS | PLC	SPS | PLC	540-606-300
		1508	8	4	max. 32	4	SPS | PLC	SPS | PLC	540-808-400
		1510	10	5	max. 40	5	SPS | PLC	SPS | PLC	541-010-500
	Öl | Oil	2002	2	1	max. 8	1	SPS | PLC	SPS | PLC	550-202-100
		2004	4	2	max. 16	2	SPS | PLC	SPS | PLC	550-404-200
		2006	6	3	max. 24	3	SPS | PLC	SPS | PLC	550-606-300
		2008	8	4	max. 32	4	SPS | PLC	SPS | PLC	550-808-400
		2010	10	5	max. 40	5	SPS | PLC	SPS | PLC	501-010-500

Zusammenfassen von Auslässen mit Y-Schlauchverbinder 134-002-000 möglich! | Merging outlets with Y-tube-connector 134-002-000!

* bei der Verwendung von Mengenteilern/Splittern | by using splitters

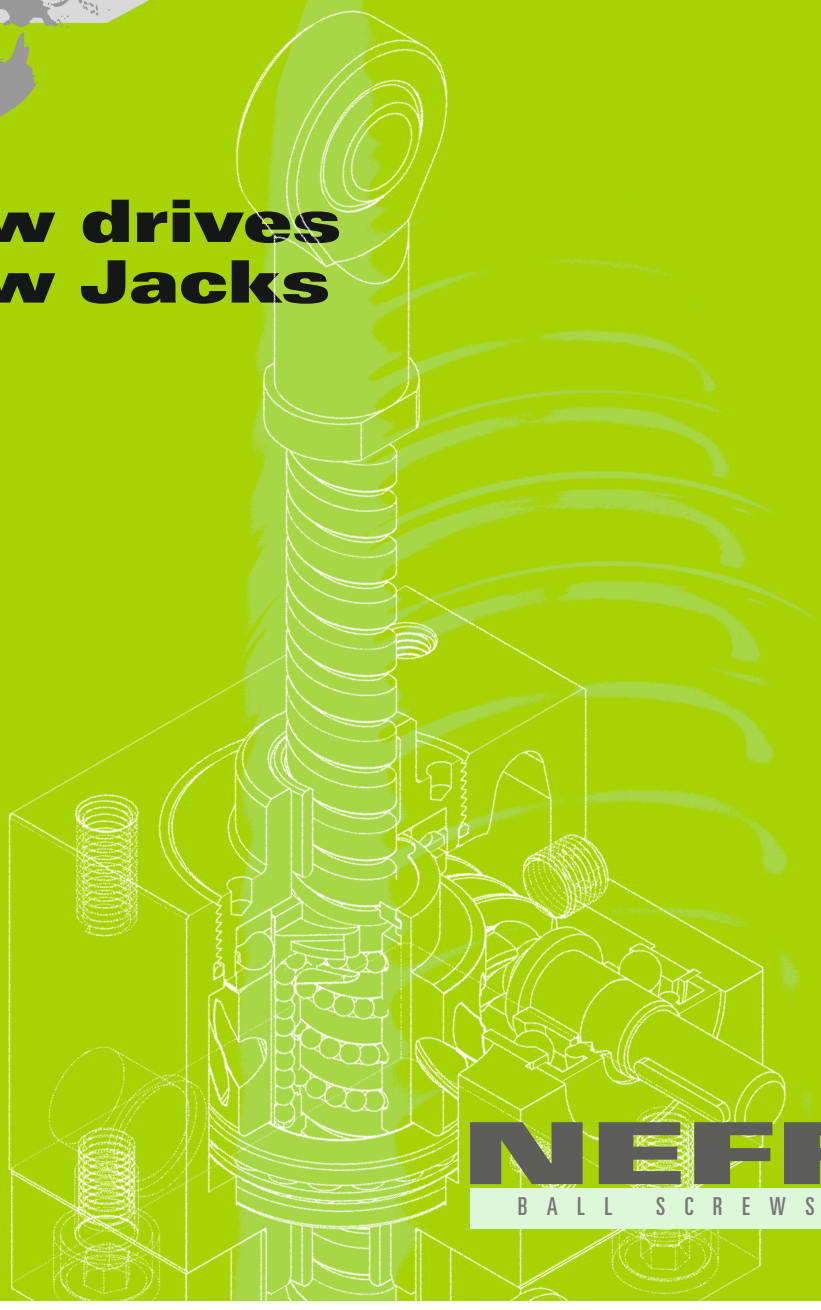
** bei Verwendung von Progressivverteilern sind mehr Schmierstellen möglich! | more lubrication-points by using progressive-distributors.

NOTES:



Lifting And Screw Jack Systems

Screw drives
Screw Jacks



NEFF
BALL SCREWS

Overview
NEFF Screw Jacks

Worm Gear Screw Jacks

The range encompasses 11 sizes with lifting forces from 2.5 to 500 kN, with fixed and rotating spindles.

- Some sizes are available as standard with lifetime lubrication
- Significantly improved efficiency through optimisation of tolerances and surface quality
- Limited absorption of lateral forces through the use of the NEFF glide screw
- Optionally also available with ball screw or trapezoidal screw drive
- Mountable in any position thanks the cubic design

High-speed screw jacks

NEFF high-speed screw jacks supplement the existing screw jack range in the medium load range for high stroke speed and higher duty cycle.

- 3 sizes
- Gearboxes with ratios of 1:1, 2:1 and 3:1 available
- Hardened, polished and spiral-toothed bevel gearboxes
- Mountable in any position thanks to the cubic design
- Available with up to 4 output shafts (except transmission ratio 1:1)

Screw jack accessories

The NEFF screw jack accessory range offers an extensive selection of accessories for all common accessory parts of a screw jack, from precise pivot bearings to the appropriate grease dispenser.

If desired we also manufacture tailor-made solutions in our modern machine pool.

- Bevel gearboxes
- Fastening strips BL-L
- Pivot adaptors KA
- Pivot bearing flange
- Pivot bearing pedestal
- Mounting plate BP
- Limit switch
- Fork end GK
- Spherical bearing GA
- High-performance rod end HG
- Spiral spring cover SF
- Bellows FB
- Three-phase motors M
- Motor adaptor flanges MG
- Shaft coupling GS
- Shaft coupling RA, RG
- Universal joint shaft ZR
- Universal joint shaft GX
- Pedestal bearing SN
- Grease cartridges
- Lubricant dispensers
- Adaptor brackets KON
- Pivot adaptors KAR
- Bellows FB
- Spiral spring covers SF
- Lubricant dispensers
- Grease cartridges



Worm Gear Screw Jacks M/J

The range includes a total of 11 worm gear screw jack models in two series: M 0 – M 5 with lifting capacities from 2.5 kN to 100 kN and J 1 – J 5 with static lifting capacities from 150 kN to 500 kN.

Stroke speed
Transmission Ratio H (high speed)
Worm gear screw jacks with trapezoidal-threaded spindle produce a stroke of 1 mm for each full revolution of the worm shaft. Accordingly the linear speed is 1500 mm per min at 1500 rpm. Worm gear screw jacks with a ball screw achieve 6000 mm/min, depending on size and pitch.

Transmission Ratio L (low speed)
Worm gear screw jacks with trapezoidal-threaded spindle produce a stroke of 0.25 mm for each full revolution of the worm shaft. Accordingly the linear speed is 375 mm per min at 1500 rpm.

Please note that higher speeds of travel can be achieved by using spindles with larger thread pitches or multi-start threads.

The worm gear screw jack's maximum drive speed of 3000 rpm must not be exceeded.
The higher efficiency of the ball screw drive also permits a longer duty cycle.

Tolerances and backlash
- The gearbox housings are machined on the six mounting sides. The tolerances conform to DIN ISO 2768-mH
- The axial backlash of the jack screw under alternating load is as follows:
  – Trapezoidal-threaded spindles: up to 0.4 mm (to DIN 103)
  – Ball screws: 0.07 mm
- The lateral backlash between the outside diameter of the spindle and the guide diameter is 0.2 mm.
- The backlash in the worm gears is ± 4° for transmission ratio L and ± 1° for transmission ratio H based on the drive shaft.
- Trapezoidal-threaded spindles are manufactured to a straightness of 0.3 – 1.5 mm/m, ball screws to a straightness of 0.02 mm/m over a length of 1000 mm and to the following pitch accuracies:
  M 0 – M 5: 0.05 mm/300 mm length
  J 1 – J 5: 0.2 mm/300 mm length.

Lateral forces on the screw jack.
Lateral forces can also be absorbed by our screw jacks.
Please contact us.

Self-locking
The self-locking function depends on a variety of parameters:
- High pitches
- Different worm gear transmission ratios
- Lubrication
- Friction parameters
- Environmental influences, such as high or low temperatures, vibrations, etc.
- The mounting position

Versions with ball screw and TGS/KGS with high pitches are therefore not self-locking. Suitable brakes or braking motors must therefore be used in such cases. Self-locking is only conditionally available for smaller pitches (single-start). Self-locking in individual cases on enquiry

Version N
The lifting spindle is driven by a nut thread in the worm gear via the worm shaft. Protection against twisting is achieved by the on-site fastening of the spindle.

Version VK
The lifting spindle is driven by a nut thread in the worm gear via the worm shaft. Protection against twisting is achieved by a square protective tube on the gear side.

Version VP
The lifting spindle is driven by a nut thread in the worm gear via the worm shaft. Protection against twisting is achieved by a feather key in the bearing cover of the gearbox and a milled groove in the spindle.

Version R
The lifting spindle is made to rotate by the worm shaft via the worm gear with a feather key connection to the spindle.
The rotary motion of the spindle is converted into a linear motion by the on-site anti-twist securing of the travelling nut.

Anti-unscrewing device A
The anti-unscrewing device prevents the spindle from screwing out of the gearbox. It is standard equipment in the ball screw versions N and V and is available as an option in worm gear screw jacks with trapezoidal-threaded spindles.
The anti-unscrewing device cannot be used as a fixed stop.

Special versions
In addition to the extensive standard range, NEFF can also supply anticlockwise, multi-start and special material worm gear screw jacks on enquiry.

General technical data

NEFF

Trapezoidal-thread spindle

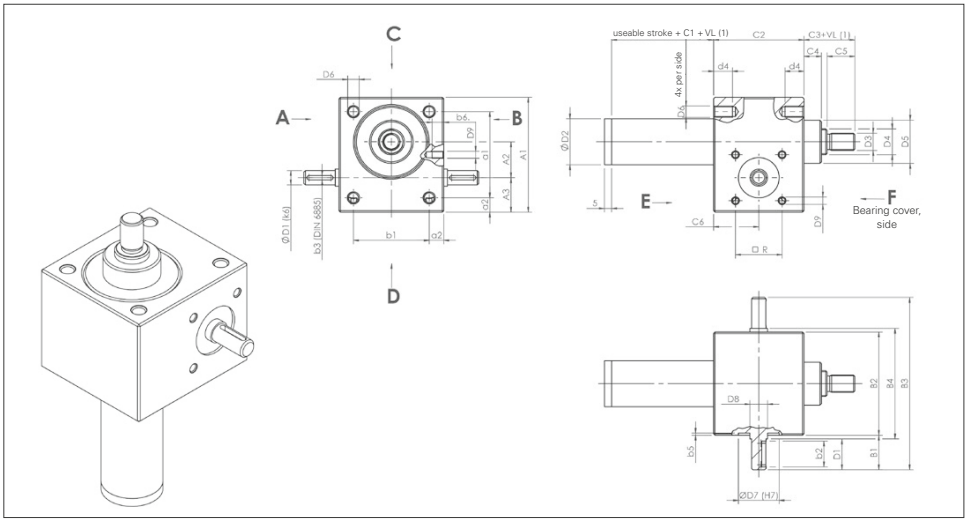
		M 0	M 1	M 2	M 3	M 4	M 5	J 1	J 2	J 3	J 4	J 5
Maximum lifting force [kN][1]		2.5	5	10	25	50	100	150	200	250	350	500
Diameter and pitch [mm]		14 x 4	18 x 4	20 x 4	30 x 6	40 x 7	55 x 9	60 x 9	70 x 10	80 x 10	100 x 10	120 x 14
Stroke per revolution of the drive shaft [mm]	Transmission ratio. H[2]	1	1	1	1	1	1	1	1	1	1	1
	Transmission ratio. L[2]	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Transmission ratio.	Transmission ratio. H[2]	4:1	4:1	4:1	6:1	7:1	9:1	9:1	10:1	10:1	10:1	14:1
	Transmission ratio. L[2]	16:1	16:1	16:1	24:1	28:1	36:1	36:1	40:1	40:1	40:1	56:1
Efficiency [%][3]	Transmission ratio. H[2]	35	31	29	29	26	24	23	22	20	19	19
	Transmission ratio. L[2]	27	25	23	23	21	19	18	17	15	15	15
Weight [kg] (without stroke)		0.6	1.2	2.1	6	17	32	41	57	57	85	160
Weight [kg per 100 mm stroke]		0.1	0.26	0.42	1.14	1.67	3.04	3.1	4.45	6.13	7.9	11.5
Idling torque [Nm]	H	0.02	0.04	0.11	0.15	0.35	0.84	0.88	1.28	1.32	1.62	1.98
	L	0.016	0.03	0.10	0.12	0.25	0.51	0.57	0.92	0.97	1.10	1.42
Housing material		G – AL up to M3				GGG – 40						

Ball screw spindle

		M 0	M 1	M 2	M 3	M 4		M 5	J 3
Maximum lifting force [kN][1]		2	5	10	12.5	22	42	65	78
Diameter and pitch [mm]		1205	1605	2005	2505	4005	4010	5010	8010
Stroke per revolution of the drive shaft [mm]	Transmission ratio. H[2]	1.25	1.25	1.25	0.83	0.71	1.43	1.1	1
	Transmission ratio. L[2]	0.31	0.31	0.31	0.21	0.18	0.36	0.28	0.25
Transmission ratio.	Transmission ratio. H[2]	4:1	4:1	4:1	6:1	7:1		9:1	10:1
	Transmission ratio. L[2]	16:1	16:1	16:1	24:1	28:1		36:1	40:1
Efficiency [%][3]	Transmission ratio. H[2]	60	57	56	55	53	56	47	45
	Transmission ratio. L[2]	48	46	44	43	43	45	37	34
Weight [kg] (without stroke)		0.6	1.3	2.3	7	19		35	63
Weight [kg per 100 mm stroke]		0.09	0.26	0.42	1.14	1.67		3.04	6.13
Idling torque [Nm]	H	0.02	0.04	0.11	0.15	0.35		0.84	1.32
	L	0.016	0.03	0.10	0.12	0.25		0.51	0.97
Housing material		G – AL up to M3				GGG – 40			

[1] Dependent on stroke speed, duty cycle, etc.
[2] H =high travel speed,
L = low travel speed
[3] The specified efficiency values are average values

Dimensions, version N



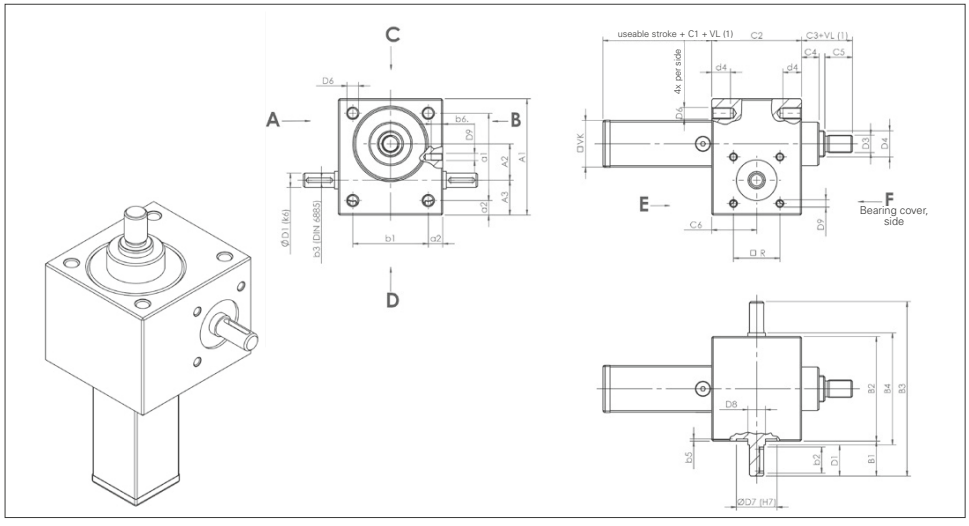
Size	Dimensions [mm]																
	A_1	A_2	A_3	a_1	a_2	B_1	B_2	B_3	B_4	b_1	b_2	b_3	b_5	C_1TR[2]	C_1KGT/AS[3]	C_2	C_3
M 0	60	20	18	48	6	21	50	92	52	38	14	3	1.5	20	50	50	27
M 1	80	25	24	60	10	24	72	120	77	52	18	3	1.5	20	50	62	35
M 2	100	32	28	78	11	27.5	85	140	90	63	20	5	1.5	30	60	75	45
M 3	130	45	31	106	12	45	105	195	110	81	36	5	2	35	70	82	50
M 4	180	63	39	150	15	47.5	145	240	150	115	36	6	2	40	90	117	65
M 5	200	71	46	166	17	67.5	165	300	170	131	56	8	2.5	55	100	160	95
J 1	210	71	49	170	20	65	195	325	200	155	56	8	8	55	100	175	95
J 2	240	80	60	190	25	67.5	220	355	225	170	56	8	8	60	110	165	110
J 3 (M6)	240	80	60	190	25	67.5	220	355	225	170	56	8	8	60	110	165	110
J 4 (M7)	290	100	65	230	30	65	250	380	255	190	56	10	8	65	150	220	140
J 5 (M8)	360	135	75	290	35	100	300	500	305	230	90	14	8	100	145	266	200

Size	Dimensions [mm]													
	C_4	C_5	C_6	D_{1k6}	D_2	D_3	d_4	D_4Tr	D_4KGT	D_5	D_6	D_7^{H7}	D_8	$D_9 \times b_6$	TK ❑ R
M 0	12	12	25	9 x 20	28	M8	12	Tr14 x 4	1205	26	M6	22	10	(M5 x 6)*	24
M 1	12	19	31	10 x 21.5	32	M12	13	Tr18 x 4	1605	30	M8	32	12	M5 x 6	32
M 2	18	20	37.5	14 x 25	40	M14	15	Tr20 x 4	2005	38.7	M8	35	15	M6 x 10	35
M 3	23	22	41	16 x 42.5	50	M20	15	Tr30 x 6	2505	46	M10	40	17	M8 x 10	44
M 4	32	29	58.5	20 x 45	65	M30	16	Tr40 x 7	4005/4010	60	M12	52	25	M10 x 14	55
M 5	40	48	80	25 x 65	90	M36	30	Tr55 x 9	5010	85	M20	62	28	M12 x 16	70
J 1	40	48	87.5	25 x 62.5	95	M48 x 2	40	Tr60 x 9	–	90	M24	72	28	M12 x 16	70
J 2	40	58	82.5	30 x 65	110	M56 x 2	45	Tr70 x 10	–	105	M30	80	32	M12 x 18	(80)
J 3 (M6)	40	58	82.5	30 x 65	125	M64 x 3	45	Tr80 x 10	8010	120	M30	80	32	M12 x 18	(80)
J 4 (M7)	50	78	110	35 x 62.5	150	M72 x 3	54	Tr100 x 10	–	145	M36	85	40	M16 x 30	(80)
J 5 (M8)	60	118	133	48 x 97.5	180	M100 x 3	80	Tr120 x 14	–	170	M42	90	50	M16 x 40	(115)

* Tapped bore for motor adaptor flange on attachment side A and B standard only centralised. Tapped bore on enquiry.
Note: subject to technical changes.

(1) VL: Spindle extension
(2) Mass C1 for screw jacks with trapezoidal screw drive
(3) Mass C1 for screw jacks with ball screw drive or securing against hollowing

Dimensions, version VK



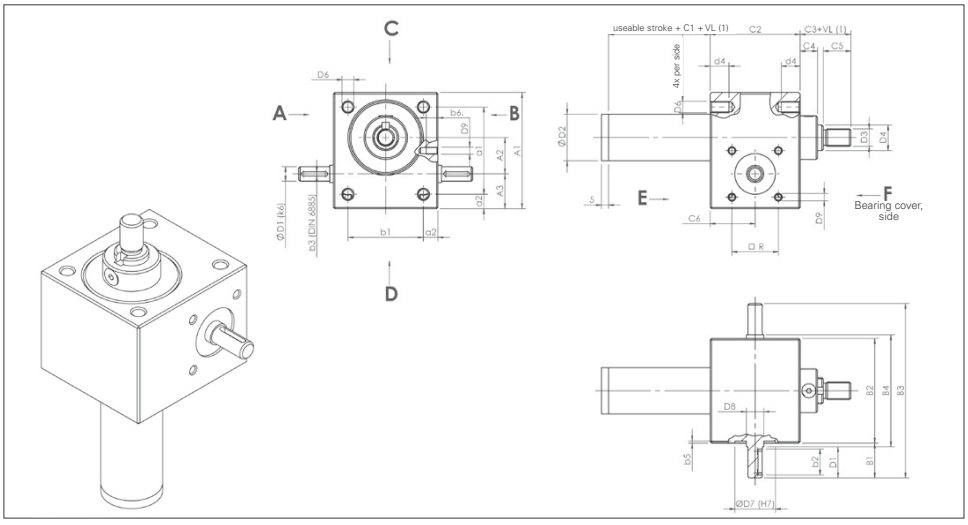
Size	Dimensions [mm]																
	A_1	A_2	A_3	a_1	a_2	B_1	B_2	B_3	B_4	b_1	b_2	b_3	b_5	$C_1TR^{(2)}$	$C_1KGT/AS^{(3)}$	C_2	C_3
M 0	60	20	18	48	6	21	50	92	52	38	14	3	1.5	20	50	50	27
M 1	80	25	24	60	10	24	72	120	77	52	18	3	1.5	20	50	62	35
M 2	100	32	28	78	11	27.5	85	140	90	63	20	5	1.5	30	60	75	45
M 3	130	45	31	106	12	45	105	195	110	81	36	5	2	35	70	82	50
M 4	180	63	39	150	15	47.5	145	240	150	115	36	6	2	40	90	117	65
M 5	200	71	46	166	17	67.5	165	300	170	131	56	8	2.5	55	100	160	95
J 1	210	71	49	170	20	65	195	325	200	155	56	8	8	55	100	175	95
J 2	240	80	60	190	25	67.5	220	355	225	170	56	8	8	60	110	165	110
J 3 (M6)	240	80	60	190	25	67.5	220	355	225	170	56	8	8	60	110	165	110
J 4 (M7)	290	100	65	230	30	65	250	380	255	190	56	10	8	65	150	220	140
J 5 (M8)	360	135	75	290	35	100	300	500	305	230	90	14	8	100	145	266	200

Size	Dimensions [mm]													
	C_4	C_5	C_6	D_{1k6}	D_3	d_4	D_4Tr	D_4KGT	D_5	D_6	D_7^{H7}	D_8	$D_9 \times b_6$	TK ❑ R	V-KGT
M 0	12	12	25	9 x 20	M8	12	Tr14 x 4	1205	26	M6	22	10	(M5 x 6)*	24	30 x 30
M 1	12	19	31	10 x 21.5	M12	13	Tr18 x 4	1605	30	M8	32	12	M5 x 6	32	35 x 35
M 2	18	20	37.5	14 x 25	M14	15	Tr20 x 4	2005	38.7	M8	35	15	M6 x 10	35	40 x 40
M 3	23	22	41	16 x 42.5	M20	15	Tr30 x 6	2505	46	M10	40	17	M8 x 10	44	50 x 50
M 4	32	29	58.5	20 x 45	M30	16	Tr40 x 7	4005/4010	60	M12	52	25	M10 x 14	55	70 x 70
M 5	40	48	80	25 x 65	M36	30	Tr55 x 9	5010	85	M20	62	28	M12 x 16	70	90 x 90
J 1	40	48	87.5	25 x 62.5	M48 x 2	40	Tr60 x 9	–	90	M24	72	28	M12 x 16	70	90 x 90
J 2	40	58	82.5	30 x 65	M56 x 2	45	Tr70 x 10	–	105	M30	80	32	M12 x 18	(80)	110 x 110
J 3 (M6)	40	58	82.5	30 x 65	M64 x 3	45	Tr80 x 10	8010	120	M30	80	32	M12 x 18	(80)	125 x 125
J 4 (M7)	50	78	110	35 x 62.5	M72 x 3	54	Tr100 x 10	–	145	M36	85	40	M16 x 30	(80)	150 x 150
J 5 (M8)	60	118	133	48 x 97.5	M100 x 3	80	Tr120 x 14	–	170	M42	90	50	M16 x 40	(115)	180 x 180

* Tapped bore for motor adaptor flange on attachment side A and B standard only centralised. Tapped bore on enquiry.
Note: subject to technical changes.

(1) VL: Spindle extension
(2) Mass C1 for screw jacks with trapezoidal screw drive
(3) Mass C1 for screw jacks with ball screw drive or securing against hollowing

Dimensions, version VP



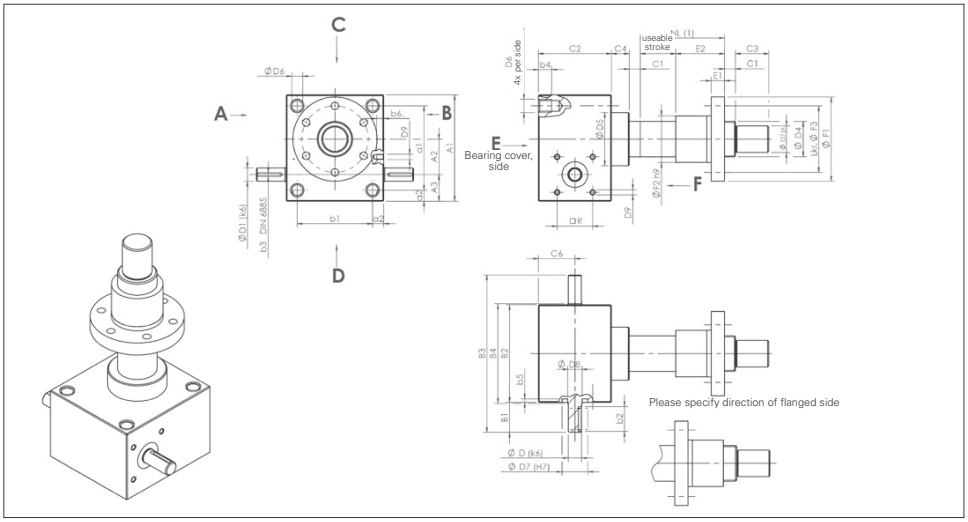
Size	Dimensions [mm]																
	A_1	A_2	A_3	a_1	a_2	B_1	B_2	B_3	B_4	b_1	b_2	b_3	b_5	$C_1TR^{(2)}$	$C_1KGT/AS^{(3)}$	C_2	C_3
M 0	60	20	18	48	6	21	50	92	52	38	14	3	1.5	20	50	50	27
M 1	80	25	24	60	10	24	72	120	77	52	18	3	1.5	20	50	62	35
M 2	100	32	28	78	11	27.5	85	140	90	63	20	5	1.5	30	60	75	45
M 3	130	45	31	106	12	45	105	195	110	81	36	5	2	35	70	82	50
M 4	180	63	39	150	15	47.5	145	240	150	115	36	6	2	40	90	117	65
M 5	200	71	46	166	17	67.5	165	300	170	131	56	8	2.5	55	100	160	95
J 1	210	71	49	170	20	65	195	325	200	155	56	8	8	55	100	175	95
J 2	240	80	60	190	25	67.5	220	355	225	170	56	8	8	60	110	165	110
J 3	240	80	60	190	25	67.5	220	355	225	170	56	8	8	60	110	165	110
J 4	290	100	65	230	30	65	250	380	255	190	56	10	8	65	150	220	140
J 5	360	135	75	290	35	100	300	500	305	230	90	14	8	100	145	266	200

Size	Dimensions [mm]													
	C_4	C_5	C_6	D_{1K6}	D_2	D_3	d_4	D_4Tr	D_4KGT	D_5	D_6	$D_7{}^{H7}$	D_8	$D_9 \times b_6$	TK ❑ R
M 0	12	12	25	9 x 20	28	M8	12	Tr14 x 4	1205	26	M6	22	10	(M5 x 6)*	24
M 1	12	19	31	10 x 21.5	32	M12	13	Tr18 x 4	1605	30	M8	32	12	M5 x 6	32
M 2	18	20	37.5	14 x 25	40	M14	15	Tr20 x 4	2005	38.7	M8	35	15	M6 x 10	35
M 3	23	22	41	16 x 42.5	50	M20	15	Tr30 x 6	2505	46	M10	40	17	M8 x 10	44
M 4	32	29	58.5	20 x 45	65	M30	16	Tr40 x 7	4005/4010	60	M12	52	25	M10 x 14	55
M 5	40	48	80	25 x 65	90	M36	30	Tr55 x 9	5010	85	M20	62	28	M12 x 16	70
J 1	40	48	87.5	25 x 62.5	95	M48 x 2	40	Tr60 x 9	–	90	M24	72	28	M12 x 16	70
J 2	40	58	82.5	30 x 65	110	M56 x 2	45	Tr70 x 10	–	105	M30	80	32	M12 x 18	(80)
J 3 (M6)	40	58	82.5	30 x 65	125	M64 x 3	45	Tr80 x 10	8010	120	M30	80	32	M12 x 18	(80)
J 4 (M7)	50	78	110	35 x 62.5	150	M72 x 3	54	Tr100 x 10	–	145	M36	85	40	M16 x 30	(80)
J 5 (M8)	60	118	133	48 x 97.5	180	M100 x 3	80	Tr120 x 14	–	170	M42	90	50	M16 x 40	(115)

* Tapped bore for motor adaptor flange on attachment side A and B standard only centralised. Tapped bore on enquiry.
Note: subject to technical changes.

(1) VL: Spindle extension
(2) Mass C1 for screw jacks with trapezoidal screw drive
(3) Mass C1 for screw jacks with ball screw drive or securing against hollowing

Dimensions, version R



Size	Dimensions [mm]																		
	A_1	A_2	A_3	a_1	a_2	B_1	B_2	B_3	B_4	b_1	b_2	b_3	b_4	b_5	C_1	C_2	C_3	C_4	C_6
M 0	60	20	18	48	6	21	50	92	52	38	14	3	12	1.5	10	50	12	12	25
M 1	80	25	24	60	10	24	72	120	77	52	18	3	13	1.5	12	62	15	12	31
M 2	100	32	28	78	11	27.5	85	140	90	63	20	5	15	1.5	15	75	20	18	37.5
M 3	130	45	31	106	12	45	105	195	110	81	36	5	15	2	20	82	25	23	41
M 4	180	63	39	150	15	47.5	145	240	150	115	36	6	16	2	25	117	30	32	58.5
M 5	200	71	46	166	17	67.5	165	300	170	131	56	8	30	2.5	25	160	45	40	80
J 1	210	71	49	170	20	65	195	325	200	155	56	8	40	8	25	175	55	40	87.5
J 2	240	80	60	190	25	67.5	220	355	225	170	56	8	45	8	25	165	70	40	82.5
J 3	240	80	60	190	25	67.5	220	355	225	170	56	8	45	8	25	165	75	40	82.5
J 4	290	100	65	230	30	65	250	380	255	190	56	10	54	8	25	220	100	50	110
J 5	360	135	75	290	35	100	300	500	305	230	90	14	80	8	30	266	120	60	133

Size	Dimensions [mm]														
	D_{1k6}	D_{2j6}	D_4TR	D_4KGT	D_5	D_6	D_7^{H7}	D_8	$D_9 \times b_6$	❑ R	E_1	E_2	F_1	F_2	F_3	F_4
M 0	9 x 20	8	Tr14 x 4	1205	26	M6	22	10	M5 x 6*	24	12	35	48	28	38	6
M 1	10 x 21.5	12	Tr18 x 4	1605	30	M8	32	12	(M5 x 6)*	32	12/12	44/44	48/48	28/28	38/38	6/6
M 2	14 x 25	15	Tr20 x 4	2005	36.1	M8	32	15	M6 x 10	35	12/12	44/44	55/55	32/32	45/45	7/7
M 3	16 x 42.5	20	Tr30 x 6	2505	46	M10	40	17	M8 x 10	44	14/14	46/46	62/62	38/38	50/50	7/7
M 4	20 x 45	25	Tr40 x 7	4005/4010	60	M12	52	25	M10 x 14	55	16/16	73/59	95/80	63/53	78/68	9/7
M 5	25 x 65	40	Tr55 x 9	5010	85	M20	62	28	M12 x 16	70	18/18	97/97	110/110	72/72	90/90	11/11
J 1	25 x 62.5	45	Tr60 x 9	–	90	M24	72	28	M12 x 16	70	20	99	125	85	105	11
J 2	30 x 65	55	Tr70 x 10	–	105.2	M30	80	32	M12 x 18	(80)	30	100	180	95	140	17
J 3 (M 6)	30 x 65	60	Tr80 x 10	8010	120	M30	80	32	M12 x 18	(80)	30/22	110/101	190/145	105/105	150/125	17/14
J 4 (M 7)	35 x 62.5	80	Tr100 x 10	–	145	M36	85	40	M16 x 30	(80)	35	130	240	130	185	25
J 5 (M 8)	48 x 97.5	95	Tr120 x 14	–	170	M42	90	50	M16 x 40	(115)	40	160	300	160	230	28

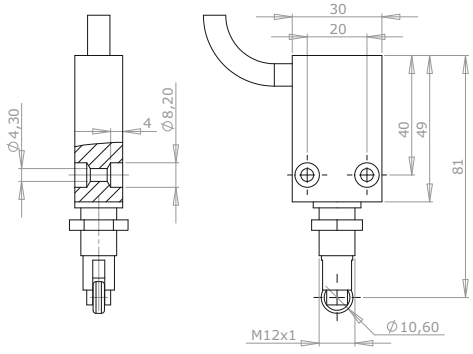
* Tapped bore for motor adaptor flange on attachment side A and B standard only centralised. Tapped bore on enquiry.
Note: subject to technical changes.
(1) NL: usable stroke length

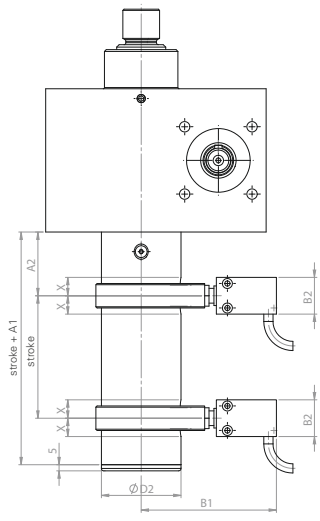
Dimensions

Version N/VK/VP with limit switch attachment

Limit switch with roller plunger:

Actuating cam 30° according to DIN 69639
- Minimum actuation stroke: 2.6 mm +/- 0.5mm
- Differential stroke: 0.85 mm +/- 0.25mm
- Minimum switch-on force: 1 N
- Start-up speed: 0.001 to 0.1 m/s
- Connection: 5-core (brown/blue: normally open; black/black: normally closed; green/yellow: earth conductor
- Switching capacity: NFC 63146





Size	Dimensions [mm]						
	A_1	A_2	B_1	B_2	M	X	Ø D2
M0	65	27	94	30	M12x1	±10	28
M1	65	27	96	30	M12x1	±10	32
M2	65	32	100	30	M12x1	±10	40
M3	75	41	105	30	M12x1	±10	50
M4	90	52	113	30	M12x1	±10	65
M5	100	60	125	30	M12x1	±10	90
J1	100	60	125	30	M12x1	±10	95
J2	on enquiry						
J3							
J4							
J5							

endo

Performance table

for worm gear screw jacks M/J

Duty cycle 10-20%

Duty cycle < 10%

only static permissible

NEFF

M0

n [rpm]	Stroke speed [m/min]		F=2.5 [kN]				F=2 [kN]				F=1.5 [kN]				F=1 [kN]				F=0.75 [kN]				F=0.5 [kN]				F=0.25 [kN]			
			4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	1.2	0.18	0.4	0.1	0.9	0.15	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
1000	1	0.25	1.2	0.12	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
750	0.75	0.188	1.2	0.1	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
600	0.6	0.15	1.2	0.1	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
500	0.5	0.125	1.2	0.1	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
300	0.3	0.075	1.2	0.1	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
100	0.1	0.025	1.2	0.1	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1
50	0.05	0.013	1.2	0.1	0.4	0.1	0.9	0.1	0.3	0.1	0.7	0.1	0.2	0.1	0.5	0.1	0.2	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0	0.1

M1

n [rpm]	Stroke speed [m/min]		F=5 [kN]				F=4 [kN]				F=3 [kN]				F=2.5 [kN]				F=2 [kN]				F=1.5 [kN]				F=1 [kN]			
			4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	2.7	0.42	0.9	0.1	2.1	0.33	0.7	0.1	1.6	0.25	0.5	0.1	1.3	0.21	0.4	0.1	1.1	0.2	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
1000	1	0.25	2.7	0.28	0.9	0.1	2.1	0.22	0.7	0.1	1.6	0.17	0.5	0.1	1.3	0.14	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
750	0.75	0.188	2.7	0.21	0.9	0.1	2.1	0.17	0.7	0.1	1.6	0.13	0.5	0.1	1.3	0.1	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
600	0.6	0.15	2.7	0.17	0.9	0.1	2.1	0.13	0.7	0.1	1.6	0.1	0.5	0.1	1.3	0.1	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
500	0.5	0.125	2.7	0.14	0.9	0.1	2.1	0.1	0.7	0.1	1.6	0.1	0.5	0.1	1.3	0.1	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
300	0.3	0.075	2.7	0.1	0.9	0.1	2.1	0.1	0.7	0.1	1.6	0.1	0.5	0.1	1.3	0.1	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
100	0.1	0.025	2.7	0.1	0.9	0.1	2.1	0.1	0.7	0.1	1.6	0.1	0.5	0.1	1.3	0.1	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1
50	0.05	0.013	2.7	0.1	0.9	0.1	2.1	0.1	0.7	0.1	1.6	0.1	0.5	0.1	1.3	0.1	0.4	0.1	1.1	0.1	0.3	0.1	0.8	0.1	0.3	0.1	0.5	0.1	0.2	0.1

M2

n [rpm]	Stroke speed [m/min]		F=10 [kN]				F=8 [kN]				F=6 [kN]				F=4 [kN]				F=3 [kN]				F=2 [kN]				F=1 [kN]			
			4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	5.7	0.89	1.9	0.3	4.5	0.71	1.5	0.24	3.4	0.54	1.1	0.18	2.3	0.36	0.8	0.1	1.7	0.27	0.6	0.1	1.1	0.2	0.4	0.1	0.6	0.1	0.2	0.1
1000	1	0.25	5.7	0.6	1.9	0.2	4.5	0.48	1.5	0.16	3.4	0.36	1.1	0.12	2.3	0.24	0.8	0.1	1.7	0.18	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1
750	0.75	0.188	5.7	0.45	1.9	0.15	4.5	0.36	1.5	0.12	3.4	0.27	1.1	0.1	2.3	0.18	0.8	0.1	1.7	0.13	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1
600	0.6	0.15	5.7	0.36	1.9	0.12	4.5	0.29	1.5	0.1	3.4	0.21	1.1	0.1	2.3	0.14	0.8	0.1	1.7	0.1	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1
500	0.5	0.125	5.7	0.3	1.9	0.1	4.5	0.24	1.5	0.1	3.4	0.18	1.1	0.1	2.3	0.12	0.8	0.1	1.7	0.1	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1
300	0.3	0.075	5.7	0.18	1.9	0.1	4.5	0.14	1.5	0.1	3.4	0.11	1.1	0.1	2.3	0.1	0.8	0.1	1.7	0.1	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1
100	0.1	0.025	5.7	0.1	1.9	0.1	4.5	0.1	1.5	0.1	3.4	0.1	1.1	0.1	2.3	0.1	0.8	0.1	1.7	0.1	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1
50	0.05	0.013	5.7	0.1	1.9	0.1	4.5	0.1	1.5	0.1	3.4	0.1	1.1	0.1	2.3	0.1	0.8	0.1	1.7	0.1	0.6	0.1	1.1	0.1	0.4	0.1	0.6	0.1	0.2	0.1

M3

n [rpm]	Stroke speed [m/min]		F=25 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2.5 [kN]				F=1 [kN]			
			6:1		24:1		6:1		24:1		6:1		24:1		6:1		24:1		6:1		24:1		6:1		24:1		6:1		24:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	14.7	2.31	5.2	0.82	11.8	1.85	4.2	0.66	8.8	1.39	3.1	0.49	5.9	0.93	2.1	0.33	2.9	0.46	1	0.2	1.5	0.2	0.5	0.1	0.6	0.1	0.2	0.1
1000	1	0.25	14.7	1.54	5.2	0.55	11.8	1.23	4.2	0.44	8.8	0.93	3.1	0.33	5.9	0.62	2.1	0.22	2.9	0.31	1	0.1	1.5	0.2	0.5	0.1	0.6	0.1	0.2	0.1
750	0.75	0.188	14.7	1.16	5.2	0.41	11.8	0.93	4.2	0.33	8.8	0.69	3.1	0.25	5.9	0.46	2.1	0.16	2.9	0.23	1	0.1	1.5	0.1	0.5	0.1	0.6	0.1	0.2	0.1
600	0.6	0.15	14.7	0.93	5.2	0.33	11.8	0.74	4.2	0.26	8.8	0.56	3.1	0.2	5.9	0.37	2.1	0.13	2.9	0.19	1	0.1	1.5	0.1	0.5	0.1	0.6	0.1	0.2	0.1
500	0.5	0.125	14.7	0.77	5.2	0.27	11.8	0.62	4.2	0.22	8.8	0.46	3.1	0.16	5.9	0.31	2.1	0.11	2.9	0.15	1	0.1	1.5	0.1	0.5	0.1	0.6	0.1	0.2	0.1
300	0.3	0.075	14.7	0.46	5.2	0.16	11.8	0.37	4.2	0.13	8.8	0.28	3.1	0.1	5.9	0.19	2.1	0.1	2.9	0.1	1	0.1	1.5	0.1	0.5	0.1	0.6	0.1	0.2	0.1
100	0.1	0.025	14.7	0.15	5.2	0.1	11.8	0.12	4.2	0.1	8.8	0.1	3.1	0.1	5.9	0.1	2.1	0.1	2.9	0.1	1	0.1	1.5	0.1	0.5	0.1	0.6	0.1	0.2	0.1
50	0.05	0.013	14.7	0.1	5.2	0.1	11.8	0.1	4.2	0.1	8.8	0.1	3.1	0.1	5.9	0.1	2.1	0.1	2.9	0.1	1	0.1	1.5	0.1	0.5	0.1	0.6	0.1	0.2	0.1

Note: values are valid at an ambient temperature of 20 °C

Duty cycle 10-20%

Duty cycle < 10%

only static permissible

Performance table

for worm gear screw jacks M/J

M4

n [rpm]	Stroke speed [m/min]		F=50 [kN]				F=40 [kN]				F=30 [kN]				F=20 [kN]				F=10 [kN]				F=5 [kN]				F=2.5 [kN]			
			7:1		28:1		7:1		28:1		7:1		28:1		7:1		28:1		7:1		28:1		7:1		28:1		7:1		28:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	31.8	5	11.1	1.7	25.5	4	8.8	1.4	19.1	3	6.6	1	12.7	2	4.4	0.7	6.4	1	2.2	0.3	3.2	0.5	1.1	0.2	1.6	0.3	0.6	0.1
1000	1	0.25	31.8	3.3	11.1	1.2	25.5	2.7	8.8	0.9	19.1	2	6.6	0.7	12.7	1.3	4.4	0.5	6.4	0.7	2.2	0.2	3.2	0.3	1.1	0.1	1.6	0.2	0.6	0.1
750	0.75	0.188	31.8	2.5	11.1	0.9	25.5	2	8.8	0.7	19.1	1.5	6.6	0.5	12.7	1	4.4	0.35	6.4	0.5	2.2	0.2	3.2	0.3	1.1	0.1	1.6	0.1	0.6	0.1
600	0.6	0.15	31.8	2	11.1	0.7	25.5	1.6	8.8	0.6	19.1	1.2	6.6	0.4	12.7	0.8	4.4	0.3	6.4	0.4	2.2	0.1	3.2	0.2	1.1	0.1	1.6	0.1	0.6	0.1
500	0.5	0.125	31.8	1.7	11.1	0.6	25.5	1.3	8.8	0.5	19.1	1	6.6	0.3	12.7	0.7	4.4	0.2	6.4	0.3	2.2	0.1	3.2	0.2	1.1	0.1	1.6	0.1	0.6	0.1
300	0.3	0.075	31.8	1	11.1	0.3	25.5	0.8	8.8	0.3	19.1	0.6	6.6	0.2	12.7	0.4	4.4	0.1	6.4	0.2	2.2	0.1	3.2	0.1	1.1	0.1	1.6	0.1	0.6	0.1
100	0.1	0.025	31.8	0.3	11.1	0.1	25.5	0.3	8.8	0.1	19.1	0.2	6.6	0.1	12.7	0.1	4.4	0.1	6.4	0.1	2.2	0.1	3.2	0.1	1.1	0.1	1.6	0.1	0.6	0.1
50	0.05	0.013	31.8	0.2	11.1	0.1	25.5	0.1	8.8	0.1	19.1	0.1	6.6	0.1	12.7	0.1	4.4	0.1	6.4	0.1	2.2	0.1	3.2	0.1	1.1	0.1	1.6	0.1	0.6	0.1

M5

n [rpm]	Stroke speed [m/min]		F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]				F=20 [kN]				F=10 [kN]				F=50 [kN]			
			9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	67.2	10.5	21.5	3.4	53.9	8.5	17.3	2.7	40.6	6.4	13.1	2.1	27.4	4.3	8.9	1.4	14.1	2.2	4.7	0.7	7.5	1.2	2.6	0.4	4.2	0.7	1.6	0.2
1000	1	0.25	67.2	7.0	21.5	2.2	53.9	5.6	17.3	1.8	40.6	4.3	13.1	1.4	27.4	2.9	8.9	0.9	14.1	1.5	4.7	0.5	7.5	0.8	2.6	0.3	4.2	0.4	1.6	0.2
750	0.75	0.188	67.2	5.3	21.5	1.7	53.9	4.2	17.3	1.4	40.6	3.2	13.1	1.0	27.4	2.1	8.9	0.7	14.1	1.1	4.7	0.4	7.5	0.6	2.6	0.2	4.2	0.3	1.6	0.1
600	0.6	0.15	67.2	4.2	21.5	1.3	53.9	3.4	17.3	1.1	40.6	2.6	13.1	0.8	27.4	1.7	8.9	0.6	14.1	0.9	4.7	0.3	7.5	0.5	2.6	0.2	4.2	0.3	1.6	0.1
500	0.5	0.125	67.2	3.5	21.5	1.1	53.9	2.8	17.3	0.9	40.6	2.1	13.1	0.7	27.4	1.4	8.9	0.5	14.1	0.7	4.7	0.2	7.5	0.4	2.6	0.1	4.2	0.2	1.6	0.1
300	0.3	0.075	67.2	2.1	21.5	0.7	53.9	1.7	17.3	0.5	40.6	1.3	13.1	0.4	27.4	0.9	8.9	0.3	14.1	0.4	4.7	0.1	7.5	0.2	2.6	0.1	4.2	0.1	1.6	0.1
100	0.1	0.025	67.2	0.7	21.5	0.2	53.9	0.6	17.3	0.2	40.6	0.4	13.1	0.1	27.4	0.3	8.9	0.1	14.1	0.1	4.7	0.1	7.5	0.1	2.6	0.1	4.2	0.1	1.6	0.1
50	0.05	0.013	67.2	0.4	21.5	0.1	53.9	0.3	17.3	0.1	40.6	0.2	13.1	0.1	27.4	0.1	8.9	0.1	14.1	0.1	4.7	0.1	7.5	0.1	2.6	0.1	4.2	0.1	1.6	0.1

J1

n [rpm]	Stroke speed [m/min]		F=150 [kN]				F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]				F=20 [kN]				F=10 [kN]			
			9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1		9:1		36:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	125.7	19.7	42.6	6.7	83.8	13.2	28.4	4.5	67	10.5	22.7	3.6	50.3	7.9	17.1	2.7	33.5	5.3	11.4	1.8	16.8	2.6	5.7	0.9	8.4	1.3	2.8	0.4
1000	1	0.25	125.7	13.2	42.6	4.5	83.8	8.8	28.4	3	67	7	22.7	2.4	50.3	5.3	17.1	1.8	33.5	3.5	11.4	1.2	16.8	1.8	5.7	0.6	8.4	0.9	2.8	0.3
750	0.75	0.188	125.7	9.9	42.6	3.3	83.8	6.6	28.4	2.2	67	5.3	22.7	1.8	50.3	3.9	17.1	1.3	33.5	2.6	11.4	0.9	16.8	1.3	5.7	0.4	8.4	0.7	2.8	0.2
600	0.6	0.15	125.7	7.9	42.6	2.7	83.8	5.3	28.4	1.8	67	4.2	22.7	1.4	50.3	3.2	17.1	1.1	33.5	2.1	11.4	0.7	16.8	1.1	5.7	0.4	8.4	0.5	2.8	0.2
500	0.5	0.125	125.7	6.6	42.6	2.2	83.8	4.4	28.4	1.5	67	3.5	22.7	1.2	50.3	2.6	17.1	0.9	33.5	1.8	11.4	0.6	16.8	0.9	5.7	0.3	8.4	0.4	2.8	0.1
300	0.3	0.075	125.7	3.9	42.6	1.3	83.8	2.6	28.4	0.9	67	2.1	22.7	0.7	50.3	1.6	17.1	0.5	33.5	1.1	11.4	0.4	16.8	0.5	5.7	0.2	8.4	0.3	2.8	0.1
100	0.1	0.025	125.7	1.3	42.6	0.4	83.8	0.9	28.4	0.3	67	0.7	22.7	0.2	50.3	0.5	17.1	0.2	33.5	0.4	11.4	0.1	16.8	0.2	5.7	0.1	8.4	0.1	2.8	0.1
50	0.05	0.013	125.7	0.7	42.6	0.2	83.8	0.4	28.4	0.1	67	0.4	22.7	0.1	50.3	0.3	17.1	0.1	33.5	0.2	11.4	0.1	16.8	0.1	5.7	0.1	8.4	0.1	2.8	0.1

J2

n [rpm]	Stroke speed [m/min]		F=200 [kN]				F=150 [kN]				F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]				F=20 [kN]			
			10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	146.0	22.9	47.7	7.5	109.8	17.2	36.0	5.7	73.6	11.6	24.3	3.8	59.2	9.3	19.6	3.1	44.7	7.0	15.0	2.4	30.2	4.7	10.3	1.6	15.7	2.5	5.6	0.9
1000	1	0.25	146.0	15.3	47.7	5.0	109.8	11.5	36.0	3.8	73.6	7.7	24.3	2.5	59.2	6.2	19.6	2.1	44.7	4.7	15.0	1.6	30.2	3.2	10.3	1.1	15.7	1.6	5.6	0.6
750	0.75	0.188	146.0	11.5	47.7	3.7	109.8	8.6	36.0	2.8	73.6	5.8	24.3	1.9	59.2	4.6	19.6	1.5	44.7	3.5	15.0	1.2	30.2	2.4	10.3	0.8	15.7	1.2	5.6	0.4
600	0.6	0.15	146.0	9.2	47.7	3.0	109.8	6.9	36.0	2.3	73.6	4.6	24.3	1.5	59.2	3.7	19.6	1.2	44.7	2.8	15.0	0.9	30.2	1.9	10.3	0.6	15.7	1.0	5.6	0.4
500	0.5	0.125	146.0	7.6	47.7	2.5	109.8	5.7	36.0	1.9	73.6	3.9	24.3	1.3	59.2	3.1	19.6	1.0	44.7	2.3	15.0	0.8	30.2	1.6	10.3	0.5	15.7	0.8	5.6	0.3
300	0.3	0.075	146.0	4.6	47.7	1.5	109.8	3.4	36.0	1.1	73.6	2.3	24.3	0.8	59.2	1.9	19.6	0.6	44.7	1.4	15.0	0.5	30.2	0.9	10.3	0.3	15.7	0.5	5.6	0.1
100	0.1	0.025	146.0	1.5	47.7	0.5	109.8	1.1	36.0	0.4	73.6	0.8	24.3	0.3	59.2	0.6	19.6	0.2	44.7	0.5	15.0	0.1	30.2	0.3	10.3	0.1	15.7	0.2	5.6	0.1
50	0.05	0.013	146.0	0.8	47.7	0.2	109.8	0.6	36.0	0.2	73.6	0.4	24.3	0.1	59.2	0.3	19.6	0.1	44.7	0.2	15.0	0.1	30.2	0.1	10.3	0.1	15.7	0.1	5.6	0.1

Note: values are valid at an ambient temperature of 20 °C

Performance table

for worm gear screw jacks M/J

Duty cycle 10-20%

Duty cycle < 10%

only static permissible

NEFF

J3

n [rpm]	Stroke speed [m/min]		F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]			
			10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	209.4	32.9	71.1	11.2	167.5	26.3	56.8	8.9	125.7	19.7	42.6	6.7	83.8	13.2	28.4	4.5	67	10.5	22.7	3.6	50.3	7.9	17.1	2.7	33.5	5.3	11.4	1.8
1000	1	0.25	209.4	21.9	71.1	7.4	167.5	17.5	56.8	6	125.7	13.2	42.6	4.5	83.8	8.8	28.4	3	67	7	22.7	2.4	50.3	5.3	17.1	1.8	33.5	3.5	11.4	1.2
750	0.75	0.188	209.4	16.4	71.1	5.6	167.5	13.2	56.8	4.5	125.7	9.9	42.6	3.3	83.8	6.6	28.4	2.2	67	5.3	22.7	1.8	50.3	3.9	17.1	1.3	33.5	2.6	11.4	0.9
600	0.6	0.15	209.4	13.2	71.1	4.5	167.5	10.5	56.8	3.6	125.7	7.9	42.6	2.7	83.8	5.3	28.4	1.8	67	4.2	22.7	1.4	50.3	3.2	17.1	1.1	33.5	2.1	11.4	0.7
500	0.5	0.125	209.4	11	71.1	3.7	167.5	8.8	56.8	3	125.7	6.6	42.6	2.2	83.8	4.4	28.4	1.5	67	3.5	22.7	1.2	50.3	2.6	17.1	0.9	33.5	1.8	11.4	0.6
300	0.3	0.075	209.4	6.6	71.1	2.2	167.5	5.3	56.8	1.8	125.7	3.9	42.6	1.3	83.8	2.6	28.4	0.9	67	2.1	22.7	0.7	50.3	1.6	17.1	0.5	33.5	1.1	11.4	0.4
100	0.1	0.025	209.4	2.2	71.1	0.7	167.5	1.8	56.8	0.6	125.7	1.3	42.6	0.4	83.8	0.9	28.4	0.3	67	0.7	22.7	0.2	50.3	0.5	17.1	0.2	33.5	0.4	11.4	0.1
50	0.05	0.013	209.4	1.1	71.1	0.4	167.5	0.9	56.8	0.3	125.7	0.7	42.6	0.2	83.8	0.4	28.4	0.1	67	0.4	22.7	0.1	50.3	0.3	17.1	0.1	33.5	0.2	11.4	0.1

J4

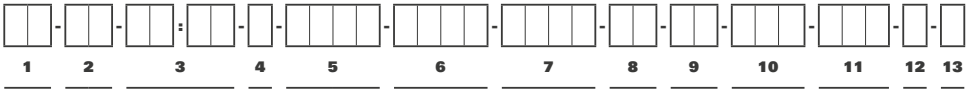
n [rpm]	Stroke speed [m/min]		F=350 [kN]				F=300 [kN]				F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]			
			10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1		10:1		40:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1.5	0.375	371.4	58.3	126.6	19.9	318.3	50	108.5	17	265.3	41.7	90.4	14.2	212.2	33.3	72.3	11.4	159.2	25	54.3	8.5	106.1	16.7	36.2	5.7	53.1	8.3	18.1	2.8
1000	1	0.25	371.4	38.9	126.6	13.3	318.3	33.3	108.5	11.4	265.3	27.8	90.4	9.5	212.2	22.2	72.3	7.6	159.2	16.7	54.3	5.7	106.1	11.1	36.2	3.8	53.1	5.6	18.1	1.9
750	0.75	0.188	371.4	29.2	126.6	9.9	318.3	25	108.5	8.5	265.3	20.8	90.4	7.1	212.2	16.7	72.3	5.7	159.2	12.5	54.3	4.3	106.1	8.3	36.2	2.8	53.1	4.2	18.1	1.4
600	0.6	0.15	371.4	23.3	126.6	8	318.3	20	108.5	6.8	265.3	16.7	90.4	5.7	212.2	13.3	72.3	4.5	159.2	10	54.3	3.4	106.1	6.7	36.2	2.3	53.1	3.3	18.1	1.1
500	0.5	0.125	371.4	19.4	126.6	6.6	318.3	16.7	108.5	5.7	265.3	13.9	90.4	4.7	212.2	11.1	72.3	3.8	159.2	8.3	54.3	2.8	106.1	5.6	36.2	1.9	53.1	2.8	18.1	0.9
300	0.3	0.075	371.4	11.7	126.6	4	318.3	10	108.5	3.4	265.3	8.3	90.4	2.8	212.2	6.7	72.3	2.3	159.2	5	54.3	1.7	106.1	3.3	36.2	1.1	53.1	1.7	18.1	0.6
100	0.1	0.025	371.4	3.9	126.6	1.3	318.3	3.3	108.5	1.1	265.3	2.8	90.4	0.9	212.2	2.2	72.3	0.8	159.2	1.7	54.3	0.6	106.1	1.1	36.2	0.4	53.1	0.6	18.1	0.2
50	0.05	0.013	371.4	1.9	126.6	0.7	318.3	1.7	108.5	0.6	265.3	1.4	90.4	0.5	212.2	1.1	72.3	0.4	159.2	0.8	54.3	0.3	106.1	0.6	36.2	0.2	53.1	0.3	18.1	0.1

J5

n [rpm]	Stroke speed [m/min]		F=500 [kN]				F=400 [kN]				F=300 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]			
			14:1		56:1		14:1		56:1		14:1		56:1		14:1		56:1		14:1		56:1		14:1		56:1		14:1		56:1	
	H	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1000	1	0.25	531	55.6	181	18.9	424	44.4	145	15.2	318	33.3	108	11.4	212	22.2	72	7.6	159	16.7	54	5.7	106	11.1	36	3.8	53	5.6	18	1.9
750	0.75	0.188	531	41.7	181	14.2	424	33.3	145	11.4	318	25	108	8.5	212	16.7	72	5.7	159	12.5	54	4.3	106	8.3	36	2.8	53	4.2	18	1.4
600	0.6	0.15	531	33.3	181	11.4	424	26.7	145	9.1	318	20	108	6.8	212	13.3	72	4.5	159	10	54	3.4	106	6.7	36	2.3	53	3.3	18	1.1
500	0.5	0.125	531	27.8	181	9.5	424	22.2	145	7.6	318	16.7	108	5.7	212	11.1	72	3.8	159	8.3	54	2.8	106	5.6	36	1.9	53	2.8	18	0.9
300	0.3	0.075	531	16.7	181	5.7	424	13.3	145	4.5	318	10	108	3.4	212	6.7	72	2.3	159	5	54	1.7	106	3.3	36	1.1	53	1.7	18	0.6
100	0.1	0.025	531	5.6	181	1.9	424	4.4	145	1.5	318	3.3	108	1.1	212	2.2	72	0.8	159	1.7	54	0.6	106	1.1	36	0.4	53	0.6	18	0.2
50	0.05	0.013	531	2.8	181	0.9	424	2.2	145	0.8	318	1.7	108	0.6	212	1.1	72	0.4	159	0.8	54	0.3	106	0.6	36	0.2	53	0.3	18	0.1

Note: values are valid at an ambient temperature of 20 °C

Ordering code
Worm gear screw jacks



No.	Designation	Code	Discription
1	Size	M1, M2, ...	
		J1, J2, ...	
2	Design	N	Lifting spindle
		VP	Lifting spindle, protected against twisting by feather key
		VK	Lifting spindle, protected against twisting by square tube
		R	Rotating spindle
3	Transmission ratio	4:1 / 16:1	For M0, M1, M2
		6:1 / 24:1	For M3
		7:1 / 28:1	For M4
		9:1 / 36:1	For M5 and J1
		10:1 / 40:1	For J2, J3, J4
		14:1 / 56:1	For J5
4	Type of spindle	T	Trapezoidal screw drive
		K	Ball screw drive
5	Spindle dimension		e.g. 2005 = diameter 20 mm, pitch 5 mm
6	Stroke in [mm]		Specification of the stroke length
7	Attached part for version N/VK/VP		Spindle extension VL, Usable stroke length NL, e.g. due to block dimension bellows, mounting situation. See product drawings at page 57-60.
	Usable stroke length NL for version R		
8	Spindle end	M	Metric threaded stem
		A	End with chamfer
		S	Custom (according to specification, description or drawing)
		Z	Centric stem (standard for version R)
9	Attached part for version N/VK/VP	0	None
		BP	With fastening plate mounted
		GA	With spherical bearing mounted
		GK	With fork end mounted
		HG	With high-performance fork end mounted
	Nut type for version R	F-D	Flanged nut according to DIN 69051 (flange direction to housing)
		F-N	Flanged nut according to NEFF-Norm (flange direction to housing)
		D-F	Flanged nut according to DIN 69051 (flange direction to screw end)
		N-F	Flanged nut according to NEFF-Norm (flange direction to screw end)
10	Spindle cover	0	None
		FB	With bellows
		SF	With spiral spring cover
11	Anti-unscrewing device	0	None
		AS	With (installed as standard in KGT)
12	Shaft end	0	On both sides A+B (Standard)
		A	Shaft end on Side A
		B	Shaft end on side B
13	Special requirements	0	None
		1	According to specification, description or drawing

High-speed screw jacks G1-G3

High Speed Screw Jack G1-G3

NEFF high speed screw jacks supplement our offer of worm gear screw jacks. They are more efficient and may be used in a broader field of applications. They may be used in a medium load range (12.3 kN-117 kN1), with a high lifting speed and longer operating time.

All high speed screw jacks are equipped with hardened, sharpened and spiral-toothed bevel gear transmissions. Therefore, they attain high lifting speeds and improved efficiency.

The models N, V and R are available in three sizes with 2:1 and 3:1 transmissions. With ball screws, high speed screw jacks become even more dynamic. All high speed screw jacks work in all installation positions. Due to their cubic casing they can be mounted flexibly.

By using ball screws the high-speed screw jacks achieve even better performance values. All high-speed screw jacks are functional in every installation position and can be mounted flexibly thanks to the cubic form of the housing.

According to the customer's request they are delivered with up to four drive shafts. Lifting assemblies with several high speed screw jacks do not therefore require additional bevel gears.

Technical data - type N:

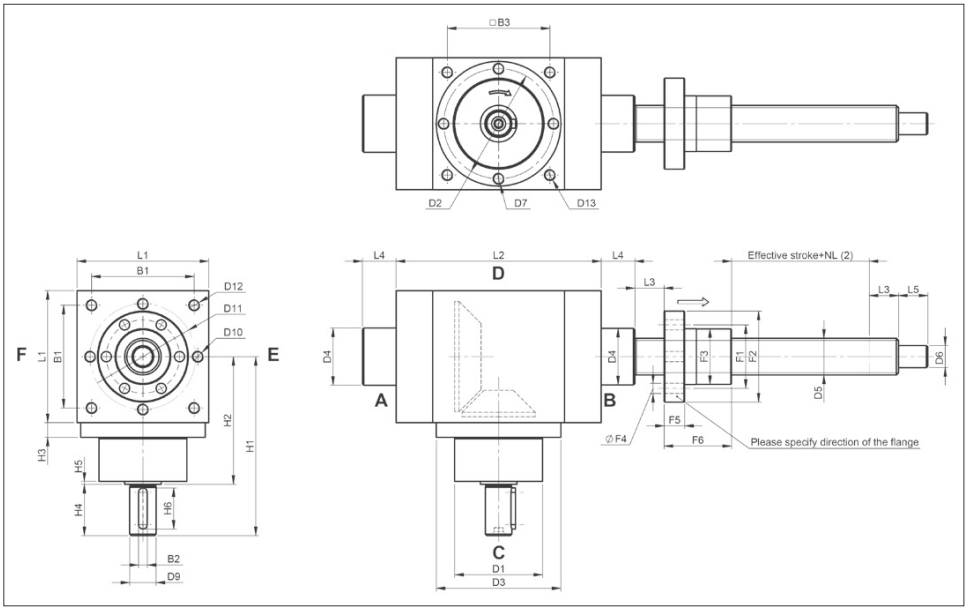
Size[7]	G1-N-TGS 24x5	G1-N-KGS 2505	G2-N-TGS 40x7	G2-N-KGS 3210	G2-N-KGS 4005	G3-N-TGS 60x9	G3-N-KGS 6310
Max. stroke and drag force in [kN]	20.6	12.3	44.5	33.4	23.8	117	76
Stroke per full turn of the srew shaft, ratio 2:1 in [mm]	2.5	2.5	3.5	5	2.5	4.5	5
Stroke per full turn of the srew shaft, ratio 3:1 in [mm]	1.6	1.6	2.3	3.33	1.6	3	3.33
Max. stroke speed in m/min ratio 2:1, 3000/min	-[1]	7.5	-[2]	15	7.5	-[3]	15
Max. stroke speed in m/min ratio 3:1, 3000/min	-[4]	5.01	-[5]	10	4.99	-[6]	9.99
Efficiency	0.45	0.75	0.4	0.75	0.75	0.35	0.75
Max. moment of a torque on the screw shaft in [Nm]	50	50	175	175	175	1600	1600

Technical data - type R:

Size[7]	G1-R-TGS 24x5	G1-R-KGS 2505	G2-R-TGS 40x7	G2-R-KGS 3210	G2-R-KGS 4005	G3-R-TGS 60x9	G3-R-KGS 6310
Max. stroke and drag force in [kN]	19.6	12.3	56.5	33.4	23.8	117	76
Stroke per full turn of the srew shaft, ratio 2:1 in [mm][8]	2.5	2.5	3.5	5	2.5	4.5	5
Stroke per full turn of the srew shaft, ratio 3:1 in [mm][8]	1.6	1.6	2.3	3.33	1.6	3	3.33
Max. stroke speed in m/min ratio 2:1, 3000/min	-[1]	7.5	-[2]	15	7.5	-[3]	15
Max. stroke speed in m/min ratio 3:1, 3000/min	-[4]	5.01	-[5]	10	4.99	-[6]	9.99
Efficiency	0.45	0.75	0.4	0.75	0.75	0.35	0.75
Max. moment of a torque on the screw shaft in [Nm]	50	50	175	175	175	1600	1600

1) max. permissible screw revolution speed (max. 4,55m/min at 1820/min)
2) max. permissible screw revolution speed (max. 1,82m/min at 520/min)
3) max. permissible screw revolution speed (max. 1,44m/min at 320/min)
4) max. permissible screw revolution speed (max. 4,55m/min at 2730/min)
5) max. permissible screw revolution speed (max. 1,82m/min at 780/min)
6) max. permissible screw revolution speed (max. 1,44m/min at 460/min)
7) **all screw sizes with other threads in stock**
8) ratio 1:1 on request

High-speed screw jacks
Dimensions - type R

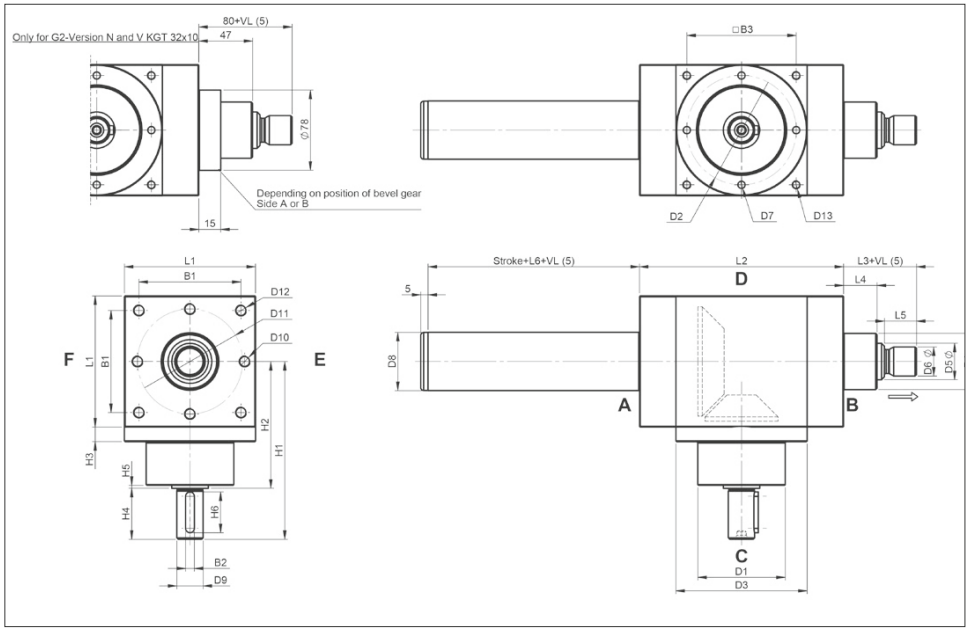


Size	L1	L2	L3	L4	L5	B1	B2	B3	H1	H2	H3	H4	H5	H6	D1	D2	D3 h7
G1	90	140	20	23	25	-	6	-	122	87	10	35	2	25	60	75	90
G2	140	190	25	32	30	113	10	110	180	130	13	50	2	45	95	-	135
G3	230	295	40	40	55	-	16/12[1]	180	305/310[1]	215/230[1]	17	90/80[1]	7.5	80/63[1]	150/120[1]	-	225

Size	D4	D5	D6 j6	D7	D9 j6	D10	D11	D12	D13	F1	F2	F3	F4	F5	F6
G1	39	T24x5/K2505	20	M8	18/12[1]	M10	72	-	-	50	62	38	7	14	46
G2	60	T40x7/K4005	25	-	32	-	-	M12	M10	68	80	53	7	16	59
G3	90	T60x9/K6310	45	-	55/40[1]	M20	180	-	M16	105	125	85	11	20	99

1) First dimension for ratio 2:1, second dimension for ratio 3:1
2) NL: usable stroke length

High-speed screw jacks G1
Dimensions - type N/V



Size	L1	L2	L3	L4	L5	L6	B1	B2	B3	H1	H2	H3	H4	H5	H6	D1	D2	D3 h7
G1	90	140	50	23	22	35/70[4]	-	6	-	122	87	10	35	2	25	60	75	90
G2	140	190	65	32	29	45/100[4]	113	10	110	180	130	13	50	2	45	95	-	135
G3	230	295	95	40	48	60/110[4]	-	16/12[1]	180	305/310[1]	215/230[1]	17.5	90/80[1]	2/3.5[1]	80/63[1]	150/120[1]	-	225

Size	D4	D5	D6	D7	D8	D9 j6	D10	D11	D12	D13
G1	39	T24x5/K2505	M18/M20[3]	M8	42/□40[2]	18/12[1]	M10	72	-	-
G2	60	T40x7/K4005	M30/M20[3]	-	65/□65[2]	32	-	-	M12	M10
G3	90	T60x9/K6310	M48x2[3]	-	90/□90[2]	55/40[1]	M20	180	-	M16

1) First dimension for ratio 2:1, second dimension for ratio 3:1
2) First dimension for Standard-Version N, second dimension for square-type tube Version V
3) First dimension for trapezoidal screw, second dimension for ball screw
4) Second dimension for stop collar or locking device
5) VL: spindle extansion

Service life over 500 hrs

Service life 100-500 hrs

only static permissible (service life less than 100 hrs)

Performance table

G1-N-KGS 2505

n [rpm]	Stroke speed [m/min]		F=15 [kN]				F=12.5 [kN]				F=10 [kN]				F=7.5 [kN]				F=5 [kN]				F=2.5 [kN]				F=1 [kN]			
	2:1	3:1	2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
	2:1	3:1	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	7.50	5.00	9.758	3.1	6.8	2.1	8.431	2.6	5.9	1.9	7.1	2.2	5.1	1.6	5.7	1.8	4.3	1.4	4.5	1.4	3.4	1.1	3.1	1.0	2.5	0.8	2.3	0.7	2.0	0.6
2250	5.63	3.75	9.758	2.3	6.8	1.6	8.431	2.0	6.0	1.4	7.1	1.7	5.1	1.2	5.7	1.3	4.3	1.0	4.5	1.0	3.4	0.8	3.1	0.7	2.5	0.6	2.3	0.5	2.0	0.5
1500	3.75	2.50	9.758	1.5	6.8	1.1	8.431	1.3	6.0	0.9	7.1	1.1	5.1	0.8	5.7	0.9	4.3	0.7	4.5	0.7	3.4	0.5	3.1	0.5	2.5	0.4	2.3	0.4	2.0	0.3
1000	2.50	1.67	9.758	1.0	6.8	0.7	8.431	0.9	6.0	0.6	7.1	0.7	5.1	0.5	5.7	0.6	4.3	0.5	4.5	0.5	3.4	0.4	3.1	0.3	2.5	0.3	2.3	0.2	2.0	0.2
750	1.88	1.25	9.758	0.8	6.8	0.5	8.431	0.7	6.0	0.5	7.1	0.6	5.1	0.4	5.7	0.4	4.3	0.3	4.5	0.3	3.4	0.3	3.1	0.2	2.5	0.2	2.3	0.2	2.0	0.2
500	1.25	0.83	9.758	0.5	6.8	0.4	8.431	0.4	6.0	0.3	7.1	0.4	5.1	0.3	5.7	0.3	4.3	0.2	4.5	0.2	3.4	0.2	3.1	0.2	2.5	0.1	2.3	0.1	2.0	0.1
250	0.63	0.42	9.758	0.3	6.8	0.2	8.431	0.2	6.0	0.2	7.1	0.2	5.1	0.1	5.7	0.1	4.3	0.1	4.5	0.1	3.4	0.1	3.1	0.1	2.5	0.1	2.3	0.1	2.0	0.1

G2-N-KGS 4005

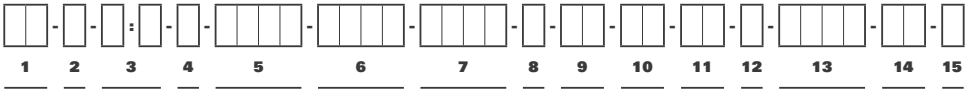
n [rpm]	Stroke speed [m/min]		F=50 [kN]				F=30 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2.5 [kN]			
	2:1	3:1	2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
	2:1	3:1	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	7.50	5.00	28.83	9.1	19	6.0	18.22	5.7	12	3.9	13	4.1	9	2.8	10	3.2	7.3	2.3	7.6	2.4	5.6	1.8	5	1.6	3.9	1.2	3.6	1.1	3	1.0
2250	5.63	3.75	28.83	6.8	19	4.5	18.22	4.3	12	2.9	13	3.0	9	2.1	10	2.4	7.3	1.7	7.6	1.8	5.6	1.3	5	1.2	3.9	0.9	3.6	0.9	3	0.7
1500	3.75	2.50	28.83	4.5	19	3.0	18.22	2.9	12	2.0	13	2.0	9	1.4	10	1.6	7.3	1.1	7.6	1.2	5.6	0.9	5	0.8	3.9	0.6	3.6	0.6	3	0.5
1000	2.50	1.67	28.83	3.0	19	2.0	18.22	1.9	12	1.3	13	1.4	9	0.9	10	1.1	7.3	0.8	7.6	0.8	5.6	0.6	5	0.5	3.9	0.4	3.6	0.4	3	0.3
750	1.88	1.25	28.83	2.3	19	1.5	18.22	1.4	12	1.0	13	1.0	9	0.7	10	0.8	7.3	0.6	7.6	0.6	5.6	0.4	5	0.4	3.9	0.3	3.6	0.3	3	0.2
500	1.25	0.83	28.83	1.5	19	1.0	18.22	1.0	12	0.7	13	0.7	9	0.5	10	0.5	7.3	0.4	7.6	0.4	5.6	0.3	5	0.3	3.9	0.2	3.6	0.2	3	0.1
250	0.63	0.42	28.83	0.8	19	0.5	18.22	0.5	12	0.3	13	0.3	9	0.2	10	0.3	7.3	0.2	7.6	0.2	5.6	0.1	5	0.1	3.9	0.1	3.6	0.1	3	0.1

G3-N-KGS 6310

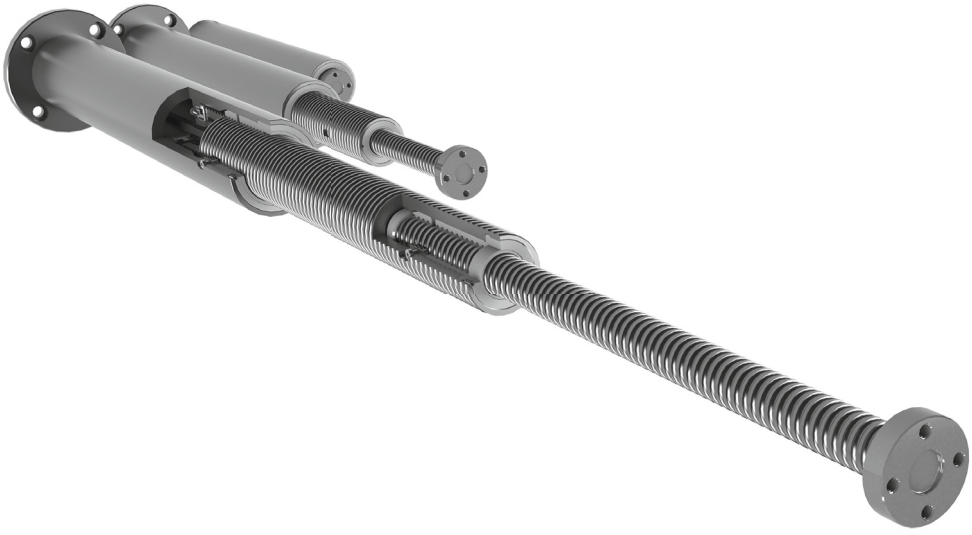
n [rpm]	Stroke speed [m/min]		F=90 [kN]				F=75 [kN]				F=50 [kN]				F=25 [kN]				F=10 [kN]				F=5 [kN]				F=2.5 [kN]			
	2:1	3:1	2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
	2:1	3:1	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	15.00	10.00	99.89	31	68	21	83.98	26	57	18	57	18	40	12	31	9.7	22	6.9	15	4.7	11	3.6	9.7	3	7.8	2.5	7.1	2.2	6.1	1.9
2250	11.25	7.50	99.89	24	68	16	83.98	20	57	13	57	14	40	9.3	31	7.3	22	5.2	15	3.5	11	2.7	9.7	2.3	7.8	1.8	7.1	1.7	6.1	1.4
1500	7.50	5.00	99.89	16	68	11	83.98	13	57	9	57	9	40	6.2	31	4.9	22	3.5	15	2.4	11	1.8	9.7	1.5	7.8	1.2	7.1	1.1	6.1	1
1000	5.00	3.33	99.89	10	68	7.1	83.98	8.8	57	6	57	6	40	4.1	31	3.2	22	2.3	15	1.6	11	1.2	9.7	1	7.8	0.8	7.1	0.7	6.1	0.6
750	3.75	2.50	99.89	7.8	68	5.3	83.98	6.6	57	4.5	57	4.5	40	3.1	31	2.4	22	1.7	15	1.2	11	0.9	9.7	0.8	7.8	0.6	7.1	0.6	6.1	0.5
500	2.50	1.67	99.89	5.2	68	3.6	83.98	4.4	57	3	57	3	40	2.1	31	1.6	22	1.2	15	0.8	11	0.6	9.7	0.5	7.8	0.4	7.1	0.4	6.1	0.1
250	1.25	0.83	99.89	2.6	68	1.8	83.98	2.2	57	1.5	57	1.5	40	1	31	0.8	22	0.6	15	0.4	11	0.1	9.7	0.3	7.8	0.1	7.1	0.2	6.1	0.1

Note: values are valid at an ambient temperature of 20 °C
Tables for other spindle types on request.

Ordering code
High Speed Screw Jacks



No.	Designation	Code	Description
1	Size	G1, G2, G3	
2	Design	N	Lifting spindle
		V	Lifting spindle, protected against twisting by square tube
		R	Rotating spindle
3	Transmission	2:1	Gearboxes available for all sizes
		3:1	
4	Type of spindle	T	Trapezoidal screw drive
		K	Ball screw drive
5	Spindle dimension		e.g. 2005 = diameter 20 mm, pitch 5 mm
6	Stroke in [mm]		Specification of the stroke length
7	Spindle extension VL for version N/V in [mm]		Spindle extension VL, Usable thread length NL eg due to block dimension bellows, mounting situation see product drawings S. 67-68.
	Usable stroke length for version R in [mm]		
8	Spindle end	M	Metric threaded stem
		A	End with chamfer
		S	Custom (according to specification, description or drawing)
		Z	Centric stem (standard for version R)
9	Attached part for version N/VK/VP	0	None
		BP	With fastening plate mounted
		GA	With spherical bearing mounted
		GK	With fork end mounted
		HG	With high-performance fork end mounted
	Nut type for version R	F-D	Flanged nut according to DIN 69051 (flange direction to housing)
		F-N	Flanged nut according to NEFF-Norm (flange direction to housing)
		D-F	Flanged nut according to DIN 69051 (flange direction to screw end)
		N-F	Flanged nut according to NEFF-Norm (flange direction to screw end)
10	Spindle cover	0	None
		FB	With bellows
		SF	With spiral spring cover
11	Anti-unscrewing device	0	None
		AS	With (installed as standard in KGT)
12	Installation position/attachment side	A	See dimensions G1-G3
		B	
		C	
		D	
		E	
		F	
13	Shaft arrangement	1WD	1 shaft end side D
		1WE	1 shaft end side E
		1WF	1 shaft end side F
		2WDE	2 shaft ends sides D and E
		2WDF	2 shaft ends sides D and F
		2WFE	2 shaft ends sides F and E
		3W	3 shaft ends
14	Gear wheel arrangement	RO	Gear wheel above (viewed on attachment side)
		RU	Gear wheel below (viewed on attachment side)
15	requirements	0	None
		1	According to specification, description or drawing



NEFF Telescopic Screw Drive S-TEG

2-stage synchronously extending telescopic screw drive as glide screw drive version or as ball screw drive version.
As proven "N" design version – "Lifting screw" - or as non-rotating variant of the "VK" design, optionally with safety nut and integrated limit switches.

Standardised connecting options on request for gear, toothed belt or for the direct connection of a drive motor by means of a motor adapter flange or coupling.
The different variants can be selected on the basis of the product code.

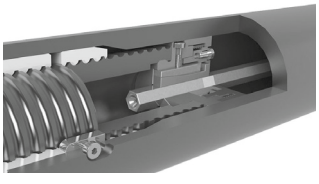
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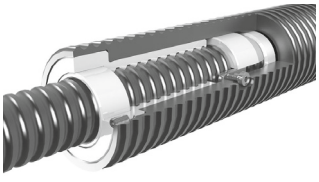
- The intelligent drive unit ensures continuous torque and clearance throughout the entire stroke.
- Reduced friction values due to Teflon-coated aluminium materials (glide screw version)
- The safety nuts for the glide screw version may optionally be set for fracture or wear.
- For the ball screw version, nuts from the standard product range are used, thus ensuring availability of stock goods and quick replacement.

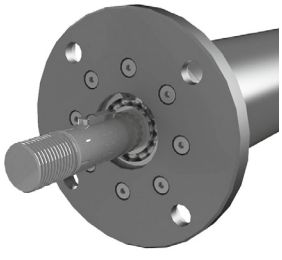
Technical specifications:

Max. stroke power with ball drive:	16400 N
Max. stroke power with glide screw drive:[1)]	10500 N
Maximum stroke length:	up to 2400mm > 2400mm on request
Stroke per revolution of the drive shaft:	10mm Up to 100mm on request
Axial clearance with ball screw drive:	0.1mm (standard) <0.1mm on request
Axial clearance with glide screw drive:	max. 0.4mm <0.4mm on request
Accuracy classes:	T7: 52µm/300mm[2)] T9: 130µm/300mm T10: 210µm/300mm
Efficiency with ball screw drive:	0.76
Efficiency with glide screw drive:	0.21 (version: 10mm stroke per revolution) 0.68 (version: 100mm stroke per revolution)
Idling torque with ball screw drive:	0.054 Nm
Idling torque with glide screw drive:	0.133 Nm
Maximum admissible drive torque:	30Nm

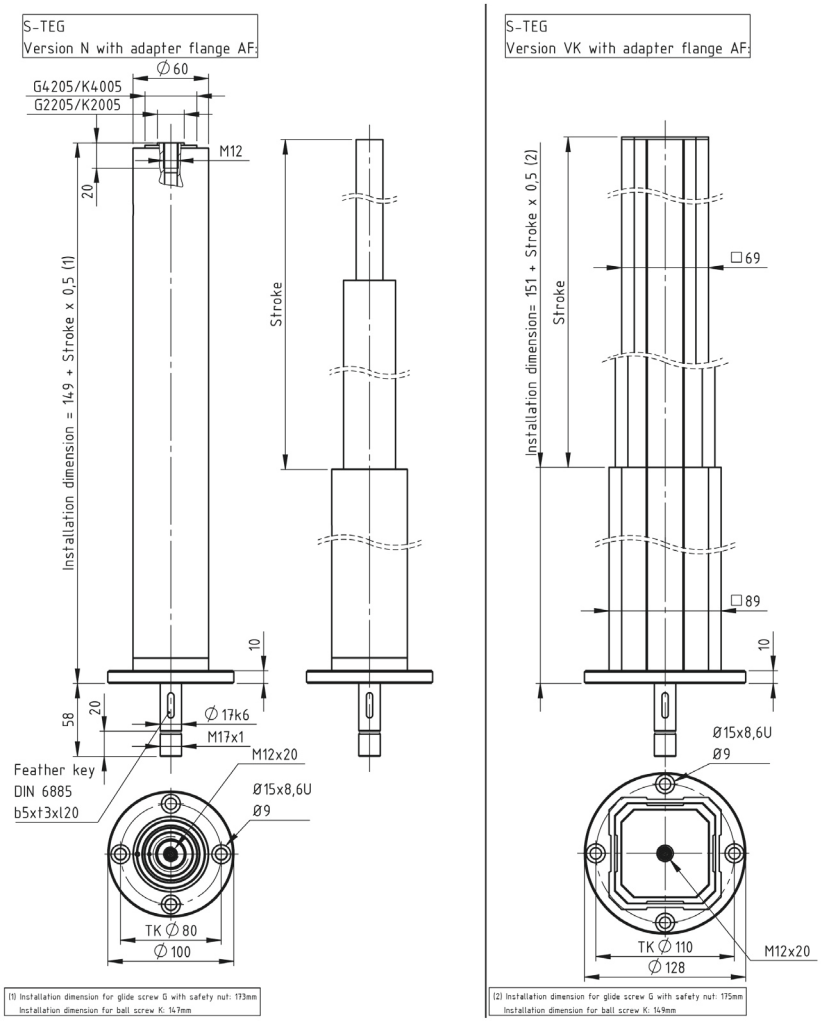
1) Depending on the pv value (load x speed)
2) Only available for ball screw version



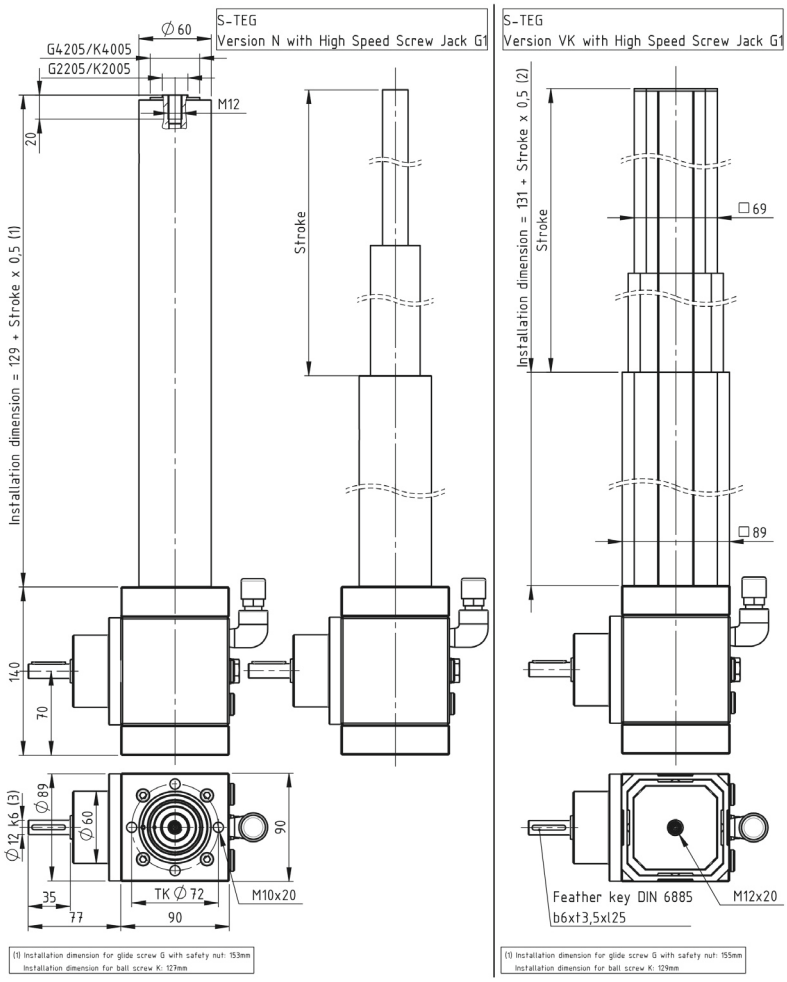




S-TEG-N-VK with adapter flange AF

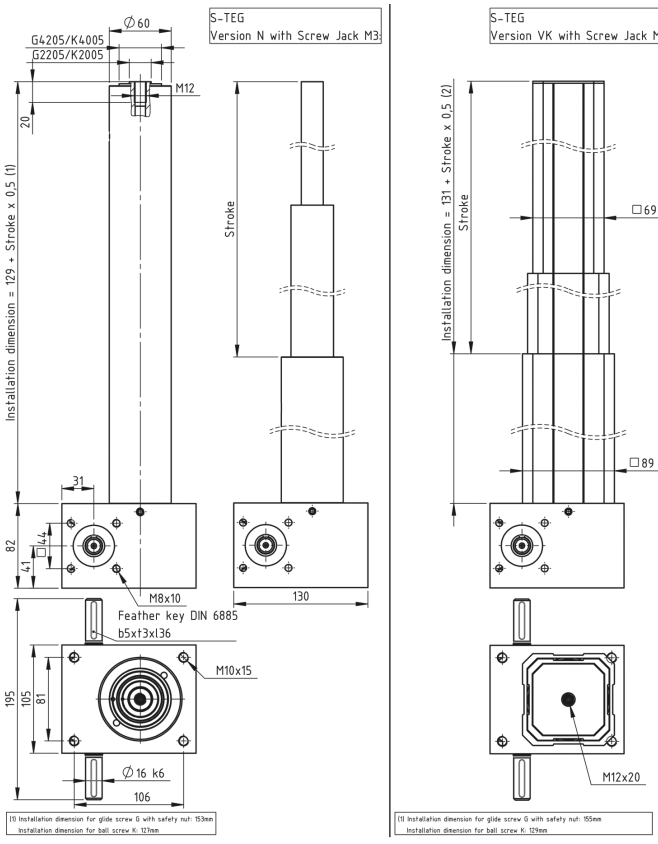


S-TEG-N-VK with High Speed Screw Jack G1



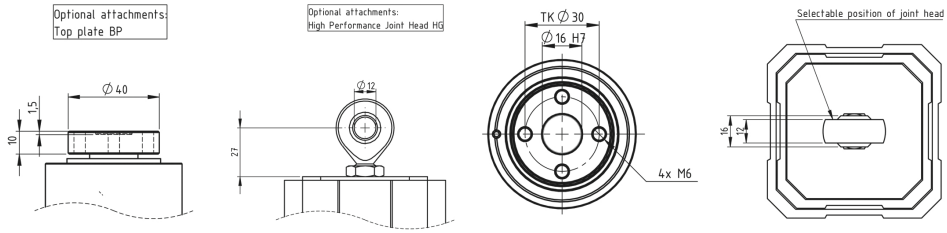
* optional with translation 2:1 or 3:1

S-TEG-N-VK with Screw Jack M3



*optional with translation 6 : 1 or 24 : 1

Attachment parts S-TEG



Ordering code

S-TEG Synchron-Telescope drive

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

□.□□□.□□.□.□□□□.□□□□.□□□.□□□.□□□□.□□.□□□□.□□□□.□

No.	Designation	Code	Description
①	Product abbreviation	S-TEG	Synchron-Telescop drive
②	Design	N VK	Lifting screw Lifting screw (protected against twisting by square tube)
③	Screw design	G K	Glide screw Ball screw
④	Screw size	4205- 2205 4005- 2005	Standard for Glide screw: 1. Step: 4205= Ø 42mm, 5mm Pitch 2. Step: 2205= Ø 22mm, 5mm Pitch Standard for ball screw: 1. Step: 4005= Ø 40mm, 5mm Pitch 2. Step: 2005= Ø 20mm, 5mm Pitch
⑤	Accuracy class of the screw	T7 T9 T10	52µm/300mm (Only for ball screw) 130µm/300mm 210µm/300mm
⑥	Safety nut	0 SFM	none Safety nut (Only for glide screw)
⑦	Stroke		Stroke length in [mm]
⑧	Attached parts screw end	0 BP HG	none (M12 Threaded) With Top plate BP With High Performance Joint Plug HGK
⑨	Attached parts driving side	AF MG M3 G1	With adaper flange AF With mounted Screw Jack M3 With mounted High Speed Screw Jack G1
⑩	Limit switches	0 IEND	none With inductive limit switches
⑪	Special requirements	0 1	none According to specificatin, description or drawing

TUBIX

Spindelhubgetriebe *Screw Jacks*



Konsequent dem Ansatz des Value Engineering folgend, sind die TUBIX Spindelhubgetriebe im Hause NEFF entstanden. Zwei gekreuzte und mit Laserstrahl verschweißte Rohre übernehmen dabei die Funktion des traditionellen Getriebegehäuses. Das vereinfacht Materialvariationen und ermöglicht eine breite Palette neuer Anwendungsfälle.

Approaching consistently the Value-Engineering technique NEFF created TUBIX – The new generation of Screw Jacks. Two tubes crossed replaces the traditional housing and opened a wide range of applications in design and material.

Technische Daten *Technical data*

TUBIX T50 mit Trapezgewindespindel *with trapezoidal screw*

Maximale Hubkraft / *Maximum lifting force:*		5kN [1]
Durchmesser und Steigung / *Diameter and pitch:*		Tr 18x4
Übersetzung / *Transmission ration:*		4:1
		16:1
Hub pro Umdrehung der Antriebswelle / *Stroke per revolution of the drive shaft:*	Übersetzung / *ratio 4:1*	1mm
	Übersetzung / *ratio 16:1*	0,25mm
Wirkungsgrad: [2] / *Effciency [2]*	Übersetzung / *ratio 4:1*	31%
	Übersetzung / *ratio 16:1*	25%
Leerlaufmoment: / *Idling torque*	Übersetzung / *ratio 4:1*	0,04Nm
	Übersetzung / *ratio 16:1*	0,03Nm
Max. zul. Drehmoment an der Antriebswelle / *Maximum drive torque*		3,4 Nm
Massenträgheitsmoment Bauart N Übers. 4:1 *Mass moment of inertia Design N Transmission ratio. 4:1*		1,22 x 10-5 kg m²
Massenträgheitsmoment Bauart N Übers. 16:1 *Mass moment of inertia Design N Transmission ratio 16:1*		8,8 x 10-6 kg m²
Massenträgheitsmoment Bauart R Übers. 4:1 *Mass moment of inertia Design R Transmission ratio 4:1*		1,26 x 10-5 kg m²
Massenträgheitsmoment Bauart R Übers. 16:1 *Mass moment of inertia Design R Transmission ratio 16:1*		9,1 x 10-6 kg m²

[1] abhängig von Hubgeschwindigkeit, Einschaltdauer, etc. / *Dependent on stroke speed, duty cycle, etc.*
[2] Bei den angegebenen Wirkungsgraden handelt es sich um Mittelwerte / *The specified efficiency values are average values*

Leistungstabellen *Performance table*

TUBIX T50 Tr18x4

n [$^{-1}$/min]	Hubgeschw. / Stroke speed [m/min]		F=5 [kN]				F=4 [kN]				F=3 [kN]				F=2,5 [kN]			
			4:1		16:1		4:1		16:1		4:1		16:1		4:1		16:1	
	4:1	16:1	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,5	0,375	2,7	0,42	0,9	0,1	2,1	0,33	0,7	0,1	1,6	0,25	0,5	0,1	1,3	0,21	0,4	0,1
1000	1	0,25	2,7	0,28	0,9	0,1	2,1	0,22	0,7	0,1	1,6	0,17	0,5	0,1	1,3	0,14	0,4	0,1
750	0,75	0,188	2,7	0,21	0,9	0,1	2,1	0,17	0,7	0,1	1,6	0,13	0,5	0,1	1,3	0,1	0,4	0,1
600	0,6	0,15	2,7	0,17	0,9	0,1	2,1	0,13	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1
500	0,5	0,125	2,7	0,14	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1
300	0,3	0,075	2,7	0,1	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1
100	0,1	0,025	2,7	0,1	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1
50	0,05	0,013	2,7	0,1	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1

TUBIX T50 Tr18x4

n [$^{-1}$/min]	Hubgeschw. / Stroke speed [m/min]		F=2 [kN]				F=1,5 [kN]				F=1 [kN]			
			4:1		16:1		4:1		16:1		4:1		16:1	
	4:1	16:1	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,5	0,375	1,1	0,2	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
1000	1	0,25	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
750	0,75	0,188	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
600	0,6	0,15	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
500	0,5	0,125	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
300	0,3	0,075	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
100	0,1	0,025	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1
50	0,05	0,013	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1

Einschaltdauer / *Duty cycle* 10-20% — Einschaltdauer / *Duty cycle* <10% — Nur statisch zulässig / *only static*

Übersicht Konstruktive Ausführung Spindelhubgetriebe
Overview constructive design Screw Jacks

Einbauausführung – *standard configuration* TUBIX

000- Ohne Flansch & Schutzrohr zur eigenen Anbindung *Without flange & protection tube for own connection*

Basisausführungen *Basic* – TUBIX Klassisch kompatibel *Classic combatible*

001- Ausführung *Type* NEFF – Siehe Tabelle / Zeichnung Basisausführungen Klassische SHG [1] *See table / drawing Basics classic SHG [1]*
00X- Frei konfigurierbare Ausführung – Maße in Tabelle / Zeichnung Basisausführungen Klassische SHG eintragen
Free configuration - Write dimensions in the table / drawing Basics classic SHG [1]

Basisausführungen *Basic* – TUBIX Kubisch kompatibel *Cubic compatible*

050- Ausführung *Type* NEFF – Siehe Tabelle/Zeichnung Basisausführungen Kubische SHG [1] *See table/drawing Basics cubic SHG [1]*
070- Ausführung *Type* mit Flansch 050, Hohlwelle und IEC-Motorflansch 71 *with flange 050, hollow shaft and IEC-71 motorflange*
00Y- Frei konfigurierbare Ausführung – Maße in Tabelle / Zeichnung Basisausführungen Kubische SHG [1] eintragen
Free configuration - Write dimensions in the table / drawing Basics cubic SHG [1]

Konstruktive Ausführungen *Constructive design* TUBIX mit kardanischer Aufhängung *with gimbal*

301- Mit Schwenklagerauge Seite A-B am Schneckenwellenrohr *with gimbal side A-B on wormshaft tube*
302- Mit Schwenklagerauge Seite C-D am Schneckenradrohr Seite F *with gimbal side C-D on worm tube side F*
303- Mit Schwenklagerauge Seite A-B am verlängerten Schneckenradrohr Seite E *with gimbal side A-B on extended worm tube E*
304- Mit Schwenklagerauge Seite C-D am verlängerten Schneckenradrohr Seite E *with gimbal side C-D on extended worm tube E*

Konstruktive Ausführungen *Constructive design* TUBIX mit Schubzylinder *with lifting cylinder*

601- Schubzylinderausführung *Standard Lifting cylinder standard*
602- Schubzylinderausführung, verdrehgesichert *Lifting cylinder, protected against twisting*
603- Schubzylinderausführung mit beidseitigem Schwenklagerauge *A-B Lifting cylinder, with both-sided gimbal side A-B*
604- Schubzylinderausführung mit Hohlwelle und Motorflansch *IEC 63 Lifting cylinderwith hollow shaft and IEC-63 motorflange*
605- Schubzylinderausführung mit Hohlwelle und Motorflansch *IEC 71 Lifting cylinderwith hollow shaft and IEC-71 motorflange*
606- Schubzylinderausführung mit Flansch 001 *Lifting cylinder with flange 001*
607- Schubzylinderausführung doppelseitig auf Seite *E-F Both-ended Lifting cylinder on side E-F*

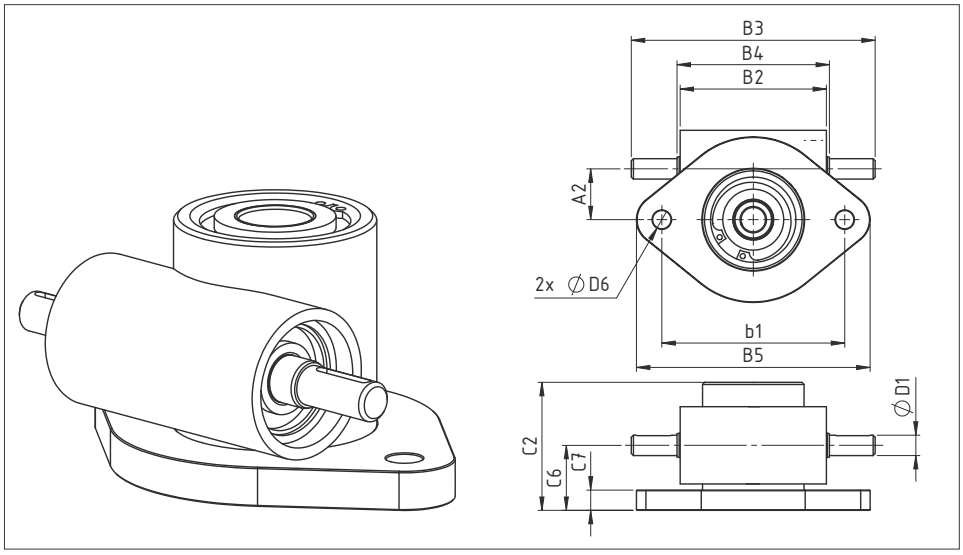
Weitere *More* TUBIX Ausführungen *Designs*

500- Mit Rechts- Links Gewindetrieb Seite E-F *with right- left handed threaded screw side E-F*
501- Ausführung mit integrierter Axiallast-Sensorik *with integrated load-sensoric*
502- Ausführung mit integrierter Drehmoment-Sensorik *with integrated torque-sensoric*
503- Ausführung mit Lineargleitführung *with glide linear guide*
504- Ausführung mit Linearkugelführung *with ball linear guide*

[1] SHG = Spindelhubgetriebe *Screw Jacks*

Konstruktive Ausführungen *Constructive design*

TUBIX T50 Basisausführungen – Klassische Spindelhubgetriebe SHG *Basics - Classic Screw Jacks SHG*



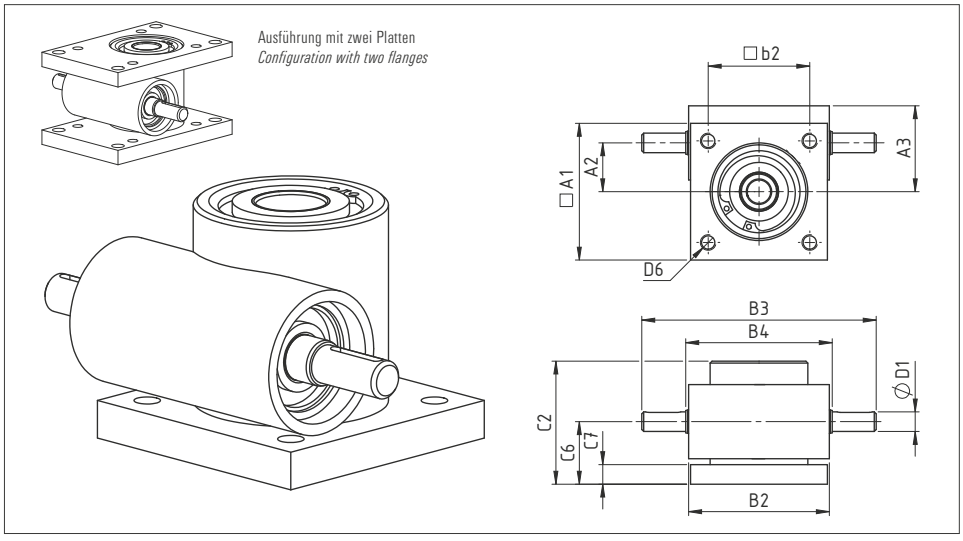
Konstruktive Ausführung *Constructive design*	Beschreibung *Description*	A2*[1,3]	b1	B2	B3	B4	B5	C2	C6*[2]	C7	D1	D6
001	NEFF	25	90	72	120	75	115	63	32	10	10	9
00X	Konfigurierbar *configurable*	25							min 30			

*[1] Festes Maß, nicht konfigurierbar *fix dimension, not changable*
*[2] Min. 30mm *min. 30mm*
*[3] Um bei Hubsystemen mit Verbindungsgetrieben das herstellungsbedingte Maß 25 auszugleichen, kann mittels einer kardanischen Gelenkwelle ausgeglichen werden.
To compensate the given dimension 25mm please use cardanic shafts.

- Kompatibel mit allen gängigen klassischen Hubgetrieben. *Compatible with all established classic Screw Jacks.*
- Einfacher Vergleich der bestehenden Anschlussmaße mit den vorgegebenen Maßen in der Tabelle. *Comprare the connecting dimensions with the table above.*
- Die Anschlussmaße sind zusätzlich frei konfigurierbar, dazu die leeren Felder in der Konstruktiven Ausführung 00X ausfüllen und unser Vertriebsteam kontaktieren. *Additional the connecting dimensions are free configurable. Therefor please fill in the free cells at Constructive Design 00X and contact our sales team.*

Konstruktive Ausführungen *Constructive design*

TUBIX T50 Basisausführungen – Kubische Spindelhubgetriebe SHG Basics - *Cubic Screw Jacks SHG*



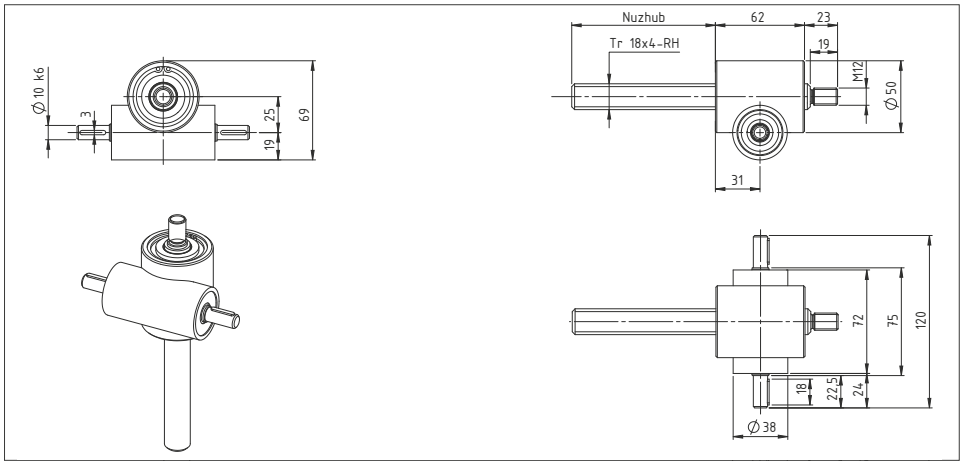
Konstruktive Ausführung *Constructive design*	Beschreibung *Description*	A1	A2[1,3]	b2	B2	B3	B4	C2	C6[2]	C7	D1	D6
050	N NEFF	70	25	52	72	120	75	63	32	10	10	M8
00Y	K Konfigurierbar configurable		25						min 30			

*(1) Festes Maß, nicht konfigurierbar *fix dimension, not changable*
*(2) Min. 30mm *min. 30mm*
*(3) Um bei Hubsystemen mit Verbindungsgetrieben das herstellungsbedingte Maß 25 auszugleichen, kann mittels einer kardanischen Gelenkwelle ausgeglichen werden.
To compensate the given dimension 25mm please use cardanic shafts.

- Kompatibel mit allen gängigen klassischen Hubgetrieben. *Compatible with all established classic Screw Jacks.*
- Einfacher Vergleich der bestehenden Anschlussmaße mit den vorgegebenen Maßen in der Tabelle. *Comprare the connecting dimensions with the table above.*
- Die Anschlussmaße sind zusätzlich frei konfigurierbar, dazu die leeren Felder in der Konstruktiven Ausführung 00X ausfüllen und unser Vertriebsteam kontaktieren. *Additional the connecting dimensions are free configurable. Therefor please fill in the free cells at Constructive Design 00X and contact our sales team.*

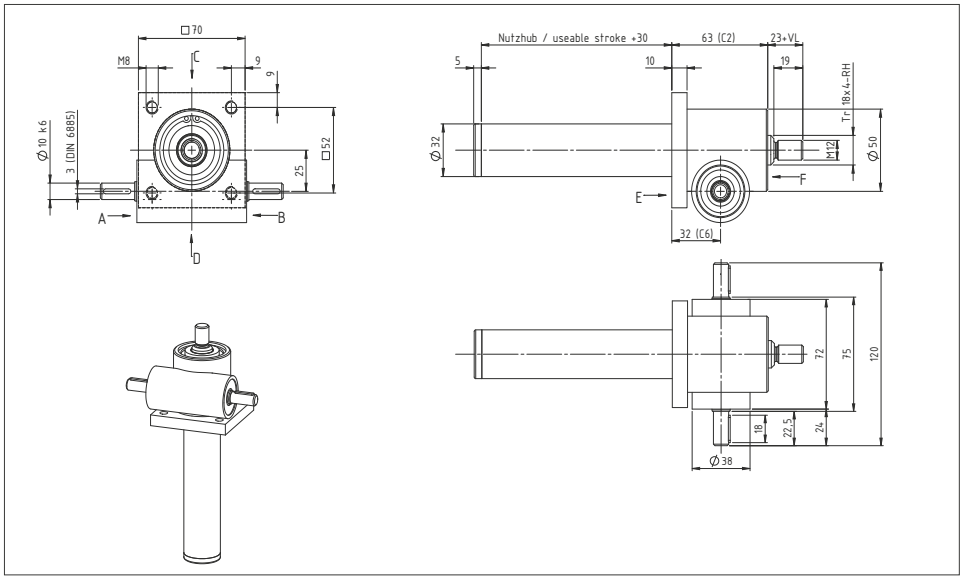
Konstruktive Ausführungen *Constructive design*

TUBIX T50 Konstruktive Ausführung 000-Bauart N – *Constructive design 000-Version N*



Ausführung mit Gewindezapfen *Design with metric threaded stem*

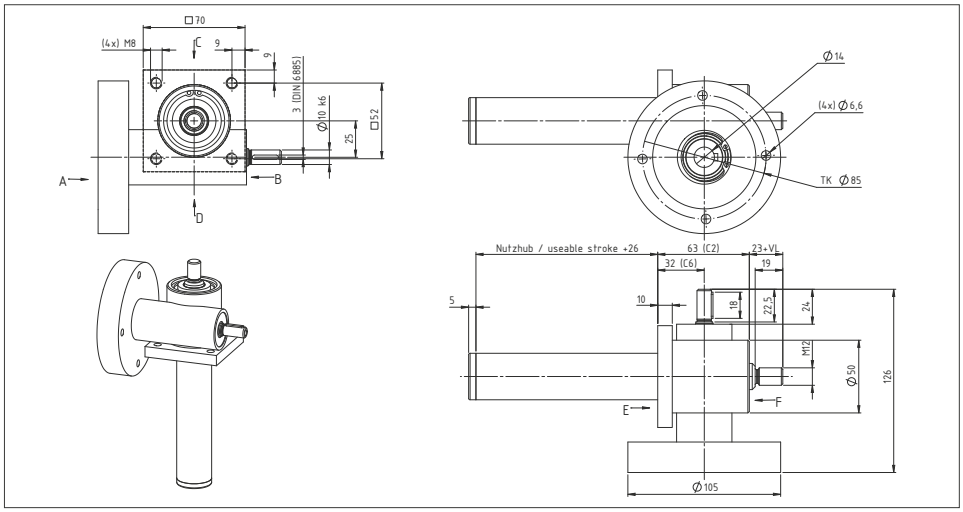
TUBIX T50 Konstruktive Ausführung 050-Bauart N – *Constructive design 050-Version N*



Ausführung mit Gewindezapfen *Design with metric threaded stem*

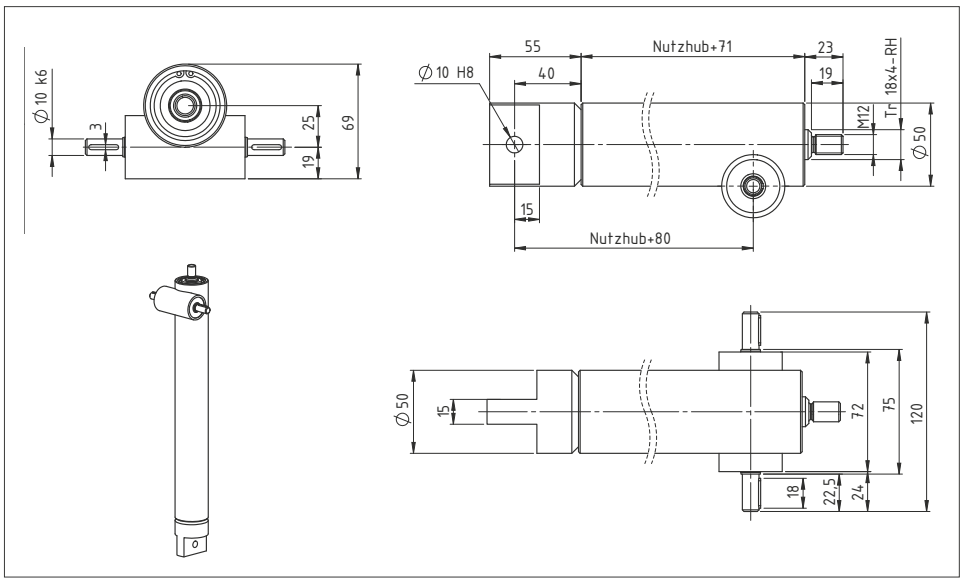
Konstruktive Ausführungen *Constructive design*

TUBIX T50 Konstruktive Ausführung 070-Bauart N – *Constructive design 070-Version N*



Ausführung mit Gewindezapfen *Design with metric threaded stem*

TUBIX T50 Konstruktive Ausführung 303 - *Constructive design 303*

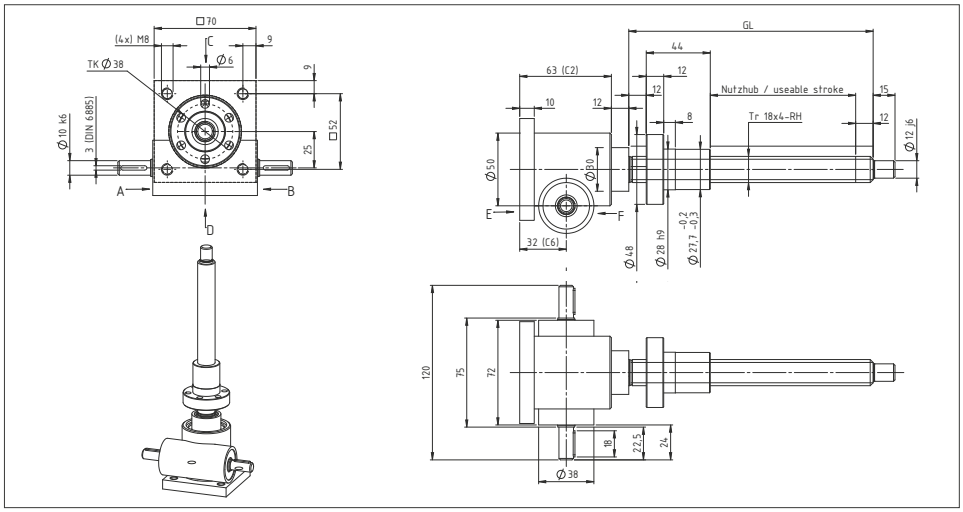


Ausführung mit Gewindezapfen *Design with metric threaded stem*

NEFF

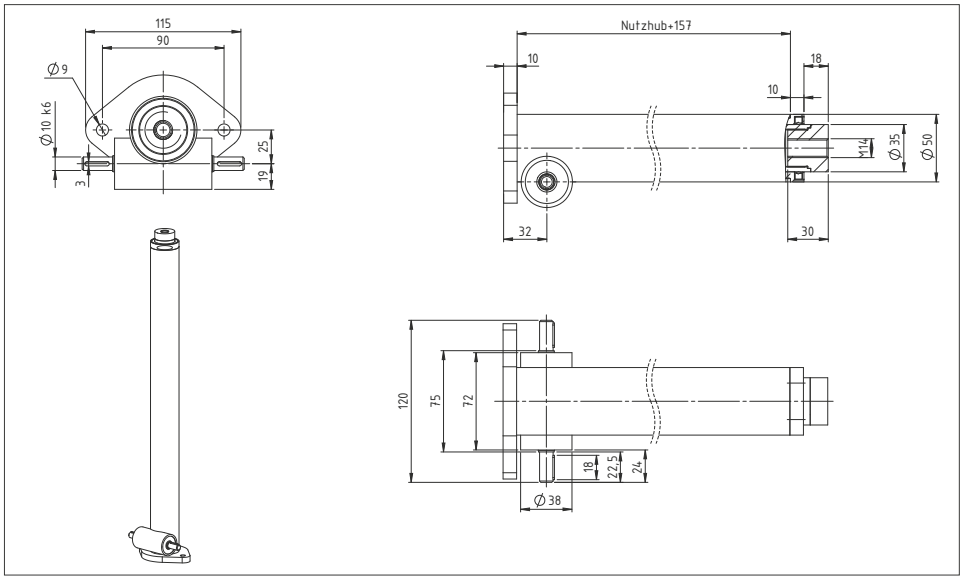
Konstruktive Ausführungen *Constructive design*

TUBIX T50 Konstruktive Ausführung 050-Bauart R – *Constructive design 050-Version R*



Ausführung mit Zentrierzapfen *Design with centric stem*

TUBIX T50 Konstruktive Ausführung 606 - *Constructive design 606*



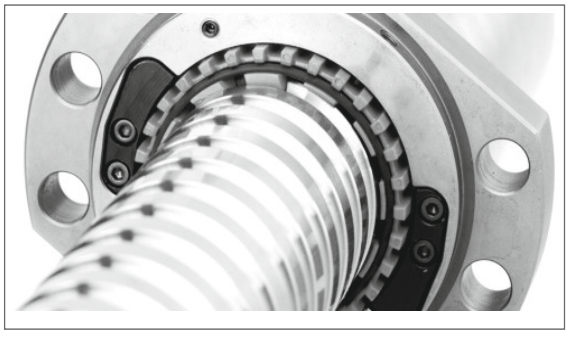
Ausführung mit Gewindezapfen *Design with metric threaded stem*

TUBIX Bestellcode *Ordering code*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				:											

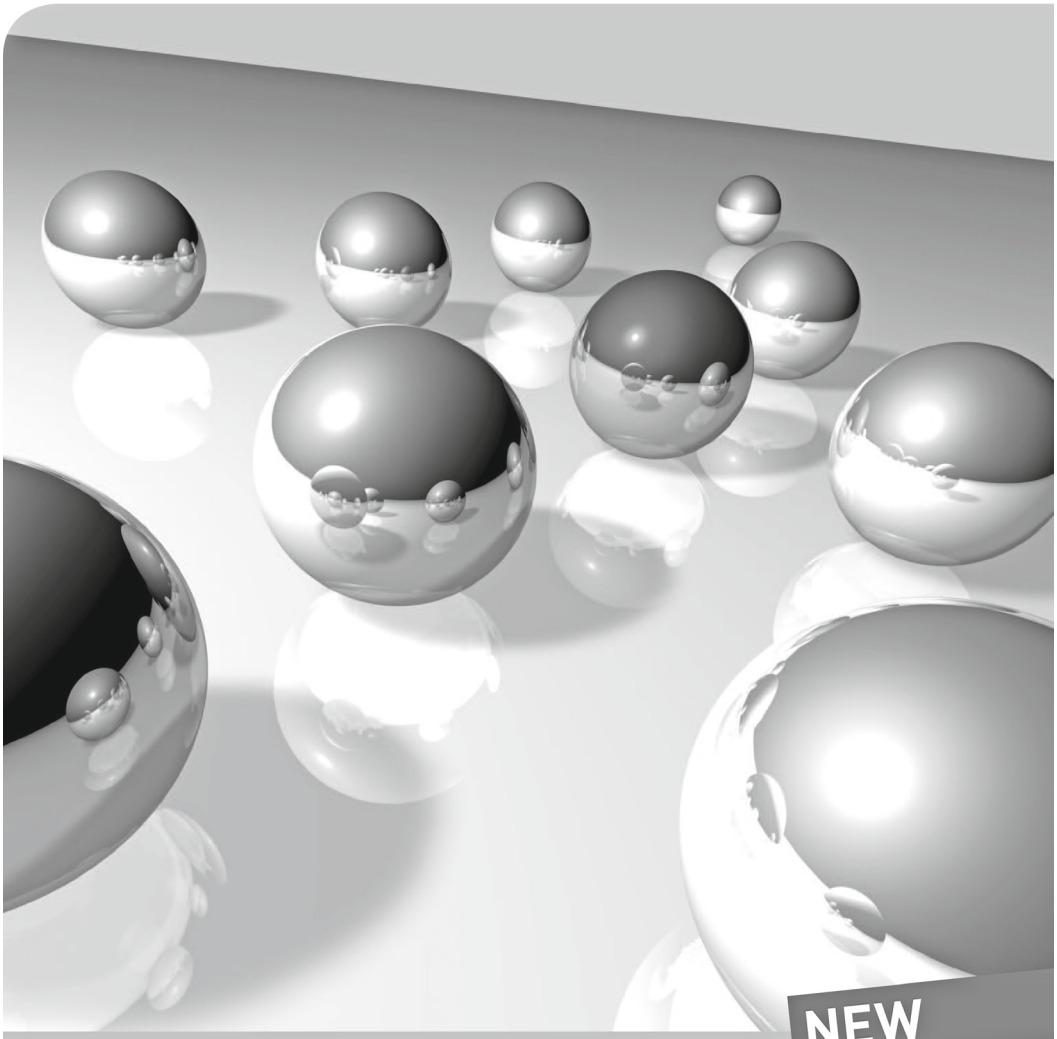
1	Produktkurzzeichen / *Product abbreviation*	**T**	Spindelhubgetriebe TUBIX / *Screw Jack TUBIX*
2	Bauart / *Design*	**N**	Stehende Hubspindel / *Lifting screw*
		R	Rotierende Hubspindel / *Rotating screw*
3	Baugröße / *Size*	**50**	Außendurchmesser des Schneckenradrohres in mm external diameter of worm gear tube in mm
4	Konstruktive Ausführung / *Constructive design*	**000-999**	z.B. 001 Ausführung ohne Anbauplatte und Schutzrohr Siehe Seite Konstruktive Ausführungen *e.g. 001 Design without mounting flange and mounting flange* *Specification of the constructive design*
5	Übersetzung / *Transmission ratio*	**4:1 / 16:1**	
6	Spindelart / *Type of screw*	**T**	Trapezgewinde / *Trapezoidal screw*
		K	Gleitgewinde / *Glide screw*
		G	Kugelgewinde / *Ball screw*
7	Spindelabmessung / *Screw dimension*	**z.B. 18x4**	18mm Durchmesser und 4mm Steigung *diameter 18mm, pitch 4mm*
8	Hub in mm / Stroke in mm		Maßangabe in mm / *Specification of the stroke length*
9	Spindelverlängerung VL [mm] bei Bauart N *Attached part for version N / VK* Nutzbare Hublänge GL in mm bei Bauart R *Usable stroke length GL for version R*		Spindelverlängerung VL, Nutzbare Gewindelänge GL z.B. aufgrund Einbausituation, siehe Produktzeichnungen *Screw ectension VL, Usable stroke length GL e.g. mounting situation see* *product drawings*
10	Anschraubfläche zu Gehäuseoberkante in mm *Mounting surface to top edge housing*	**z.B. 62**	Maß C2 in Produktzeichnungen / *Specification C2 of the product drawings*
11	Anschraubfläche zu Schneckenwellenachse *Mounting surface to worm gear shaft*		Maß C6 in Produktzeichnungen / *Specification C6 of the product drawings*
12	Spindelende / *Screw end*	**M**	Metrischer Gewindezapfen / *Metric threaded stem*
		A	Ende mit Fase / *End with chamfer*
		S	Sonder (entsprechend Angabe, Beschreibung oder Zeichnung) *Custom (according to specification, description or drawing)*
		Z	Zentrierzapfen (Standard Version R) *Centric stem (standard for version R)*
13	Anbauteile für Version N/VK *Attached part for version N/VK*	**0**	Ohne / *None*
		BP	Mit Befestigungsplatte montiert / *With fastening plate mounted*
		GA	Mit Gelenkauge montiert / *With spherical bearing mounted*
		GK	Mit Gabelkopf montiert / *With fork end mounted*
		HG	Mit Hochleistungsgelenkkopf montiert / *With high-performance fork end mounted*
	Muttertyp für Version R *Nut type for version R*	**F-D**	Flanschmutter nach DIN 69051 (Flansch zeigt zum Getriebe) *Flanged nut according to DIN 69051 (flange direction to housing)*
		F-N	Flanschmutter nach Neff-Norm (Flansch zeigt zum Getriebe) *Flanged nut according to NEFF-Norm (flange direction to housing)*
		D-F	Flanschmutter nach DIN 69051 (Flansch zeigt zum Spindelende) *Flanged nut according to DIN 69051 (flange direction to screw end)*
		N-F	Flanschmutter nach Neff-Norm (Flansch zeigt zum Spindelende) *Flanged nut according to NEFF-Norm (flange direction to screw end*
		EFM-N	Trapezgewindemutter nach Neff-Norm (Flansch zeigt zum Getriebe) *Trapezoidal-threaded nut to NEFF-Norm (flange direction to housing)*
		N-EFM	Trapezgewindemutter nach Neff-Norm (Flansch zeigt zum Spindelende) *Trapezoidal-threaded nut to NEFF-Norm (flange direction to screw end)*
		SFF-N	Fangmutter-Flanschseitig n. Neff-Norm (Flansch zeigt zum Getriebe) *Safety nut – flange side to NEFF-Norm (flange direction to housing)*
		N-SFF	Fangmutter-Flanschseitig n. Neff-Norm (Flansch zeigt zum Spindelende) *Safety nut – flange side to NEFF-Norm (flange direction to screw end)*
		SFZ-N	Fangmutter-Zentrierseitig n. Neff-Norm (Flansch zeigt zum Getriebe) *Safety nut – centric side to NEFF-Norm (flange direction to housing)*
		N-SFZ	Fangmutter-Zentrierseitig n. Neff-Norm (Flansch zeigt zum Spindelende) *Safety nut – centric side to NEFF-Norm (flange direction to screw end)*
14	Spindelabdeckung / *Screw cover*	**0**	Ohne / *None*
		FB	Mit Faltenbalg / *With bellow*
		SF	Mit Spiralfederabdeckung / *With spiral spring cover*
15	Ausdrehsicherung / *Anti-unscrewing* device	**0**	Ohne / *None*
		AS	Mit (Bei KGT serienmäßig verbaut) / *With (installed as standard with ball screw drive)*
16	Material / *material*	**0**	Stahl, schwarz lackiert / *steel black coated*
		1	Zinkphosphatiert / *zinc phosphated*
		2	Rostfreier Stahl (V2A) / *stainless steel (V2A)*

NOTES:





ROLLED AND GROUND TYPE BALL SCREWS

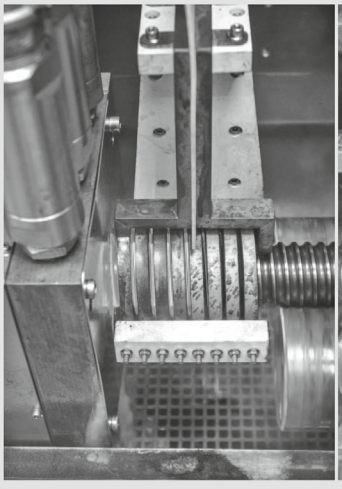


ROLLED BALL SCREWS –
THE ALTERNATIVE IN LINEAR TECHNOLOGY

2.1 | MANUFACTURING PROCESS



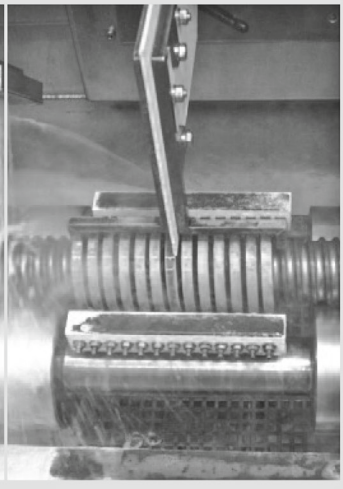
Thread rolling



Heat treatment: annealing ...



Quenching ...



and tempering



Alignment



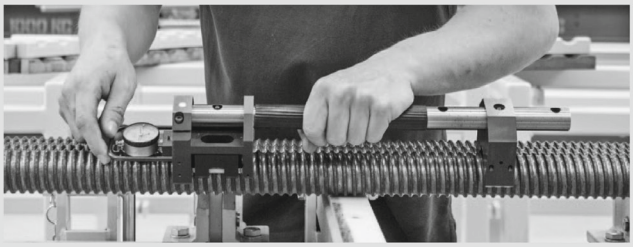
Polishing



Measurement of the diameter

2.2 | ACCURACY CLASSES

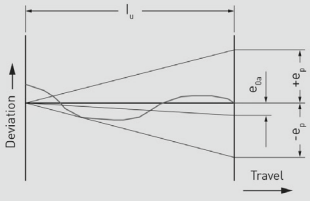
Steinmeyer classifies rolled ball screws according to DIN ISO 69051 part 3 – as transport ball screws in tolerance class T5 through T10.



2.2.1 | Lead error

Limit e_p for the average lead error e_{0a} [µm]

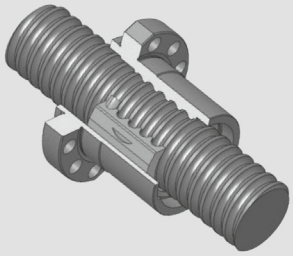
	Tolerance classes			
l_u [mm]	T5	T7	T9	T10
200 – 315	23	52	130	210
315 – 400	24	55	137	221
400 – 500	31	69	173	280
500 – 630	38	87	217	350
630 – 800	48	109	273	441
800 – 1,000	61	139	347	560
1,000 – 1,250	77	173	433	700
1,250 – 1,600	96	217	542	875
1,600 – 2,000	123	277	693	1120
2,000 – 2,500	153	347	867	1400
2,500 – 3,150	192	433	1083	1750
3,150 – 4,000	242	546	1365	2205
4,000 – 5,000	307	693	1733	2800
5,000 – 6,300	383	867	2167	3500



2.3 | BALL RETURN

As world's only Steinmeyer uses all commonly known designs for ball returns. However, the multiliner return represents the standard for all rolled ball screws. Steinmeyer employs external return as through-the-nut and end cap return.

2.3.1 | Multiliner (internal return)

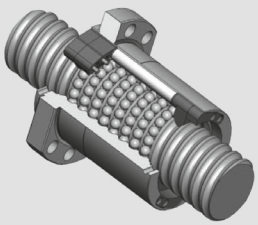


A feature that characterises internal return are multiliners, which lift the balls out of the track and over the outer diameter of the spindle and guide them into the next available track. The internal return is particularly compact and yields the smallest nut diameters of any ball return system. It is also the ball return of choice for very small ball sizes and small leads.

2.3.2 | Technical tip:

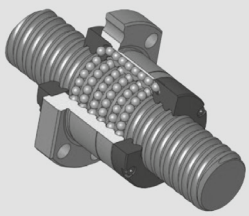
Ball nuts require a means to recirculate balls. Without it, the ball path would not be closed and balls would fall out at the rear end of the nut.
Design of the ball return is the determining factor for the maximum speed at which the ball nut can safely operate. This is normally expressed by the DN value. The better the ball return system deals with mass forces of the balls, the higher the DN value. Manufacturers typically quote DN values from 60,000 for basic tube returns to 160,000 and higher, e.g. the UltraSpeed return from Steinmeyer.

2.3.3 | Through the nut return (external return)



Steinmeyer's UltraSpeed return is normally used for lead/diameter ratios greater than 0.5. It is normally used with dual start threads. Balls are lifted off the shaft using a deflector at one end of the nut and then guided through a bore (internal to the nut body) to the other end of the nut, where a similar piece guides the balls back onto the thread. One pair of deflectors serves one circuit (i.e. one of the threads), which includes several turns.

2.3.4 | End cap return (external return)



End cap return works very much like the previously described through-the-nut return, with the exception that the ball deflector function is executed using a cap that is integrated onto the front of the nut along with the wiper. End cap return is normally used for very large lead/diameter ratios.

2.4 | ROTATION SPEED VALUES

2.4.1 | Critical speed

Critical speed is the first (lowest) speed at which the ball screw shaft is in resonance. In applications with rotating shafts it limits the rpm of the screw. Variables that influence it are shaft diameter, unsupported length and support bearing configuration.

2.4.2 | Maximum speed

A second limitation is imposed by the mass forces upon balls. It depends on internal construction of the ball nut and in particular the ball return, and ball diameter (or mass).

2.4.3 | DN Value

DN values allow easy comparison between different ball screw designs. More sophisticated ball return systems result in higher DN values and, conversely, lower DN values are associated with less sophisticated ball return methods. DN values provide direct correlation to ball velocity.

$$DN = n_{max} \cdot d_N$$

n_{max} = Maximum speed [rpm]
d_N = Nominal diameter [mm]
DN = Rotation speed value

Most ball screws available today have maximum DN values between 60,000 and 120,000, and in some cases even higher. However, Steinmeyer recommends observing the maximum speeds published here for each size. Use the following values for orientation purposes and of course for Steinmeyer ball screws only.

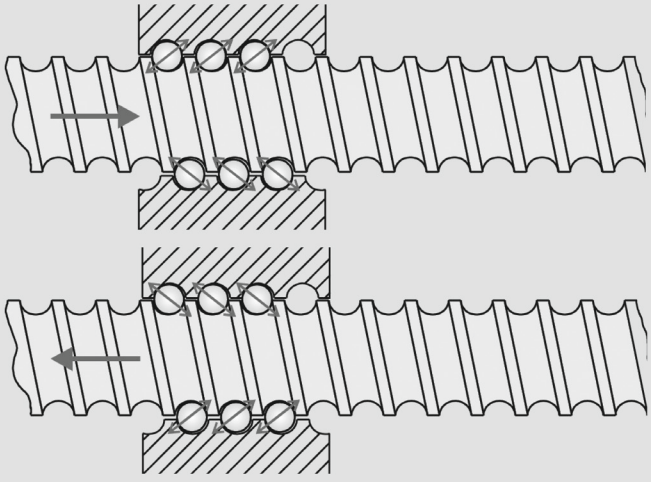
- Internal return
  (Series 8xxx): DN ≤ 120,000
- External return
  (UltraSpeed and end-cap return)
  (Series 2xxx und 3xxx):
  DN ≤ 160,000

2.5 | NUT CLEARANCE

Single nut with backlash

Steinmeyer produces rolled ball screws with a single nut with clearance. This axial clearance amounts to approx. 0.04 mm with a maximum 0.06 mm for the sizes displayed here.

Versions that are free of clearance/ pre-tensioned are available upon request. In this instance the nut is not available separately, but is supplied already mounted to the screw shaft.



- Axial clearance (approx. 0.04 – 0.06 mm)
- Edge change with changes in load direction
- always two-point contact
- Balls convey alternately in both directions

2.6 | WIPERS

Plastic wiper

Segment wipers are standard in a variety of applications: they reliably prevent the penetration of shavings and coarse dirt particles but allow for a certain amount of lubricant leakage. In conjunction with an automatic oil and grease intake, a rinsing effect of the nut occurs, resulting in a high level of operational safety.



2.7 | LUBRICATION, INSTALLATION AND ASSEMBLY

2.7.1 | Handling, Storage

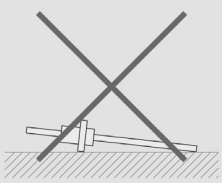
Ball screws should be protected against damage and dirt particles. No additional treatment of the ball screws is necessary after delivery and they can be immediately stored. They should be kept in the protective foil until installation.

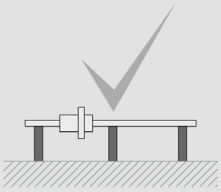
2.7.2 | Storage

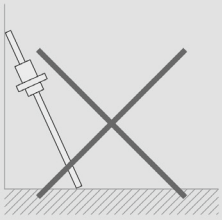
Heavy units should not be placed on the nut. Placing underneath can prevent bending of the spindle. Temperature fluctuations should be avoided in the storage space (risk of build up of condensation).

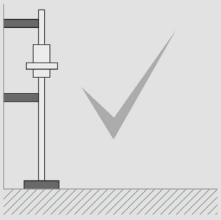
2.7.3 | Cleaning

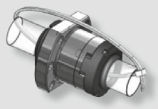
- Petrol or kerosene can be used for cleaning. This should be thinly applied to the spindle and then thoroughly removed with compressed air. Avoid turning the nut.
- Periodic movement of the nut results in improved cleanliness.
- Use a lint-free rag for cleaning







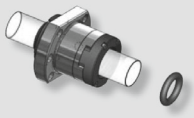




2.7.4 | Nut assembly

Before the nut can be mounted on the spindle, the following points should be reviewed:

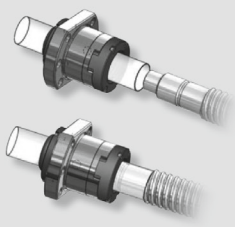
- Has the spindle been cleaned and aligned?
- Is the thread bur-free?
- Nut assembly unit on the spindle (e.g. flange to the short pin side)
- Nut mounting alignment on the spindle (from which side is being turned?)



■ Remove safety

During transportation, the nut is secured using cable ties or o rings. This safety must be removed before installation.

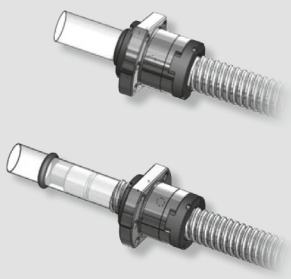
Attention: It is important to ensure that the nut does not slip down the spine as the ball can be lost.



■ Positioning the spine at the top of the thread

Depending on the circumstances, the spine (with nut) will either be conducted via the spindle pin or set on the spindle end.

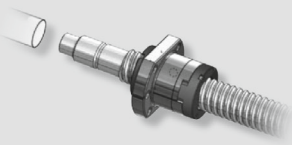
Attention: it is important to ensure that it rests flush with the thread.



■ Screwing the nut onto the spindle

The nut is now carefully pushed forward onto the spine until the front edge of the nut is right next to the spindle thread. Now the nut should be screwed carefully onto the spindle. There should be only minimal resistance. The following guideline value applies: **Threading force in [N] = 1/2-nominal-Ø [mm]** (Threading force is the force required for the area of the nut).

The nut is then completely screwed onto the spindle.



■ Removing the mounting sleeve

The spine may only be removed if it is ensured that the nut is secured onto the spindle, complete with balls and wipers.

■ Screwing the nut downwards from the spindle

In order to remove the nut from the spindle, repeat the above-described process in reverse order.

3.1 | ORDER CODE

Order code	(Example)	0	0	3	5	/	5	16		3000	3000	T	7
0 Without nut (single screw shaft) **2** Nut with end cap return **3** Nut with through-the-nut return **8** Nut with multiliner													
0 No nut (single screw shaft) **1** Nut with connecting thread **4** Single flange nut													
1 Ground – one start (for nuts on sleeve) **2** Ground – two or more threads (for nuts on sleeve) **3** Rolled thread– one start **4** Rolled thread – two or more starts													
5 Screw shafts without nut **4** Nut dimensions special version **6** Flange nut dimensions according to DIN **2** Dimensions according to Steinmeyer standards (with connector nuts)													
... Lead													
... Diameter													
... Ball diameter (with nuts on sleeve)													
... Number of circuits (for nuts on sleeve)													
... Thread length (different for screw shafts with end machining)													
... Total length (screw shafts)													
T Transportation KGT													
... Tolerance class according to DIN 69051 (standard 7, classes 5, 9, 10 upon request)													
P Nut without clearance or with preload (option for assembled nut)													
... Number of nuts mounted onto the screw shaft (option for assembled nut)													

Examples:

Screw shaft:	0035/5.16.3000.3000 T7
Nut:	8416/5.16.3,5.3
Ball screw:	8416/5.16.3000.3000 T7P 3

4.1 | FLANGE NUTS ON MOUNTING SLEEVES

Model series 2426 | Flange single nut with end cap return, wiper on both sides, two or more threads.



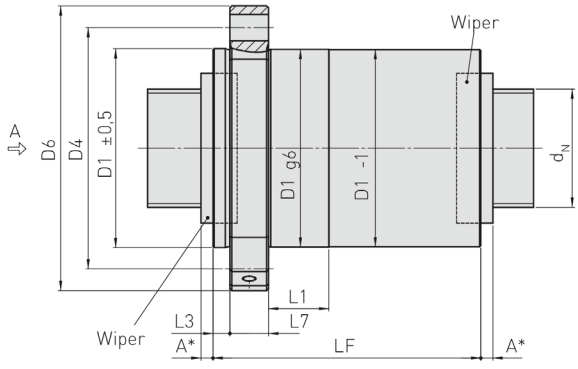
Model series 3426 | Flange single nut with external high-speed through-the-nut return, wiper on both sides, two or more threads.

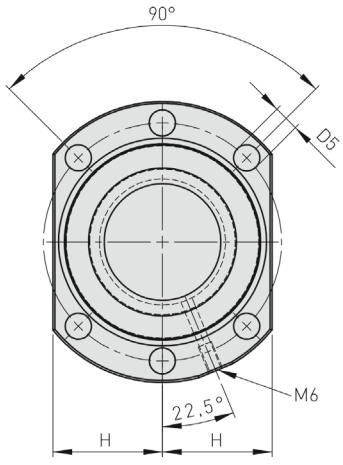


Model series 8416 | Flange single nut with multiliner, wiper on both sides.



Type	Lead P [mm]	Nominal diameter d_N [mm]	Ball diameter d_W [mm]	Number of circuits [i]	Dynamic load capacity C_a [kN]	Static load capacity C_{0a} [kN]
8416/5.16.3,5.3	5	16	3.5	3	10.1	12
2426/10.16.3,5.6	10	16	3.5	3 + 3	19.6	27.4
8416/5.20.3,5.3	5	20	3.5	3	12.1	16.7
2426/10.20.3,5.6	10	20	3.5	3 + 3	22.8	36.5
2426/20.20.3,5.4	20	20	3.5	2 + 2	14.7	22.4
8416/5.25.3,5.3	5	25	3.5	3	13.7	21.5
2426/10.25.3,5.6	10	25	3.5	3 + 3	25.2	45.4
2426/20.25.3,5.4	20	25	3.5	2 + 2	17.1	29.5
2426/25.25.3,5.4	25	25	3.5	2 + 2	16.7	29
8416/5.32.3,5.4	5	32	3.5	4	20.4	39.8
8416/10.32.6.3	10	32	6	3	30.8	45.6
3426/20.32.6.4	20	32	6	2 + 2	39.3	63.6
3426/32.32.6.2	32	32	6	1 + 1	18.2	26.5





Hole pattern 1

Hole pattern 1, flange from B according to DIN 69051.

Hole pattern	LF [mm]	Ø D1 g6 [mm]	L1 [mm]	Ø D4 [mm]	Ø D5 [mm]	Ø D6 [mm]	L7 [mm]	L3 [mm]	H [mm]
1	46	28	10	38	5.5	48	10	6	20
1	44	32	16	42	5.5	52	10	12	20
1	46	36	10	47	6.6	58	10	6	22
1	49	36	10	47	6.6	58	10	7	22
1	57	36	10	47	6.6	58	10	7	22
1	46	40	10	51	6.6	62	10	6	24
1	49	40	10	51	6.6	62	10	7	24
1	57	40	10	51	6.6	62	10	7	24
1	66	40	10	51	6.6	62	10	7	24
1	53	50	10	65	9	80	12	6	31
1	72	50	16	65	9	80	12	7	31
1	68	56	20	71	9	86	14	7	32.5
1	60 + 2x5*	56	20	71	9	86	14	7 + 5*	32.5

4.1 | FLANGE NUTS ON MOUNTING SLEEVE

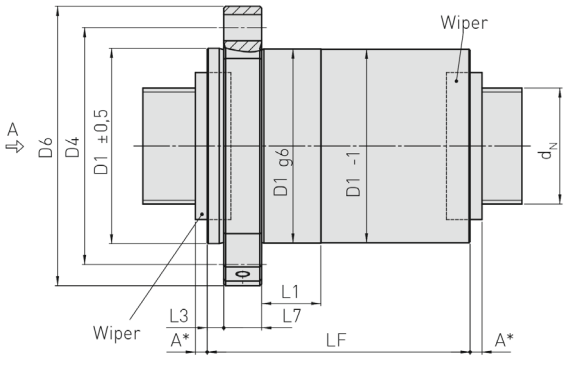
Model series 3426 | Flange single nut with external high-speed through-the-nut return, wiper on both sides, two or more threads.

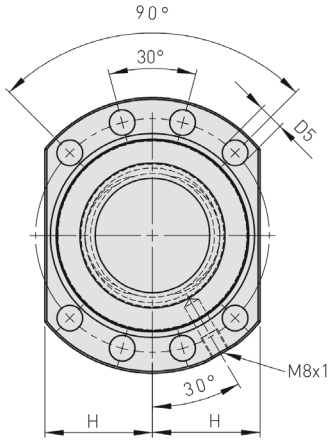


Model series 8416 | Flange single nut with multiliner, wiper on both sides.
Model series 8426 | Flange single nut with multiliner, wiper on both sides, two or more threads.



Type	Lead P [mm]	Nominal diameter d_N [mm]	Ball diameter d_W [mm]	Number of circuits [i]	Dynamic load capacity C_a [kN]	Static load capacity C_{0a} [kN]
8416/5.40.3,5.5	5	40	3.5	5	27.5	63.6
8416/10.40.7,5.4	10	40	7.5	4	59	95.1
3426/20.40.6.6	20	40	6	3 + 3	64.9	126.3
3426/40.40.7,5.4	40	40	7.5	2 + 2	59	96.6
8416/10.50.7,5.4	10	50	7.5	4	67.4	124.3
8426/20.50.7,5.6	20	50	7.5	3 + 3	84	154.4
8416/10.63.7,5.5	10	63	7.5	5	91.8	201.1
3426/20.63.7,5.6	20	63	7.5	3 + 3	107.6	249.1
8416/10.80.7,5.6	10	80	7.5	6	123.8	328.6





Hole pattern 2

Hole pattern 2, flange form B according to DIN 69051.

Hole pattern	LF [mm]	Ø D1 g6 [mm]	L1 [mm]	Ø D4 [mm]	Ø D5 [mm]	Ø D6 [mm]	L7 [mm]	L3 [mm]	H [mm]
2	60	63	10	78	9	93	14	6	35
2	84	63	16	78	9	93	14	7	35
2	89	63	20	78	9	93	14	19.5	35
2	107	70	25	85	9	100	14	21	37.5
2	86	75	16	93	11	110	16	7	42.5
2	90	75	16	93	11	110	16	22	42.5
2	98	90	16	108	11	125	18	7	47.5
2	91	95	25	115	13.5	135	20	24	50
2	110	105	16	125	13.5	145	20	7	55

4.2 | NUTS WITH CONNECTING THREAD ON MOUNTING SLEEVE

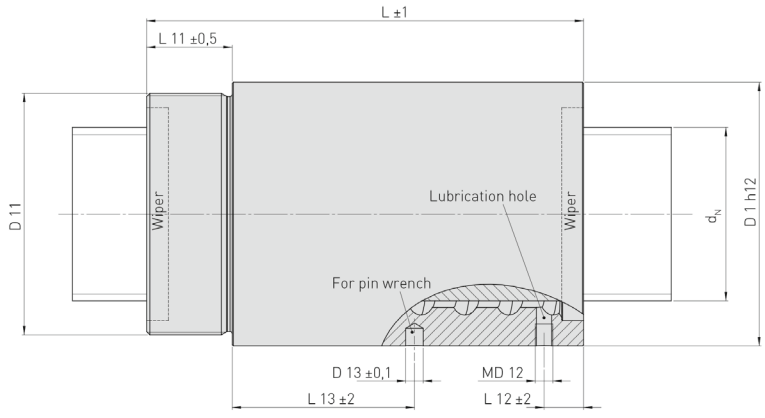
Model series 8112 | Nut with connecting thread with multiliner, wiper on both sides.



Model series 8122 | Nut with connecting thread with multiliner, wiper on both sides, two or more threads.



Type	Lead P [mm]	Nominal diameter d_N [mm]	Ball diameter d_W [mm]	Number of circuits [i]	Dynamic load capacity C_a [kN]	Static load capacity C_{0a} [kN]
8112/5.16.3,5.4	5	16	3.5	4	12.9	16
8112/5.20.3,5.4	5	20	3.5	4	15.5	22.3
8112/5.25.3,5.5	5	25	3.5	5	21.2	35.9
8122/10.25.3,5.4	10	25	3.5	2 + 2	16.1	25.5
8112/5.32.3,5.5	5	32	3.5	5	24.8	49.7
8112/10.32.6.4	10	32	6	4	39.4	60.8
8112/5.40.3,5.5	5	40	3.5	5	27.5	63.6
8112/10.40.7,5.5	10	40	7.5	5	71.5	118.9
8112/10.50.7,5.6	10	50	7.5	6	95.6	186.5
8112/10.63.7,5.6	10	63	7.5	6	107.4	241.3
8112/10.80.7,5.6	10	80	7.5	6	123.8	328.6



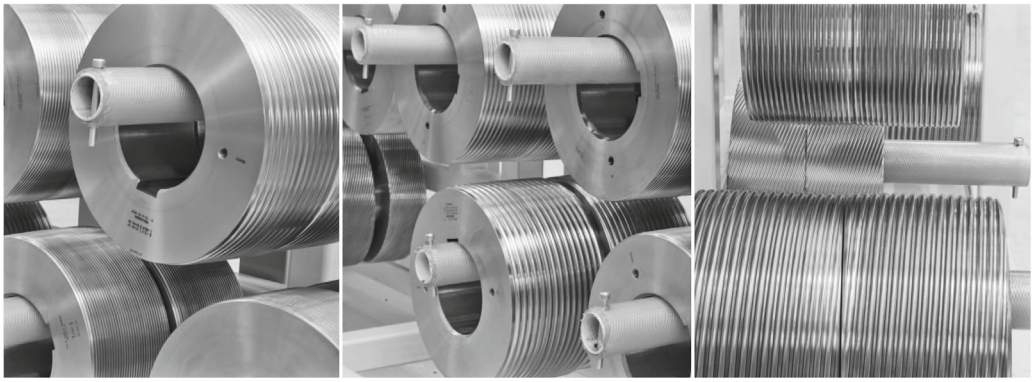
L [mm]	Ø D1 [mm]	L11 [mm]	Ø D11 [mm]	L12 [mm]	Ø D12 [mm]	L13 [mm]	Ø D13 [mm]
57.5	32	16.5	M30x1.5	10.5	M6x1	22	4
57.5	38	16.5	M35x1.5	10.5	M6x1	22	4
63.5	42	17	M40x1.5	10.5	M6x1	23	4
61	42	17	M40x1.5	10	M6x1	21	4
65.5	52	19	M48x1.5	10.5	M6x1	23	5
85	52	19	M48x1.5	12	M6x1	43	5
67.5	58	19	M56x1.7	12	M8x1	22.5	5
105.5	65	27	M60x2	13	M8x1	43	6
118	78	29	M72x2	13	M8x1	53	6
118	92	29	M85x2	13	M8x1	53	6
126	120	34	M110x2	15.5	M8x1	53	8

4.3 | SCREW SHAFTS



Order code	Lead P [mm]	Nominal diameter d_N [mm]	Ball diameter d_W [mm]	Number of threads	Pitch	Maximum Length [mm]
0035/5.16.3000.3000 T7	5	16	3.5	1	5	3000
0045/10.16.3000.3000 T7	10	16	3.5	2	5	3000
0035/5.20.3000.3000 T7	5	20	3.5	1	5	3000
0045/10.20.3000.3000 T7	10	20	3.5	2	5	3000
0045/20.20.3000.3000 T7	20	20	3.5	4	5	3000
0035/5.25.6000.6000 T7	5	25	3.5	1	5	6000
0045/10.25.6000.6000 T7	10	25	3.5	2	5	6000
0045/20.25.6000.6000 T7	20	25	3.5	2	10	6000
0045/25.25.6000.6000 T7	25	25	3.5	2	12.5	6000
0035/5.32.6000.6000 T7	5	32	3.5	1	5	6000
0035/10.32.6000.6000 T7	10	32	6	1	10	6000

Standard accuracy class T7 (T5, T9, T10 upon request).
Additional charge for shorter lengths (saw lengths).
Length tolerance: 3 m -0.05 +0.1 m, 6 m -0.1 +0.15 m.
2 x approx. 10 – 15 cm unhardened area on each screw shaft end.
Hardness raceway 58 HRC – 62 HRC.



Order code	Lead P [mm]	Nominal diameter d_N [mm]	Ball diameter d_W [mm]	Number of threads	Pitch	Maximum Length [mm]
0045/20.32.6000.6000 T7	20	32	6	2	10	6000
0045/32.32.6000.6000 T7	32	32	6	2	16	6000
0035/5.40.6000.6000 T7	5	40	3.5	1	5	6000
0035/10.40.6000.6000 T7	10	40	7.5	1	10	6000
0045/20.40.6000.6000 T7	20	40	6	2	10	6000
0045/40.40.6000.6000 T7	40	40	7.5	4	10	6000
0035/10.50.6000.6000 T7	10	50	7.5	1	10	6000
0045/20.50.6000.6000 T7	20	50	7.5	2	10	6000
0035/10.63.6000.6000 T7	10	63	7.5	1	10	6000
0045/20.63.6000.6000 T7	20	63	7.5	2	10	6000
0035/10.80.6000.6000 T7	10	80	7.5	1	10	6000

LARGE BALL SCREWS DIAMETER 16 - 125 MM, GROUND THREAD

This section includes nuts with standard dimensions per ISO 3408 / DIN 69051. In most cases, there is a choice of three different flange shapes (full round, single flat, or double flat) and different number of ball circles and load capacities.
The majority of these nuts is available either in single nut execution with 4-point contact, double nut execution with 2-point contact, or advanced ETA+ execution, which you see on the double nut pages. Technical data for ETA+ ball screws are shown in parenthesis. Some sizes are no longer available as conventional double nuts. In such cases, the page shows only data for ETA+ ball screws

Steinmeyer produces ball screws for machine tool and similar use with custom shafts only. For a quote, we just need a drawing or sketch that sufficiently defines the shaft.

The nut can be a standard one shown on the following pages, or custom. Even for the custom version, you may obtain useful information from the listing of technical data, since load capacities, rigidity or friction torque will be the same as in the corresponding standard version. Of course we are also prepared to assist you in selecting a nut that best meets your needs, recommend the right preload setting or provide minimum nut dimensions to yield a given life expectancy of the unit.

TECHNICAL TIP

Steinmeyer ball screws with nominal diameters of 16 mm to 125 mm are available as ETA+ screws, which yields a clear performance advantage for your linear drive. ETA+ technology significantly reduces friction while, at the same time, the rigidity increases. Life is also improved. ETA+ ball screws have near zero reversing error and may be used with much higher servo loop gain.

The nuts of ETA+ ball screws are often somewhat shorter than the double nuts shown on the following pages, but for simplicity the difference is not shown. Please inquire if a small reduction in overall nut length is desired.
ETA+ ball screws may be found on the following pages. Technical data are given in parenthesis. When inquiring, please clearly state that you want ETA+ execution.

Due to the success of ETA+, some sizes are no longer available in conventional execution.
ETA+ is a registered trademark of August Steinmeyer GmbH & Co. KG.

HIGH ETA+® PERFORMANCE

NOTES:

NOMINAL DIAMETER 16 – 20 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut,
ball oversize preload

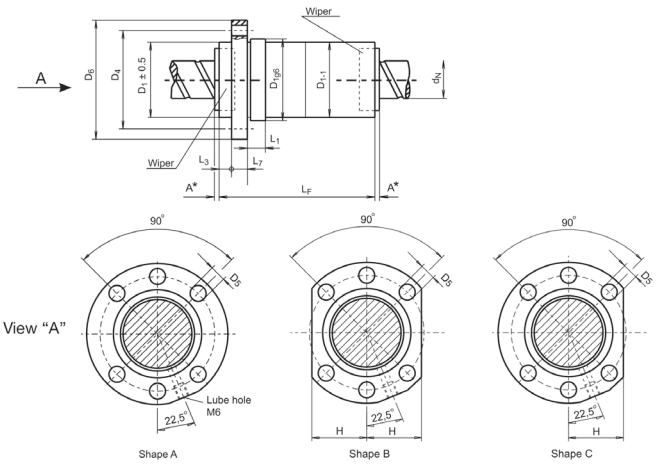


■ **Series 2426:**
End cap nut with flange, dual start,
ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\,ar}$ [N/µm]
1416	2.16.1,5.3	2	16	3	1.5	2.9	4.9	200
	2.16.1,5.4	2	16	4	1.5	3.8	6.5	260
	4.16.3.3	4	16	3	3.0	8.9	11.4	170
	4.16.3.4	4	16	4	3.0	11.4	15.2	220
	5.16.3,5.3	5	16	3	3.5	10.1	12.0	150
	5.16.3,5.4	5	16	4	3.5	12.9	16.0	200
2426	10.16.3,5.6	10	16	3 + 3	3.5	19.6	27.4	270
	10.16.3,5.8	10	16	4 + 4	3.5	25.6	37.7	360
	10.16.3,5.10	10	16	5 + 5	3.5	31.4	47.8	450
1416	2.20.1,5.2	2	20	2	1.5	2.3	4.1	130
	2.20.1,5.3	2	20	3	1.5	3.2	6.2	190
	2.20.1,5.4	2	20	4	1.5	4.1	8.2	250
	2.20.1,5.5	2	20	5	1.5	5.0	10.3	310
	4.20.3.2	4	20	2	3.0	7.1	9.9	150
	4.20.3.3	4	20	3	3.0	10.1	14.9	220
	4.20.3.4	4	20	4	3.0	13.0	19.9	290
	5.20.3,5.2	5	20	2	3.5	8.6	11.2	140
	5.20.3,5.3	5	20	3	3.5	12.1	16.7	210
	5.20.3,5.4	5	20	4	3.5	15.5	22.3	270
	10.20.3,5.2	10	20	2	3.5	8.5	11.1	110
	10.20.3,5.3	10	20	3	3.5	12.0	16.6	160
2426	10.20.3,5.10	10	20	5 + 5	3.5	36.4	63.0	630
	20.20.3,5.4	20	20	2 + 2	3.5	14.7	22.4	140
	20.20.3,5.6	20	20	3 + 3	3.5	21.7	35.2	220

* Actual stiffness at preload equal to 0.08 x C_a

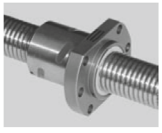


	Dimensions Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	39	28	10	38	5.5	48	10	6	20	0	9
	43	28	10	38	5.5	48	10	6	20	0	9
	49	28	10	38	5.5	48	10	6	20	0	9
	53	28	10	38	5.5	48	10	6	20	0	9
	54	28	10	38	5.5	48	10	6	20	0	9
	59	28	10	38	5.5	48	10	6	20	0	9
2426	49	32	16	42	5.5	52	10	7	20	0	-
	59	32	16	42	5.5	52	10	7	20	0	-
	69	32	16	42	5.5	52	10	7	20	0	-
1416	43	36	16	47	6.6	58	10	6	22	0	9
	48	36	10	47	6.6	58	10	6	22	0	9
	52	36	10	47	6.6	58	10	6	22	0	9
	56	36	10	47	6.6	58	10	6	22	0	9
	43	36	10	47	6.6	58	10	6	22	0	9
	49	36	10	47	6.6	58	10	6	22	0	9
	53	36	10	47	6.6	58	10	6	22	0	9
	48	36	10	47	6.6	58	10	6	22	0	9
	55	36	10	47	6.6	58	10	6	22	0	9
	60	36	10	47	6.6	58	10	6	22	0	9
	62	36	16	47	6.6	58	10	7	22	0	12
	76	36	16	47	6.6	58	10	7	22	0	12
2426	69	36	16	47	6.6	58	10	7	22	0	-
	57	36	16	47	6.6	58	10	7	22	0	-
	77	36	16	47	6.6	58	10	7	22	0	-

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 25 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut,
ball oversize preload

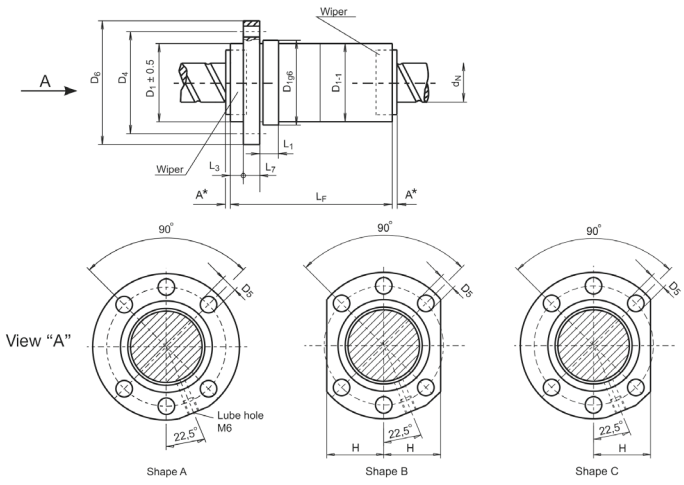


■ **Series 2426:**
End cap nut with flange, dual start,
ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\,ar}$ [N/µm]
1416	2.25.1,5.3	2	25	3	1.5	3.5	7.8	220
	2.25.1,5.4	2	25	4	1.5	4.5	10.4	290
	2.25.1,5.5	2	25	5	1.5	5.5	13.0	370
	4.25.3.3	4	25	3	3.0	11.4	19.3	270
	4.25.3.4	4	25	4	3.0	14.6	25.7	360
	5.25.3,5.3	5	25	3	3.5	13.7	21.5	260
	5.25.3,5.4	5	25	4	3.5	17.5	28.7	350
	5.25.3,5.5	5	25	5	3.5	21.2	35.9	430
	10.25.3,5.2	10	25	2	3.5	9.6	14.3	150
	10.25.3,5.3	10	25	3	3.5	13.6	21.4	220
	12.28.4.4	12	28	4	4.0	22.1	37.2	310
2426	10.25.3,5.10	10	25	5 + 5	3.5	40.3	78.4	830
	15.25.3,5.4	15	25	2 + 2	3.5	16.8	28.6	270
	15.25.3,5.6	15	25	3 + 3	3.5	24.9	45.0	410
	20.25.3,5.4	20	25	2 + 2	3.5	17.1	29.5	230
	20.25.3,5.6	20	25	3 + 3	3.5	25.2	46.4	340
	25.25.3,5.4	25	25	2 + 2	3.5	16.7	29.0	180

* Actual stiffness at preload equal to 0.08 x C_a



	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	43	40	10	51	6.6	62	10	6	24	0	9
	51	40	10	51	6.6	62	10	6	24	0	9
	56	40	10	51	6.6	62	10	6	24	0	9
	49	40	10	51	6.6	62	10	6	24	0	9
	53	40	10	51	6.6	62	10	6	24	0	9
	55	40	10	51	6.6	62	10	6	24	0	9
	60	40	10	51	6.6	62	10	6	24	0	9
	66	40	10	51	6.6	62	10	6	24	0	9
	64	40	16	51	6.6	62	10	7	24	0	12
	78	40	16	51	6.6	62	10	7	24	0	12
	98	40	16	51	6.6	62	10	7	24	0	12
2426	69	40	16	51	6.6	62	10	7	24	0	12
	48	40	16	51	6.6	62	10	7	24	0	12
	63	40	16	51	6.6	62	10	7	24	0	12
	57	40	16	51	6.6	62	10	7	24	0	12
	77	40	16	51	6.6	62	10	7	24	0	12
	66	40	16	51	6.6	62	10	7	24	0	12

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 32 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut, ball oversize preload



■ **Series 3426:**
UltraSpeed nut with flange, dual start, ball oversize preload

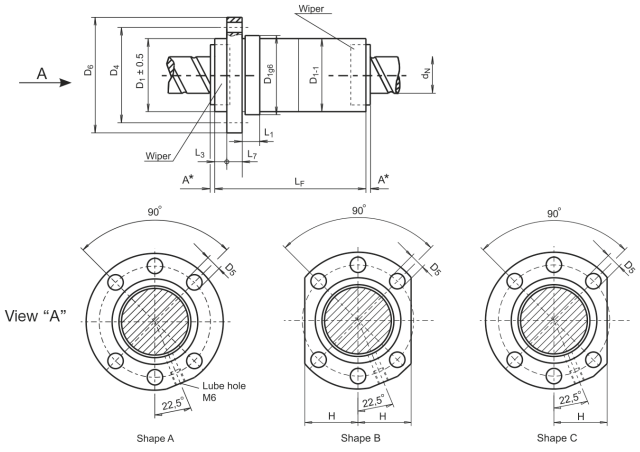


■ **Series 3416:**
UltraSpeed nut with flange, single start, ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\,ar}$ [N/µm]
1416	4.32.3.3	4	32	3	3.0	13.1	26.3	350
	4.32.3.4	4	32	4	3.0	16.8	35.0	460
	5.32.3,5.3	5	32	3	3.5	16.0	29.8	350
	5.32.3,5.4	5	32	4	3.5	20.4	39.8	460
	5.32.3,5.5	5	32	5	3.5	24.8	49.7	570
	5.32.3,5.6	5	32	6	3.5	29.0	59.0	680
	6.32.4.3	6	32	3	4.0	18.7	32.7	340
	6.32.4.4	6	32	4	4.0	24.0	43.7	450
	8.32.5.4	8	32	4	5.0	31.5	52.0	420
	8.32.5.6	8	32	6	5.0	44.6	78.0	620
	10.32.6.3	10	32	3	6.0	30.8	45.6	300
	10.32.6.4	10	32	4	6.0	39.4	60.8	400
	10.32.6.5	10	32	5	6.0	47.8	76.0	490
	12.32.5.3	12	32	3	5.0	24.5	38.8	280
3416	15.32.6.3	15	32	3	6.0	28.5	43.1	270
	15.32.6.5	15	32	5	6.0	47.3	77.7	450
3426	20.32.6.4	20	32	2 + 2	6.0	39.3	63.6	360
	20.32.6.6	20	32	3 + 3	6.0	57.9	100.0	530
	20.32.6.8	20	32	4 + 4	6.0	75.6	136.4	710
	25.32.6.4	25	32	2 + 2	6.0	38.7	63.0	300
	30.32.6.4	30	32	2 + 2	6.0	38.1	62.2	250

* Actual stiffness at preload equal to 0.08 x C_a

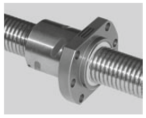


	Dimensions Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	51	50	10	65	9	80	12	6	31.0	0	9
	55	50	10	65	9	80	12	6	31.0	0	9
	57	50	10	65	9	80	12	6	31.0	0	9
	62	50	10	65	9	80	12	6	31.0	0	9
	67	50	10	65	9	80	12	6	31.0	0	9
	73	50	10	65	9	80	12	6	31.0	0	9
	61	50	10	65	9	80	12	6	31.0	0	9
	68	50	10	65	9	80	12	6	31.0	0	9
	84	50	16	65	9	80	12	7	31.0	0	12
	102	50	16	65	9	80	12	7	31.0	0	12
	84	50	16	65	9	80	12	7	31.0	0	12
	95	50	16	65	9	80	12	7	31.0	0	12
	107	50	16	65	9	80	12	7	31.0	0	12
	94	50	16	65	9	80	12	7	31.0	0	12
3416	74	56	20	71	9	86	14	7	32.5	0	12
	104	56	20	71	9	86	14	7	32.5	0	12
3426	68	56	20	71	9	86	14	7	32.5	0	12
	88	56	20	71	9	86	14	7	32.5	0	12
	108	56	20	71	9	86	14	7	32.5	0	12
	78	56	20	71	9	86	14	7	32.5	5	22
	88	56	20	71	9	86	14	7	32.5	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 40 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut, ball oversize preload

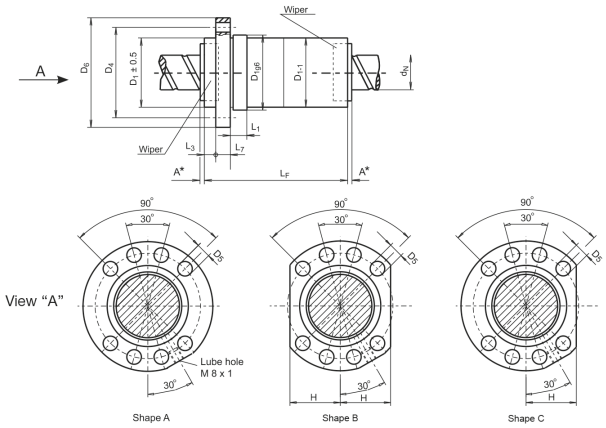


■ **Series 3416:**
UltraSpeed nut with flange, single start, ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\,ar}$ [N/µm]
1416	5.40.3,5.3	5	40	3	3.5	17.7	38.2	430
	5.40.3,5.4	5	40	4	3.5	22.7	50.9	570
	5.40.3,5.5	5	40	5	3.5	27.5	63.6	700
	5.40.3,5.6	5	40	6	3.5	32.1	76.4	840
	6.40.4.4	6	40	4	4.0	26.7	56.1	560
	6.40.4.6	6	40	6	4.0	37.9	84.2	820
	8.40.5.4	8	40	4	5.0	35.8	68.2	540
	8.40.5.6	8	40	6	5.0	50.7	102.3	800
	10.40.7,5.3	10	40	3	7.5	46.1	71.3	390
	10.40.7,5.4	10	40	4	7.5	59.0	95.1	520
	10.40.7,5.5	10	40	5	7.5	71.5	118.9	650
3416	10.40.7,5.3 N	10	40	3	7.5	43.1	67.9	420
	10.40.7,5.4 N	10	40	4	7.5	57.5	95.1	560
	10.40.7,5.5 N	10	40	5	7.5	71.4	122.3	700
	10.40.7,5.6 N	10	40	6	7.5	84.9	149.5	840
1416	12.40.7,5.3 N	12	40	3	7.5	46.0	71.2	380
	12.40.7,5.4 N	12	40	4	7.5	58.9	95.0	500
	15.40.7,5.3	15	40	3	7.5	45.9	71.1	350
	15.40.7,5.4	15	40	4	7.5	58.7	94.8	460
3416	15.40.7,5.3 N	15	40	3	7.5	42.9	67.7	370
	15.40.7,5.4 N	15	40	4	7.5	57.2	94.8	490
	15.40.7,5.5 N	15	40	5	7.5	71.1	121.8	620
	15.40.7,5.6 N	15	40	6	7.5	84.4	148.9	740
1416	16.40.7,5.5	16	40	5	7.5	71.1	118.3	550
	20.40.7,5.2	20	40	2	7.5	32.1	47.1	200
	20.40.7,5.3	20	40	3	7.5	45.5	70.7	300

* Actual stiffness at preload equal to 0.08 x C_a
N: Alternate sizes acc. to DIN 69051



STEINMEYER

	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	59	63	10	78	9	93	14	6	35	0	9
	64	63	10	78	9	93	14	6	35	0	9
	69	63	10	78	9	93	14	6	35	0	9
	75	63	10	78	9	93	14	6	35	0	9
	70	63	10	78	9	93	14	6	35	0	9
	83	63	10	78	9	93	14	6	35	0	9
	86	63	16	78	9	93	14	7	35	0	12
	104	63	16	78	9	93	14	7	35	0	12
	86	63	16	78	9	93	14	7	35	0	12
	97	63	16	78	9	93	14	7	35	0	12
	110	63	16	78	9	93	14	7	35	0	12
3416	85	70	25	85	9	100	14	7	37.5	0	12
	95	70	25	85	9	100	14	7	37.5	0	12
	105	70	25	85	9	100	14	7	37.5	0	12
	115	70	25	85	9	100	14	7	37.5	0	12
1416	92	70	25	85	9	100	14	7	37.5	0	12
	105	70	25	85	9	100	14	7	37.5	0	12
	104	63	16	78	9	93	14	7	35	0	12
	121	63	16	78	9	93	14	7	35	0	12
3416	98	70	25	85	9	100	14	7	37.5	0	12
	113	70	25	85	9	100	14	7	37.5	0	12
	128	70	25	85	9	100	14	7	37.5	0	12
	143	70	25	85	9	100	14	7	37.5	0	12
1416	144	63	16	78	9	93	14	7	35	0	12
	92	63	16	78	9	93	14	7	35	0	12
	121	63	16	78	9	93	14	7	35	0	12

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 40 mm

Single nut, 4-point contact
Execution grade P0 – P5

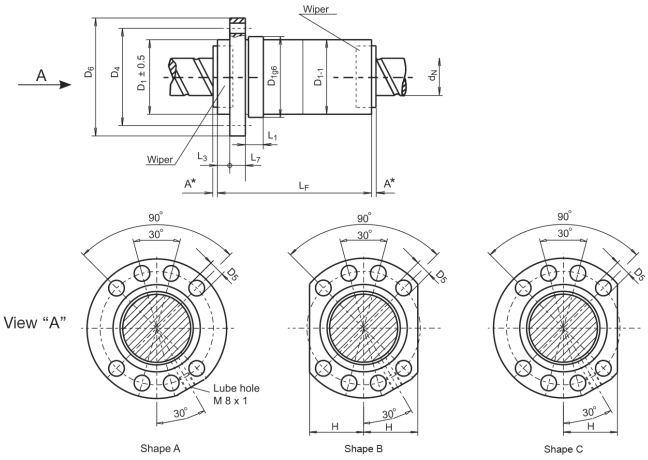


■ **Series 3426:**
UltraSpeed nut with flange, dual start, ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\,ar}$ [N/µm]
3426	20.40.6.6	20	40	3 + 3	6.0	64.9	126.3	730
	20.40.6.8	20	40	4 + 4	6.0	84.7	172.2	960
	20.40.7,5.6 N	20	40	3 + 3	7.5	83.8	148.1	710
	20.40.7,5.8 N	20	40	4 + 4	7.5	109.5	201.9	940
	25.40.6.6	25	40	3 + 3	6.0	64.3	125.4	630
	25.40.6.8	25	40	4 + 4	6.0	84.0	171.0	840
	25.40.7,5.6 N	25	40	3 + 3	7.5	86.5	156.3	650
	25.40.7,5.8 N	25	40	4 + 4	7.5	113.0	213.1	870
	30.40.6.6	30	40	3 + 3	6.0	63.6	124.4	550
	30.40.6.8	30	40	4 + 4	6.0	83.1	169.6	730
	30.40.7,5.6 N	30	40	3 + 3	7.5	85.6	155.0	570
	30.40.7,5.8 N	30	40	4 + 4	7.5	111.8	211.3	750
	40.40.6.6	40	40	3 + 3	6.0	61.9	121.9	410
	40.40.7,5.4 N	40	40	2 + 2	7.5	56.5	96.6	280

* Actual stiffness at preload equal to 0.08 x C_a
N: Alternate sizes acc. to DIN 69051

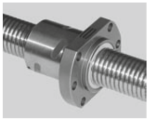


	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
3426	89	63	20	78	9	93	14	7	35	0	12
	109	63	20	78	9	93	14	7	35	0	12
	90	70	25	85	9	100	14	7	37.5	0	12
	110	70	25	85	9	100	14	7	37.5	0	12
	107	63	16	78	9	93	14	7	35	5	22
	132	63	16	78	9	93	14	7	35	5	22
	104	70	25	85	9	100	14	7	37.5	5	22
	129	70	25	85	9	100	14	7	37.5	5	22
	121	63	16	78	9	93	14	7	35	5	22
	151	63	16	78	9	93	14	7	35	5	22
	123	70	25	85	9	100	14	7	37.5	5	22
	153	70	25	85	9	100	14	7	37.5	5	22
	148	63	16	78	9	93	14	7	35	5	22
	107	70	25	85	9	100	14	7	37.5	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 50 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut, ball oversize preload

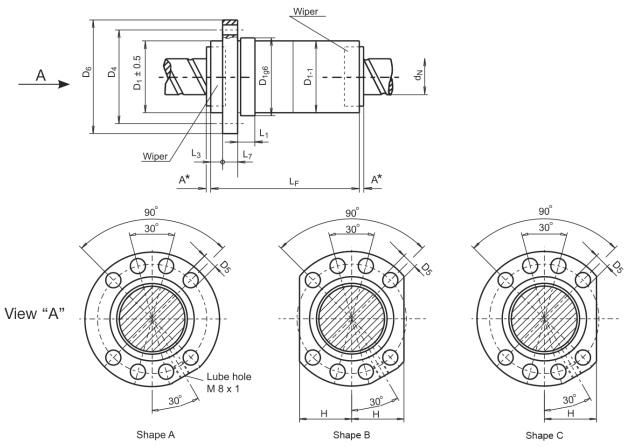


■ **Series 3426:**
UltraSpeed nut with flange, dual start, ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\ ar}$ [N/µm]
1416	5.50.3,5.3	5	50	3	3.5	19.6	48.9	520
	5.50.3,5.4	5	50	4	3.5	25.1	65.2	680
	5.50.3,5.5	5	50	5	3.5	30.4	81.5	850
	5.50.3,5.6	5	50	6	3.5	35.6	97.8	1010
	10.50.7,5.3	10	50	3	7.5	52.7	93.2	510
	10.50.7,5.4	10	50	4	7.5	67.4	124.3	670
	10.50.7,5.5	10	50	5	7.5	81.7	155.4	830
	15.50.7,5.3	15	50	3	7.5	52.5	93.0	470
	15.50.7,5.4	15	50	4	7.5	67.2	124.0	610
	15.50.7,5.5	15	50	5	7.5	81.4	155.0	760
	15.50.9.3N	15	50	3	9.0	77.2	130.4	520
	15.50.9.4N	15	50	4	9.0	98.8	173.9	690
	15.50.9.5N	15	50	5	9.0	119.7	217.4	850
	20.50.9.3	20	50	3	9.0	76.8	130.0	470
	20.50.9.4	20	50	4	9.0	98.4	173.3	620
	20.50.9.3 N	20	50	3	9.0	76.8	130.0	470
	20.50.9.4 N	20	50	4	9.0	98.4	173.3	620
3426	20.50.7,5.6 N	20	50	3 + 3	7.5	97.5	198.2	980
	20.50.7,5.8 N	20	50	4 + 4	7.5	127.3	270.3	1300
	25.50.7,5.8 N	25	50	4 + 4	7.5	126.6	269.1	1180
	30.50.6.8	30	50	4 + 4	6.0	92.6	214.6	1030
	30.50.7,5.8 N	30	50	4 + 4	7.5	125.7	267.6	1060
	35.50.7,5.6 N	35	50	3 + 3	7.5	95.5	195.0	720
	35.50.7,5.8 N	35	50	4 + 4	7.5	124.7	265.9	950
	40.50.7,5.6 N	40	50	3 + 3	7.5	94.6	193.6	640

* Actual stiffness at preload equal to 0.08 x C_a
N: Alternate sizes acc. to DIN 69051



Dimensions

Flanged nut with wipers both ends

	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	61	75	10	93	11	110	16	6	42.5	0	9
	66	75	10	93	11	110	16	6	42.5	0	9
	71	75	10	93	11	110	16	6	42.5	0	9
	76	75	10	93	11	110	16	6	42.5	0	9
	88	75	16	93	11	110	16	7	42.5	0	12
	99	75	16	93	11	110	16	7	42.5	0	12
	111	75	16	93	11	110	16	7	42.5	0	12
	107	75	16	93	11	110	16	7	42.5	0	12
	124	75	16	93	11	110	16	7	42.5	0	12
	142	75	16	93	11	110	16	7	42.5	0	12
	112	82	25	100	11	118	16	7	46.0	0	12
	129	82	25	100	11	118	16	7	46.0	0	12
	147	82	25	100	11	118	16	7	46.0	0	12
	129	75	16	93	11	110	16	7	42.5	0	12
	150	75	16	93	11	110	16	7	42.5	0	12
	129	82	25	100	11	118	16	7	46.0	0	12
	150	82	25	100	11	118	16	7	46.0	0	12
3426	91	82	25	100	11	118	16	7	46.0	0	12
	111	82	25	100	11	118	16	7	46.0	0	12
	130	82	25	100	11	118	16	7	46.0	5	22
	152	75	16	93	11	110	16	7	42.5	5	22
	150	82	25	100	11	118	16	7	46.0	5	22
	135	82	25	100	11	118	16	7	46.0	5	22
	170	82	25	100	11	118	16	7	46.0	5	22
	149	82	25	100	11	118	16	7	46.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 60 – 63 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut, ball oversize preload

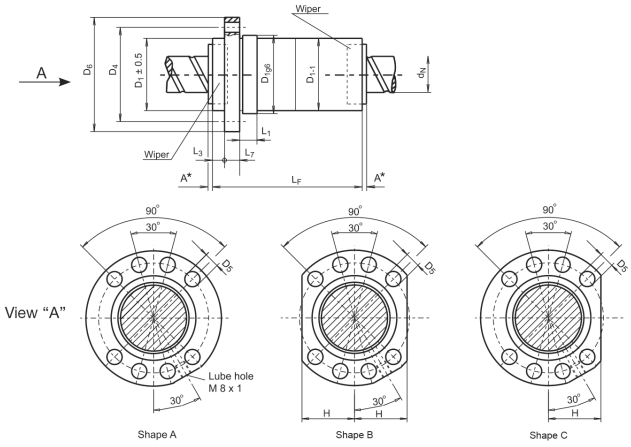


■ **Series 3426:**
UltraSpeed nut with flange, dual start, ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,\,ar}$ [N/µm]
3426	25.60.9.6	25	60	3 + 3	9.0	164.3	361.5	1350
	25.60.9.8	25	60	4 + 4	9.0	214.5	492.9	1790
	30.60.9.6	30	60	3 + 3	9.0	163.5	360.1	1250
	30.60.9.8	30	60	4 + 4	9.0	213.5	491.0	1650
	35.60.9.6	35	60	3 + 3	9.0	162.5	358.5	1140
	40.60.9.4	40	60	2 + 2	9.0	109.5	227.0	700
	40.60.9.6	40	60	3 + 3	9.0	161.5	356.7	1040
	20.63.7,5.8	20	63	4 + 4	7.5	140.5	339.7	1660
1416	5.63.3,5.4	5	63	4	3.5	27.8	84.3	820
	5.63.3,5.5	5	63	5	3.5	33.7	105.4	1010
	5.63.3,5.6	5	63	6	3.5	39.5	126.5	1200
	10.63.7,5.3	10	63	3	7.5	59.2	120.7	630
	10.63.7,5.4	10	63	4	7.5	75.8	160.9	830
	10.63.7,5.5	10	63	5	7.5	91.8	201.1	1030
	10.63.7,5.6	10	63	6	7.5	107.4	241.3	1230
	15.63.9.4	15	63	4	9.0	116.7	239.9	940
	20.63.11.3	20	63	3	11.0	115.3	209.1	660
	20.63.11.4	20	63	4	11.0	147.7	278.8	870
	20.63.11.5	20	63	5	11.0	179.0	348.5	1070
	30.63.11.3	30	63	3	11.0	114.4	207.8	550

* Actual stiffness at preload equal to 0.08 x C_a



	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
3426	106	95	25	115	13.5	135	20	7	50.0	5	22
	131	95	25	115	13.5	135	20	7	50.0	5	22
	121	95	25	115	13.5	135	20	7	50.0	5	22
	151	95	25	115	13.5	135	20	7	50.0	5	22
	135	95	25	115	13.5	135	20	7	50.0	5	22
	110	95	25	115	13.5	135	20	7	50.0	5	22
	150	95	25	115	13.5	135	20	7	50.0	5	22
	111	95	25	115	13.5	135	20	7	50.0	-	-
1416	68	90	10	108	11.0	125	18	6	47.5	0	9
	73	90	10	108	11.0	125	18	6	47.5	0	9
	78	90	10	108	11.0	125	18	6	47.5	0	9
	91	90	16	108	11.0	125	18	7	47.5	0	12
	102	90	16	108	11.0	125	18	7	47.5	0	12
	112	90	16	108	11.0	125	18	7	47.5	0	12
	124	90	16	108	11.0	125	18	7	47.5	0	12
	133	95	25	115	13.5	135	20	7	50.0	0	12
	136	95	25	115	13.5	135	20	7	50.0	0	12
	157	95	25	115	13.5	135	20	7	50.0	0	12
	182	95	25	115	13.5	135	20	7	50.0	0	12
	173	95	25	115	13.5	135	20	7	50.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 80 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut,
ball oversize preload

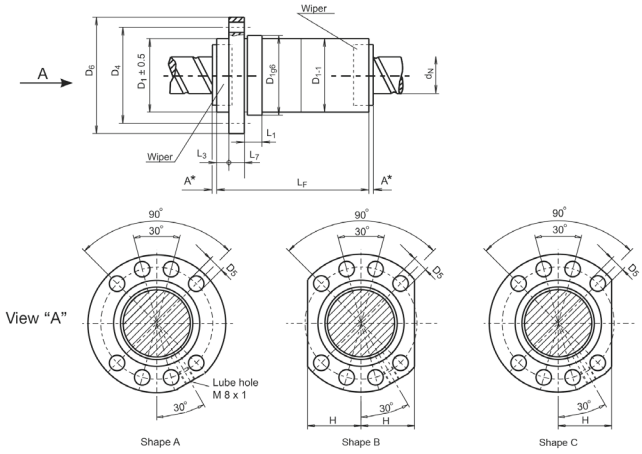


■ **Series 3426:**
UltraSpeed nut with flange, dual start,
ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,ar}$ [N/µm]
1416	5.80.3,5.3	5	80	3	3.5	23.9	81.2	700
	5.80.3,5.4	5	80	4	3.5	30.6	108.2	930
	5.80.3,5.5	5	80	5	3.5	37.1	135.3	1150
	5.80.3,5.6	5	80	6	3.5	43.4	162.4	1370
	10.80.7,5.3	10	80	3	7.5	68.2	164.3	790
	10.80.7,5.4	10	80	4	7.5	87.3	219.1	1040
	10.80.7,5.5	10	80	5	7.5	105.8	273.8	1280
	10.80.7,5.6	10	80	6	7.5	123.8	328.6	1530
	15.80.11.3	15	80	3	11.0	134.4	283.9	940
	15.80.11.4	15	80	4	11.0	172.2	378.5	1240
	15.80.11.5	15	80	5	11.0	208.6	473.1	1540
	15.80.11.6	15	80	6	11.0	244.0	567.7	1830
	20.80.11.3	20	80	3	11.0	134.2	283.5	900
	20.80.11.4	20	80	4	11.0	171.9	377.9	1180
	20.80.11.5	20	80	5	11.0	208.2	472.4	1470
	20.80.11.6	20	80	6	11.0	243.6	566.9	1750
	25.80.11.3	25	80	3	11.0	133.9	283.0	850
	30.80.11.3	30	80	3	11.0	133.5	282.4	790
3426	25.80.9.10	25	80	5 + 5	9.0	301.0	847.9	3090
	30.80.11.8	30	80	4 + 4	11.0	322.3	811.8	2420
	30.80.11.10	30	80	5 + 5	11.0	394.9	1028.2	3000
	40.80.11.4	40	80	2 + 2	11.0	166.1	376.8	1090
	40.80.11.6	40	80	3 + 3	11.0	245.1	592.1	1620

* Actual stiffness at preload equal to 0.08 x C_a



	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	64	105	16	125	13.5	145	20	7	55.0	0	9
	69	105	16	125	13.5	145	20	7	55.0	0	9
	74	105	16	125	13.5	145	20	7	55.0	0	9
	79	105	16	125	13.5	145	20	7	55.0	0	9
	93	105	16	125	13.5	145	20	7	55.0	0	12
	104	105	16	125	13.5	145	20	7	55.0	0	12
	114	105	16	125	13.5	145	20	7	55.0	0	12
	125	105	16	125	13.5	145	20	7	55.0	0	12
	121	125	25	145	13.5	165	25	7	65.0	0	12
	138	125	25	145	13.5	165	25	7	65.0	0	12
	153	125	25	145	13.5	165	25	7	65.0	0	12
	169	125	25	145	13.5	165	25	7	65.0	0	12
	143	125	25	145	13.5	165	25	7	65.0	0	12
	164	125	25	145	13.5	165	25	7	65.0	0	12
	185	125	25	145	13.5	165	25	7	65.0	0	12
	206	125	25	145	13.5	165	25	7	65.0	0	12
	177	125	25	145	13.5	165	25	7	65.0	5	22
	190	125	25	145	13.5	165	25	7	65.0	5	22
3426	157	125	25	145	13.5	165	25	7	65.0	5	22
	154	125	25	145	13.5	165	25	7	65.0	5	22
	184	125	25	145	13.5	165	25	7	65.0	5	22
	114	125	25	145	13.5	165	25	7	65.0	5	22
	154	125	25	145	13.5	165	25	7	65.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 100 – 125 mm

Single nut, 4-point contact
Execution grade P0 – P5



■ **Series 1416:**
DIN standard flanged nut,
ball oversize preload

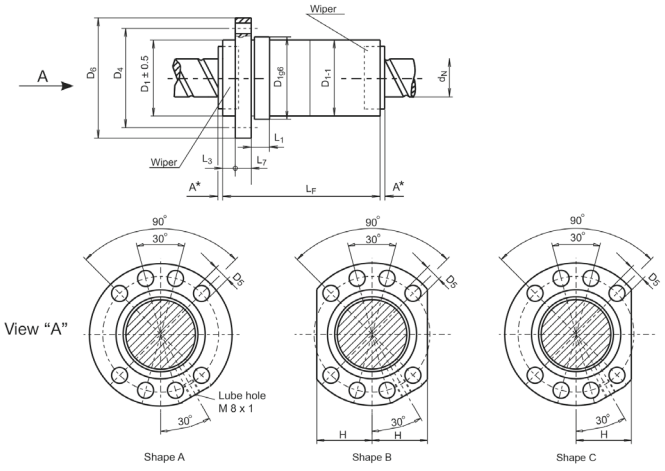


■ **Series 3426:**
UltraSpeed nut with flange, dual start,
ball oversize preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Stiffness* $R_{nu,ar}$ [N/µm]
1416	10.100.7,5.3	10	100	3	7.5	75.0	208.2	910
	10.100.7,5.4	10	100	4	7.5	96.0	277.6	1200
	10.100.7,5.5	10	100	5	7.5	116.3	347.0	1480
	10.100.7,5.6	10	100	6	7.5	136.1	416.4	1770
	15.100.11.3	15	100	3	11.0	152.2	373.2	1180
	15.100.11.4	15	100	4	11.0	195.3	497.6	1560
	15.100.11.5	15	100	5	11.0	236.7	622.0	1930
	15.100.11.6	15	100	6	11.0	276.8	746.4	2300
	20.100.11.3	20	100	3	11.0	152.4	372.9	1160
	20.100.11.4	20	100	4	11.0	195.1	497.1	1520
	20.100.11.5	20	100	5	11.0	236.4	621.4	1890
	20.100.11.6	20	100	6	11.0	276.5	745.7	2250
	25.100.11.3	25	100	3	11.0	152.1	372.4	1110
3426	30.100.11.8	30	100	4 + 4	11.0	350.8	1001.4	3010
	30.100.11.10	30	100	5 + 5	11.0	429.9	1268.4	3740
	30.100.11.12	30	100	6 + 6	11.0	506.7	1535.4	4460
	40.100.11.4	40	100	2 + 2	11.0	181.3	465.7	1400
	40.100.11.6	40	100	3 + 3	11.0	267.5	731.8	2090
1416	10.125.7,5.4	10	125	4	7.5	105.1	350.8	1340
	20.125.12,7.6	20	125	6	12.7	369.5	1074.7	2700
	20.125.12,7.8	25	125	8	12.7	473.2	1433.0	3570

* Actual stiffness at preload equal to 0.08 x C_a



Dimensions

Flanged nut with wipers both ends

	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1416	93	125	16	145	13.5	165	22	7	65	0	12
	104	125	16	145	13.5	165	22	7	65	0	12
	114	125	16	145	13.5	165	22	7	65	0	12
	126	125	16	145	13.5	165	22	7	65	0	12
	127	150	25	176	17.5	202	30	7	77.5	0	12
	144	150	25	176	17.5	202	30	7	77.5	0	12
	159	150	25	176	17.5	202	30	7	77.5	0	12
	175	150	25	176	17.5	202	30	7	77.5	0	12
	144	150	25	176	17.5	202	30	7	77.5	0	12
	164	150	25	176	17.5	202	30	7	77.5	0	12
	185	150	25	176	17.5	202	30	7	77.5	0	12
	206	150	25	176	17.5	202	30	7	77.5	0	12
	177	150	25	176	17.5	202	30	7	77.5	5	22
3426	155	150	25	176	17.5	202	30	7	77.5	5	22
	185	150	25	176	17.5	202	30	7	77.5	5	22
	215	150	25	176	17.5	202	30	7	77.5	5	22
	128	150	25	176	17.5	202	30	7	77.5	5	22
	168	150	25	176	17.5	202	30	7	77.5	5	22
1416	139	150	10	176	17.5	202	25	7	77.5	0	12
	217	170	25	196	17.5	222	30	7	87.5	0	12
	264	170	25	196	17.5	222	30	7	87.5	0	12

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 16 – 20 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut
with UNILOCK preload



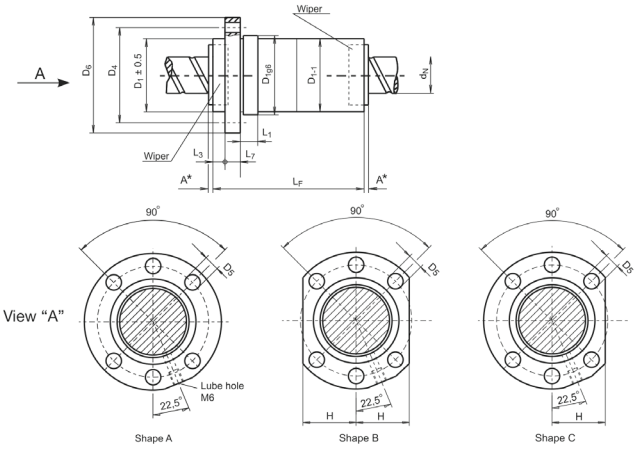
■ **Series 2526:**
End cap nut with flange, dual start,
pitch offset preload

HIGH ETA+ PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x	ETA+	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	ETA+	Stat. load rating C_{0a} [kN]	ETA+	Stiffness* $R_{nu,\,ar}$ [N/µm]	ETA+
1516	2.16.1,5.3	2	16	3		1.5	2.9		4.9		240	
	2.16.1,5.4	2	16	4		1.5	3.8		6.5		330	
	4.16.3.3	4	16	3		3.0	8.9		11.4		270	
	4.16.3.4	4	16	4		3.0	11.3		15.2		360	
	5.16.3,5.3	5	16	3		3.5	10.1		12.0		240	
	5.16.3,5.4	5	16	4		3.5	12.9		16.0		320	
2526	10.16.3,5.3	10	16		3 + 3	3.5		13.0		13.7		260
	10.16.3,5.4	10	16		4 + 4	3.5		17.3		19.2		340
	10.16.3,5.5	10	16		5 + 5	3.5		21.5		24.7		430
1516	2.20.1,5.2	2	20	2		1.5	2.3		4.1		200	
	2.20.1,5.3	2	20	3		1.5	3.2		6.2		300	
	2.20.1,5.4	2	20	4		1.5	4.1		8.2		390	
	2.20.1,5.5	2	20	5		1.5	5.0		10.3		480	
	4.20.3.2	4	20	2		3.0	7.1		9.9		240	
	4.20.3.3	4	20	3		3.0	10.1		14.9		350	
	4.20.3.4	4	20	4		3.0	13.0		19.9		460	
	5.20.3,5.2	5	20	2		3.5	8.6		11.2		230	
	5.20.3,5.3	5	20	3	3 + 3	3.5	12.1	15.9	16.7	18.2	330	370
	5.20.3,5.4	5	20	4	4 + 4	3.5	15.5	20.4	22.3	24.3	440	490
	10.20.3,5.2	10	20	2		3.5	8.5		11.1		180	
	10.20.3,5.3	10	20	3		3.5	12.0		16.6		270	
2526	10.20.3,5.5	10	20		5 + 5	3.5		25.2		32.5		590
	20.20.3,5.2	20	20		2 + 2	3.5		9.3		10.5		150
	20.20.3,5.3	20	20		3 + 3	3.5		14.5		17.4		220

* Actual stiffness at preload equal to 0.1 x C_a



Dimensions

Flanged nut with wipers both ends

	L_F [mm]	ETA PERFORMANCE	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	62		28	10	38	5.5	48	10	6	20	0	9
	70		28	10	38	5.5	48	10	6	20	0	9
	73		28	10	38	5.5	48	10	6	20	0	9
	81		28	10	38	5.5	48	10	6	20	0	9
	84		28	10	38	5.5	48	10	6	20	0	9
	95		28	10	38	5.5	48	10	6	20	0	9
2526		49	32	16	42	5.5	52	10	7	20	0	-
		59	32	16	42	5.5	52	10	7	20	0	-
		69	32	16	42	5.5	52	10	7	20	0	-
1516	61		36	10	47	6.6	58	10	6	22	0	9
	72		36	10	47	6.6	58	10	6	22	0	9
	80		36	10	47	6.6	58	10	6	22	0	9
	89		36	10	47	6.6	58	10	6	22	0	9
	63		36	10	47	6.6	58	10	6	22	0	9
	73		36	10	47	6.6	58	10	6	22	0	9
	82		36	10	47	6.6	58	10	6	22	0	9
	73		36	10	47	6.6	58	10	7	22	0	9
	85	79	36	10	47	6.6	58	10	6	22	0	9
	95	90	36	10	47	6.6	58	10	6	22	0	9
	102		36	16	47	6.6	58	10	7	22	0	12
	126		36	16	47	6.6	58	10	7	22	0	12
2526		69	36	16	47	6.6	58	10	7	22	0	-
		57	36	16	47	6.6	58	10	7	22	0	-
		77	36	16	47	6.6	58	10	7	22	0	-

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 25 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut with UNILOCK preload



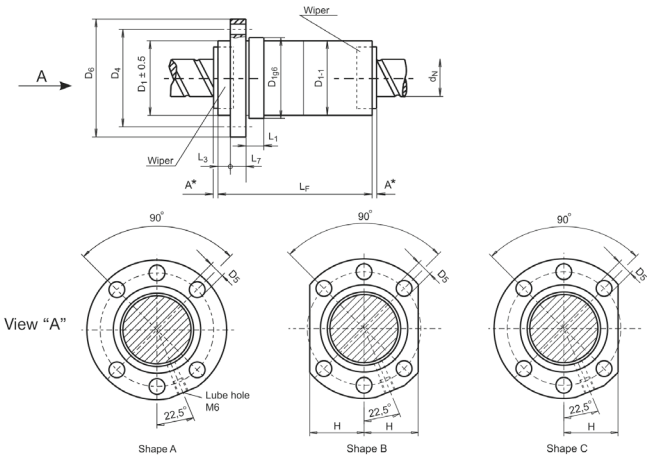
■ **Series 2526:**
End cap nut with flange, dual start, pitch offset preload

HIGH ETA+ PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x	ETA+	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	ETA+	Stat. load rating C_{0a} [kN]	ETA+	Stiffness* $R_{nu,ar}$ [N/µm]	ETA+
1516	2.25.1,5.3	2	25	3		1.5	3.5		7.8		350	
	2.25.1,5.4	2	25	4		1.5	4.5		10.4		460	
	2.25.1,5.5	2	25	5		1.5	5.5		13.0		570	
	4.25.3.3	4	25	3		3.0	11.4		19.3		430	
	4.25.3.4	4	25	4		3.0	14.6		25.7		570	
	5.25.3,5.3	5	25	3	3 + 3	3.5	13.7	18.1	21.5	23.4	420	460
	5.25.3,5.4	5	25	4	4 + 4	3.5	17.5	23.1	28.7	31.2	550	610
	5.25.3,5.5	5	25	5	5 + 5	3.5	21.2	28.0	35.9	39.0	680	750
	10.25.3,5.2	10	25	2		3.5	9.6		14.3		240	
	10.25.3,5.3	10	25	3	2 x 3	3.5	13.6	17.9	21.4	23.3	360	390
	12.28.4.4	12	28	4		4.0	22.1		37.2		510	
2526	15.25.3,5.2	15	25		2 + 2	3.5		10.7		13.3		250
	15.25.3,5.3	15	25		3 + 3	3.5		16.7		22.2		390
	20.25.3,5.2	20	25		2 + 2	3.5		10.9		13.8		220
	20.25.3,5.3	20	25		3 + 3	3.5		16.9		22.9		330
	25.25.3,5.2	25	25		2 + 2	3.5		10.6		13.5		180

* Actual stiffness at preload equal to 0.1 x C_a



Dimensions

Flanged nut with wipers both ends

	L_F [mm]	ETA+	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	72		40	10	51	6.6	62	10	6	24	0	9
	77		40	10	51	6.6	62	10	6	24	0	9
	81		40	10	51	6.6	62	10	6	24	0	9
	73		40	10	51	6.6	62	10	6	24	0	9
	82		40	10	51	6.6	62	10	6	24	0	9
	85	79	40	10	51	6.6	62	10	6	24	0	9
	95	90	40	10	51	6.6	62	10	6	24	0	9
	107	100	40	10	51	6.6	62	10	6	24	0	9
	104		40	16	51	6.6	62	10	7	24	0	12
	128	128	40	16	51	6.6	62	10	7	24	0	12
	170		40	16	51	6.6	62	10	7	24	0	12
2526		48	40	16	51	6.6	62	10	7	24	0	12
		63	40	16	51	6.6	62	10	7	24	0	12
		57	40	16	51	6.6	62	10	7	24	0	12
		77	40	16	51	6.6	62	10	7	24	0	12
		66	40	16	51	6.6	62	10	7	24	0	12

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 32 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut with UNILOCK preload



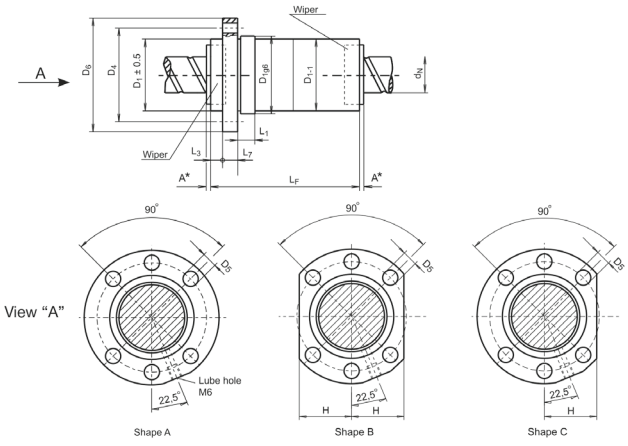
■ **Series 3526:**
UltraSpeed nut with flange, dual start, pitch offset preload

HIGH ETA+ PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x		Ball diameter d_W [N]	Dyn. load rating C_a [kN]		Stat. load rating C_{0a} [kN]		Stiffness* $R_{nu,ar}$ [N/µm]	
					ETA+			ETA+		ETA+		ETA+
1516	4.32.3.3	4	32	3		3.0	13.1		26.3		550	
	4.32.3.4	4	32	4		3.0	16.8		35.0		730	
	5.32.3,5.3	5	32	3	3 + 3	3.5	16.0	21.3	29.8	32.4	550	610
	5.32.3,5.4	5	32	4	4 + 4	3.5	20.4	27.3	39.8	43.2	730	800
	5.32.3,5.5	5	32	5	5 + 5	3.5	24.8	33.0	49.7	54.0	900	990
	5.32.3,5.6	5	32	6		3.5	29.0		59.6		1070	
	6.32.4.3	6	32	3	3 + 3	4.0	18.7	24.8	32.7	35.6	530	600
	6.32.4.4	6	32	4		4.0	24.0		43.7		710	
	8.32.5.4	8	32	4	4 + 4	5.0	31.5	41.5	52.0	56.6	680	740
	8.32.5.6	8	32	6		5.0	44.6		78.0		1000	
	10.32.6.3	10	32	3	3 + 3	6.0	30.8	40.3	45.6	49.7	490	540
	10.32.6.4	10	32	4	2 x 4	6.0	39.4	51.6	60.8	66.3	650	710
	10.32.6.5	10	32	5	2 x 5	6.0	47.8	62.6	76.0	82.9	800	880
	12.32.5.3	12	32		3 + 3	5.0		32.2		42.3		510
	12.32.5.4	12	32	4		5.0	31.3		51.8		620	
	12.32.5.5	12	32	5		5.0	37.9		64.7		760	
	15.32.6.3	15	32		2 x 3	6.0		40.0		49.4		470
	20.32.6.3	20	32	3		6.0	30.2		44.9		360	
3526	20.32.6.2	20	32		2 + 2	6.0		24.8		29.8		330
	20.32.6.3	20	32		3 + 3	6.0		38.5		49.6		500
	20.32.6.4	20	32		4 + 4	6.0		51.4		69.4		670
	25.32.6.2	25	32		2 + 2	6.0		24.5		29.4		290
	30.32.6.2	30	32		2 + 2	6.0		24.1		29.1		250

* Actual stiffness at preload equal to 0.1 x C_a



STEINMEYER

	Dimensions											
	Flanged nut with wipers both ends											
	L_F [mm]	ETA+	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	75		50	10	65	9	80	12	6	31.0	0	9
	84		50	10	65	9	80	12	6	31.0	0	9
	87	82	50	10	65	9	80	12	6	31.0	0	9
	97	92	50	10	65	9	80	12	6	31.0	0	9
	107	102	50	10	65	9	80	12	6	31.0	0	9
	114		50	10	65	9	80	12	6	31.0	0	9
	97	91	50	10	65	9	80	12	6	31.0	0	9
	110		50	10	65	9	80	12	6	31.0	0	9
	140	132	50	16	65	9	80	12	7	31.0	0	12
	174		50	16	65	9	80	12	7	31.0	0	12
	144	130	50	16	65	9	80	12	7	31.0	0	12
	165	165	50	16	65	9	80	12	7	31.0	0	12
	187	187	50	16	65	9	80	12	7	31.0	0	12
		166	50	16	65	9	80	12	7	31.0	0	12
	191		50	16	65	9	80	12	7	31.0	0	12
	218		50	16	65	9	80	12	7	31.0	0	12
		177	56	20	71	9	86	14	7	32.5	0	12
	200		50	16	65	9	80	12	7	31	0	12
3526		68	56	20	71	9	86	14	7	32.5	0	12
		88	56	20	71	9	86	14	7	32.5	0	12
		108	56	20	71	9	86	14	7	32.5	0	12
		78	56	20	71	9	86	14	7	32.5	5	22
		88	56	20	71	9	86	14	7	32.5	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 40 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut with UNILOCK preload



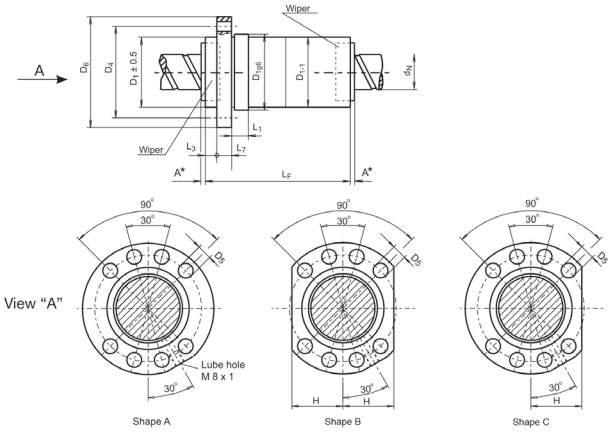
■ **Series 3526:**
UltraSpeed nut with flange, dual start, pitch offset preload

HIGH ETA PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x		Ball diameter d_W [N]	Dyn. load rating C_a [kN]		Stat. load rating C_{0a} [kN]		Stiffness* $R_{nu,ar}$ [N/µm]	
					ETA+			ETA+		ETA+		ETA+
1516	5.40.3,5.3	5	40	3	3 + 3	3.5	17.7	23.8	38.2	41.5	670	750
	5.40.3,5.4	5	40	4	4 + 4	3.5	22.7	30.5	50.9	55.3	890	990
	5.40.3,5.5	5	40	5	5 + 5	3.5	27.5	36.9	63.6	69.1	1100	1230
	5.40.3,5.6	5	40	6	6 + 6	3.5	32.1	43.2	76.4	83.0	1310	1460
	6.40.4.4	6	40	4	4 + 4	4.0	26.7	35.8	56.1	61.0	880	980
	6.40.4.6	6	40	6		4.0	37.9		84.2		1300	
	8.40.5.4	8	40	4	4 + 4	5.0	35.8	47.5	68.2	74.2	870	960
	8.40.5.6	8	40	6		5.0	50.7		102.3		1280	
	10.40.6.3	10	40	3	3 + 3	6.0	35.2	46.4	59.6	64.9	640	710
	10.40.6.4	10	40	4	4 + 4	6.0	45.1	59.4	79.5	86.6	840	930
	10.40.7,5.3	10	40	3	3 + 3	7.5	46.1	60.4	71.3	77.8	630	700
	10.40.7,5.4	10	40	4	4 + 4	7.5	59.0	77.3	95.1	103.8	830	920
	10.40.7,5.5	10	40	5		7.5	71.5		118.9		1030	
	12.40.7,5.3	12	40	3	2 x 3	7.5	46.0	60.3	71.2	77.7	610	670
	12.40.7,5.4	12	40	4		7.5	58.9		95.0		810	
	15.40.7,5.3	15	40	3	2 x 3	7.5	45.9	60.1	71.1	77.5	570	630
	15.40.7,5.4	15	40	4		7.5	58.7		94.8		760	
	16.40.7,5.5	16	40	5		7.5	71.1		118.3		910	
	20.40.7,5.2	20	40	2		7.5	32.1		47.1		340	
	20.40.7,5.3	20	40	3		7.5	45.5		70.7		500	
	20.40.7,5.4	20	40	4		7.5	58.3		94.2		670	
3526	20.40.6.3	20	40		3 + 3	6.0		43.4		62.5		670
	20.40.6.4	20	40		4 + 4	6.0		58.0		87.5		890
	20.40.7,5.3 N	20	40		3 + 3	7.5		55.7		73.4		650
	20.40.7,5.4 N	20	40		4 + 4	7.5		74.4		102.8		870
	25.40.6.3	25	40		3 + 3	6.0		43.1		62.1		600
	25.40.6.4	25	40		4 + 4	6.0		57.5		86.9		800
	25.40.7,5.3 N	25	40		3 + 3	7.5		57.5		77.5		620
	25.40.7,5.4 N	25	40		4 + 4	7.5		76.8		108.5		820
	30.40.6.3	30	40		3 + 3	6.0		42.6		61.6		540
	30.40.6.4	30	40		4 + 4	6.0		56.9		86.2		710
	40.40.6.3	40	40		3 + 3	6.0		41.5		60.3		420

* Actual stiffness at preload equal to 0.1 x C_a
N: Alternate sizes acc. to DIN 69051



	Dimensions											
	Flanged nut with wipers both ends											
	L_F [mm]	ETA	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	89	84	63	10	78	9	93	14	6	35.0	0	9
	99	94	63	10	78	9	93	14	6	35.0	0	9
	109	104	63	10	78	9	93	14	6	35.0	0	9
	125	114	63	10	78	9	93	14	6	35.0	0	9
	112	106	63	10	78	9	93	14	6	35.0	0	9
	137		63	10	78	9	93	14	6	35.0	0	9
	142	134	63	10	78	9	93	14	7	35.0	0	9
	176		63	10	78	9	93	14	7	35.0	0	9
	147	136	63	20	78	9	93	14	7	35.0	0	12
	167	157	63	20	78	9	93	14	7	35.0	0	12
	147	136	63	16	78	9	93	14	7	35.0	0	12
	167	157	63	16	78	9	93	14	7	35.0	0	12
	189		63	16	78	9	93	14	7	35.0	0	12
	152	152	63	20	78	9	93	14	7	35.0	0	12
	177		63	20	78	9	93	14	7	35.0	0	12
	180	180	63	16	78	9	93	14	7	35.0	0	12
	211		63	16	78	9	93	14	7	35.0	0	12
	256		63	16	78	9	93	14	7	35.0	0	12
	153		63	16	78	9	93	14	7	35.0	0	12
	221		63	16	78	9	93	14	7	35.0	0	12
	263		63	16	78	9	93	14	7	35.0	0	12
3526		89	63	20	78	9	93	14	7	35.0	0	12
		109	63	20	78	9	93	14	7	35.0	0	12
		90	70	25	85	9	100	14	7	37.5	0	12
		110	70	25	85	9	100	14	7	37.5	0	12
		107	63	16	78	9	93	14	7	35.0	5	22
		132	63	16	78	9	93	14	7	35.0	5	22
		104	70	25	85	9	100	14	7	37.5	5	22
		129	70	25	85	9	100	14	7	37.5	5	22
		121	63	16	78	9	93	14	7	35.0	5	22
		151	63	16	78	9	93	14	7	35.0	5	22
		148	63	16	78	9	93	14	7	35.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 50 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut
with UNILOCK preload



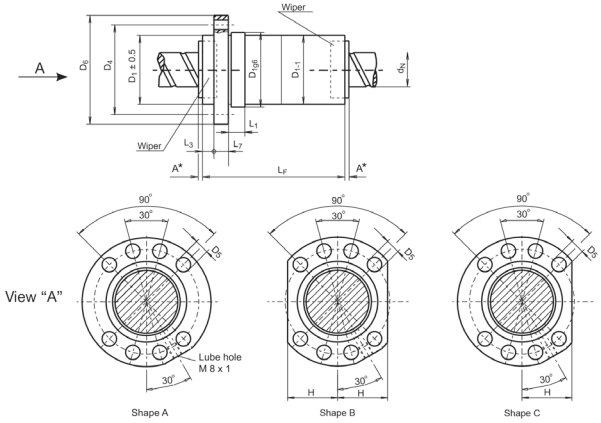
■ **Series 3526:**
UltraSpeed nut with flange, dual start,
pitch offset preload

HIGH ETA+ PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x	ETA+	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	ETA+	Stat. load rating C_{0a} [kN]	ETA+	Stiffness* $R_{nu,\,ar}$ [N/µm]	ETA+
1516	5.50.3,5.3	5	50	3		3.5	19.6		48.9		810	
	5.50.3,5.4	5	50	4	4 + 4	3.5	25.1	34.0	65.2	70.8	1070	1190
	5.50.3,5.5	5	50	5	5 + 5	3.5	30.4	41.2	81.5	88.5	1320	1470
	5.50.3,5.6	5	50	6	6 + 6	3.5	35.6	48.2	97.8	106.3	1570	1760
	10.50.7,5.3	10	50	3	3 + 3	7.5	52.7	69.5	92.3	101.5	810	890
	10.50.7,5.4	10	50	4	4 + 4	7.5	67.4	89.0	124.3	135.4	1060	1180
	10.50.7,5.5	10	50	5		7.5	81.7		155.4		1310	
	15.50.7,5.3	15	50	3		7.5	52.5		93.0		760	
	15.50.7,5.4	15	50	4		7.5	67.2		124.0		990	
	15.50.7,5.5	15	50	5		7.5	81.4		155.0		1230	
	15.50.9.3	15	50	3	2 x 3	9.0	77.2	99.2	130.4	142.2	850	890
	15.50.9.3 N	15	50	3	2 x 3	9.0	77.2	99.2	130.4	142.2	850	890
	15.50.9.4 N	15	50	4		9.0	98.8		173.9		1120	
	15.50.9.5 N	15	50	5		9.0	119.7		217.4		1380	
	20.50.9.3	20	50	3	2 x 3	9.0	76.8	98.7	130.0	141.7	780	810
	20.50.9.4	20	50	4		9.0	98.4		173.3		1020	
	20.50.9.3 N	20	50	3		9.0	76.8		130.0		780	
	20.50.9.4 N	20	50	4		9.0	98.4		173.3		1020	
3526	20.50.7,5.4 N	20	50		4 + 4	7.5		87.2		137.4		1180
	25.50.7,5.4 N	25	50		4 + 4	7.5		86.7		136.8		1090
	30.50.6.4	30	50		4 + 4	6.0		63.9		108.9		980
	30.50.7,5.3 N	30	50		3 + 3	7.5		64.5		97.2		750
	30.50.7,5.4 N	30	50		4 + 4	7.5		86.1		136.0		1010
	35.50.7,5.3 N	35	50		3 + 3	7.5		63.9		96.6		690
	35.50.7,5.4 N	35	50		4 + 4	7.5		85.4		135.2		920
	40.50.7,5.3 N	40	50		3 + 3	7.5		63.3		95.9		630

* Actual stiffness at preload equal to 0.1 x C_a



	Dimensions											
	Flanged nut with wipers both ends											
	L_F [mm]	ETA+	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	91		75	10	93	11	110	16	6	42.5	0	9
	101	93	75	10	93	11	110	16	6	42.5	0	9
	111	103	75	10	93	11	110	16	6	42.5	0	9
	122	113	75	10	93	11	110	16	6	42.5	0	9
	148	138	75	16	93	11	110	16	7	42.5	0	12
	169	159	75	16	93	11	110	16	7	42.5	0	12
	191		75	16	93	11	110	16	7	42.5	0	12
	182		75	16	93	11	110	16	7	42.5	0	12
	213		75	16	93	11	110	16	7	42.5	0	12
	262		75	16	93	11	110	16	7	42.5	0	12
	187	187	75	16	93	11	110	16	7	42.5	0	12
	199	199	82	25	100	11	118	16	7	46.0	0	12
	234		82	25	100	11	118	16	7	46.0	0	12
	267		82	25	100	11	118	16	7	46.0	0	12
	229	229	75	16	93	11	110	16	7	42.5	0	12
	271		75	16	93	11	110	16	7	42.5	0	12
	229	229	82	25	100	11	118	16	7	46.0	0	12
	271		82	25	100	11	118	16	7	46.0	0	
3526		111	82	25	100	11	118	16	7	46.0	0	12
		130	82	25	100	11	118	16	7	46.0	5	22
		152	75	16	93	11	110	16	7	42.5	5	22
		120	82	25	100	11	118	16	7	46.0	5	22
		150	82	25	100	11	118	16	7	46.0	5	22
		135	82	25	100	11	118	16	7	46.0	5	22
		170	82	25	100	11	118	16	7	46.0	5	22
		149	82	25	100	11	118	16	7	46.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 60 – 63 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ Series 1516:
DIN standard flanged nut
with UNILOCK preload



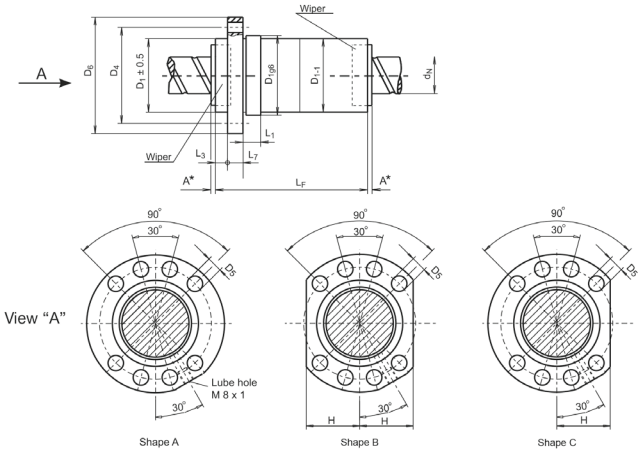
■ Series 3526:
UltraSpeed nut with flange, dual start,
pitch offset preload

HIGH ETA+ PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x		Ball diameter d_W [N]	Dyn. load rating C_a [kN]		Stat. load rating C_{0a} [kN]		Stiffness* $R_{nu,ar}$ [N/µm]	
					ETA+			ETA+		ETA+		ETA+
3526	25.60.9.3	25	60		3 + 3	9.0		107.4		179.0		1160
	25.60.9.4	25	60		4 + 4	9.0		143.4		250.5		1560
	30.60.9.3	30	60		3 + 3	9.0		106.8		178.3		1090
	30.60.9.4	30	60		4 + 4	9.0		142.7		249.6		1460
	35.60.9.3	35	60		3 + 3	9.0		106.2		177.5		1020
	40.60.9.2	40	60		2 + 2	9.0		68.0		106.0		620
	40.60.9.3	40	60		3 + 3	9.0		105.5		176.6		950
	20.63.7,5.4	20	63		4 + 4	7.5		97.0		172.5		1500
1516	5.63.3,5.4	5	63	4		3.5	27.8		84.3		1260	
	5.63.3,5.5	5	63	5		3.5	33.7		105.4		1560	
	5.63.3,5.6	5	63	6		3.5	39.5		126.5		1870	
	10.63.7,5.3	10	63	3	3 + 3	7.5	59.2	78.8	120.7	131.3	1000	1110
	10.63.7,5.4	10	63	4	4 + 4	7.5	75.8	100.7	160.9	175.0	1310	1460
	10.63.7,5.5	10	63	5	5 + 5	7.5	91.8	122.0	201.1	218.8	1620	1800
	10.63.7,5.6	10	63	6		7.5	107.4		241.3		1930	
	15.63.9.4	15	63	4	2 x 4	9.0	116.7	150.3	239.9	261.2	1510	1590
	20.63.11.3	20	63	3	2 x 3	11.0	115.3	148.3	209.1	228.0	1070	1120
	20.63.11.4	20	63	4	2 x 4	11.0	147.7	189.9	278.8	303.9	1410	1480
	20.63.11.5	20	63	5	2 x 5	11.0	179.0	230.1	348.5	379.9	1740	1830
	30.63.11.3	30	63	3		11.0	114.4		207.8		920	

* Actual stiffness at preload equal to 0.1 x C_a



	Dimensions											
	Flanged nut with wipers both ends											
	L_F [mm]	ETA+	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
3526		106	95	25	115	13.5	135	20	7	50.0	5	22
		131	95	25	115	13.5	135	20	7	50.0	5	22
		121	95	25	115	13.5	135	20	7	50.0	5	22
		151	95	25	115	13.5	135	20	7	50.0	5	22
		135	95	25	115	13.5	135	20	7	50.0	5	22
		110	95	25	115	13.5	135	20	7	50.0	5	22
		150	95	25	115	13.5	135	20	7	50.0	5	22
		111	95	25	115	13.5	135	20	7	50.0	0	0
1516	103		90	10	108	11.0	125	18	6	47.5	0	9
	113		90	10	108	11.0	125	18	6	47.5	0	9
	124		90	10	108	11.0	125	18	6	47.5	0	9
	151	141	90	16	108	11.0	125	18	7	47.5	0	12
	172	162	90	16	108	11.0	125	18	7	47.5	0	12
	192	182	90	16	108	11.0	125	18	7	47.5	0	12
	214		90	16	108	11.0	125	18	7	47.5	0	12
	239	239	95	25	115	13.5	135	20	7	50.0	0	12
	237	237	95	25	115	13.5	135	20	7	50.0	0	12
	277	277	95	25	115	13.5	135	20	7	50.0	0	12
	319	319	95	25	115	13.5	135	20	7	50.0	0	12
	324		95	25	115	13.5	135	20	7	50.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 80 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut with UNILOCK preload



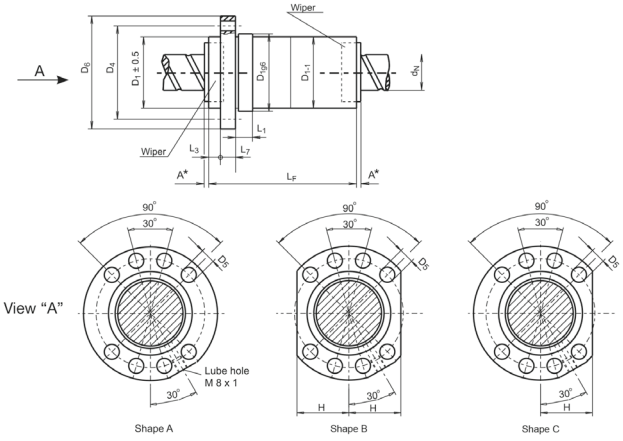
■ **Series 3526:**
UltraSpeed nut with flange, dual start, pitch offset preload

HIGH ETA+ PERFORMANCE®

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x	ETA+	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	ETA+	Stat. load rating C_{0a} [kN]	ETA+	Stiffness* $R_{nu,\,ar}$ [N/µm]	ETA+
1516	5.80.3,5.3	5	80	3		3.5	23.9		81.2		1080	
	5.80.3,5.4	5	80	4		3.5	30.6		108.2		1430	
	5.80.3,5.5	5	80	5		3.5	37.1		135.3		1770	
	5.80.3,5.6	5	80	6		3.5	43.4		162.4		2110	
	10.80.7,5.3	10	80	3	3 + 3	7.5	68.2	91.4	164.3	178.6	1230	1370
	10.80.7,5.4	10	80	4	2 x 4	7.5	87.3	117.1	219.1	238.1	1620	1810
	10.80.7,5.5	10	80	5	2 x 5	7.5	105.8	141.8	273.8	297.6	2000	2240
	10.80.7,5.6	10	80	6		7.5	123.8		328.6		2390	
	15.80.11.3	15	80	3		11.0	134.4		283.9		1490	
	15.80.11.4	15	80	4		11.0	172.2		378.5		1960	
	15.80.11.5	15	80	5	2 x 5	11.0	208.6	268.8	473.1	515.0	2430	2570
	15.80.11.6	15	80	6		11.0	224.0		567.7		2890	
	20.80.11.3	20	80	3		11.0	134.2		283.5		1440	
	20.80.11.4	20	80	4	2 x 4	11.0	171.9	221.5	377.9	411.5	1900	2000
	20.80.11.5	20	80	5		11.0	208.2		472.4		2350	
	20.80.11.6	20	80	6	2 x 6	11.0	243.6	313.9	566.9	617.2	2800	2950
	25.80.11.3	25	80	3	2 x 3	11.0	133.9	172.5	283.0	308.0	1380	1450
	25.80.11.5	25	80	5	5 + 5	11.0	267.7	204.6	471.6	513.4	2240	2360
	30.80.11.3	30	80	3		11.0	133.5		282.4		1300	
3526	30.80.11.3	30	80		3 + 3	11.0		161.4		294.6		1450
	30.80.11.4	30	80		4 + 4	11.0		215.6		412.4		1940
	30.80.11.5	30	80		5 + 5	11.0		267.6		530.2		2420
	40.80.11.2	40	80		2 + 2	11.0		103.3		175.8		940
	40.80.11.3	40	80		3 + 3	11.0		160.3		293.0		1320

* Actual stiffness at preload equal to 0.1 x C_a



Dimensions

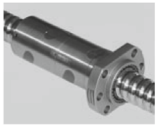
Flanged nut with wipers both ends

	L_F [mm]	ETA	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	94		105	16	125	13.5	145	20	7	55.0	0	9
	104		105	16	125	13.5	145	20	7	55.0	0	9
	114		105	16	125	13.5	145	20	7	55.0	0	9
	127		105	16	125	13.5	145	20	7	55.0	0	9
	153	143	105	16	125	13.5	145	20	7	55.0	0	12
	174	174	105	16	125	13.5	145	20	7	55.0	0	12
	194	194	105	16	125	13.5	145	20	7	55.0	0	12
	215		105	16	125	13.5	145	20	7	55.0	0	12
	211		125	25	145	13.5	165	25	7	65.0	0	12
	243		125	25	145	13.5	165	25	7	65.0	0	12
	274	274	125	25	145	13.5	165	25	7	65.0	0	12
	304		125	25	145	13.5	165	25	7	65.0	0	12
	243		125	25	145	13.5	165	25	7	65.0	0	12
	284	284	125	25	145	13.5	165	25	7	65.0	0	12
	346		125	25	145	13.5	165	25	7	65.0	0	12
	386	386	125	25	145	13.5	165	25	7	65.0	0	12
	302	302	125	25	145	13.5	165	25	7	65.0	5	22
	430	430	125	25	145	13.5	165	25	7	65.0	5	22
	340		125	25	145	13.5	165	25	7	65.0	5	22
3526		124	125	25	145	13.5	165	25	7	65.0	5	22
		154	125	25	145	13.5	165	25	7	65.0	5	22
		184	125	25	145	13.5	165	25	7	65.0	5	22
		114	125	25	145	13.5	165	25	7	65.0	5	22
		154	125	25	145	13.5	165	25	7	65.0	5	22

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 100 – 125 mm

Double nut, 2-point contact
Execution grade P0 – P5



■ **Series 1516:**
DIN standard flanged nut with UNILOCK preload

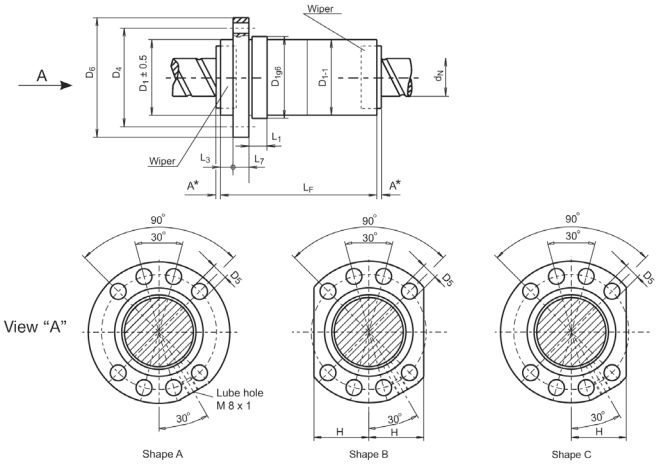


■ **Series 3526:**
UltraSpeed nut with flange, dual start, pitch offset preload

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i 2x	ETA+	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	ETA+	Stat. load rating C_{0a} [kN]	ETA+	Stiffness* $R_{nu,\,ar}$ [N/µm]	ETA+
1516	10.100.7,5.3	10	100	3		7.5	75.0		208.2		1410	
	10.100.7,5.4	10	100	4		7.5	96.0		277.6		1860	
	10.100.7,5.5	10	100	5		7.5	116.3		347.0		2300	
	10.100.7,5.6	10	100	6		7.5	136.1		416.4		2740	
	15.100.11.3	15	100	3		11.0	152.5		373.2		1860	
	15.100.11.4	15	100	4		11.0	195.3		497.6		2450	
	15.100.11.5	15	100	5		11.0	236.7		622.0		3040	
	15.100.11.6	15	100	6		11.0	276.8		746.4		3610	
	20.100.11.3	20	100	3		11.0	152.4		372.9		1840	
	20.100.11.4	20	100	4		11.0	195.1		497.1		2420	
	20.100.11.5	20	100	5		11.0	236.4		621.4		3000	
	20.100.11.6	20	100	6		11.0	276.5		745.7		3560	
	25.100.11.3	25	100	3		11.0	152.1		372.4		1790	
3526	30.100.11.4	30	100		4 + 4	11.0		235.4		508.2		2400
	30.100.11.5	30	100		5 + 5	11.0		292.2		653.4		2990
	30.100.11.6	30	100		6 + 6	11.0		347.3		798.6		3580
	40.100.11.2	40	100		2 + 2	11.0		113.1		217.0		1190
	40.100.11.3	40	100		3 + 3	11.0		175.5		361.7		1680
1516	10.125.7,5.4	10	125	4		7.5	105.1		350.8		2040	
	20.125.12,7.6	20	125	6		12.7	369.5		1074.7		4250	
	20.125.12,7.8	20	125	8		12.7	473.2		1433.0		5610	

* Actual stiffness at preload equal to 0.1 x C_a



	Dimensions											
	Flanged nut with wipers both ends											
	L_F [mm]	ETA+	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1516	154		125	16	145	13.5	165	22	7	65.0	0	12
	175		125	16	145	13.5	165	22	7	65.0	0	12
	195		125	16	145	13.5	165	22	7	65.0	0	12
	216		125	16	145	13.5	165	22	7	65.0	0	12
	217		150	25	176	17.5	202	30	7	77.5	0	12
	249		150	25	176	17.5	202	30	7	77.5	0	12
	279		150	25	176	17.5	202	30	7	77.5	0	12
	310		150	25	176	17.5	202	30	7	77.5	0	12
	247		150	25	176	17.5	202	30	7	77.5	0	12
	288		150	25	176	17.5	202	30	7	77.5	0	12
	329		150	25	176	17.5	202	30	7	77.5	0	12
	396		150	25	176	17.5	202	30	7	77.5	0	12
	302		150	25	176	17.5	202	30	7	77.5	5	22
3526		155	150	25	176	17.5	202	30	7	77.5	5	22
		185	150	25	176	17.5	202	30	7	77.5	5	22
		215	150	25	176	17.5	202	30	7	77.5	5	22
		128	150	25	176	17.5	202	30	7	77.5	5	22
		168	150	25	176	17.5	202	30	7	77.5	5	22
1516	239		150	10	176	17.5	202	25	7	77.5	0	12
	397		170	25	196	17.5	222	30	7	87.5	0	12
	484		170	25	196	17.5	222	30	7	87.5	0	12

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 16 – 20 mm

Single nut with backlash
Execution grade T7 – T10



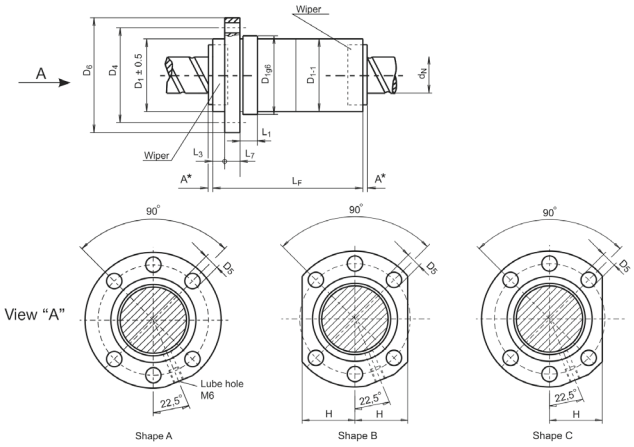
■ **Series 1436:**
DIN standard flanged nut



■ **Series 2446:**
End cap nut with flange, dual start

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Backlash max. [mm]
1436	2.16.1,5.3	2	16	3	1.5	2.6	4.4	0.02
	2.16.1,5.4	2	16	4	1.5	3.4	5.9	0.02
	4.16.3.3	4	16	3	3.0	8.0	10.3	0.03
	4.16.3.4	4	16	4	3.0	10.3	13.7	0.03
	5.16.3,5.3	5	16	3	3.5	9.1	10.9	0.04
	5.16.3,5.4	5	16	4	3.5	11.7	14.5	0.04
2446	10.16.3,5.6	10	16	3 + 3	3.5	17.7	25.0	0.04
	10.16.3,5.8	10	16	4 + 4	3.5	23.1	34.0	0.04
	10.16.3,5.10	10	16	5 + 5	3.5	28.3	43.1	0.04
1436	2.20.1,5.2	2	20	2	1.5	2.1	3.7	0.02
	2.20.1,5.3	2	20	3	1.5	3.0	5.6	0.02
	2.20.1,5.4	2	20	4	1.5	3.8	7.4	0.02
	2.20.1,5.5	2	20	5	1.5	4.6	9.3	0.02
	4.20.3.2	4	20	2	3.0	6.5	9.0	0.03
	4.20.3.3	4	20	3	3.0	9.2	13.5	0.03
	4.20.3.4	4	20	4	3.0	11.7	17.9	0.03
	5.20.3,5.2	5	20	2	3.5	7.7	10.1	0.04
	5.20.3,5.3	5	20	3	3.5	11.0	15.1	0.04
	5.20.3,5.4	5	20	4	3.5	14.0	20.1	0.04
	10.20.3,5.2	10	20	2	3.5	7.7	10.0	0.04
	10.20.3,5.3	10	20	3	3.5	10.8	15.0	0.04
2446	10.20.3,5.10	10	20	5 + 5	3.5	32.8	51.0	0.04
	20.20.3,5.4	20	20	2 + 2	3.5	13.2	18.2	0.04
	20.20.3,5.6	20	20	3 + 3	3.5	19.5	28.5	0.04



	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA* [mm]
1436	39	28	10	38	5.5	48	10	6	20	0	9
	43	28	10	38	5.5	48	10	6	20	0	9
	49	28	10	38	5.5	48	10	6	20	0	9
	53	28	10	38	5.5	48	10	6	20	0	9
	54	28	10	38	5.5	48	10	6	20	0	9
	59	28	10	38	5.5	48	10	6	20	0	9
2446	49	32	16	42	5.5	52	10	7	20	0	-
	59	32	16	42	5.5	52	10	7	20	0	-
	69	32	16	42	5.5	52	10	7	20	0	-
1436	43	36	16	47	6.6	58	10	6	22	0	9
	48	36	10	47	6.6	58	10	6	22	0	9
	52	36	10	47	6.6	58	10	6	22	0	9
	56	36	10	47	6.6	58	10	6	22	0	9
	43	36	10	47	6.6	58	10	6	22	0	9
	49	36	10	47	6.6	58	10	6	22	0	9
	53	36	10	47	6.6	58	10	6	22	0	9
	48	36	10	47	6.6	58	10	6	22	0	9
	55	36	10	47	6.6	58	10	6	22	0	9
	60	36	10	47	6.6	58	10	6	22	0	9
	62	36	16	47	6.6	58	10	7	22	0	9
	76	36	16	47	6.6	58	10	7	22	0	12
2446	69	36	16	47	6.6	58	10	7	22	0	12
	57	36	16	47	6.6	58	10	7	22	0	-
	77	36	16	47	6.6	58	10	7	22	0	-

LA *: Additional nut length at each end when using combination wipers

NOMINAL DIAMETER 25 – 32 mm

Single nut with backlash
Execution grade T7 – T10



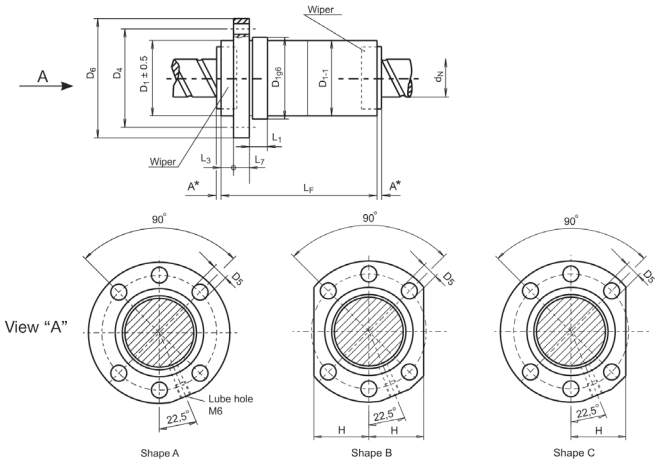
■ **Series 1436:**
DIN standard flanged nut



■ **Series 2446:**
End cap nut with flange, dual start

Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [N]	Dyn. load rating C_a [kN]	Stat. load rating C_{0a} [kN]	Backlash max. [mm]
1436	2.25.1,5.3	2	25	3	1.5	3.2	7.0	0.02
	2.25.1,5.4	2	25	4	1.5	4.1	9.4	0.02
	2.25.1,5.5	2	25	5	1.5	5.0	11.7	0.02
	4.25.3.3	4	25	3	3.0	10.3	17.4	0.03
	4.25.3.4	4	25	4	3.0	13.2	23.2	0.03
	5.25.3,5.3	5	25	3	3.5	12.3	19.4	0.04
	5.25.3,5.4	5	25	4	3.5	15.8	25.9	0.04
	5.25.3,5.5	5	25	5	3.5	19.1	32.3	0.04
	10.25.3,5.2	10	25	2	3.5	8.7	12.9	0.04
	10.25.3,5.3	10	25	3	3.5	12.3	19.3	0.04
	15.25.3,5.2	15	25	2	3.5	8.5	12.8	0.04
	15.25.3,5.3	15	25	3	3.5	12.1	19.1	0.04
2446	20.25.3,5.4	20	25	2 + 2	3.5	15.4	23.9	0.04
	20.25.3,5.6	20	25	3 + 3	3.5	22.7	37.6	0.04
	25.25.3,5.4	25	25	2 + 2	3.5	15.0	23.6	0.04
1436	5.32.3,5.3	5	32	3	3.5	14.4	26.9	0.04
	5.32.3,5.4	5	32	4	3.5	18.5	35.8	0.04
	5.32.3,5.5	5	32	5	3.5	22.3	44.8	0.04
	5.32.3,5.6	5	32	6	3.5	26.1	53.7	0.04
	6.32.4.3	6	32	3	4.0	16.9	29.5	0.04
	6.32.4.4	6	32	4	4.0	21.6	39.3	0.04
	8.32.5.4	8	32	4	5.0	28.4	46.8	0.05
	8.32.5.6	8	32	6	5.0	40.2	70.2	0.05
	10.32.6.3	10	32	3	6.0	27.8	41.1	0.06
	10.32.6.4	10	32	4	6.0	35.5	54.7	0.06
	10.32.6.5	10	32	5	6.0	43.0	68.4	0.06
	12.32.5.3	12	32	3	5.0	22.1	31.5	0.05



	Dimensions										
	Flanged nut with wipers both ends										
	L_F [mm]	D_1 g6 [mm]	L_1 [mm]	D_4 [mm]	D_5 [mm]	D_6 [mm]	L_7 [mm]	L_3 [mm]	H [mm]	A [mm]	LA * [mm]
1436	43	40	10	51	6.6	62	10	6	24	0	9
	51	40	10	51	6.6	62	10	6	24	0	9
	56	40	10	51	6.6	62	10	6	24	0	9
	49	40	10	51	6.6	62	10	6	24	0	9
	53	40	10	51	6.6	62	10	6	24	0	9
	55	40	10	51	6.6	62	10	6	24	0	9
	60	40	10	51	6.6	62	10	6	24	0	9
	60	40	10	51	6.6	62	10	6	24	0	9
	64	40	16	51	6.6	62	10	7	24	0	12
	78	40	16	51	6.6	62	10	7	24	0	12
	71	40	16	51	6.6	62	10	7	24	0	12
	92	40	16	51	6.6	62	10	7	24	0	12
2446	57	40	16	51	6.6	62	10	7	24	0	12
	77	40	16	51	6.6	62	10	7	24	0	12
	66	40	16	51	6.6	62	10	7	24	5	12
1436	57	50	10	65	9.0	80	12	6	31	0	9
	62	50	10	65	9.0	80	12	6	31	0	9
	67	50	10	65	9.0	80	12	6	31	0	9
	73	50	10	65	9.0	80	12	6	31	0	9
	61	50	10	65	9.0	80	12	6	31	0	9
	68	50	10	65	9.0	80	12	6	31	0	9
	84	50	10	65	9.0	80	12	6	31	0	12
	102	50	16	65	9.0	80	12	7	31	0	12
	84	50	16	65	9.0	80	12	7	31	0	12
	95	50	16	65	9.0	80	12	7	31	0	12
	107	50	16	65	9.0	80	12	7	31	0	12
	94	50	16	65	9.0	80	12	7	31	0	12

LA *: Additional nut length at each end when using combination wipers

ROTATING NUTS

This section describes ball nuts that mate directly with angular ball bearings. The nut body includes a metric thread for a locknut to secure the bearing. The nut flange is ground on both sides and has threaded bolt holes so a pulley can be installed opposite the bearing.
The standard rotating nut has 4-point contact preload. Special executions with 2-point contact, or as ETA, are also possible. Please inquire.

Steinmeyer ball nuts are ideal for rotating nut designs because they are inherently mass balanced due to the symmetrical orientation of the ball deflectors. Driven (rotating) nuts and stationary shafts offer a number of advantages over conventional layouts (and some disadvantages):

- Resonance of the shaft is not as critical. Higher speeds may be reached when the shaft is not rotating.
- Pre-tensioning of the shaft is simplified, since the necessary forces do not need to be transmitted through bearings. Heating is reduced significantly.
- Stationary shafts allow easy internal cooling of the screw.
- Axial and torsional stiffness is higher, when axial loads and moments can be transmitted into the surrounding structure at both ends of the shaft rather than just one. Particularly long shafts with high lead/diameter ratio exhibit a clear increase in total rigidity compared to conventional layouts with rotating shafts.
- Lubrication of the nut is complicated since rotating unions are necessary to feed lubricant directly into the nut, and centrifugal forces push all lubricant away from the balls and ball tracks.
- Thrust bearings to be installed on the nut are relatively large in diameter and may restrict speeds.
- Direct drive requires a hollow shaft motor, which may be critical due to heat emission of the motor.

TECHNICAL TIP

Rotating unions, used to feed oil into a rotating nut, can be quite troublesome because their leak rate can (with time) be higher than the actual oil flow. This means the oil can be thrown out of the nut before it reaches the balls, resulting in complete lubrication breakdown.

A simple and effective alternate solution is to drill a hole through the center of the shaft from one end and cross-drill another hole at a position where the nut passes over regularly - for example a tool change position or similar. The lube pump, which needs to be connected to the NC control, will then shoot a small quantity of oil into the nut when it is positioned over this cross hole. With proper lubricant and wiper selection, this technique should be sufficient until the nut returns to this position again.

This feature can even be combined, if necessary, with a coolant channel through the shaft.

NOTES:

NOMINAL DIAMETER 25 - 63 mm ROTATING NUT

Single nut, 4-point contact
Execution grade P0 - P5



■ **Series 1516:**
DIN standard flanged nut with UNILOCK preload

■ **Series 2424:**
End cap nut with flange, dual start, ball oversize preload

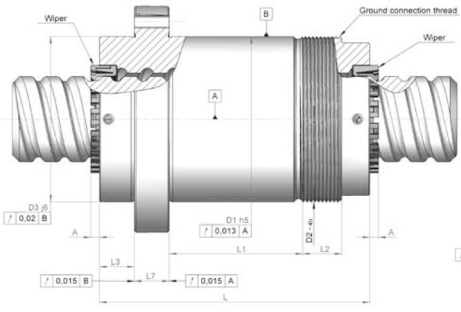
■ **Series 3424:**
UltraSpeed nut with flange, dual start, ball oversize preload

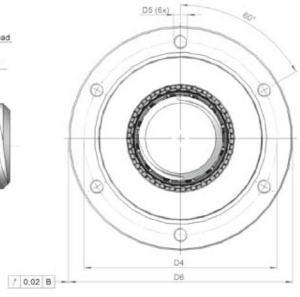
Technical data

	Nut type	Lead P [mm]	Nominal diameter d_N [mm]	No. of circuits i	Ball diameter d_W [mm]	dyn. load rating C_a [kN]	stat. load rating C_{0a} [kN]	Stiffness $R_{nu,\,ar}$ [N/µm]
1414	5.25.3,5.5	5	25	1 x 5	3.5	21.2	35.9	430
	10.25.3,5.3	15	25	1 x 3	3.5	13.6	21.4	220
	20.25.3,5.4	20	25	1 x 4	3.5	17.1	29.5	230
2424	20.25.3,5.4	20	25	2 + 2	3.5	17.1	29.5	230
1414	5.32.3,5.6	5	32	1 x 6	3.5	29.0	59.0	680
	10.32.6.5	10	32	1 x 5	6	47.8	76.0	490
	15.32.6.3	15	32	1 x 3	6	30.5	45.3	250
3424	20.32.6.6	20	32	3 + 3	6	57.9	100.0	530
1414	10.40.7,5.6	10	40	1 x 6	7.5	83.7	142.7	770
	15.40.7,5.4	15	40	1 x 4	7.5	58.7	94.8	460
	20.40.7,5.3	20	40	1 x 3	7.5	45.5	70.7	300
3424	20.40.6.8	20	40	4 + 4	6	84.7	172.2	960
	25.40.6.6	25	40	3 + 3	6	64.3	125.4	630
1414	10.50.7,5.6	10	50	1 x 6	7.5	95.6	186.5	990
	15.50.9.4	15	50	1 x 4	9	98.8	173.9	690
	20.50.9.3	20	50	1 x 3	9	76.8	130.0	470
3424	25.50.7,5.8	25	50	4 + 4	7.5	126.6	269.1	1180
	30.50.7,5.6	30	50	3 + 3	7.5	96.3	196.3	800
	40.50.7,5.6	40	50	3 + 3	7.5	94.6	193.6	640
3424	25.60.9.8	25	60	4 + 4	9	214.5	492.9	1790
	30.60.9.8	30	60	4 + 4	9	213.5	491.0	1650
	40.60.9.6	40	60	3 + 3	9	161.5	356.7	1040
1414	10.63.7,5.6	10	63	1 x 6	7.5	107.4	241.3	1230
	15.63.9.4	15	63	1 x 4	9	116.7	239.9	940
	20.63.11.3	20	63	1 x 3	11	115.3	209.4	660

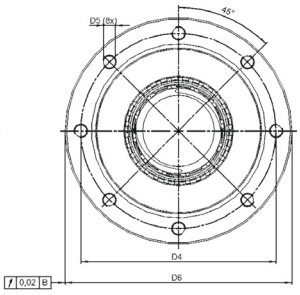
LA *: Additional nut length at each end when using combination wipers
Actual stiffness at preload equal to 0.08 x C_a

Rotating Nut





Nominal diameter
25 - 32mm



Nominal diameter
40 - 63mm

	Dimensions												
	Flanged nut with wipers both ends												
	D1	L1	D2	L2	D3	L3	D6	L7	L	D4	D5	LA *	A
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
1414	40	34	M40x1.5	20	40	7	62	10	72	51	M6	9	0
	40	34	M40x1.5	20	40	7	62	10	82	51	M6	12	0
	40	34	M40x1.5	20	40	7	62	10	82	51	M6	-	0
2424	40	34	M40x1.5	20	40	7	62	10	82	51	M6	-	0
1414	50	34	M50x1.5	20	50	7	80	12	74	65	M6	9	0
	50	34	M50x1.5	20	50	7	80	12	104	65	M6	12	0
	50	34	M50x1.5	20	50	7	80	12	99	65	M6	12	0
3424	60	45	M60x2	20	60	7	86	14	88	71	M6	12	0
1414	70	45	M70x2	23	65	7	93	14	119	78	M6	12	0
	70	45	M70x2	23	65	7	93	14	117	78	M6	12	0
	70	45	M70x2	23	65	7	93	14	117	78	M6	12	0
3424	70	45	M70x2	23	65	7	93	14	109	78	M6	12	0
	70	45	M70x2	23	65	7	93	14	107	78	M6	22	10
1414	80	45	M80x2	23	75	7	110	16	120	93	M8	12	0
	80	45	M80x2	23	75	7	110	16	125	93	M8	12	0
	80	45	M80x2	23	75	7	110	16	128	93	M8	12	0
3424	90	55	M90x2	25	85	7	125	18	130	108	M10	22	10
	90	55	M90x2	25	85	7	125	18	120	108	M10	22	10
	90	55	M90x2	25	85	7	125	18	149	108	M10	22	10
3424	100	55	M100x2	25	95	7	135	20	131	115	M10	22	10
	100	55	M100x2	25	95	7	135	20	151	115	M10	22	10
	100	55	M100x2	25	95	7	135	20	150	115	M10	22	10
1414	90	55	M90x2	25	85	7	125	18	120	115	M10	12	0
	100	55	M100x2	25	95	7	135	20	131	115	M10	12	0
	100	55	M100x2	25	95	7	135	20	132	115	M10	12	0

NOTES:



High Precision Drive Systems

nexen®

RPS Systems

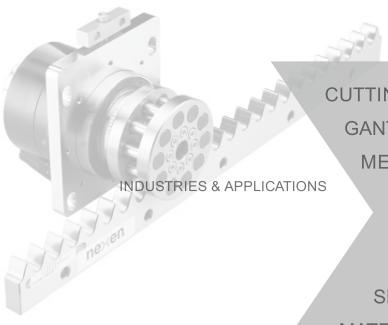


RPG Gears



Harmonic Gears





INDUSTRIES & APPLICATIONS

- CUTTING SYSTEMS
- GANTRY SYSTEMS
- MEDICAL PRODUCTS
- ROBOTICS
- AEROSPACE
- MACHINE TOOL
- SEMICONDUCTOR
- MATERIAL HANDLING

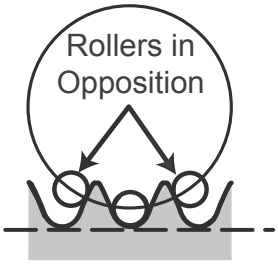
Brakes & Clutches



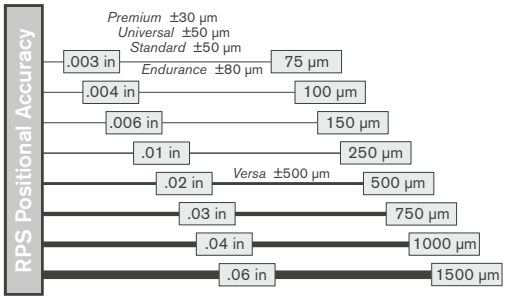
A New Standard For Precision

The Nexen Roller Pinion System (RPS) revolutionizes linear and rotary motion control possibilities. Giving a fresh face to traditional rack and pinion systems, the RPS overcomes the troublesome limitations of conventional drive systems and offers unmatched performance. Across industries as varied as laser cutting and mining, users will benefit from the accuracy and 99% efficiency of this new technology.

The incredible performance of the RPS starts with a pinion consisting of bearing-supported rollers that engage a unique tooth profile. Two or more rollers engage the teeth in opposition at all times to eliminate backlash. The pinion rollers glide easily along a tangent path and roll smoothly down the tooth face for quiet, low-friction operation.

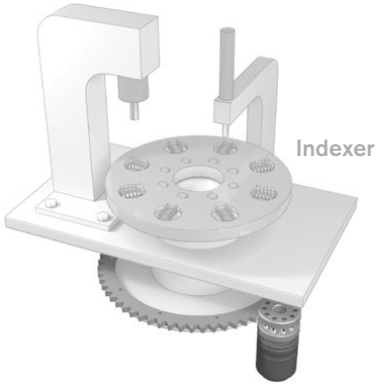


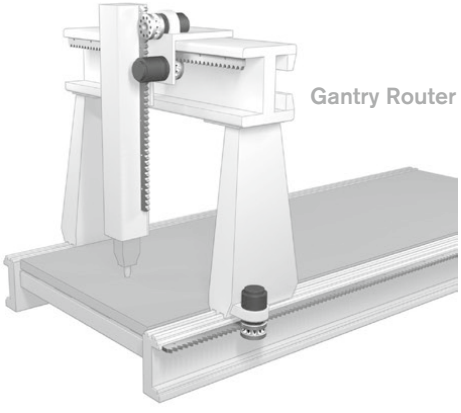
Constant Positional Accuracy Regardless of the Distance Traveled



Every aspect of the RPS system is designed for reliable, easy operation. With customizations available to meet the specific needs of any application and multiple material finishes, the RPS system can go anywhere. Even installation is worry-free with a simple alignment tool to ensure positional accuracy over multiple sections of rack.

Dependable Performance. Every Time.
The Nexen RPS System Always Delivers.

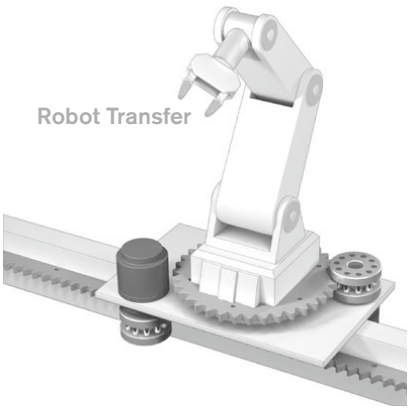




THE NEXEN ADVANTAGE

Overcoming Common Problems Found in Traditional Drive Systems

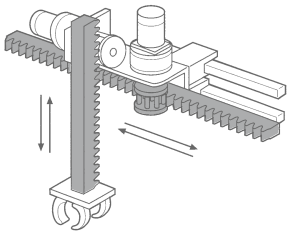
INDUSTRY PROBLEMS	Ball Screws	Traditional Rack/Gear & Pinion Systems	Belt Drives	Chain Drives	Linear Motors Direct Rotary Stages Direct Drive Motors	nexen ROLLER PINION SYSTEMS
Low Accuracy			⬢	⬢		High Positional Accuracy
Backlash / Vibrations	⬢	⬢	⬢	⬢		Near-Zero Backlash
High Cost	⬢	⬢			⬢	Economical, Efficient Components
Dirty Operation	⬢	⬢	⬢	⬢		No Dust Emissions
High Maintenance	⬢	⬢		⬢	⬢	Little to No Maintenance
Low Load Capacity			⬢		⬢	High Load Capacity
Noisy	⬢	⬢	⬢	⬢		Quiet: pinion rollers glide smoothly along teeth
Low Speed	⬢	⬢				High Speeds (up to 11 m/sec)
Magnetic Field					⬢	No magnetic field
High Wear/ Low Life	⬢	⬢	⬢	⬢		Long Life (up to 36 million meters)
Limited System Length/Size	⬢		⬢	⬢		Custom Rack Sizes & Modular Components



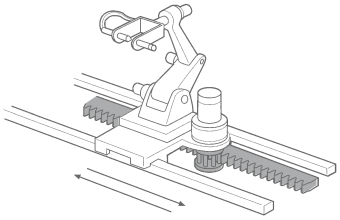


EVEN In The Most Challenging **APPLICATIONS**

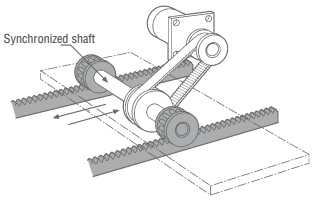
Applications



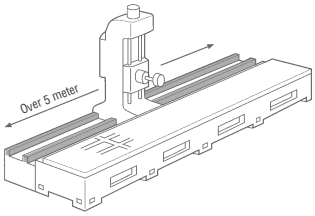
Gantry loader



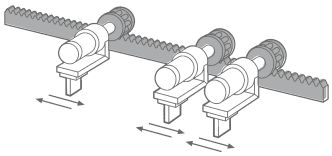
Long run robots



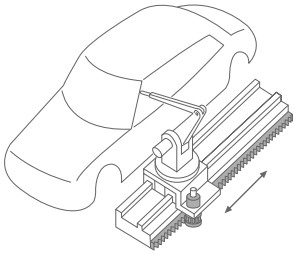
Synchronized feeding
(Maintain alignment of wide carriages)



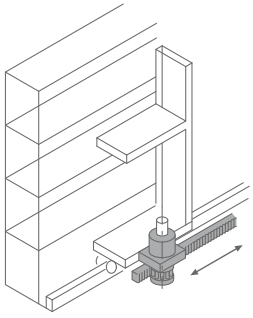
Long stroke machining tool



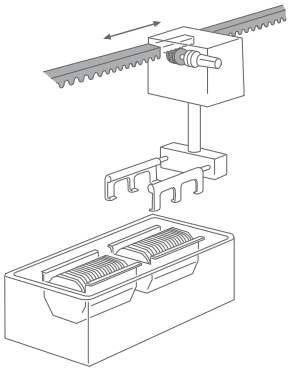
Multiple heads
〈 Applied to a slitter apparatus 〉



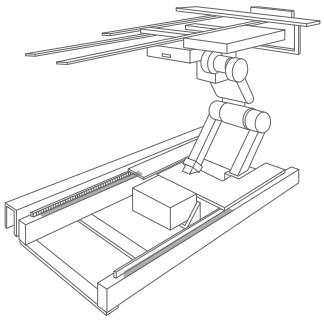
Measurement device



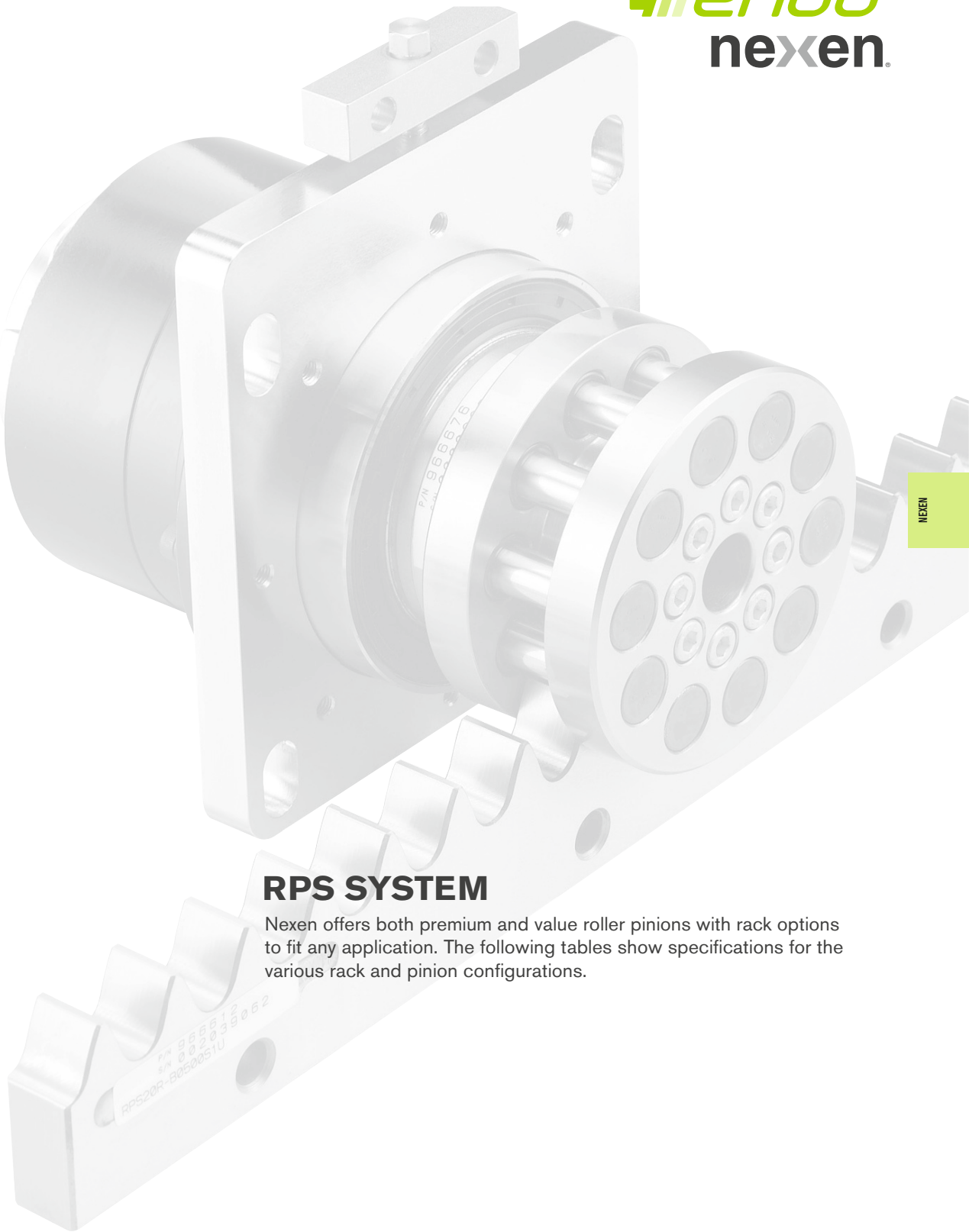
Stocker transfer



Semiconductor wafer transfer



Robot transfer in clean room



RPS SYSTEM

Nexen offers both premium and value roller pinions with rack options to fit any application. The following tables show specifications for the various rack and pinion configurations.

RPS System Configurations & Comparisons

Nexen features six different rack models and two pinion types, ensuring the perfect solution for any application. First compare the rack attributes to determine which rack model best meets your needs. Then compare the specifications of both the premium and value pinions to select the ideal RPS system configuration.

Rack Models Available

PREMIUM RACK

As the name ***premium*** suggests, this is Nexen's top of the line model featuring market leading accuracy and a hard chrome coating for corrosion resistance. A perfect choice for any precision motion need.

- Very High Precision/Accuracy
- Suitable for Dirty Environments
- Lubrication Free
- High Load Capacity
- High Corrosion Resistance

Precision Assembly Equipment • Machine Tool/CNC Mills • High Precision Gantry • Robotics

STANDARD RACK

The Standard Rack offers similar performance to the Premium model without the corrosion resistant coating. With slightly lower accuracy, the standard model still delivers dependable performance in many the same types of applications. A great, cost-saving choice when corrosion resistance is not required.

- High Precision/Accuracy
- High Load Capacity
- No Corrosion Resistance
- Lower Cost than Premium Rack

Precision Assembly Equipment • Machine Tool/CNC Mills • High Precision Gantry • Robotics

ENDURANCE RACK

This is the work horse of the product line, combining both high load capacity and good corrosion resistance.

- High Load Capacity
- Medium Corrosion Resistance
- Good Accuracy (not high precision)

General Assembly Equipment • Machine Tool • Gantry Systems

UNIVERSAL RACK

With better accuracy than Endurance Racks, the Universal Rack is a great option for lower load applications when corrosion resistance is not required.

- High Accuracy
- Medium Load Capacity
- No Corrosion Resistance

Material Handling Equipment • Gantry Systems • Packaging Equipment • General Motion Control

UNIVERSAL STAINLESS RACK

Get all the features of the Universal Rack with the added benefits of corrosion resistant stainless steel.

- High Accuracy
- Medium Load Capacity
- Wet or Dirty Environments
- Very High Corrosion Resistance

Material Handling Equipment • Gantry Systems • Packaging Equipment • General Motion Control

VERSA RACK

Made from thermoplastic, this rack can go places no other racks can go. It's wide range of applications make it a great fit for general motion control applications looking for the advantages of the RPS in a conventional accuracy version.

- Extremely High Corrosion Resistance
- Light Load Motion Control
- High Durability
- Basic Actuator (similar to cylinder/belt)

Equipment with Conventional Accuracy Requirements • Packaging • General Motion Control

Pinion Models Available

PREMIUM PINION

This long time standard at Nexen offers the best precision on the market. Use with any RPS rack for unbeatable performance.

- Very High Precision/Accuracy
- High Torque Capacity
- Great Performance in Any Application

VALUE PINION

A great fit for unique applications, Nexen offers the Value pinion to fit applications looking for the general features of Nexen's RPS in a conventional accuracy version.

- Lighter Load, General Accuracy Applications
- Harsh Environments
- Available in Sizes 16, 20 & 25

RPS System Specifications

Table 1 Rack Thrust Capacity (N)

RPS Size		Premium Rack			Standard Rack			Endurance Rack			Universal & Universal Stainless Racks			Versa Rack		
		Accel.	Avg.	Static	Accel.	Avg.	Static	Accel.	Avg.	Static	Accel.	Avg.	Static	Accel.	Avg.	Static
PREMIUM PINION	10	250	250	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12	500	500	750	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	16	2400	1000	2400	2400	1000	2400	1500	1000	2000	750	750	750	500	500	500
	20	2900	1500	3000	2900	1500	3000	2250	1500	3000	1125	1125	1125	750	750	750
	25	4000	2200	4400	4000	2200	4400	3300	2200	4400	1650	1650	1650	1100	1100	1100
	32	6300	3600	7200	6300	3600	7200	5400	3600	7200	2700	2700	2700	NA	NA	NA
	40	6000	6000	12000	6000	6000	12000	6000	6000	12000	4500	4500	4500	NA	NA	NA
	4014	14000	14000	21000	14000	14000	21000	14000	14000	21000	10500	10500	10500	NA	NA	NA
VALUE PINION	16	500														
	20	750														
	25	1100														

Table 2 Pinion Torque (Nm)

RPS Size	Peak Pinion Torque		Maximum Average Pinion Torque for Full Life	
	Premium Pinion	Value Pinion	Premium Pinion	Value Pinion
10	4.0	NA	4.0	NA
12	9.5	NA	9.5	NA
16	61.1	12.8	33.7	12.8
20	92.3	23.9	52.5	23.9
25	159.2	43.8	89.5	43.8
32	385.0	NA	218.7	NA
40	458.4	NA	458.4	NA
4014	1247.8	NA	1247.8	NA

Table 3 Accuracy & Repeatability

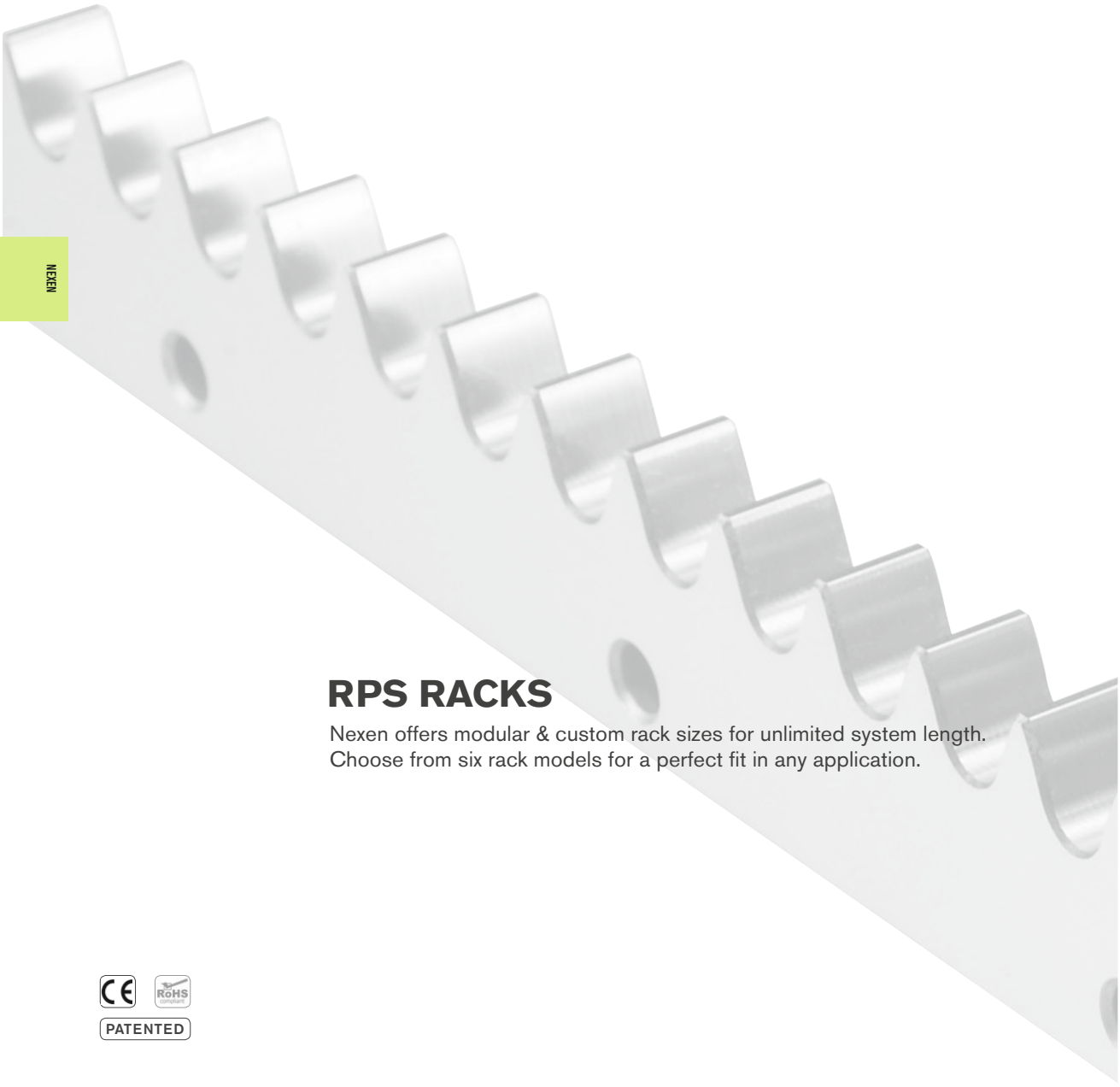
PINION TYPE \ RACK MODEL		Premium Rack	Standard Rack	Endurance Rack	Universal Rack & Universal Stainless	Versa Rack
Premium Pinion	Accuracy ± µm	30	50	80	50	500
	Repeatability ± µm	5	10	20	10	20
Value Pinion	Accuracy * ± µm	110	130	160	130	580
	Repeatability * ± µm	5	10	20	10	20

Table 4 Rack Model Attributes (NOT AFFECTED BY PINION CHOICE)

ATTRIBUTES \ RACK MODEL	Premium Rack	Standard Rack	Endurance Rack	Universal Rack	Universal Stainless	Versa Rack
Backlash* µm	0					
Corrosion Resistant Surface Treatment	Hard Chrome	None	Nitrided	None	None	Plastic
Corrosion Resistance Rating	High	None	Medium	None	Very High	Extremely High
Lubrication Free Operation	Yes up to 30 m/min	No	Yes up to 30 m/min	No	No	Yes up to max speed
Noise Level dB	up to 75 (Speed Dependent)					
Temperature Range °C	-5 to 40					

* Specifications listed for the Value Pinion are "out-of-box" ratings. Over time, these specifications are affected by operating torque and speed.

NOTE: Refer to the ***System Life*** section for Load Life Comparison. See the ***Definitions*** section at the end of this catalog for details on these attributes.



RPS RACKS

Nexen offers modular & custom rack sizes for unlimited system length.
Choose from six rack models for a perfect fit in any application.

PATENTED

Rack Specifications

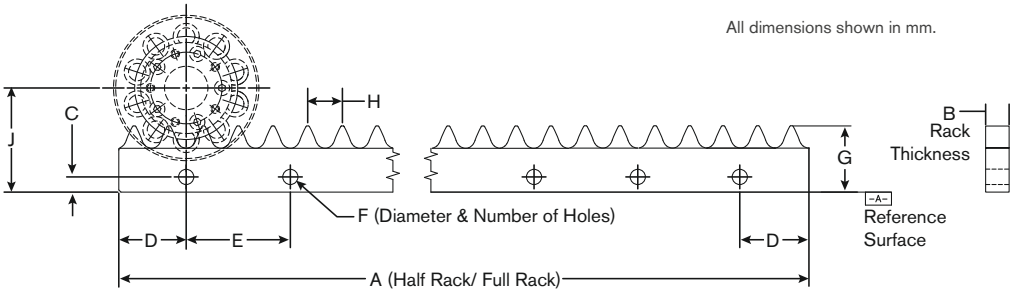
Table 5 Common Rack Specifications

Attribute \ Rack Size			RPS10	RPS12	RPS16		RPS20		RPS25		RPS32		RPS40		RPS4014	
Max Pressure Angle		°	26.4	26.4	27.9		26.4		26.4		26.0		26.0		26.0	
Avg Pressure Angle		°	21.9	21.9	23.4		21.9		21.9		22.7		21.3		20.9	
Module		mm	3.0	3.6	4.8		6.0		7.5		9.5		12.0		12.0	
Max Speed *	All Metal Racks	m/s	4	8	4		5		8		11		6		6	
	Versa Rack	m/s	NA	NA	2		2		2		NA		NA		NA	
Rack Tooth Pitch		mm	10	12	16		20		25		32		40		40	
Rack Height		mm	27	27	30.5		42.0		48.0		57.0		72.6		69.0	
Rack Width		mm	5.7	5.7	11.5		15.5		18.5		24.5		31.5		42.0	
Rack Section Size			Half	Half	Half	Full	Half	Full	Half	Full	Half	Full	Half	Full	Half	Full
Rack Length		mm	480	480	512	992	500	1000	500	1000	512	992	520	1000	520	1000
Number of Rack Teeth			48	40	32	62	25	50	20	40	16	31	13	25	13	25
Rack Weight	All Metal Racks	kg	0.5	0.6	1.1	2.1	2.1	4.1	2.7	5.4	4.2	8.2	6.9	13.2	8.8	17.0
	Versa Rack	kg	NA	NA	0.2	0.4	0.4	0.8	0.5	1.0	NA		NA		NA	

* The maximum rated speed of a RPS system is equal to the lowest rating of either the pinion or the rack.

Rack Dimensions

All dimensions shown in mm.



RPS Size	A Rack Length Half	A Rack Length Full	B Rack Thickness	C Hole Height	D Hole From End	E Hole Spacing	F Mounting Holes Ø	F Mounting Holes # Half Rack	F Mounting Holes # Full Rack	G Rack Height	H Tooth Pitch	J Axis to Base
RPS10	480	NA	5.7	7	29.8	60	5.5	8	NA	27.0	10	37.5
RPS12	480	NA	5.7	7	29.8	60	5.5	8	NA	27.0	12	40
RPS16	512	992	11.5	7	16	96	7	6	11	30.5	16	48
RPS20	500	1000	15.5	10	50	100	9	5	10	42.0	20	64
RPS25	500	1000	18.5	12	50	100	11	5	10	48.0	25	75
RPS32	512	992	24.5	14	16	96	14	6	11	57.0	32	102
RPS40	520	1000	31.5	16	80	120	18	4	8	72.6	40	129
RPS4014	520	1000	42.0	16	60	80	18	6	12	69.0	40	140

See drawings or CAD models on Nexen's website for additional dimensions and tolerances.

Rack Product Numbers

RPS Size	Rack Length		Premium	Standard	Endurance	Universal	Universal Uncoated Stainless	Universal Coated Stainless	Versa
10	Half	480 mm	966768	NA	NA	NA	Contact Nexen	Contact Nexen	NA
	Alignment Tool		966507						
12	Half	480 mm	966769	NA	NA	NA	Contact Nexen	Contact Nexen	NA
	Alignment Tool		966508						
16	Half	512 mm	966652	966602	Contact Nexen	966801	966760	966742	Contact Nexen
	Full	992 mm	966651	966601	966850	966800	966813	966741	966860
	Alignment Tool		966503						
20	Half	500 mm	966662	966612	Contact Nexen	966803	Contact Nexen	Contact Nexen	Contact Nexen
	Full	1000 mm	966661	966611	966851	966802	966625	966619	966861
	Alignment Tool		966513						
25	Half	500 mm	966672	966622	Contact Nexen	966805	Contact Nexen	Contact Nexen	Contact Nexen
	Full	1000 mm	966671	966621	966852	966804	966814	966755	966862
	Alignment Tool		966523						
32	Half	512 mm	966682	966632	Contact Nexen	966807	Contact Nexen	Contact Nexen	NA
	Full	992 mm	966681	966631	966853	966806	966812	Contact Nexen	NA
	Alignment Tool		966533						
40	Half	520 mm	966692	966642	Contact Nexen	966809	Contact Nexen	Contact Nexen	NA
	Full	1000 mm	966691	966641	966854	966808	966815	Contact Nexen	NA
	Alignment Tool		966543						
4014	Half	520 mm	966695	966647	Contact Nexen	966811	Contact Nexen	Contact Nexen	NA
	Full	1000 mm	966694	966646	966855	966810	966816	Contact Nexen	NA
	Alignment Tool		966543						
Rack Grease			853901						



RPG GEARS

Nexen offers the RPG Gears as solid rings up to 1.7 m in diameter. Segmented rings or arcs can also be combined to create your own custom rotary drive system.

PATENTED

Gear Specifications

RPG Size	Gear Product Number	Gear Ratio	Pinion Type	Maximum Dynamic Torque @ Minimum Life Nm	Maximum Dynamic Torque @ Maximum Life Nm	Max Static Torque Nm	Max RPM	Accuracy ArcSec	Repeatability ArcSec
16	966566	3:1	PREMIUM	183.3	101.1	183.3	500	+/- 84.2	+/- 14
			VALUE	38.1	38.1	38.1	250	+/- 308.7	+/- 14.0
	966567	4:1	PREMIUM	244.4	134.8	244.4	375	+/- 63.4	+/- 10.6
			VALUE	50.8	50.8	50.8	188	+/- 232.5	+/- 10.6
	966568	5:1	PREMIUM	305.5	168.5	305.5	300	+/- 50.9	+/- 8.5
			VALUE	63.5	63.5	63.5	150	+/- 186.5	+/- 8.5
	966569	6:1	PREMIUM	366.6	202.2	366.6	250	+/- 42.5	+/- 7.1
			VALUE	76.2	76.2	76.2	125	+/- 155.7	+/- 7.1
	966570	7:1	PREMIUM	427.7	235.9	427.7	215	+/- 36.5	+/- 6.1
			VALUE	88.9	88.9	88.9	108	+/- 134.0	+/- 6.1
	966797	15:1	PREMIUM	916.5	505.5	916.5	100	+/- 16.9	+/- 2.8
			VALUE	190.5	190.5	190.5	50	+/- 62.1	+/- 2.8
	966571	40:1	PREMIUM	2444.0	1348.0	2444.0	38	+/- 6.4	+/- 1.1
			VALUE	508.0	508.0	508.0	19	+/- 23.4	+/- 1.1
20	966572	14:1	PREMIUM	1292.2	735.0	1337.0	108	+/- 14.4	+/- 2.4
			VALUE	334.6	334.6	334.6	43	+/- 52.6	+/- 2.4
	966798	15:1	PREMIUM	1384.5	787.5	1432.5	100	+/- 13.4	+/- 2.2
			VALUE	358.5	358.5	358.5	40	+/- 49.2	+/- 2.2
	966799	18:1	PREMIUM	1661.4	945.0	1719.0	84	+/- 11.2	+/- 1.9
			VALUE	430.2	430.2	430.2	34	+/- 41.2	+/- 1.9
	966793	54:1	PREMIUM	4984.2	2835.0	5157.0	28	+/- 3.7	+/- 0.6
			VALUE	1290.6	1290.6	1290.6	12	+/- 13.7	+/- 0.6
	966789	68.4:1	PREMIUM	6313.3	3591.0	6532.2	22	+/- 2.9	+/- 0.5
			VALUE	1634.8	1634.8	1634.8	9	+/- 10.7	+/- 0.5
	966787	90:1	PREMIUM	8307.0	4725.0	8595.0	17	+/- 2.2	+/- 0.4
			VALUE	2151.0	2151.0	2151.0	7	+/- 8.2	+/- 0.4
25	966573	3:1	PREMIUM	477.6	268.5	528.0	607	+/- 53.6	+/- 8.9
			VALUE	138.0	138.0	138.0	160	+/- 196.4	+/- 8.9
	966574	4:1	PREMIUM	636.8	358.0	704.0	455	+/- 40.1	+/- 6.7
			VALUE	184.0	184.0	184.0	120	+/- 147	+/- 6.7
	966575	5:1	PREMIUM	796.0	447.5	880.0	364	+/- 32.3	+/- 5.4
			VALUE	230.0	230.0	230.0	96	+/- 118.4	+/- 5.4
	966576	6:1	PREMIUM	955.2	537.0	1056.0	304	+/- 26.9	+/- 4.5
			VALUE	276.0	276.0	276.0	80	+/- 98.8	+/- 4.5
	966577	7.5:1	PREMIUM	1194.0	671.3	1320.0	243	+/- 21.5	+/- 3.6
			VALUE	345.0	345.0	345.0	64	+/- 78.9	+/- 3.6
	966578	48.6:1	PREMIUM	7737.1	4349.7	8553.6	38	+/- 3.3	+/- 0.6
			VALUE	2235.6	2235.6	2235.6	10	+/- 12.1	+/- 0.6
32	966638	4:1	PREMIUM	1540.0	874.8	1760.0	430	+/- 26.5	+/- 4.4
	966639	7.25:1	PREMIUM	2791.3	1585.6	3190.0	238	+/- 14.6	+/- 2.4
	966763	37.5:1	PREMIUM	14437.5	8201.3	16500.0	46	+/- 2.8	+/- 0.5
	966778	63.3:1	PREMIUM	24383.3	13851.0	27866.7	28	+/- 1.7	+/- 0.3
40	966791	4:1	PREMIUM	1833.6	1833.6	3667.2	188	+/- 21.0	+/- 3.5
	966549	16.7:1	PREMIUM	7640.0	7640.0	15280.0	45	+/- 5.0	+/- 0.8
4014	966818	3:1	PREMIUM	3743.4	3743.4	5614.8	215	+/- 23.8	+/- 4.0
	966696	5.14:1	PREMIUM	6417.3	6417.3	9625.4	126	+/- 14.0	+/- 2.3
	966725	13.7:1	PREMIUM	17112.7	17112.7	25667.7	47	+/- 5.2	+/- 0.9

Common Attributes for All Gears

Estimated Life		See ***System Life*** section.
Operating Temperature Range	°C	-5 to 40
Tooth Grease		Part Number 853901

Gear Dimensions & Specifications by Product Number

Figure A

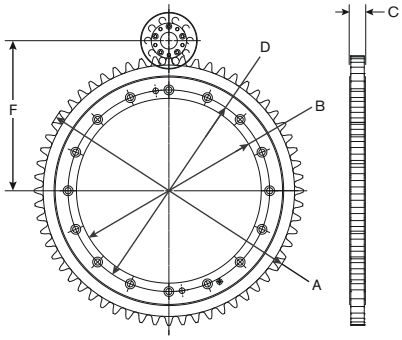


Figure B

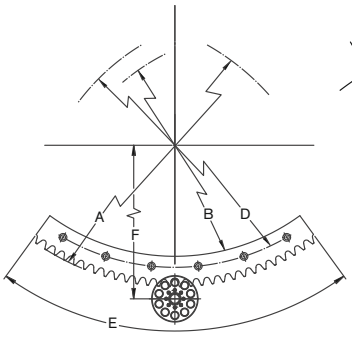
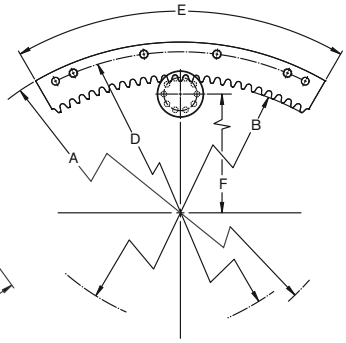


Figure C



Basic gear dimensions shown for selection purposes only and subject to change. Go to www.nexengroup.com for detailed drawings and CAD models. If none of the products below meet your needs, contact Nexen and one can be designed to your specifications. Due to the variety of gears and gear segments, these products are made to order. Please contact Nexen for lead times.

Dimensions shown in ***mm*** unless otherwise noted.

RPG Size	Gear Product Number	Alignment Tool Product Number	Teeth Orientation	Number of Teeth	Moment of Inertia	Weight	Figure	Coating	A Outer Diameter	B Inner Diameter	C Max Width	D Bolt Circle Ø	E Arc Length/ Full Ring	F Distance from Center
				segment/ring	kgm²	kg								
16	966566	NA	external	NA/30	0.004	1.2	A	Hard Chrome	161	70	11.5	90	360°/yes	98
	966567	NA	external	NA/40	0.01	1.7	A	Hard Chrome	209	120	11.5	145	360°/yes	122
	966568	NA	external	NA/50	0.03	2.4	A	Hard Chrome	257	160	11.5	180	360°/yes	146
	966569	NA	external	NA/60	0.05	3.4	A	Hard Chrome	305	190	11.5	220	360°/yes	170
	966570	NA	external	NA/70	0.08	3.3	A	Hard Chrome	352	260	11.5	285	360°/yes	193.5
	966797	966557	external	30/150	0.19*	1.6*	B	Hard Chrome	745	652	11.5	670	72°/yes	390
	966571	966656	external	25/400	1.64*	1.8*	B	Hard Chrome	1954	1830	11.5	1870	22.5°/yes	995
20	966572	966706	external	28/140	0.48*	2.9*	B	Hard Chrome	880	770	15.5	810	72°/yes	462
	966798	966615	internal	25/150	0.86*	3.6*	C	Hard Chrome	1038	906	15.5	1013	60°/yes	430
	966799	966734	external	30/180	0.76*	2.7*	B	Hard Chrome	1120	1020	15.5	1060	60°/yes	582
	966793	966794	external	30/540	9.57*	3.6*	B	Hard Chrome	3338	3220	15.5	3250	20°/yes	1692
	966789	966790	internal	19/684	14.9*	3.2*	C	Hard Chrome	4400	4241	15.5	4354	10°/yes	2098
	966787	966788	external	30/900	36.3*	4.9*	B	Hard Chrome	5554	5392	15.5	5438	12°/yes	2800
25	966573	NA	external	NA/30	0.04	4.5	A	Hard Chrome	254	120	18.5	145	360°/yes	154
	966574	NA	external	NA/40	0.12	6.8	A	Hard Chrome	331	190	18.5	220	360°/yes	193
	966575	NA	external	NA/50	0.25	9.1	A	Hard Chrome	404	260	18.5	285	360°/yes	230
	966576	NA	external	NA/60	0.47	11.5	A	Hard Chrome	480	330	18.5	360	360°/yes	268
	966577	NA	external	NA/75	0.93	13.5	A	Hard Chrome	596	460	22.5	490	360°/yes	326
	966578	966740	external	27/486	15.7*	4.6*	B	Hard Chrome	3760	3640	18.5	3684	20°/yes	1908
32	966638	NA	external	NA/48	0.69	16.6	A	Hard Chrome	493	330	24.5	360	360°/yes	292
	966639	NA	external	NA/87	4.4	27.8	A	Black Oxide	874	730	24.5	770	360°/yes	482
	966763	966685	external	18/450	35.7*	7.7*	B	Hard Chrome	4400	4220	24.5	4280	14.4°/yes	2246
	966778	966779	external	19/760	112.8*	8.4*	B	Hard Chrome	7428	7250	24.5	7310	9°/yes	3760
40	966791	NA	external	NA/48	2.5	39.2	A	Hard Chrome	622	390	35.5	430	360°/yes	369
	966549	966546	external	11/200	9.1*	6.4*	B	Hard Chrome	2482	2320	31.5	2360	19.8°/no	1300
4014	966818	NA	external	NA/42	1.69	31.5	A	Hard Chrome	551	390	46	430	360°/yes	346
	966696	966547	external	18/72	2.82*	17.3*	B	Hard Chrome	916	711.2	42	785	90°/yes	529
	966725	966548	external	12/192	12.5*	9.4*	B	Hard Chrome	2392	2230	42	2270	22.5°/yes	1268

* Per Segment



RPS ROLLER PINION

Once you have selected your rack/gear, finding the right pinion is easy. The following pages offer step-by-step selection instructions as well as pinion specifications and details on accessories.

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RPS Pinion Selection Process

STEP 1: *Determine your rack/gear size and find the same RPS pinion size. Always use the same size rack/gear and pinion.*

STEP 2: *Select the material best suited for your application. (Other materials available upon request.)*

Hard Chrome: alloy steel with a thin, dense chrome coating
Nickel: alloy steel with nickel plating
Stainless: stainless steel with or without a hard chrome coating

STEP 3: *Select Mounting Style: For easy installation and maximum versatility, Nexen recommends using the flange-mounted version when practical.*

Shaft Mount
- Shaft Coupling or Shaft & Keyway mounting option
- Coupling option uses a keyless mechanical compression coupling to secure to shaft
- Available in multiple bore diameters. Contact Nexen.

Flange Mount
- Conforms to ISO 9409 specifications
- Nexen adapter preloader options available with this version

Pinion Type	RPS Size	Number of Rollers	Distance per Revolution	Pitch Circle Diameter	Max RPM *	Product Number	Base Material/ Coating	Mount Style	Bore Size	Mass	Moment of Inertia
			mm	mm					mm	kg	kgm^2x10^{-4}
PREMIUM PINIONS	10	10	100	31.8	2400	966480	Hard Chrome	Shaft Coupling	12	0.2	0.4
	12	10	120	38.2	4000	966490	Hard Chrome	Shaft Coupling	16	0.3	1.0
	16	10	160	50.9	1500	966819	Nickel	Shaft Coupling	16	0.7	3.9
						966650	Nickel	Shaft Coupling	20	0.7	3.9
						966761	Stainless	Shaft Coupling	20	0.7	3.9
						966687	Nickel	Flange	N/A	0.8	4.0
						966759	Stainless	Flange	N/A	0.8	4.0
	20	10	200	63.7	1500	966820	Nickel	Shaft Coupling	22	1.4	10.6
						966660	Nickel	Shaft Coupling	25	1.3	10.5
						966771	Stainless	Shaft Coupling	25	1.3	10.5
						966675	Nickel	Flange	N/A	1.2	10.2
						Request	Stainless	Flange	N/A	1.2	10.2
	25	10	250	79.6	1820	966670	Nickel	Shaft Coupling	30	2.1	25.5
						966758	Stainless	Shaft Coupling	30	2.1	25.2
						966673	Nickel	Flange	N/A	2.1	25.2
						Request	Stainless	Flange	N/A	2.1	25.2
	32	12	384	122.2	1719	966821	Nickel	Shaft Coupling	32	7.3	173.0
						966822	Nickel	Shaft Coupling	40	6.8	171.0
						966680	Nickel	Shaft Coupling	45	6.4	169.0
						Request	Stainless	Shaft Coupling	45	6.4	169.0
						966677	Nickel	Flange	N/A	6.6	168.0
						Request	Stainless	Flange	N/A	6.6	168.0
	40	12	480	152.8	750	966823	Nickel	Shaft Coupling	55	12.9	598.0
						966690	Nickel	Shaft Coupling	60	12.4	594.0
						Request	Stainless	Shaft Coupling	60	12.4	594.0
						966697	Nickel	Flange	N/A	15.5	665.0
						Request	Stainless	Flange	N/A	15.5	665.0
	4014	14	560	178.3	643	966824	Nickel	Shaft Coupling	55	21.4	1184.0
						966693	Nickel	Shaft Coupling	60	20.9	1180.0
						Request	Stainless	Shaft Coupling	60	20.9	1180.0
						966700	Nickel	Flange	N/A	23.5	1306.0
						Request	Stainless	Flange	N/A	23.5	1306.0
VALUE PINIONS	16	10	160	50.9	750	966826	Aluminum	Shaft & Keyway	16	0.4	2.4
	20	10	200	63.7	600	966827	Aluminum	Shaft & Keyway	16	0.7	6.0
	25	10	250	79.6	480	966828	Aluminum	Shaft & Keyway	22	1.1	14.7

* The maximum rated speed of a RPS system is equal to the lowest rating of either the pinion or the rack.

See the ***Definitions*** section for more information on these attributes.

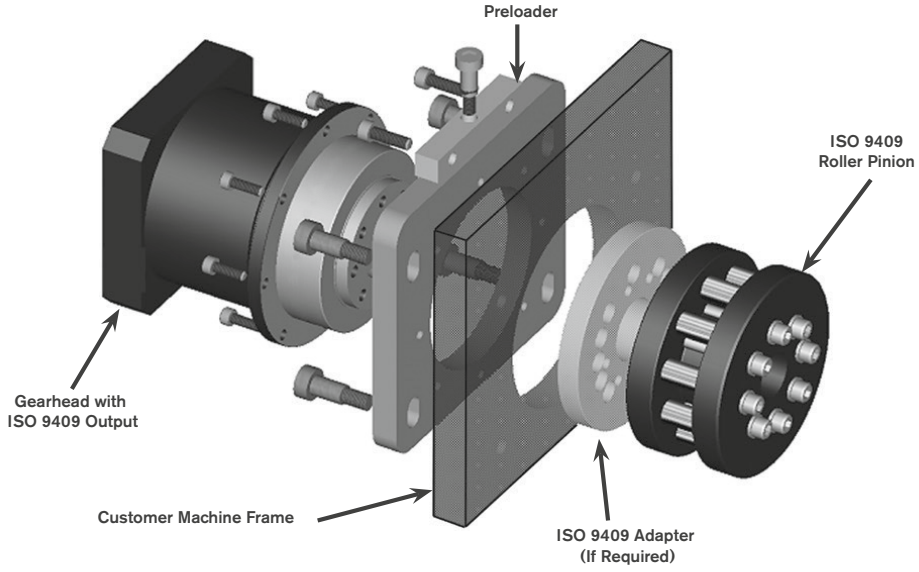
Pinion Preloader

Pair Nexen's Flange-Mount Pinion with our RPS Pinion Preloader for easy integration into your machine design. Preloaders feature an adjuster that allows the pinion to be moved up or down into the rack while keeping the pinion properly oriented to the rack. The pilot in the adjuster plate accommodates common servo gearhead sizes from your favorite servo gearhead manufacturer.

Preloader and Adapter components are either made from corrosion-resistant stainless steel, nickel, or zinc plating.

FEATURES:

- High-Precision Ground Surfaces
- Allows Perpendicular Movement
- Corrosion Resistant Materials



SELECTING PINION ADAPTERS AND PRELOADERS

If directly mounting the pinion to the reducer:
Disregard the Adapter column and select the preloader and gearhead for your RPS Pinion size.

If going up a reducer frame size:
Start in the Adapter column and select the compatible pinion, adapter, preloader and gearhead.

Table 6 Gearhead Compatibility Table

Pinion Size	Adapter w/ Pinion (not required in some applications)	Pinion Preloader	Customer Provided Gearhead						
			Alpha/ Wittenstein	APEX	Mijno	Neugart	SEW-Euro	Sumitomo	Stöber
RPS16	N/A	N/A	N/A	AD047	N/A	N/A	N/A	N/A	N/A
RPS20	RPS16 & 966688	960851	TP004	AD064	BDB 085	PLFE/N 64	PSBF221/2	N/A	PH/A/KX 321/2
RPS25	RPS20 & 966676	960850	TP010	AD090	BDB 120	PLFE/N 90	PSBF321/2	PNFX080	PH/A/KX 421/2
RPS32	RPS25 & 966674	960852	TP025	AD110	BDB 145	PLFE/N 110	PSBF521/2	PNFX250	PH/A/KX 521/2
RPS40	RPS32 & 966668	960853	TP050	AD140	BDB 180	PLFN 40	PSBF621/2	PNFX450	PH/A/KX 721/2
RPS4014	RPS40 & 966698	960854	TP110	AD200	BDB 250	PLFN 200	PSBF721/2	N/A	PH/A/KX 821/2
N/A	RPS4014 & 966701	N/A	TP300	AD255	BDB 300	N/A	N/A	N/A	PH/A/KX 912/23

This is a partial list. Other gearheads may apply.



PRECISION RING DRIVE SYSTEM

Based on Nexen's innovative Roller Pinion technology, the Precision Ring Drive System (PRD) comes complete with a precision-grade bearing and gearhead for a system with unmatched performance and efficiency. With accelerations up to twice as high as other indexing technologies, the PRD system provides more productivity while boasting low maintenance and long life.

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The Nexen Precision Ring Drive Advantage

The Precision Ring Drive System (PRD) simplifies the selection process and includes all components needed for your rotary drive system. The PRD system offers all the great features of our other advanced RPS technology and opens up new design possibilities to next generation machines.

High Indexing Precision
With an indexing precision up to ± 11 ArcSec and repeatability up to ± 1.2 ArcSec, Nexen's PRD offers unmatched mechanical system capabilities.

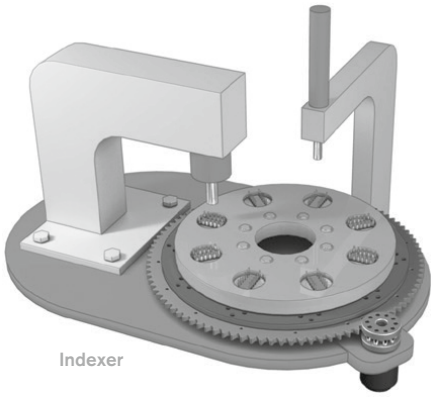
Unlimited Performance At Any Position
Unlike some cam driven systems, the PRD can start and stop at any incremental position. Users can change the motion profile by simply loading a new servo drive program. The PRD also allows maximum acceleration or deceleration at any point without the risk of damage.

High Load Capacity
The PRD table is supported by a high capacity cross-roller bearing rated for loads up to 1575 kN.

Rigidity
The PRD provides very high system rigidity. An innovative design combination of a preloaded cross-roller bearing, RPS, and a precision gearbox create the high rigidity customers demand.

High Speed & Acceleration
The PRD is capable of speeds of up to 94 RPM. Unlike traditional cam driven systems, the PRD can handle peak torque inputs at any time. This allows for indexing times up to 2x faster than the competition.

EASY SYSTEM INTEGRATION
MINIMAL ONGOING MAINTENANCE



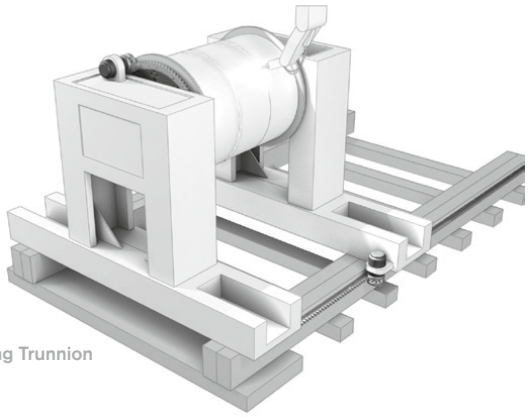
Indexer

Large Open Center
The Ring Drive has a large open center that allows users to easily mount equipment and cabling in the center of the rotating plate.

Overcoming Common Problems Found in Other Drive Systems

INDUSTRY PROBLEMS	Large, Open-Center Cam Indexers	Traditional Gearing	Belt Drives	Direct Drive Motors	nexen PRECISION RING DRIVE
Low Accuracy	⬢	⬢	⬢		High Positional Accuracy
Backlash /Vibrations		⬢	⬢		Near-Zero Backlash
High Cost				⬢	Economical & Efficient
Dirty Operation	⬢	⬢	⬢		No Dust or Oil Emissions
High Maintenance	⬢	⬢		⬢	Little to No Maintenance
Low Load Capacity			⬢	⬢	High Load Capacity
Noisy	⬢	⬢	⬢		Quiet
Low Speed	⬢	⬢			Speeds up to 94 RPM
Magnetic Field				⬢	No magnetic field
High Wear/Low Life		⬢	⬢		Long Life
Low Acceleration	⬢				Rapid Accelerations
Inefficient	⬢				99% Efficient
Poor Rigidity		⬢	⬢	⬢	High Rigidity
Mounting Restrictions	⬢				Mounting In Any Position

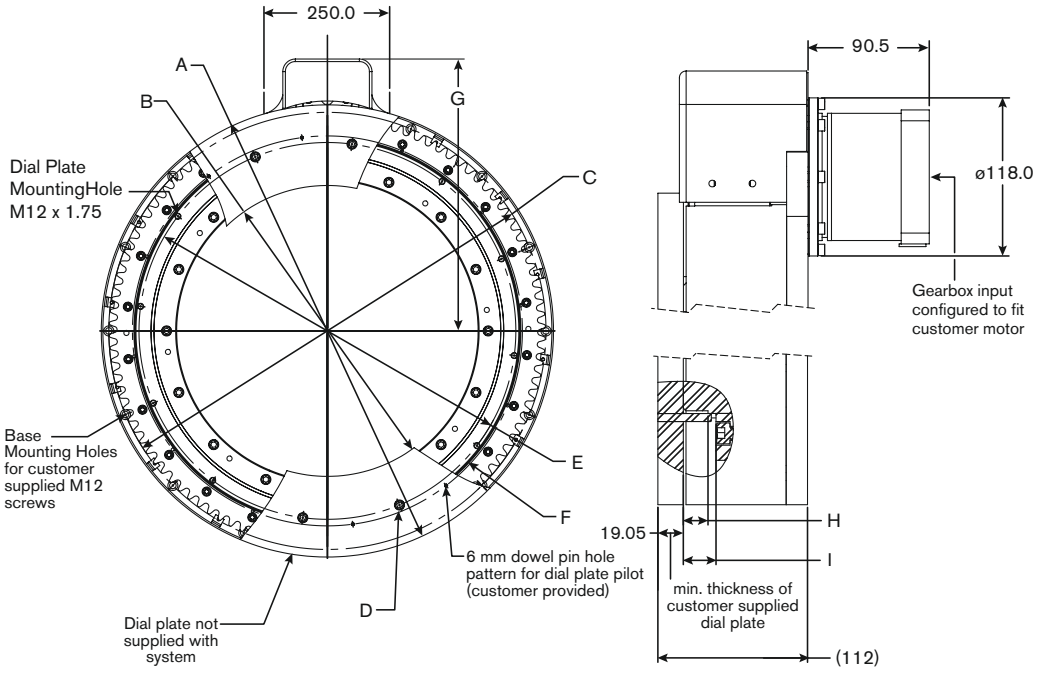
Unlimited Mounting Configurations
The PRD does not require an oil bath as some other indexing technologies do, allowing it to be mounted in any orientation.



Welding Trunnion

DEPENDABLE. RELIABLE. **PERFORMANCE**

Precision Ring Drive Dimensions



NOTE: Basic dimensions shown for selection purposes only and subject to change. Visit www.nexengroup.com for detailed drawings and CAD models before designing into your system. (All dimensions shown in mm.)

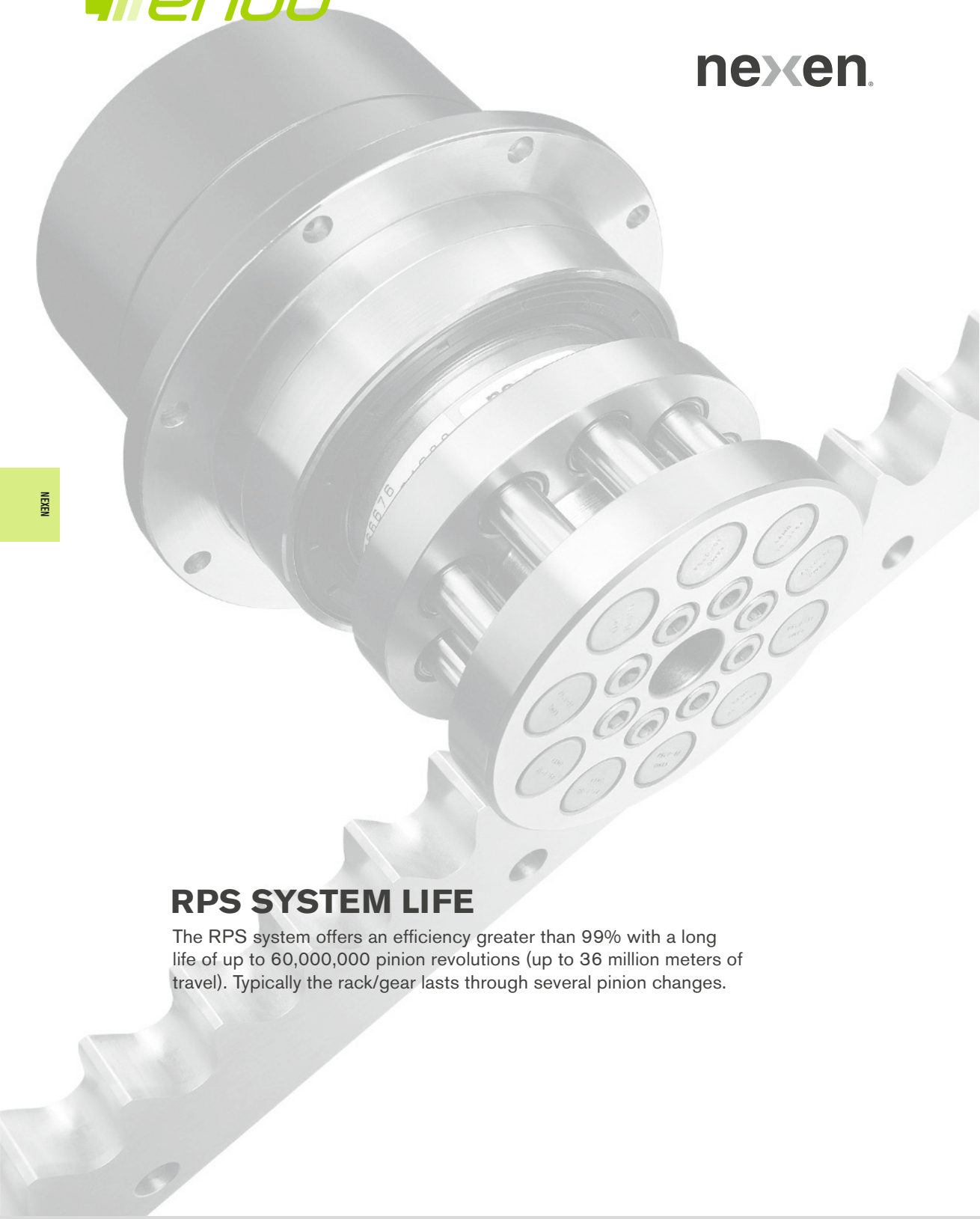
		PRD400	PRD750	PRD1100	PRD1500
A	Minimum Outer Diameter	550	900	1350	1750
B	Maximum Inner Diameter	280	579	966	1330
C	Base Mounting Hole Circle Diameter	500	870	1325	1715
D	Dial Plate Bolt Pattern Circle Diameter	396	750	1100	1500
E	Ring Drive Pilot Diameter	460	770	1150	1525
F	Dowel Pin Hole Circle For 6mm Pins	466	776	1156	1531
G	Drive Enclosure Envelope to Center Distance	363	543	770	970
H	Minimum Depth to Dial Plate Pilot	0	18.5	18.5	18.5
I	Maximum Depth to Dial Plate Pilot	7	24.5	24.5	24.5

Precision Ring Drive Specifications

Performance Specifications		PRD400	PRD750	PRD1100	PRD1500
Positional Accuracy*	±ArcSec	35	21	13	11
One Way Repeatability*	±ArcSec	4.2	2.4	1.6	1.2
Maximum Backlash*	±ArcSec	12	7	4	3
Peak Torque at Output	Nm	563	968	1496	1936
Maximum Velocity Output	RPM	94	54	35	27
Maximum Acceleration	rad/sec^2	414	110	30	17
Input to Output Ratio (assuming 10:1 gearhead)		64:1	110:1	170:1	220:1
Gear/Pinion Ratio		6.4:1	11:1	17:1	22:1
Estimated Pinion & Ring Gear Life**		60 Million Contacts per Pinion Roller or 30 Million per Gear Tooth			
Output Inertia	kgm^2	1.39	8.83	48.97	112.95
Pinion Inertia	kgm^2	0.0025			
Total reflected inertia to gearbox output	kgm^2	0.036	0.075	0.172	0.236
Maximum Bearing Drag Torque	Nm	40	100	150	200

* All performance specifications assume using Nexen's standard 10:1 high precision reducer. Other customer specified reducers can be requested but will have an impact on the above specifications.

** Life rating is an estimate based on maintaining published accuracy specifications while operating with allowable dynamic loading. Nexen does not guarantee life since it can be impacted by environmental conditions, and lubrication intervals.



RPS SYSTEM LIFE

The RPS system offers an efficiency greater than 99% with a long life of up to 60,000,000 pinion revolutions (up to 36 million meters of travel). Typically the rack/gear lasts through several pinion changes.

Calculating RPS System Life

The calculations in the following section will allow you to calculate the expected rack and pinion life. These calculations will result in the same values as the charts on the following pages.

RPS Pinion Life Data & Calculations

Table 7 RPS Pinion Life Values

		RPS10	RPS12	RPS16		RPS20		RPS25		RPS32	RPS40	RPS4014
				premium	value	premium	value	premium	value			
Max Torque (T_{max})	Nm	4.0	9.5	61.1	12.8	92.3	23.9	159.2	43.8	385.0	458.4	1247.8
Torque at Max Life (T_{final})	Nm	4.0	9.5	33.7	12.8	52.5	23.9	89.5	43.8	218.7	458.4	1247.8
Distance Per Revolution (L_{rev})	meters	0.1	0.12	0.16	0.16	0.2	0.2	0.25	0.25	0.384	0.48	0.56
Transition Point (E_T)	million contacts	60	60	8	2	8.2	2	8.5	2	9.2	60	60
Max Life ($N_{max\ contacts}$)	million contacts	60	60	60	2	60	2	60	2	60	60	60
Constant (C)		NA	NA	115.30	NA	179.43	NA	305.91	NA	747.91	NA	NA

STEP 1: GATHER APPLICATION DATA

Before you begin calculations, there are three key measurements that you will need from your application. Collect the data and record it in space provided to the right.

Measurements Required for Pinion Calculations	Customer Data (record your values below)	*Sample Data*
Average Torque (T_{avg})	Nm	*85 Nm*
Distance Per Cycle (L) (single direction move)	m	*1.3 m*
Average Speed (V_{avg})	m/s	*2 m/s*

STEP 2: CALCULATE THE TOTAL NUMBER OF PINION CONTACTS ($N_{CONTACTS}$)

Perform the following calculations using the data collected from your application data in Step 1.

PINION ROLLER CONTACTS ($N_{contacts}$)

The total number of roller contacts ($N_{contacts}$) that an RPS Pinion can sustain before needing replacement is based on the average torque of your application. Determine which equivalency or inequality statement below is true for the average torque (T_{avg}) of your application. Then complete the corresponding pinion roller contact equation and record your value below.

IF T_{avg} is:	THEN $N_{contacts}$:
$\leq T_{final}$	$= N_{max\ contacts}$
$> T_{final}$ AND $< T_{max}$	$= (C \div T_{avg})^{3.333} =$ (÷ Nm)$^{3.333}$
$= T_{max}$	$= E_T$

PINION LIFE IN ROLLER CONTACTS

$N_{contacts} =$ million contacts

Sample: *(Evaluating RPS20 size)* $N_{contacts} = (179.43 \div 85\ Nm)^{3.333} = 12$ *million contacts*

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RPS Rack Life Data

Table 8 RPS Rack Life Values

	RPS Rack Size	RPS10	RPS12	RPS16	RPS20	RPS25	RPS32	RPS40	RPS4014
	Pitch (P) meters	0.01	0.012	0.016	0.02	0.025	0.032	0.04	0.04
	Distance Per Revolution (L_{rev}) meters	0.1	0.12	0.16	0.2	0.25	0.384	0.48	0.56
Premium & Standard	Max Dynamic Thrust (F_{max}) N	250	500	2400	2900	4000	6300	6000	14000
	Thrust at Max Life (F_{final}) N	250	500	1000	1500	2200	3600	6000	14000
	Transition Point (E_T) million contacts	30	30	5	5	5	5	30	30
	Max Life ($N_{max\ contacts}$)	30 Million Contacts							
	Slope (m)	NA	NA	-56	-56	-72	-108	NA	NA
	Intercept (b) N	NA	NA	2680	3180	4360	6840	NA	NA
Endurance	Max Dynamic Thrust (F_{max}) N	NA	NA	1500	2250	3300	5 400	6000	14000
	Thrust at Max Life (T_{final}) N	NA	NA	1000	1500	2200	3600	6000	14000
	Transition Point (E_T) million contacts	NA	NA	5	5	5	5	30	30
	Max Life ($N_{max\ contacts}$)	NA	NA	30 Million Contacts					
	Slope (m)	NA	NA	-20	-30	-44	-72	NA	NA
	Intercept (b) N	NA	NA	1600	2400	3520	5760	NA	NA
Universal & Universal Stainless	Max Dynamic Thrust (F_{max}) N	NA	NA	750	1125	1650	2700	4500	10500
	Thrust at Max Life (F_{final}) N	NA	NA	750	1125	1650	2700	4500	10500
	Max Life ($N_{max\ contacts}$)	NA	NA	5 Million Contacts				2 Million Contacts	
Versa	Max Dynamic Thrust (F_{max}) N	NA	NA	500	750	1100	NA	NA	NA
	Thrust at Max Life (F_{final}) N	NA	NA	500	750	1100	NA	NA	NA
	Max Life ($N_{max\ contacts}$)	NA	NA	2 Million Contacts				NA	

NEXEN



HARMONIC GEARHEAD

Nexen's revolutionary Harmonic Gearhead (HG) is the perfect combination of size and precision. Use the Harmonic Gearhead integrated with Nexen's RPS Pinion (HGP) to create a true backlash-free solution from the motor to the driven load. With up to a 70% reduction in length over standard gearheads, machine designers will appreciate the opportunities available with this space saving product.



CE RoHS compliant

PATENTED

The Nexen Harmonic Gearhead Advantage

Nexen's patent pending Harmonic Gearhead (HG) offers a precision drive solution that overcomes the challenges of existing gearing methods. This new technology eliminates problems with backlash that have plagued the motion control industry, offering reliable precision even when intricate movements are required.

In the tradition of Nexen's entire line of precision motion control products, the Harmonic Gearhead sets new standards with these great features:

- **Zero Backlash**
- **High Positional Accuracy & Repeatability**
- **Quiet Operation**
- **Large, Rugged Cross-Roller Output Bearing**
- **Compact**



Save 70% or more in gearhead length.



HGP



Standard Two-Stage Planetary

Harmonic Gearhead with Pinion

Save space by taking advantage of Nexen's Harmonic Gearhead with Pinion (HGP).

In this model, the RPS pinion comes fully integrated into the gearhead, creating the only drive solution that maintains **zero backlash** from the driving motor shaft through to the driven load for both linear and rotary motion.

DRIVING TECHNOLOGY IN ADVANCING MARKETS

Nexen's HG(P) utilizes Harmonic Strain-Wave Technology made up of a circular spline, flex-spline and wave generator. As these components rotate, their unique shape and tooth profile allow 30% of the teeth to be engaged simultaneously for:

Smooth Rotation • High Torque • Zero Backlash

The effortless, low-stress meshing of the circular spline and flex-spline teeth results in a long gearhead life with reliable, quiet operation. Some operators call this peace of mind.

Aerospace

Robotics

Semiconductor

Factory Automation

Medical / Surgical

Harmonic Gearhead Specifications

HARMONIC GEARHEAD (HG)

Specifications		HG17				HG25				HG32				HG50		
Gear Ratio		50:1	80:1	100:1	120:1	50:1	80:1	100:1	120:1	50:1	80:1	100:1	120:1	80:1	100:1	120:1
Max Acceleration Torque[1]	Nm	35	35	51	51	72	113	140	140	140	217	281	281	675	866	1057
Max Average Torque[1]	Nm	25	30	35	35	51	85	90	90	100	153	178	178	484	611	688
Inertia at Input	kg-cm^2	0.1959	0.1954	0.1952	0.1952	0.7522	0.7503	0.7498	0.7496	2.6294	2.6236	2.6222	2.6215	20.485	20.467	20.457
Backlash	ArcSec	0				0				0				0		
One Way Accuracy	±ArcSec	45				45				45				45		
One Way Repeatability	±ArcSec	10				10				10				10		
Weight	kg	1.4				2.6				5.2				20.0		
Product Number		969000	969001	969002	969003	969040	969041	969042	969043	969060	969061	969062	969063	969100	969101	969102

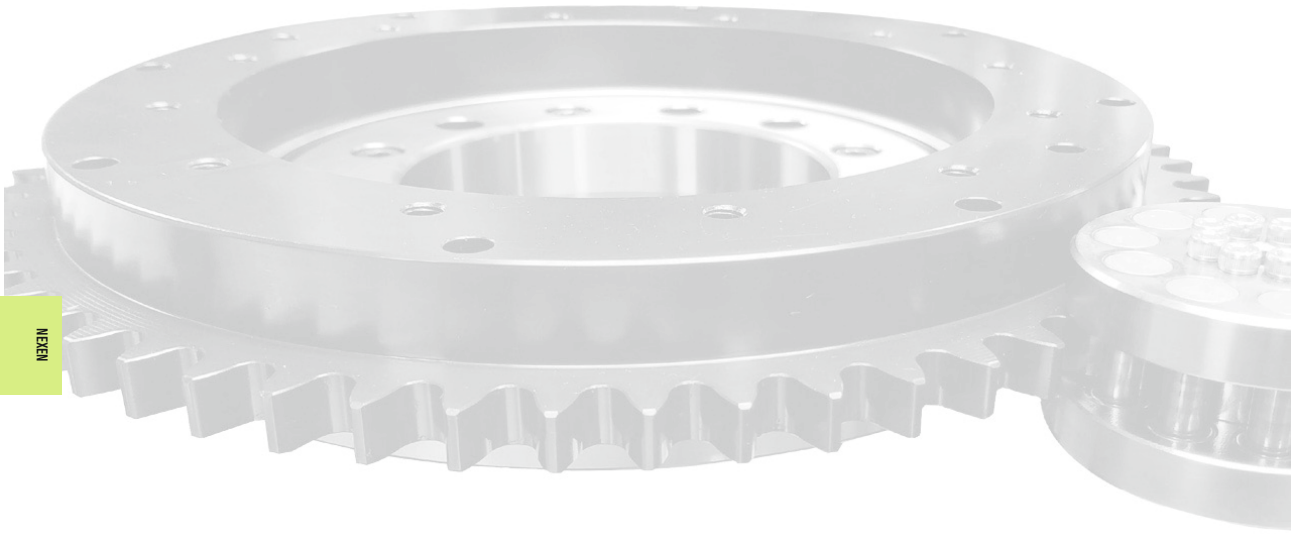
HARMONIC GEARHEAD WITH PINION (HGP)

Specifications		HGP17				HGP25				HGP32				HGP50		
Integrated Pinion Size		RPS16				RPS20				RPS25				RPS40		
Gear Ratio		50:1	80:1	100:1	120:1	50:1	80:1	100:1	120:1	50:1	80:1	100:1	120:1	80:1	100:1	120:1
Max Acceleration[1]	Torque (Nm)	35	35	51	51	72	92	92	92	140	159	159	159	458		
	Thrust (N)	1374	1374	2003	2003	2262	2900	2900	2900	3519	4000	4000	4000	6000		
Max Average[1]	Torque (Nm)	25	30	35	35	51	85	90	90	100	153	159	159	458		
	Thrust (N)	982	1178	1374	1374	1602	2670	2827	2827	2513	3845	4000	4000	6000		
Inertia at Input	kg-cm^2	0.1971	0.1958	0.1955	0.1954	0.7538	0.7509	0.7502	0.7499	2.6326	2.6248	2.6230	2.6221	20.518	20.488	20.471
Backlash	µm	0				0				0				0		
One Way Accuracy	± µm	25				25				25				25		
One Way Repeatability	± µm	7.5				7.5				7.5				7.5		
Weight	kg	1.7				3.0				5.8				24.8		
Product Number		969010	969011	969012	969013	969050	969051	969052	969053	969070	969071	969072	969073	969110	969111	969112

GENERAL SPECIFICATIONS FOR BOTH HG & HGP UNITS

Specifications		Size 17	Size 25	Size 32	Size 50
Max Input Speed[1]	cyclic RPM	7300	5600	4800	3500
	continuous RPM	3650	3500	3500	2500
Max Average Input Speed[1]	RPM	3650	3500	3500	2500
Max Input Acceleration Rate	rad/sec^2	5100	3900	3350	2450
Efficiency @ Max Average Torque (E_{T_max})		80% ±5%			
Stiffness, Hysteresis		See ***Stiffness*** Section			
Output Loading		See ***Output Loading*** Section			
Temperature Limits		Ambient Temperature: 0°C to +40°C Maximum Unit Temperature: < 90°C			
Mounting Position		No Restriction			
Direction of Rotation		Motor Opposite Gearhead			
Lubrication		Lubricated for Life			
Life		See ***HG & HGP Life*** Section			

[1] Refer to the ***Harmonic Gearhead Selection Process*** section for product sizing procedures.
Note: All accuracy data taken at 2% of maximum load.



ZERO BACKLASH GEARING

Based on Nexen's innovative Roller Pinion technology, the Geared Bearing comes complete with a gear and a precision grade, high capacity bearing. With a wide range of sizes and ratios, all with zero backlash, a Geared Bearing can fit in any application.

PATENTED

Zero Backlash Gearing Advantage

Based on Nexen's innovative Roller Pinion technology, the Roller Pinion System Geared Bearing (RPS-GB) comes complete with a precision zero backlash gear mounted and dialed in on a precision grade high capacity bearing.

With many possible sizes and gear ratios, all with zero backlash, the Nexen Geared Bearing can be incorporated into any precision rotary motion control application.

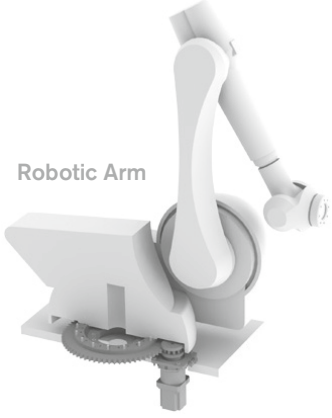
- **High Indexing Precision**
  With an indexing precision as low as ± 30 ArcSec and repeatability as low as ± 5.0 ArcSec, Nexen's Geared Bearing offers unmatched mechanical system capabilities.

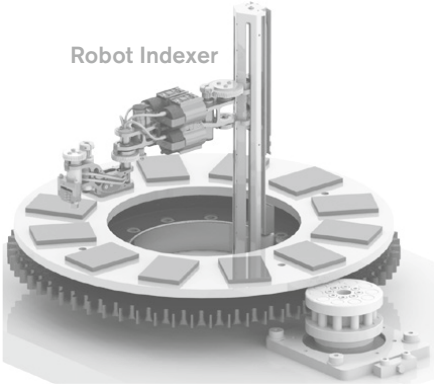
- **Zero Backlash**
  Based on Nexen's RPS technology, the Geared Bearing offers a rigid, zero backlash system.

- **High Output Load Capacity**
  The Nexen Geared Bearing is supported by a precision grade, high load capacity cross-roller bearing.

- **High Speed**
  The Nexen Geared Bearings can handle speeds up to 632 RPM.

DEPENDABLE. DRIVEN.
ARRAY OF OPTIONS.





AT THE CORE OF A ROTARY SYSTEM

Large Open Center
The Geared Bearing has a large open center that allows users to easily mount equipment and cabling in the center of the rotating output.

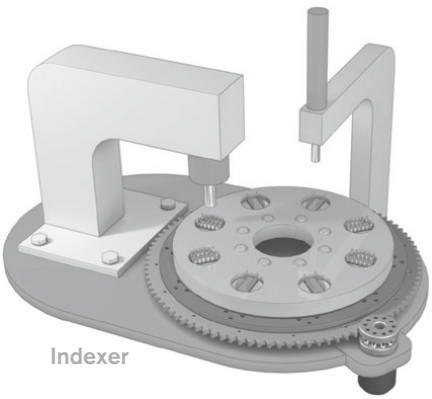
Mounting Options
Threaded and thru hole mounting and piloting options ensure a Nexen Geared Bearing can be incorporated into any application.

High Capacity Bearing
The Geared Bearing has a High Capacity Cross Roller Bearing capable of supporting significant loads at multiple mounting configurations.



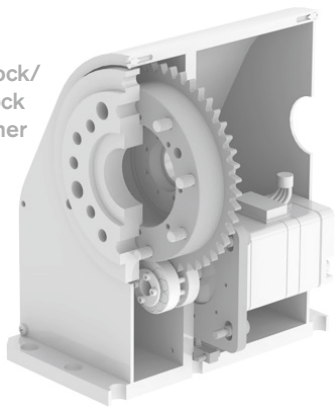
High Precision RPS Gears
Nexen RPS Technology allows for lube-free operation, high output torque and zero backlash for the most accurate positioning possible.

Drive Flexibility
Pinions are available from Nexen that are compatible with many manufacturer's gearboxes.



Indexer

Head Stock/
Tail Stock
Positioner



Geared Bearing Selection

RPS 10

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967226	**15.2**	126	**106**	3.8 : 1	**38**
967227	**16.0**	132	**101**	4.0 : 1	**40**
967228	**16.8**	138	**96**	4.2 : 1	**42**
967229	**17.6**	144	**92**	4.4 : 1	**44**
967230	**18.4**	150	**88**	4.6 : 1	**46**
967231	**19.2**	156	**84**	4.8 : 1	**48**
967232	**20.0**	162	**81**	5.0 : 1	**50**
967233	**20.8**	168	**78**	5.2 : 1	**52**
967234	**21.6**	174	**75**	5.4 : 1	**54**
967235	**22.4**	182	**72**	5.6 : 1	**56**
967236	**23.2**	188	**69**	5.8 : 1	**58**
967237	**24.0**	194	**67**	6.0 : 1	**60**
967238	**24.8**	200	**65**	6.2 : 1	**62**
967239	**25.6**	206	**63**	6.4 : 1	**64**
967240	**26.4**	212	**61**	6.6 : 1	**66**
967241	**27.2**	218	**59**	6.8 : 1	**68**
967242	**28.0**	224	**58**	7.0 : 1	**70**
967243	**28.8**	230	**56**	7.2 : 1	**72**
967244	**29.6**	236	**55**	7.4 : 1	**74**
967245	**30.4**	242	**53**	7.6 : 1	**76**
967246	**31.2**	248	**52**	7.8 : 1	**78**
967247	**32.0**	254	**51**	8.0 : 1	**80**
967248	**32.8**	262	**49**	8.2 : 1	**82**
967249	**33.6**	268	**48**	8.4 : 1	**84**
967250	**34.4**	274	**47**	8.6 : 1	**86**
967251	**35.2**	280	**46**	8.8 : 1	**88**
967252	**36.0**	286	**45**	9.0 : 1	**90**
967253	**36.8**	292	**44**	9.2 : 1	**92**
967254	**37.6**	298	**43**	9.4 : 1	**94**
967255	**38.4**	304	**42**	9.6 : 1	**96**
967256	**39.2**	310	**41**	9.8 : 1	**98**
967257	**40.0**	316	**40**	10.0 : 1	**100**
967258	**40.8**	322	**40**	10.2 : 1	**102**
967259	**41.6**	328	**39**	10.4 : 1	**104**
967260	**42.4**	334	**38**	10.6 : 1	**106**
967261	**43.2**	342	**37**	10.8 : 1	**108**
967262	**44.0**	348	**37**	11.0 : 1	**110**
967263	**44.8**	354	**36**	11.2 : 1	**112**
967264	**45.6**	360	**35**	11.4 : 1	**114**
967265	**46.4**	366	**35**	11.6 : 1	**116**
967266	**47.2**	372	**34**	11.8 : 1	**118**
967267	**48.0**	378	**34**	12.0 : 1	**120**
967268	**48.8**	384	**33**	12.2 : 1	**122**
967269	**49.6**	390	**32**	12.4 : 1	**124**
967270	**50.4**	396	**32**	12.6 : 1	**126**
967271	**51.2**	402	**31**	12.8 : 1	**128**
967272	**52.0**	408	**31**	13.0 : 1	**130**
967273	**52.8**	414	**31**	13.2 : 1	**132**
967274	**53.6**	422	**30**	13.4 : 1	**134**

RPS 12

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967185	**30.4**	129	**104**	3.2 : 1	**32**
967186	**32.3**	135	**99**	3.4 : 1	**34**
967187	**34.2**	143	**93**	3.6 : 1	**36**
967188	**36.1**	151	**88**	3.8 : 1	**38**
967189	**38.0**	157	**84**	4.0 : 1	**40**
967190	**39.9**	165	**80**	4.2 : 1	**42**
967191	**41.8**	173	**76**	4.4 : 1	**44**
967192	**43.7**	179	**73**	4.6 : 1	**46**
967193	**45.6**	187	**70**	4.8 : 1	**48**
967194	**47.5**	195	**67**	5.0 : 1	**50**
967195	**49.4**	201	**65**	5.2 : 1	**52**
967196	**51.3**	209	**62**	5.4 : 1	**54**
967197	**53.2**	217	**60**	5.6 : 1	**56**
967198	**55.1**	225	**58**	5.8 : 1	**58**
967199	**57.0**	231	**56**	6.0 : 1	**60**
967200	**58.9**	239	**54**	6.2 : 1	**62**
967201	**60.8**	247	**52**	6.4 : 1	**64**
967202	**62.7**	253	**51**	6.6 : 1	**66**
967203	**64.6**	261	**49**	6.8 : 1	**68**
967204	**66.5**	269	**48**	7.0 : 1	**70**
967205	**68.4**	275	**47**	7.2 : 1	**72**
967206	**70.3**	283	**45**	7.4 : 1	**74**
967207	**72.2**	291	**44**	7.6 : 1	**76**
967208	**74.1**	297	**43**	7.8 : 1	**78**
967209	**76.0**	305	**42**	8.0 : 1	**80**
967210	**77.9**	313	**41**	8.2 : 1	**82**
967211	**79.8**	321	**40**	8.4 : 1	**84**
967212	**81.7**	327	**39**	8.6 : 1	**86**
967213	**83.6**	335	**38**	8.8 : 1	**88**
967214	**85.5**	343	**37**	9.0 : 1	**90**
967215	**87.4**	349	**37**	9.2 : 1	**92**
967216	**89.3**	357	**36**	9.4 : 1	**94**
967217	**91.2**	365	**35**	9.6 : 1	**96**
967218	**93.1**	371	**34**	9.8 : 1	**98**
967219	**95.0**	379	**34**	10.0 : 1	**100**
967220	**96.9**	387	**33**	10.2 : 1	**102**
967221	**98.8**	393	**32**	10.4 : 1	**104**
967222	**100.7**	401	**32**	10.6 : 1	**106**
967223	**102.6**	409	**31**	10.8 : 1	**108**
967224	**104.5**	417	**30**	11.0 : 1	**110**
967225	**106.4**	423	**30**	11.2 : 1	**112**

RPS 16

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967100	**159**	141	**97**	2.6 : 1	**26**
967101	**171**	151	**90**	2.8 : 1	**28**
967102	**183**	159	**85**	3.0 : 1	**30**
967103	**196**	169	**80**	3.2 : 1	**32**
967104	**208**	179	**75**	3.4 : 1	**34**
967105	**220**	189	**71**	3.6 : 1	**36**
967106	**232**	199	**67**	3.8 : 1	**38**
967107	**244**	209	**63**	4.0 : 1	**40**
967108	**257**	219	**60**	4.2 : 1	**42**
967109	**269**	229	**58**	4.4 : 1	**44**
967110	**281**	237	**55**	4.6 : 1	**46**
967111	**293**	247	**53**	4.8 : 1	**48**
967112	**306**	257	**51**	5.0 : 1	**50**
967113	**318**	267	**49**	5.2 : 1	**52**
967114	**330**	277	**47**	5.4 : 1	**54**
967115	**342**	287	**45**	5.6 : 1	**56**
967116	**354**	297	**44**	5.8 : 1	**58**
967117	**367**	307	**42**	6.0 : 1	**60**
967118	**379**	315	**41**	6.2 : 1	**62**
967119	**391**	325	**40**	6.4 : 1	**64**
967120	**403**	335	**39**	6.6 : 1	**66**
967121	**415**	345	**37**	6.8 : 1	**68**
967122	**428**	355	**36**	7.0 : 1	**70**
967123	**440**	365	**35**	7.2 : 1	**72**
967124	**452**	375	**34**	7.4 : 1	**74**
967125	**464**	383	**34**	7.6 : 1	**76**
967126	**477**	393	**33**	7.8 : 1	**78**
967127	**489**	403	**32**	8.0 : 1	**80**
967128	**501**	413	**31**	8.2 : 1	**82**
967129	**513**	423	**30**	8.4 : 1	**84**

RPS 20

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967147	**203**	152	**92**	2.2 : 1	**22**
967148	**222**	166	**84**	2.4 : 1	**24**
967149	**240**	178	**77**	2.6 : 1	**26**
967150	**258**	190	**72**	2.8 : 1	**28**
967151	**277**	202	**67**	3.0 : 1	**30**
967152	**295**	214	**63**	3.2 : 1	**32**
967153	**314**	226	**59**	3.4 : 1	**34**
967154	**332**	240	**56**	3.6 : 1	**36**
967155	**351**	252	**53**	3.8 : 1	**38**
967156	**369**	264	**50**	4.0 : 1	**40**
967157	**388**	276	**48**	4.2 : 1	**42**
967158	**406**	288	**46**	4.4 : 1	**44**
967159	**425**	300	**44**	4.6 : 1	**46**
967160	**443**	312	**42**	4.8 : 1	**48**
967161	**462**	326	**40**	5.0 : 1	**50**
967162	**480**	338	**39**	5.2 : 1	**52**
967163	**498**	350	**37**	5.4 : 1	**54**
967164	**517**	362	**36**	5.6 : 1	**56**
967165	**535**	374	**35**	5.8 : 1	**58**
967166	**554**	386	**34**	6.0 : 1	**60**
967167	**572**	400	**32**	6.2 : 1	**62**
967168	**591**	412	**31**	6.4 : 1	**64**
967169	**609**	424	**30**	6.6 : 1	**66**

Geared Bearing Selection

RPS 25

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967130	**318**	174	**81**	2.0 : 1	**20**
967131	**350**	190	**73**	2.2 : 1	**22**
967132	**382**	206	**67**	2.4 : 1	**24**
967133	**414**	220	**62**	2.6 : 1	**26**
967134	**446**	236	**58**	2.8 : 1	**28**
967135	**478**	252	**54**	3.0 : 1	**30**
967136	**509**	268	**50**	3.2 : 1	**32**
967137	**541**	282	**47**	3.4 : 1	**34**
967138	**573**	298	**45**	3.6 : 1	**36**
967139	**605**	314	**42**	3.8 : 1	**38**
967140	**637**	328	**40**	4.0 : 1	**40**
967141	**669**	344	**38**	4.2 : 1	**42**
967142	**700**	360	**37**	4.4 : 1	**44**
967143	**732**	374	**35**	4.6 : 1	**46**
967144	**764**	390	**34**	4.8 : 1	**48**
967145	**796**	406	**32**	5.0 : 1	**50**
967146	**828**	420	**31**	5.2 : 1	**52**

RPS 32

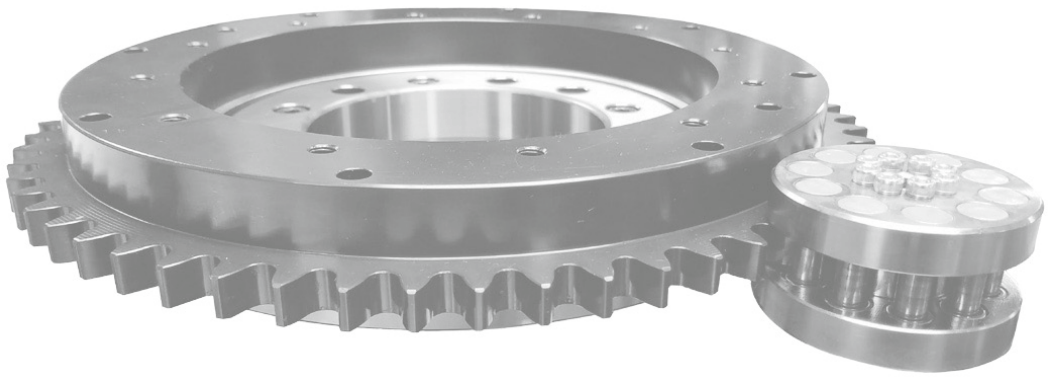
Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967170	**770**	260	**53**	2.0 : 1	**24**
967171	**834**	280	**49**	2.1$\overline{6}$: 1	**26**
967172	**898**	300	**45**	2.$\overline{3}$: 1	**28**
967173	**963**	320	**42**	2.5 : 1	**30**
967174	**1027**	338	**40**	2.$\overline{6}$: 1	**32**
967175	**1091**	358	**37**	2.8$\overline{3}$: 1	**34**
967176	**1155**	378	**35**	3.0 : 1	**36**
967177	**1219**	398	**33**	3.1$\overline{6}$: 1	**38**
967178	**1283**	416	**32**	3.$\overline{3}$: 1	**40**

RPS 40

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967179	**917**	331	**42**	2.0 : 1	**24**
967180	**993**	355	**39**	2.1$\overline{6}$: 1	**26**
967181	**1070**	379	**36**	2.$\overline{3}$: 1	**28**
967182	**1146**	403	**34**	2.5 : 1	**30**

RPS 4014

Product Number	Dynamic Max Gear Torque (Nm)	Gear OD Size (mm)	Accuracy (±ArcSec)	Gear Ratio	# Teeth
967183	**2496**	376	**36**	2.0 : 1	**28**
967184	**2674**	402	**34**	2.1$\overline{4}$: 1	**30**



Geared Bearing Specifications by Product Number

RPS 10																		
General Specs					Gear Torque			Speed		Precision			Load			Inertia		
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967226	**38**	3.8 : 1	**42**	2.1	**23**	15.2	**15.2**	632	**82**	106	**17.6**	0	**0.0**	2.3	**3.6**	.0026	**.000019**
967227	**40**	4.0 : 1	**42**	2.1	**24**	16.0	**16.0**	600	**78**	101	**16.8**	0	**0.0**	2.3	**3.6**	.0028	**.000019**
967228	**42**	4.2 : 1	**42**	2.1	**26**	16.8	**16.8**	571	**74**	96	**16.0**	0	**0.0**	2.3	**3.6**	.0030	**.000019**
967229	**44**	4.4 : 1	**42**	2.1	**27**	17.6	**17.6**	545	**71**	92	**15.3**	0	**0.0**	2.3	**3.6**	.0033	**.000019**
967230	**46**	4.6 : 1	**66**	2.1	**28**	18.4	**18.4**	522	**68**	88	**14.6**	0	**0.2**	6.0	**9.1**	.0058	**.00015**
967231	**48**	4.8 : 1	**66**	2.1	**29**	19.2	**19.2**	500	**65**	84	**14.0**	0	**0.2**	6.0	**9.1**	.0062	**.00015**
967232	**50**	5.0 : 1	**66**	2.1	**30**	20.0	**20.0**	480	**62**	81	**13.5**	0	**0.2**	6.0	**9.1**	.0065	**.00015**
967233	**52**	5.2 : 1	**66**	2.1	**32**	20.8	**20.8**	462	**60**	78	**13.0**	0	**0.2**	6.0	**9.1**	.0070	**.00015**
967234	**54**	5.4 : 1	**85**	2.1	**33**	21.6	**21.6**	444	**58**	75	**12.5**	0	**0.3**	7.0	**10.6**	.012	**.00039**
967235	**56**	5.6 : 1	**85**	2.1	**34**	22.4	**22.4**	429	**55**	72	**11.9**	0	**0.3**	7.0	**10.6**	.012	**.00039**
967236	**58**	5.8 : 1	**85**	2.1	**35**	23.2	**23.2**	414	**53**	69	**11.5**	0	**0.3**	7.0	**10.6**	.013	**.00039**
967237	**60**	6.0 : 1	**85**	2.1	**36**	24.0	**24.0**	400	**52**	67	**11.1**	0	**0.3**	7.0	**10.6**	.014	**.00039**
967238	**62**	6.2 : 1	**85**	2.1	**38**	24.8	**24.8**	387	**50**	65	**10.8**	0	**0.3**	7.0	**10.6**	.014	**.00039**
967239	**64**	6.4 : 1	**85**	2.1	**39**	25.6	**25.6**	375	**48**	63	**10.5**	0	**0.3**	7.0	**10.6**	.015	**.00039**
967240	**66**	6.6 : 1	**85**	2.1	**40**	26.4	**26.4**	364	**47**	61	**10.2**	0	**0.3**	7.0	**10.6**	.016	**.00039**
967241	**68**	6.8 : 1	**124**	2.1	**41**	27.2	**27.2**	353	**46**	59	**9.9**	0	**0.7**	11.6	**17.5**	.032	**.0028**
967242	**70**	7.0 : 1	**124**	2.1	**43**	28.0	**28.0**	343	**44**	58	**9.6**	0	**0.7**	11.6	**17.5**	.033	**.0028**
967243	**72**	7.2 : 1	**124**	2.1	**44**	28.8	**28.8**	333	**43**	56	**9.3**	0	**0.7**	11.6	**17.5**	.034	**.0028**
967244	**74**	7.4 : 1	**124**	2.1	**45**	29.6	**29.6**	324	**42**	55	**9.1**	0	**0.7**	11.6	**17.5**	.035	**.0028**
967245	**76**	7.6 : 1	**124**	2.1	**46**	30.4	**30.4**	316	**41**	53	**8.9**	0	**0.7**	11.6	**17.5**	.037	**.0028**
967246	**78**	7.8 : 1	**124**	2.1	**47**	31.2	**31.2**	308	**40**	52	**8.6**	0	**0.7**	11.6	**17.5**	.038	**.0028**
967247	**80**	8.0 : 1	**124**	2.1	**49**	32.0	**32.0**	300	**39**	51	**8.4**	0	**0.7**	11.6	**17.5**	.040	**.0028**
967248	**82**	8.2 : 1	**124**	2.1	**50**	32.8	**32.8**	293	**38**	49	**8.2**	0	**0.7**	11.6	**17.5**	.042	**.0028**
967249	**84**	8.4 : 1	**148**	2.1	**51**	33.6	**33.6**	286	**37**	48	**8.0**	0	**1.3**	17.4	**26.1**	.080	**.0063**
967250	**86**	8.6 : 1	**148**	2.1	**52**	34.4	**34.4**	279	**36**	47	**7.8**	0	**1.3**	17.4	**26.1**	.082	**.0063**
967251	**88**	8.8 : 1	**148**	2.1	**54**	35.2	**35.2**	273	**35**	46	**7.6**	0	**1.3**	17.4	**26.1**	.084	**.0063**
967252	**90**	9.0 : 1	**148**	2.1	**55**	36.0	**36.0**	267	**34**	45	**7.4**	0	**1.3**	17.4	**26.1**	.086	**.0063**
967253	**92**	9.2 : 1	**148**	2.1	**56**	36.8	**36.8**	261	**34**	44	**7.3**	0	**1.3**	17.4	**26.1**	.089	**.0063**
967254	**94**	9.4 : 1	**178**	2.1	**57**	37.6	**37.6**	255	**33**	43	**7.1**	0	**2.5**	28.6	**42.9**	.12	**.015**
967255	**96**	9.6 : 1	**178**	2.1	**58**	38.4	**38.4**	250	**32**	42	**7.0**	0	**2.5**	28.6	**42.9**	.13	**.015**
967256	**98**	9.8 : 1	**178**	2.1	**60**	39.2	**39.2**	245	**32**	41	**6.9**	0	**2.5**	28.6	**42.9**	.13	**.015**
967257	**100**	10.0 : 1	**178**	2.1	**61**	40.0	**40.0**	240	**31**	40	**6.7**	0	**2.5**	28.6	**42.9**	.13	**.015**
967258	**102**	10.2 : 1	**178**	2.1	**62**	40.8	**40.8**	235	**31**	40	**6.6**	0	**2.5**	28.6	**42.9**	.13	**.015**
967259	**104**	10.4 : 1	**178**	2.1	**63**	41.6	**41.6**	231	**30**	39	**6.5**	0	**2.5**	28.6	**42.9**	.14	**.015**
967260	**106**	10.6 : 1	**178**	2.1	**64**	42.4	**42.4**	226	**29**	38	**6.3**	0	**2.5**	28.6	**42.9**	.14	**.015**
967261	**108**	10.8 : 1	**178**	2.1	**66**	43.2	**43.2**	222	**29**	37	**6.2**	0	**2.5**	28.6	**42.9**	.15	**.015**
967262	**110**	11.0 : 1	**228**	2.1	**67**	44.0	**44.0**	218	**28**	37	**6.1**	0	**4.2**	37.2	**55.6**	.25	**.044**
967263	**112**	11.2 : 1	**228**	2.1	**68**	44.8	**44.8**	214	**28**	36	**6.0**	0	**4.2**	37.2	**55.6**	.25	**.044**
967264	**114**	11.4 : 1	**228**	2.1	**69**	45.6	**45.6**	211	**27**	35	**5.9**	0	**4.2**	37.2	**55.6**	.26	**.044**
967265	**116**	11.6 : 1	**228**	2.1	**71**	46.4	**46.4**	207	**27**	35	**5.8**	0	**4.2**	37.2	**55.6**	.26	**.044**
967266	**118**	11.8 : 1	**228**	2.1	**72**	47.2	**47.2**	203	**26**	34	**5.7**	0	**4.2**	37.2	**55.6**	.27	**.044**
967267	**120**	12.0 : 1	**228**	2.1	**73**	48.0	**48.0**	200	**26**	34	**5.6**	0	**4.2**	37.2	**55.6**	.27	**.044**
967268	**122**	12.2 : 1	**228**	2.1	**74**	48.8	**48.8**	197	**25**	33	**5.5**	0	**4.2**	37.2	**55.6**	.28	**.044**
967269	**124**	12.4 : 1	**228**	2.1	**75**	49.6	**49.6**	194	**25**	32	**5.4**	0	**4.2**	37.2	**55.6**	.28	**.044**
967270	**126**	12.6 : 1	**228**	2.1	**77**	50.4	**50.4**	190	**25**	32	**5.3**	0	**4.2**	37.2	**55.6**	.29	**.044**
967271	**128**	12.8 : 1	**228**	2.1	**78**	51.2	**51.2**	188	**24**	31	**5.2**	0	**4.2**	37.2	**55.6**	.29	**.044**
967272	**130**	13.0 : 1	**228**	2.1	**79**	52.0	**52.0**	185	**24**	31	**5.2**	0	**4.2**	37.2	**55.6**	.30	**.044**
967273	**132**	13.2 : 1	**228**	2.1	**80**	52.8	**52.8**	182	**24**	31	**5.1**	0	**4.2**	37.2	**55.6**	.31	**.044**
967274	**134**	13.4 : 1	**228**	2.1	**81**	53.6	**53.6**	179	**23**	30	**5.0**	0	**4.2**	37.2	**55.6**	.32	**.044**

[1] Load types are mutually exclusive for comparison purposes. For combined loads & high loads, see Bearing Load Section.

Geared Bearing Specifications by Product Number

RPS 12																	
General Specs					Gear Torque			Speed		Precision			Load			Inertia	
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967185	**32**	3.2 : 1	**42**	2.4	**46**	30.4	**30.4**	625	**80**	104	**17.3**	0	**0.0**	1.9	**3.2**	.003	**.00002**
967186	**34**	3.4 : 1	**42**	2.4	**48**	32.3	**32.3**	588	**76**	99	**16.5**	0	**0.0**	1.9	**3.2**	.003	**.00002**
967187	**36**	3.6 : 1	**42**	2.4	**51**	34.2	**34.2**	556	**72**	93	**15.5**	0	**0.0**	1.9	**3.2**	.003	**.00002**
967188	**38**	3.8 : 1	**66**	2.4	**54**	36.1	**36.1**	526	**68**	88	**14.6**	0	**0.2**	5.6	**8.7**	.006	**.00015**
967189	**40**	4.0 : 1	**66**	2.4	**57**	38.0	**38.0**	500	**65**	84	**14.0**	0	**0.2**	5.6	**8.7**	.006	**.00015**
967190	**42**	4.2 : 1	**66**	2.4	**60**	39.9	**39.9**	476	**62**	80	**13.3**	0	**0.2**	5.6	**8.7**	.007	**.00015**
967191	**44**	4.4 : 1	**66**	2.4	**63**	41.8	**41.8**	455	**59**	76	**12.7**	0	**0.2**	5.6	**8.7**	.007	**.00015**
967192	**46**	4.6 : 1	**85**	2.4	**66**	43.7	**43.7**	435	**57**	73	**12.2**	0	**0.3**	6.7	**10.3**	.012	**.0004**
967193	**48**	4.8 : 1	**85**	2.4	**68**	45.6	**45.6**	417	**54**	70	**11.7**	0	**0.3**	6.7	**10.3**	.013	**.0004**
967194	**50**	5.0 : 1	**85**	2.4	**71**	47.5	**47.5**	400	**52**	67	**11.1**	0	**0.3**	6.7	**10.3**	.014	**.0004**
967195	**52**	5.2 : 1	**85**	2.4	**74**	49.4	**49.4**	385	**50**	65	**10.8**	0	**0.3**	6.7	**10.3**	.014	**.0004**
967196	**54**	5.4 : 1	**85**	2.4	**77**	51.3	**51.3**	370	**48**	62	**10.4**	0	**0.3**	6.7	**10.3**	.015	**.0004**
967197	**56**	5.6 : 1	**85**	2.4	**80**	53.2	**53.2**	357	**46**	60	**10.0**	0	**0.3**	6.7	**10.3**	.017	**.0004**
967198	**58**	5.8 : 1	**124**	2.4	**83**	55.1	**55.1**	345	**44**	58	**9.6**	0	**0.7**	11.3	**17.2**	.033	**.0028**
967199	**60**	6.0 : 1	**124**	2.4	**86**	57.0	**57.0**	333	**43**	56	**9.3**	0	**0.7**	11.3	**17.2**	.034	**.0028**
967200	**62**	6.2 : 1	**124**	2.4	**88**	58.9	**58.9**	323	**42**	54	**9.0**	0	**0.7**	11.3	**17.2**	.036	**.0028**
967201	**64**	6.4 : 1	**124**	2.4	**91**	60.8	**60.8**	313	**40**	52	**8.7**	0	**0.7**	11.3	**17.2**	.038	**.0028**
967202	**66**	6.6 : 1	**124**	2.4	**94**	62.7	**62.7**	303	**39**	51	**8.5**	0	**0.7**	11.3	**17.2**	.039	**.0028**
967203	**68**	6.8 : 1	**124**	2.4	**97**	64.6	**64.6**	294	**38**	49	**8.2**	0	**0.7**	11.3	**17.2**	.041	**.0028**
967204	**70**	7.0 : 1	**148**	2.4	**100**	66.5	**66.5**	286	**37**	48	**8.0**	0	**1.3**	17.1	**25.8**	.080	**.0063**
967205	**72**	7.2 : 1	**148**	2.4	**103**	68.4	**68.4**	278	**36**	47	**7.8**	0	**1.3**	17.1	**25.8**	.082	**.0063**
967206	**74**	7.4 : 1	**148**	2.4	**105**	70.3	**70.3**	270	**35**	45	**7.6**	0	**1.3**	17.1	**25.8**	.085	**.0063**
967207	**76**	7.6 : 1	**148**	2.4	**108**	72.2	**72.2**	263	**34**	44	**7.3**	0	**1.3**	17.1	**25.8**	.088	**.0063**
967208	**78**	7.8 : 1	**178**	2.4	**111**	74.1	**74.1**	256	**33**	43	**7.2**	0	**2.5**	28.3	**42.6**	.12	**.015**
967209	**80**	8.0 : 1	**178**	2.4	**114**	76.0	**76.0**	250	**32**	42	**7.0**	0	**2.5**	28.3	**42.6**	.13	**.015**
967210	**82**	8.2 : 1	**178**	2.4	**117**	77.9	**77.9**	244	**32**	41	**6.8**	0	**2.5**	28.3	**42.6**	.13	**.015**
967211	**84**	8.4 : 1	**178**	2.4	**120**	79.8	**79.8**	238	**31**	40	**6.6**	0	**2.5**	28.3	**42.6**	.13	**.015**
967212	**86**	8.6 : 1	**178**	2.4	**123**	81.7	**81.7**	233	**30**	39	**6.5**	0	**2.5**	28.3	**42.6**	.14	**.015**
967213	**88**	8.8 : 1	**178**	2.4	**125**	83.6	**83.6**	227	**29**	38	**6.3**	0	**2.5**	28.3	**42.6**	.14	**.015**
967214	**90**	9.0 : 1	**178**	2.4	**128**	85.5	**85.5**	222	**29**	37	**6.2**	0	**2.5**	28.3	**42.6**	.15	**.015**
967215	**92**	9.2 : 1	**178**	2.4	**131**	87.4	**87.4**	217	**28**	37	**6.1**	0	**2.5**	28.3	**42.6**	.15	**.015**
967216	**94**	9.4 : 1	**228**	2.4	**134**	89.3	**89.3**	213	**28**	36	**5.9**	0	**4.2**	36.9	**55.3**	.25	**.044**
967217	**96**	9.6 : 1	**228**	2.4	**137**	91.2	**91.2**	208	**27**	35	**5.8**	0	**4.2**	36.9	**55.3**	.26	**.044**
967218	**98**	9.8 : 1	**228**	2.4	**140**	93.1	**93.1**	204	**26**	34	**5.7**	0	**4.2**	36.9	**55.3**	.26	**.044**
967219	**100**	10.0 : 1	**228**	2.4	**143**	95.0	**95.0**	200	**26**	34	**5.6**	0	**4.2**	36.9	**55.3**	.27	**.044**
967220	**102**	10.2 : 1	**228**	2.4	**145**	96.9	**96.9**	196	**25**	33	**5.5**	0	**4.2**	36.9	**55.3**	.28	**.044**
967221	**104**	10.4 : 1	**228**	2.4	**148**	98.8	**98.8**	192	**25**	32	**5.4**	0	**4.2**	36.9	**55.3**	.28	**.044**
967222	**106**	10.6 : 1	**228**	2.4	**151**	100.7	**100.7**	189	**24**	32	**5.3**	0	**4.2**	36.9	**55.3**	.29	**.044**
967223	**108**	10.8 : 1	**228**	2.4	**154**	102.6	**102.6**	185	**24**	31	**5.2**	0	**4.2**	36.9	**55.3**	.30	**.044**
967224	**110**	11.0 : 1	**228**	2.4	**157**	104.5	**104.5**	182	**23**	30	**5.1**	0	**4.2**	36.9	**55.3**	.31	**.044**
967225	**112**	11.2 : 1	**228**	2.4	**160**	106.4	**106.4**	179	**23**	30	**5.0**	0	**4.2**	36.9	**55.3**	.32	**.044**

[1] Load types are mutually exclusive for comparison purposes. For combined loads & high loads, see Bearing Load Section.

Geared Bearing Specifications by Product Number

RPS 16																		
General Specs					Gear Torque			Speed		Precision			Load			Inertia		
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967100	**26**	2.6 : 1	**42**	3.4	**159**	159	**88**	577	**75**	97	**16.2**	0	**0.0**	0.4	**1.0**	.004	**.00002**
967101	**28**	2.8 : 1	**42**	3.4	**171**	171	**94**	536	**70**	90	**15.1**	0	**0.0**	0.4	**1.0**	.005	**.00002**
967102	**30**	3.0 : 1	**42**	3.4	**183**	183	**101**	500	**66**	85	**14.2**	0	**0.0**	0.4	**1.0**	.006	**.00002**
967103	**32**	3.2 : 1	**66**	3.4	**196**	196	**108**	469	**62**	80	**13.3**	0	**0.1**	4.4	**7.5**	.009	**.00015**
967104	**34**	3.4 : 1	**66**	3.4	**208**	208	**115**	441	**58**	75	**12.5**	0	**0.1**	4.4	**7.5**	.011	**.00015**
967105	**36**	3.6 : 1	**85**	3.4	**220**	220	**121**	417	**55**	71	**11.8**	0	**0.2**	5.5	**9.1**	.016	**.00039**
967106	**38**	3.8 : 1	**85**	3.4	**232**	232	**128**	395	**52**	67	**11.1**	0	**0.2**	5.5	**9.1**	.018	**.00039**
967107	**40**	4.0 : 1	**85**	3.4	**244**	244	**135**	375	**49**	63	**10.6**	0	**0.2**	5.5	**9.1**	.021	**.00039**
967108	**42**	4.2 : 1	**85**	3.4	**257**	257	**142**	357	**47**	60	**10.1**	0	**0.2**	5.5	**9.1**	.024	**.00039**
967109	**44**	4.4 : 1	**85**	3.4	**269**	269	**148**	341	**44**	58	**9.6**	0	**0.2**	5.5	**9.1**	.027	**.00040**
967110	**46**	4.6 : 1	**124**	3.4	**281**	281	**155**	326	**43**	55	**9.2**	0	**0.6**	10.2	**16.0**	.043	**.0028**
967111	**48**	4.8 : 1	**124**	3.4	**293**	293	**162**	313	**41**	53	**8.9**	0	**0.6**	10.2	**16.0**	.047	**.0028**
967112	**50**	5.0 : 1	**124**	3.4	**306**	306	**169**	300	**39**	51	**8.5**	0	**0.6**	10.2	**16.0**	.052	**.0028**
967113	**52**	5.2 : 1	**124**	3.4	**318**	318	**175**	288	**38**	49	**8.2**	0	**0.6**	10.2	**16.0**	.058	**.0028**
967114	**54**	5.4 : 1	**148**	3.4	**330**	330	**182**	278	**36**	47	**7.8**	0	**1.2**	16.0	**24.7**	.095	**.0063**
967115	**56**	5.6 : 1	**148**	3.4	**342**	342	**189**	268	**35**	45	**7.6**	0	**1.2**	16.0	**24.7**	.10	**.0063**
967116	**58**	5.8 : 1	**148**	3.4	**354**	354	**195**	259	**34**	44	**7.3**	0	**1.2**	16.0	**24.7**	.11	**.0063**
967117	**60**	6.0 : 1	**178**	3.4	**367**	367	**202**	250	**33**	42	**7.0**	0	**2.4**	27.3	**41.5**	.15	**.015**
967118	**62**	6.2 : 1	**178**	3.4	**379**	379	**209**	242	**32**	41	**6.9**	0	**2.4**	27.3	**41.5**	.15	**.015**
967119	**64**	6.4 : 1	**178**	3.4	**391**	391	**216**	234	**31**	40	**6.6**	0	**2.4**	27.3	**41.5**	.16	**.015**
967120	**66**	6.6 : 1	**178**	3.4	**403**	403	**222**	227	**30**	39	**6.4**	0	**2.4**	27.3	**41.5**	.17	**.015**
967121	**68**	6.8 : 1	**178**	3.4	**415**	415	**229**	221	**29**	37	**6.2**	0	**2.4**	27.3	**41.5**	.19	**.015**
967122	**70**	7.0 : 1	**178**	3.4	**428**	428	**236**	214	**28**	36	**6.0**	0	**2.4**	27.3	**41.5**	.20	**.015**
967123	**72**	7.2 : 1	**228**	3.4	**440**	440	**243**	208	**27**	35	**5.9**	0	**4.1**	35.8	**54.3**	.29	**.044**
967124	**74**	7.4 : 1	**228**	3.4	**452**	452	**249**	203	**26**	34	**5.7**	0	**4.1**	35.8	**54.3**	.31	**.044**
967125	**76**	7.6 : 1	**228**	3.4	**464**	464	**256**	197	**26**	34	**5.6**	0	**4.1**	35.8	**54.3**	.32	**.044**
967126	**78**	7.8 : 1	**228**	3.4	**477**	477	**263**	192	**25**	33	**5.4**	0	**4.1**	35.8	**54.3**	.34	**.044**
967127	**80**	8.0 : 1	**228**	3.4	**489**	489	**270**	188	**25**	32	**5.3**	0	**4.1**	35.8	**54.3**	.36	**.044**
967128	**82**	8.2 : 1	**228**	3.4	**501**	501	**276**	183	**24**	31	**5.2**	0	**4.1**	35.8	**54.3**	.39	**.044**
967129	**84**	8.4 : 1	**228**	3.4	**513**	513	**283**	179	**23**	30	**5.0**	0	**4.1**	35.8	**54.3**	.41	**.044**

[1] Load types are mutually exclusive for comparison purposes. For combined loads & high loads, see Bearing Load Section.

NEXEN

Geared Bearing Specifications by Product Number

RPS 20

General Specs					Gear Torque			Speed		Precision			Load			Inertia	
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967147	**22**	2.2 : 1	**42**	4.2	**210**	203	**116**	545	**71**	92	**15.4**	0	[2]	[2]	[2]	.006	**.00002**
967148	**24**	2.4 : 1	**42**	4.2	**229**	222	**126**	500	**65**	84	**13.9**	0	[2]	[2]	[2]	.008	**.00002**
967149	**26**	2.6 : 1	**66**	4.2	**248**	240	**137**	462	**60**	77	**12.9**	0	**0.1**	3.8	**6.9**	.012	**.0002**
967150	**28**	2.8 : 1	**66**	4.2	**267**	258	**147**	429	**56**	72	**12.0**	0	**0.1**	3.8	**6.9**	.014	**.0002**
967151	**30**	3.0 : 1	**85**	4.2	**287**	277	**158**	400	**52**	67	**11.2**	0	**0.2**	4.9	**8.5**	.021	**.0004**
967152	**32**	3.2 : 1	**85**	4.2	**306**	295	**168**	375	**49**	63	**10.5**	0	**0.2**	4.9	**8.5**	.025	**.0004**
967153	**34**	3.4 : 1	**85**	4.2	**325**	314	**179**	353	**46**	59	**9.9**	0	**0.2**	4.9	**8.5**	.03	**.0004**
967154	**36**	3.6 : 1	**124**	4.2	**344**	332	**189**	333	**43**	56	**9.3**	0	**0.6**	9.7	**15.6**	.05	**.003**
967155	**38**	3.8 : 1	**124**	4.2	**363**	351	**200**	316	**41**	53	**8.8**	0	**0.6**	9.7	**15.6**	.05	**.003**
967156	**40**	4.0 : 1	**124**	4.2	**382**	369	**210**	300	**39**	50	**8.4**	0	**0.6**	9.7	**15.6**	.06	**.003**
967157	**42**	4.2 : 1	**124**	4.2	**401**	388	**221**	286	**37**	48	**8.0**	0	**0.6**	9.7	**15.6**	.07	**.003**
967158	**44**	4.4 : 1	**148**	4.2	**420**	406	**231**	273	**35**	46	**7.6**	0	**1.1**	15.5	**24.2**	.11	**.006**
967159	**46**	4.6 : 1	**148**	4.2	**439**	425	**242**	261	**34**	44	**7.3**	0	**1.1**	15.5	**24.2**	.12	**.006**
967160	**48**	4.8 : 1	**148**	4.2	**458**	443	**252**	250	**32**	42	**7.0**	0	**1.1**	15.5	**24.2**	.14	**.006**
967161	**50**	5.0 : 1	**178**	4.2	**478**	462	**263**	240	**31**	40	**6.7**	0	**2.4**	26.8	**41.1**	.18	**.015**
967162	**52**	5.2 : 1	**178**	4.2	**497**	480	**273**	231	**30**	39	**6.4**	0	**2.4**	26.8	**41.1**	.20	**.015**
967163	**54**	5.4 : 1	**178**	4.2	**516**	498	**284**	222	**29**	37	**6.2**	0	**2.4**	26.8	**41.1**	.22	**.015**
967164	**56**	5.6 : 1	**178**	4.2	**535**	517	**294**	214	**28**	36	**6.0**	0	**2.4**	26.8	**41.1**	.24	**.015**
967165	**58**	5.8 : 1	**228**	4.2	**554**	535	**305**	207	**27**	35	**5.8**	0	**4.0**	35.4	**53.9**	.33	**.044**
967166	**60**	6.0 : 1	**228**	4.2	**573**	554	**315**	200	**26**	34	**5.6**	0	**4.0**	35.4	**53.9**	.36	**.044**
967167	**62**	6.2 : 1	**228**	4.2	**592**	572	**326**	194	**25**	32	**5.4**	0	**4.0**	35.4	**53.9**	.39	**.044**
967168	**64**	6.4 : 1	**228**	4.2	**611**	591	**336**	188	**24**	31	**5.2**	0	**4.0**	35.4	**53.9**	.43	**.044**
967169	**66**	6.6 : 1	**228**	4.2	**630**	609	**347**	182	**24**	30	**5.1**	0	**4.0**	35.4	**53.9**	.46	**.044**

RPS 25

General Specs					Gear Torque			Speed		Precision			Load			Inertia	
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967130	**20**	2.0 : 1	**42**	5.4	**352**	318	**179**	455	**62**	81	**13.5**	0	[2]	[2]	[2]	.011	**.000019**
967131	**22**	2.2 : 1	**66**	5.4	**387**	350	**197**	414	**57**	73	**12.2**	0	**0.1**	2.8	**5.9**	.017	**.00015**
967132	**24**	2.4 : 1	**85**	5.4	**422**	382	**215**	379	**52**	67	**11.1**	0	**0.2**	4.0	**7.6**	.027	**.00039**
967133	**26**	2.6 : 1	**85**	5.4	**458**	414	**233**	350	**48**	62	**10.4**	0	**0.2**	4.0	**7.6**	.033	**.00039**
967134	**28**	2.8 : 1	**85**	5.4	**493**	446	**251**	325	**44**	58	**9.6**	0	**0.2**	4.0	**7.6**	.042	**.00039**
967135	**30**	3.0 : 1	**124**	5.4	**528**	478	**269**	303	**41**	54	**8.9**	0	**0.5**	8.8	**14.7**	.067	**.0028**
967136	**32**	3.2 : 1	**124**	5.4	**563**	509	**286**	284	**39**	50	**8.4**	0	**0.5**	8.8	**14.7**	.080	**.0028**
967137	**34**	3.4 : 1	**124**	5.4	**598**	541	**304**	268	**37**	47	**7.9**	0	**0.5**	8.8	**14.7**	.094	**.0028**
967138	**36**	3.6 : 1	**148**	5.4	**634**	573	**322**	253	**34**	45	**7.4**	0	**1.1**	14.7	**23.4**	.15	**.0063**
967139	**38**	3.8 : 1	**148**	5.4	**669**	605	**340**	239	**33**	42	**7.0**	0	**1.1**	14.7	**23.4**	.17	**.0063**
967140	**40**	4.0 : 1	**178**	5.4	**704**	637	**358**	228	**31**	40	**6.7**	0	**2.3**	26.0	**40.3**	.22	**.015**
967141	**42**	4.2 : 1	**178**	5.4	**739**	669	**376**	217	**30**	38	**6.4**	0	**2.3**	26.0	**40.3**	.25	**.015**
967142	**44**	4.4 : 1	**178**	5.4	**774**	700	**394**	207	**28**	37	**6.1**	0	**2.3**	26.0	**40.3**	.29	**.015**
967143	**46**	4.6 : 1	**178**	5.4	**810**	732	**412**	198	**27**	35	**5.8**	0	**2.3**	26.0	**40.3**	.32	**.015**
967144	**48**	4.8 : 1	**228**	5.4	**845**	764	**430**	190	**26**	34	**5.6**	0	**3.9**	34.6	**53.1**	.44	**.044**
967145	**50**	5.0 : 1	**228**	5.4	**880**	796	**448**	182	**25**	32	**5.4**	0	**3.9**	34.6	**53.1**	.50	**.044**
967146	**52**	5.2 : 1	**228**	5.4	**915**	828	**465**	175	**24**	31	**5.2**	0	**3.9**	34.6	**53.1**	.54	**.044**

[1] Load types are mutually exclusive for comparison purposes. For combined loads & high loads, see Bearing Load Section.
[2] Contact Nexen

Geared Bearing Specifications by Product Number

RPS 32

General Specs					Gear Torque			Speed		Precision			Load			Inertia	
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967170	**24**	2.0 : 1	**124**	5.0	**880**	770	**437**	313	**41**	53	**8.9**	0	**0.4**	6.8	**12.7**	.08	**.003**
967171	**26**	2.1$\overline{6}$: 1	**124**	5.0	**953**	834	**474**	289	**38**	49	**8.2**	0	**0.4**	6.8	**12.7**	.11	**.003**
967172	**28**	2.$\overline{3}$: 1	**124**	5.0	**1027**	898	**510**	268	**35**	45	**7.6**	0	**0.4**	6.8	**12.7**	.14	**.003**
967173	**30**	2.5 : 1	**148**	5.0	**110**	963	**547**	250	**33**	42	**7.0**	0	**0.9**	12.8	**21.5**	.21	**.006**
967174	**32**	2.$\overline{6}$: 1	**178**	5.0	**1173**	1027	**583**	234	**31**	40	**6.6**	0	**2.1**	24.2	**38.4**	.27	**.015**
967175	**34**	2.8$\overline{3}$: 1	**178**	5.0	**1247**	1091	**620**	221	**29**	37	**6.2**	0	**2.1**	24.2	**38.4**	.32	**.015**
967176	**36**	3.0 : 1	**178**	5.0	**1320**	1155	**656**	208	**27**	35	**5.9**	0	**2.1**	24.2	**38.4**	.39	**.015**
967177	**38**	3.1$\overline{6}$: 1	**228**	5.0	**1393**	1219	**693**	197	**26**	33	**5.6**	0	**3.7**	32.9	**51.3**	.53	**.044**
967178	**40**	3.$\overline{3}$: 1	**228**	5.0	**1467**	1283	**729**	188	**25**	32	**5.3**	0	**3.7**	32.9	**51.3**	.61	**.044**

RPS 40

General Specs					Gear Torque			Speed		Precision			Load			Inertia	
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967179	**24**	2.0 : 1	**148**	6.8	**1834**	917	**917**	250	**32**	42	**7.0**	0	**0.7**	9.2	**17.9**	.28	**.006**
967180	**26**	2.1$\overline{6}$: 1	**178**	6.8	**1986**	993	**993**	231	**30**	39	**6.4**	0	**1.8**	20.7	**35.0**	.38	**.015**
967181	**28**	2.$\overline{3}$: 1	**178**	6.8	**2139**	1070	**1070**	214	**28**	36	**6.0**	0	**1.8**	20.7	**35.0**	.47	**.015**
967182	**30**	2.5 : 1	**178**	6.8	**2292**	1146	**1146**	200	**26**	34	**5.6**	0	**1.8**	20.7	**35.0**	.58	**.015**

RPS 4014

General Specs					Gear Torque			Speed		Precision			Load			Inertia	
Product Number	Number of Teeth	Gear Ratio	Bearing Number	Module of Gear Teeth (mm)	Static Torque (Nm)	Dynamic Torque at MIN Life (Nm)	Dynamic Torque at MAX Life (Nm)	Max Speed (RPM)	Max Lube-Free Speed (RPM)	Angular Accuracy (±ArcSec)	One-Way Repeatability (±ArcSec)	Angular Backlash (±ArcSec)	Max Dynamic Moment Load @ Max Life & Avg Torque (kNm)[1]	Max Dynamic Radial Load@ Max Life & Avg Torque (kN)[1]	Max Dynamic Axial Load @ Max Life & Avg Torque (kN)[1]	Moment of Inertia OUTER (kg/m²)	Moment of Inertia INNER (kg/m²)
967183	**28**	2.0 : 1	**178**	5.6	**3743**	2496	**2496**	214	**28**	36	**6.0**	0	**0.8**	9.2	**20.4**	.64	**.015**
967184	**30**	2.1$\overline{4}$: 1	**178**	5.6	**4011**	2674	**2674**	200	**26**	34	**5.6**	0	**0.8**	9.2	**20.4**	.79	**.015**

[1] Load types are mutually exclusive for comparison purposes. For combined loads & high loads, see Bearing Load Section.

LINEAR MOTION CONTROL

Technical Data Sheet

Ball Screw Brake

The Nexen Ball Screw Brake is a high-torque, spring-engaged brake acting on the machined end of a ball screw. It serves as a primary or redundant safety brake to prevent back driving if a power loss or mechanical defect occurs in the driveline.

The low backlash and coupling combination provides a high degree of accuracy for holding ball screw position. An expanding shaft/clamping hub coupling connects the brake shaft to the end of the ball screw. This coupling comes with an elastomer insert with high torsional stiffness.



Features

- Low backlash for precision holding
- Spring engaged, air released
- Low inertia
- High torsional rigidity
- Bi-directional braking
- Fast engagement
- Meets IP67 dust and waterproof standards
- Operates in vertical and horizontal applications
- Allows thermal expansion of ball screw

Brake Dimensions

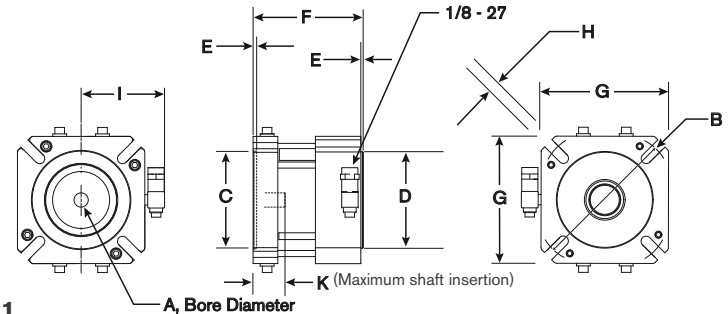


Figure 1

Model Size	Product Numbers	A (Bore Range)	B	C	D	E	F	G	H	I	K
BSB 2	964640	5-12,7 [0.197-0.50]	63-91,5 [2.48-3.60]	52 [2.047]	50 [1.97]	3,50 [0.14]	74,5 [2.93]	74,2 [2.92]	6,3 [0.24]	56 [2.20]	12 [0.5]
BSB 3	964745 964740[1]	7-16 [0.275-0.63]	95-108 [3.74-4.25]	50 [1.97]	50 [1.97]	5,00 [0.20]	77,7 [3.06]	92 [3.62]	7 [0.28]	65 [2.56]	18.5 [0.73]
BSB 4	964840	16-32 [0.63-1.26]	115-150 [4.53-5.91]	96 [3.78]	95 [3.74]	3,50 [0.14]	105,7 [4.16]	125 [4.92]	10 [0.39]	82 [3.23]	24.2 [0.95]
BSB 5	964940	16-32 [0.63-1.26]	165-186 [6.49-7.32]	130 [5.12]	130 [5.12]	6,15 [0.24]	132,5 [5.22]	150,4 [5.92]	12 [0.47]	95 [3.74]	25.5 [1.00]
BSB 7	965040	20-35 [0.787-1.38]	215 [8.47]	130 [5.12]	130 [5.12]	3,50 [0.14]	105,8 [4.17]	192 [7.56]	15* [0.59]	113 [4.45]	29.1 [1.14]

[1] Torque = 5 Nm (44 in-lbs)
* Clearance Hole Diameter

NOTE: When selecting a brake, a coupling must also be selected. See the coupling chart on the next page.

Brake Specifications

Model Size	Minimum Holding Torque	Release Pressure	Maximum Speed (RPM)	Inertia / Coupling $kg.m^2$ [$lbs\text{-}ft^2$]	Torsional Rigidity Nm/radian [lb-ft/radian]	Weight
BSB 2	2 Nm [20 in-lbs]	5.5 bar [80 psi]	10,000	0,00002 [0.0005]	6180 [4550]	1,3 kg [2.9 lbs]
BSB 3	8 Nm [70 in-lbs]	5.5 bar [80 psi]	10,000	0,00006 [0.0014]	9613 [7090]	1,6 kg [3.5 lbs]
BSB 4	22 Nm [200 in-lbs]	5.5 bar [80 psi]	10,000	0,00031 [0.00736]	23796 [17550]	3,4 kg [7.6 lbs]
BSB 5	45 Nm [400 in-lbs]	5.5bar [80 psi]	10,000	0,00114 [0.0271]	36184 [26688]	6,6 kg [14.6 lbs]
BSB 7	125 Nm [1100 in-lbs]	5.5 bar [80 psi]	5,000	0,00394 [0.0935]	54772 [40390]	14,7 kg [32.4 lbs]

Coupling Specifications

BSB Brake Model	Coupling Product Number	Bore (H7)	Coupling Bore Range	Axial Misalignment	Torsional Rigidity Nm/radian [ft-lb/radian]
BSB2	964641	8 mm	5-12.7 mm (0.197-0.500")	+/- 1 mm (+/- 0.04")	350 (258)
BSB2	964642	0.406	5-12.7 mm (0.197-0.500")	+/- 1 mm (+/- 0.04")	350 (258)
BSB3	964741	14 mm	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB3	964742	0.500	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB3	964743	0.312	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB3	964744	0.625	7-16 mm (0.275-0.625")	+/- 1 mm (+/- 0.04")	600 (442)
BSB4 and BSB5	964841	20 mm	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964847	20 mm, keyed	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964868	0.875	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964854	1.000	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964859	23 mm	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964862	19 mm	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB4 and BSB5	964863	1.125	16-32 mm (0.630-1.250")	+/- 2 mm (+/- 0.08")	9750 (7191)
BSB7	965041	30 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965042	35 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965043	1.000	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965044	20 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965045	25 mm	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)
BSB7	965046	1.375	20-35 mm (0.787-1.375")	+/- 2 mm (+/- 0.08")	10600 (7818)

Note: Select a coupling with a bore matching the machined end of the ball screw. Custom bores available on request; see Bore Range. Keyed bores optional.

Back Drive Torque Formula

In-lbs

$$\text{Back Drive Torque} = \frac{PLe}{2\ (pi)}$$

L = Screw Lead in inches
P = Load in pounds
e = mechanical efficiency of 0.9
pi = 3.1416

Nm

$$\text{Back Drive Torque} = \frac{LPe}{2000\ (pi)}$$

L = Screw Lead in millimeter
P = Load in Newtons
e = mechanical efficiency (0.9)
pi - 3.1416

Note: Select a Ball Screw Brake with holding torque that exceeds the back-drive torque by 20-30%.

Brake Control

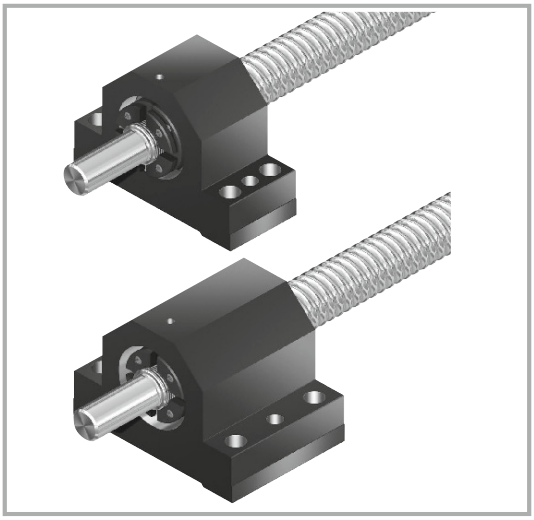
3-Way Valve, Air Inlet Mount

Product Number	964650
Valve	Normally Closed
Effective Orifices	0.062 Body 0.089 Exhaust Port
Port Size	1/8-27 NPT Male
Voltage	24VDC
DIN Connector	Included
Power Consumption	25 Watts

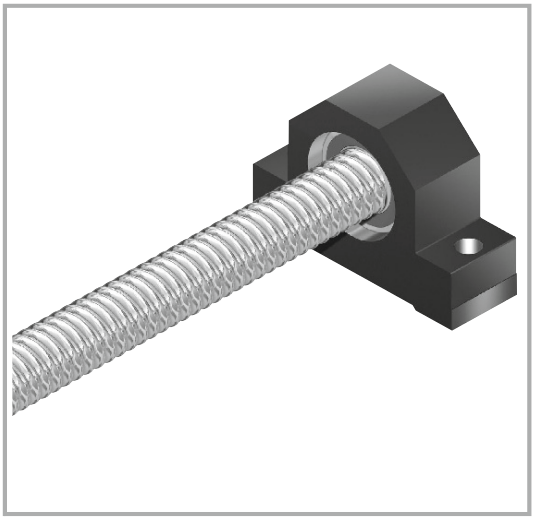
NOTES:

Ball Bearing Support Units

Pillow Block Unit SEB-F



Pillow Block Unit SEB-L



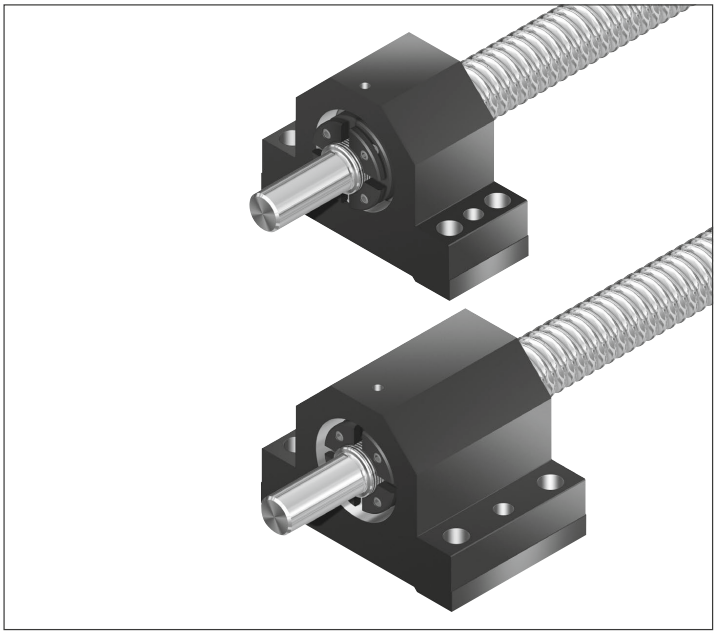
Pillow Block Unit SEB-F assembly

Fixed bearing with angular-contact thrust ball bearing
LGN-B-…
LGN-C-…

The pillow block unit consists of:
- Precision pillow block housing made of steel with reference edges on both sides
- Angular-contact thrust ball bearing LGN
- Slotted nut NMA or NMZ
- Ring nut GWR

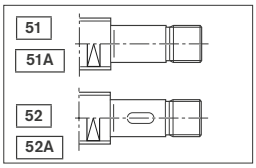
The slotted nut is delivered unmounted.

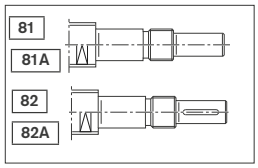
Separate technical dimensioning to determine the limit values is absolutely necessary for all attachments (e.g. pillow block units, bearing assembly, etc.)

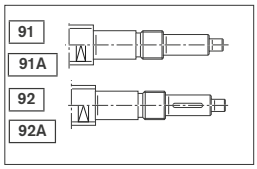


Size	Complete pillow block	Angular-contact thrust ball bearing						Slotted nut		Weight complete
		Load ratings (axial)		Dimensions (mm)			Abbreviation		Abbreviation	
		dyn. C	stat. C_0					M_A		
d_0 x P	Part number	(N)	(N)	d	D	B		(Nm)		(kg)
6 x 1/2	R1591 106 00	6,900	8,500	6	24	15	LGN-B-0624	2.0	NMZ 6x0.5	0.38
8 x 1/2/2.5	R1591 106 00	6,900	8,500	6	24	15	LGN-B-0624	2.0	NMZ 6x0.5	0.38
12 x 2/5/10	R1591 106 20	6,900	8,500	6	24	15	LGN-B-0624	2.0	NMZ 6x0.5	0.38
16 x 5/10/16	R1591 110 20	13,400	18,800	10	34	20	LGN-B-1034	6.0	NMZ 10x1	0.87
20 x 5/10/20/40	R1591 112 20	17,000	24,700	12	42	25	LGN-B-1242	8.0	NMZ 12x1	1.12
25 x 5/10/25	R1591 117 20	18,800	31,000	17	47	25	LGN-B-1747	15.0	NMZ 17x1	1.65
25 x 5/10/25	R1591 117 30	18,800	31,000	17	47	25	LGN-B-1747	15.0	NMA 17x1	1.69
32 x 5/10/20/32/64	R1591 120 20	26,000	47,000	20	52	28	LGN-B-2052	18.0	NMA 20x1	1.93
32 x 5/10/20/32/64	R1591 120 30	26,000	47,000	20	52	28	LGN-B-2052	18.0	NMA 20x1	2.03
40 x 10/12/16/20/40	R1591 225 30	44,500	111,000	25	57	56	LGN-C-2557	25.0	NMA 25x1.5	5.13
40 x 5	R1591 130 20	29,000	64,000	30	62	28	LGN-B-3062	32.0	NMA 30x1.5	2.64
40 x 5	R1591 130 30	29,000	64,000	30	62	28	LGN-B-3062	32.0	NMA 30x1.5	2.77
50 x 5	R1591 135 30	41,000	89,000	35	72	34	LGN-B-3572	40.0	NMA 35x1.5	4.66
50 x 10/12/16/20/25/40	R1591 230 30	47,500	127,000	30	62	56	LGN-C-3062	32.0	NMA 30x1.5	7.04
63 x 10/20/40	R1591 140 30	72,000	149,000	40	90	46	LGN-A-4090	55.0	NMA 40x1.5	10.49
80 x 10/20	R1591 150 30	113,000	250,000	50	110	54	LGN-A-50110	85.0	NMA 50x1.5	15.61

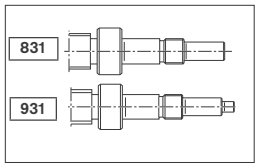
Suitable for screw ends: Form

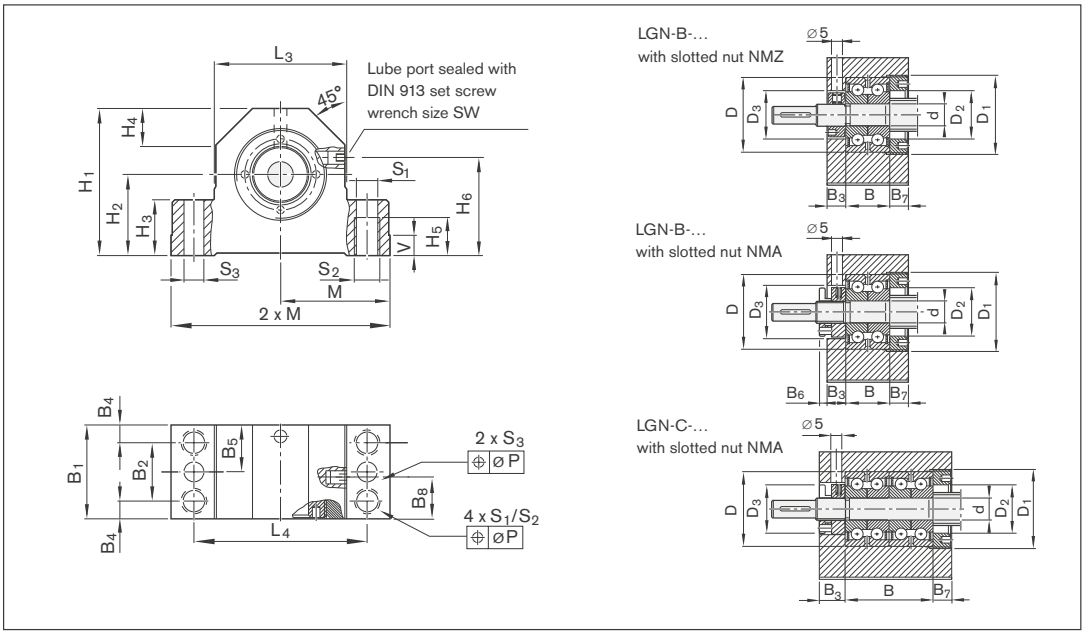






For screws 8 x1/2/2.5:
Form 831, 931





Size	(mm)																								
d_0 x P	M js7	L_3	L_4	H_1	H_2 ±0.02	H_3	H_4	H_5	H_6	B_1	B_2	B_3	B_4	B_5	B_6	B_7	B_8	V	S_1 H12	S_2	S_3	SW	D_1	D_2	D_3	P
6 x 1/2	31.0	38	50	34	18	13	8	9	22	32	16	8.5	8.0	16.0	–	8.5	16.0	6	5.3	M6	3.7	3	M26x1.5	16.5	18	0.10
8 x 1/2/2.5	31.0	38	50	34	18	13	8	9	22	32	16	8.5	8.0	16.0	–	8.5	16.0	6	5.3	M6	3.7	3	M26x1.5	16.5	18	0.10
12 x 2/5/10	31.0	38	50	41	22	13	8	9	22	32	16	8.5	8.0	16.0	–	8.5	16.0	6	5.3	M6	3.7	3	M26x1.5	16.5	18	0.10
16 x 5/10/16	43.0	52	68	58	32	22	14	15	37	37	23	8.5	7.0	18.5	–	8.5	18.5	8	8.4	M10	7.7	4	M36x1.5	22.0	27	0.15
20 x 5/10/20/40	47.0	60	77	64	34	22	16	15	40	42	25	8.5	8.5	21.0	–	8.5	21.0	8	8.4	M10	7.7	4	M45x1.5	28.0	32	0.15
25 x 5/10/25	54.0	66	88	72	39	27	18	18	45	46	29	10.5	8.5	23.0	–	10.5	23.0	10	10.5	M12	9.7	4	M50x1.5	31.0	36	0.20
25 x 5/10/25	54.0	66	88	72	39	27	18	18	45	46	29	10.5	8.5	23.0	7.5	10.5	23.0	10	10.5	M12	9.7	4	M50x1.5	31.0	36	0.20
32 x 5/10/20/32/64	56.0	70	92	77	42	27	19	18	48	49	29	10.5	10.0	24.5	–	10.5	24.5	10	10.5	M12	9.7	4	M55x1.5	36.0	42	0.20
32 x 5/10/20/32/64	56.0	70	92	77	42	27	19	18	48	49	29	10.5	10.0	24.5	7.5	10.5	24.5	10	10.5	M12	9.7	4	M55x1.5	36.0	42	0.20
40 x 10/12/16/20/40	63.0	80	105	98	58	32	23	21	64	89	62	20.5	13.5	44.5	–	12.5	54.5	12	12.6	M14	9.7	4	M62x1.5	43.0	48	0.20
40 x 5	63.0	80	105	90	50	32	22	21	56	53	32	12.5	10.5	26.5	–	12.5	26.5	12	12.6	M14	9.7	4	M65x1.5	47.0	53	0.20
40 x 5	63.0	80	105	90	50	32	22	21	56	53	32	12.5	10.5	26.5	7.5	12.5	26.5	12	12.6	M14	9.7	4	M65x1.5	47.0	53	0.20
50 x 5	72.0	92	118	105	58	38	25	22	63	70	43	20.5	13.5	35.0	–	15.5	32.5	12	12.5	M14	9.7	4	M78x2	54.0	60	0.20
50 x 10/12/16/20/25/40	72.0	92	118	112	65	38	25	22	70	92	65	20.5	13.5	46.0	–	15.5	57.5	12	12.5	M14	9.7	4	M78x2	54.0	53	0.20
63 x 10/20/40	95.0	130	160	138	73	50	35	22	78	85	58	22.5	13.5	42.5	–	16.5	39.5	16	12.5	M14	9.7	4	M95x2	68.0	72	0.20
80 x 10/20	102.5	145	175	165	93	50	40	36	98	98	58	25.5	20.0	49.0	–	18.5	45.5	16	17.3	M20	11.7	4	M115x2	85.0	90	0.20

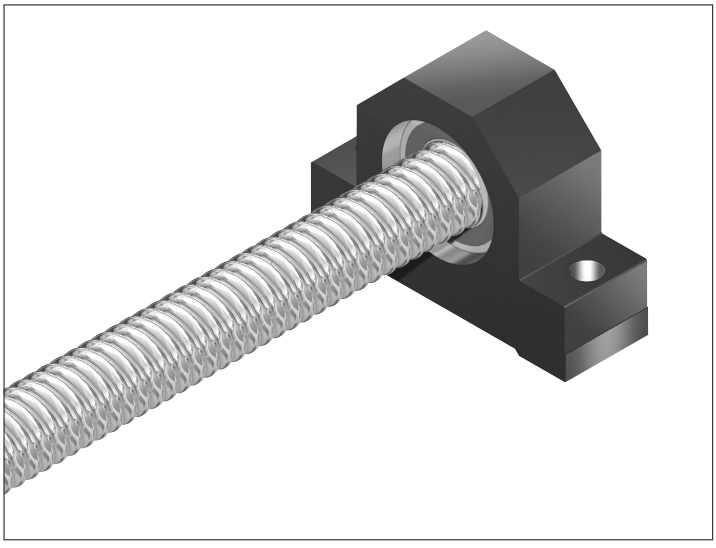
Pillow Block Unit SEB-L assembly

Floating bearing with DIN 625 deep-groove ball bearing

The pillow block unit consists of:
- Precision pillow block housing made of steel with reference edge on one side
- Deep-groove ball bearing as per DIN 625
- Retaining ring DIN 471
- Cover

All parts are delivered unmounted.

Separate technical dimensioning to determine the limit values is absolutely necessary for all attachments (e.g. pillow block units, bearing assembly, etc.)

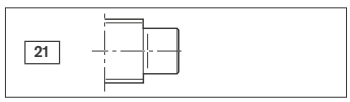


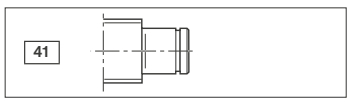
ENDO

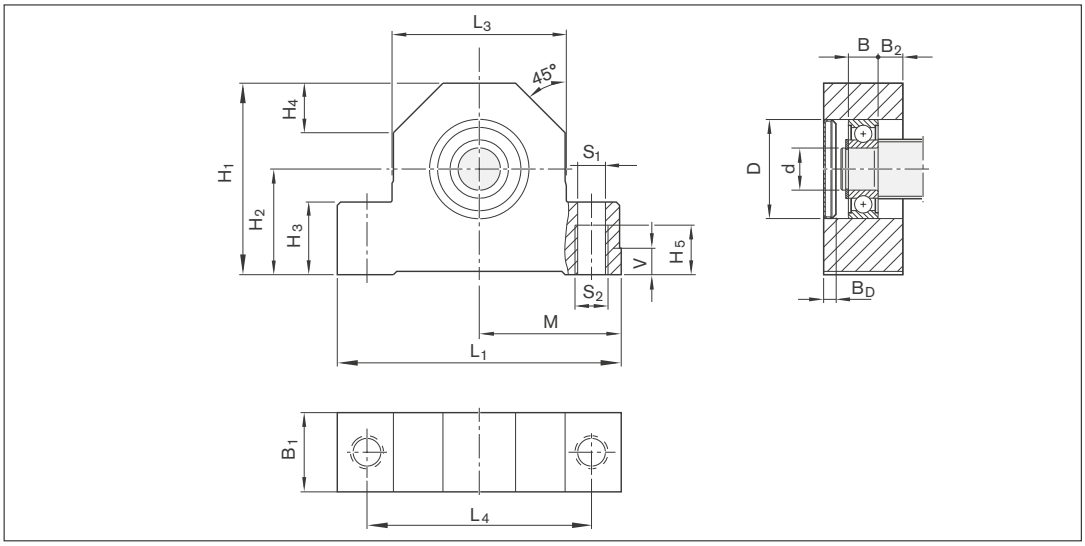
Size	Complete pillow block	Deep-groove ball bearing as per DIN 625						Retaining ring as per DIN 471	Weight complete
		Load ratings (radial)		(mm)			Designation DIN 625...		
		dyn. C	stat. C_0						
d_0 x P	Part number	(N)	(N)	d	D	B			(kg)
8 x 1/2/2.5	R1591 605 00	1,900	590	5	16	5	625.2RS	5x0.6	0.14
12 x 2/5/10	R1591 606 20	2,450	900	6	19	6	626.2RS	6x0.7	0.18
16 x 5/10/16	R1591 610 20	6,000	2,240	10	30	9	6200.2RS	10x1	0.54
20 x 5/10/20/40	R1591 612 20	6,950	2,650	12	32	10	6201.2RS	12x1	0.73
25 x 5/10/25	R1591 617 20	9,500	4,150	17	40	12	6203.2RS	17x1	0.96
32 x 5/10/20/32/64	R1591 620 20	12,700	5,700	20	47	14	6204.2RS	20x1.2	1.24
40 x 5	R1591 630 20	19,300	9,800	30	62	16	6206.2RS	30x1.5	1.66
40 x 10/12/16/20/40	R1591 630 10	19,300	9,800	30	62	16	6206.2RS	30x1.5	1.82
50 x 5 [1)]	R1591 635 10	25,500	13,200	35	72	17	6207.2RS	35x1.5	2.66
50 x 10/12/16/20/25/40 [1)]	R1591 635 20	25,500	13,200	35	72	17	6207.2RS	35x1.5	2.87
63 x 10/20/40 [1)]	R1591 650 20	36,500	20,800	50	90	20	6210.2RS	50x2	5.39
80 x 10/20 [1)]	R1591 660 20	52,000	31,000	60	110	22	6212.2RS	60x2	7.09

1) without cover

Suitable for screw ends: Form







Size	(mm)														
d_0 x P	L_1	L_3	L_4	H_1	H_2 ±0.02	H_3	H_4	H_5	B_1	B_2	M js7	V	S_1 H12	S_2	Cover B_D
8 x 1/2/2.5	62	38	50	34	18	13	11	9	13	4.0	31.0	6	5.3	M6	2.6
12 x 2/5/10	62	38	50	41	22	13	11	9	15	4.5	31.0	6	5.3	M6	2.6
16 x 5/10/16	86	52	68	58	32	22	15	15	24	7.5	43.0	8	8.4	M10	3.8
20 x 5/10/20/40	94	60	77	64	34	22	17	15	26	8.0	47.0	8	8.4	M10	3.8
25 x 5/10/25	108	66	88	72	39	27	19	18	28	8.0	54.0	10	10.5	M12	3.7
32 x 5/10/20/32/64	112	70	92	77	42	27	20	18	34	10.0	56.0	10	10.5	M12	4.8
40 x 5	126	80	105	90	50	32	23	21	38	11.0	63.0	12	12.6	M14	4.5
40 x 10/12/16/20/40	126	80	105	98	58	32	23	21	38	11.0	63.0	12	12.6	M14	4.5
50 x 5	144	92	118	105	58	38	25	22	41	12.0	72.0	12	12.5	M14	–
50 x 10/12/16/20/25/40	144	92	118	112	65	38	25	22	41	12.0	72.0	12	12.5	M14	–
63 x 10/20/40	190	130	160	138	73	50	35	22	46	13.0	95.0	16	12.5	M14	–
80 x 10/20	205	145	175	165	93	50	40	36	50	14.0	102.5	16	17.3	M20	–

NOTES:

Support Units, Couplings &XY Tables

GMT

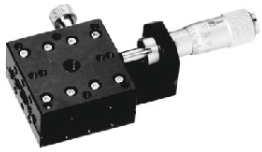
Support Units



Couplings



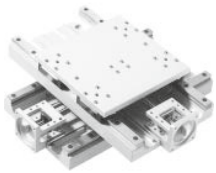
Manual Positioning Stages

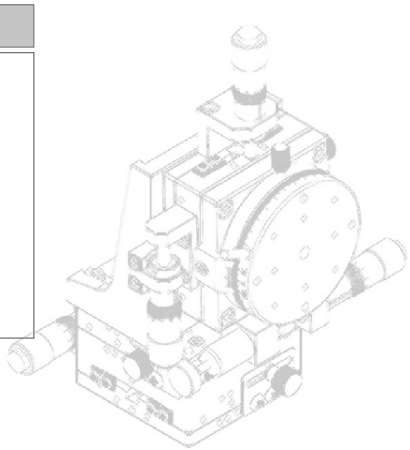


Slide Rails

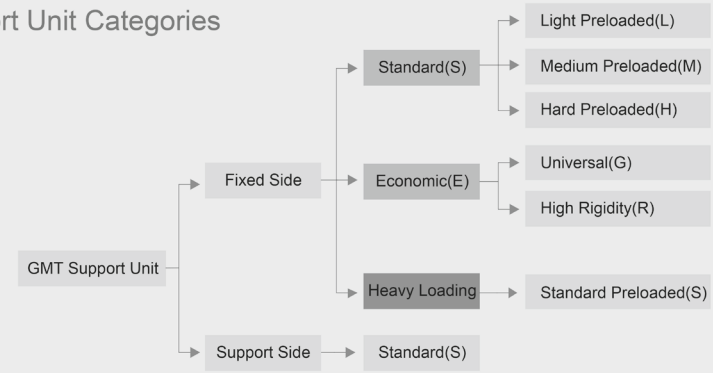


XY Tables





Support Unit Categories



Differential points between GMT Standard & Economic category :

Standard type
- Fixed side : Applied angular contact bearings to perform pre-loaded for three different usages - light preloaded, medium preloaded, heavy preloaded.
- Support side : Applied deep-groove bearings.

Economic type : Applied deep-groove bearings to rigid assembly and universal assembly types.

Heavy loading : Applied TAC series angular 60 degree contact bearing to perform heavy pre-loaded. Options of DF or DFD combination per application.

Preload selection and applications :

Preload	Machine Requirements	Application Examples
Light (L)	Equipments with small vibration and small thrust, load in one fixed direction. High accuracy is not required. Reduction of frictional force.	Laser welder, small CNCmill machine, cutter, welder, automatic tool changer, packing machine, material supply equipment.
Medium (M)	Equipments with load on a post. Equipments with a torque acting on it. Equipments working in one direction. Equipments with low load. Equipments with high accuracy.	Automated feeder, linear feeder, automatedpainting machine, precision slide table, Z-axis control on machines, PC board punch machine. Industrial robot, EDM machine, NC lathe.
Hard(H)	High rigidity, high vibration, high thrust equipments. High load, high torque equipments.	Machining center spindle, NC lathe, Z-axis spindle of the machinery, milling machine, grinding wheel feeding of grinding machine.

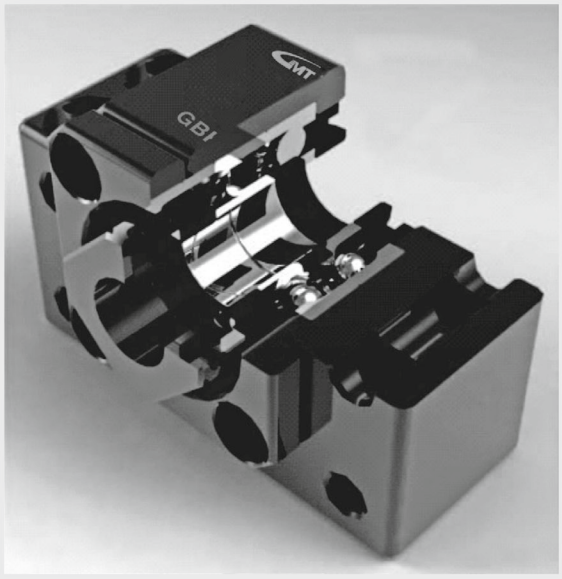
Pre-Loaded Description：

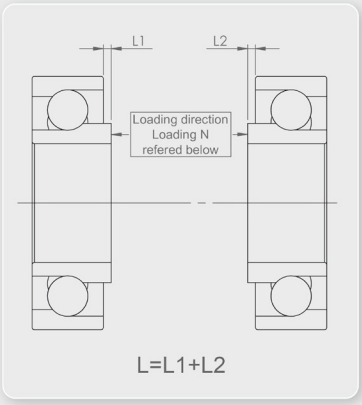
Purpose of Preloaded：

1. Increase the rotational accuracy of axle
2. Increase the rigidity of axle
3. Reduce unwanted clearance
4. Reduce vibration and noise while bearing stops.

What is bearing preload?

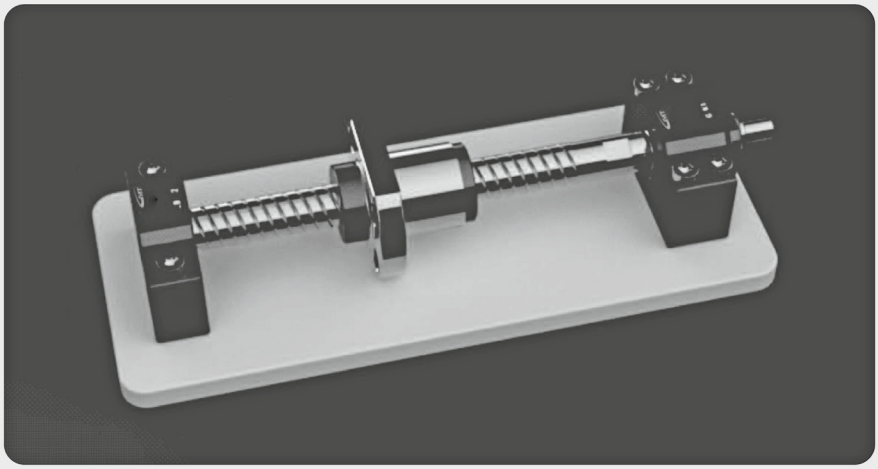
The preload describes the process wherein a permenant thrust road is applied to the bearing, so that the bearing is secure in the groove and has no axial clearence.
Apply normal force (N). Measure value of L of a pair of bearings. L=L1+L2. Press these pair of bearings on the covers to apply preload and bring these bearings together.





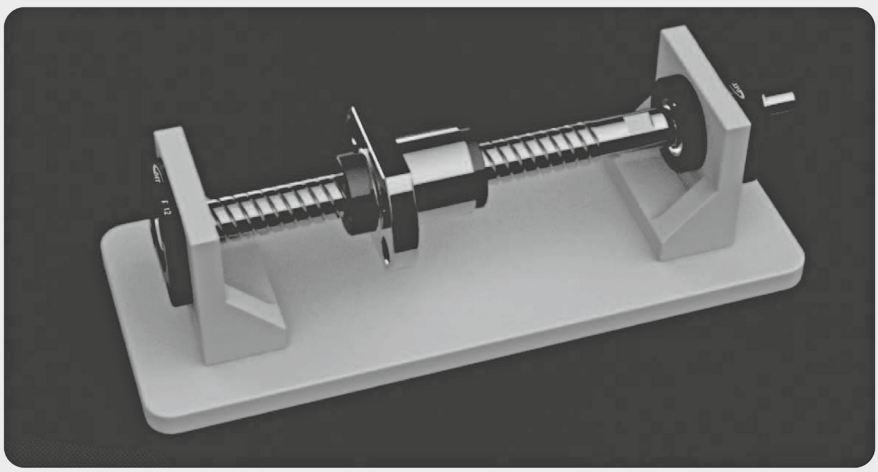
Assembly Models :

Rectangle Design



◆ Assembly features : The rectangle design is fited to plane structure which is available for lower assembly required high rigidty applications.

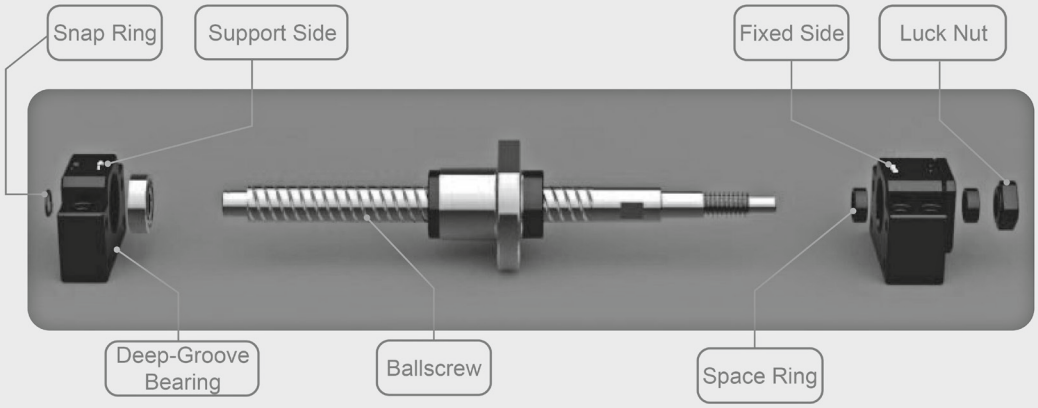
Flange Design



◆ Assembly features : The round design is fited to suspension and spindle structure which is able to be assembled freely according to the equipment height.

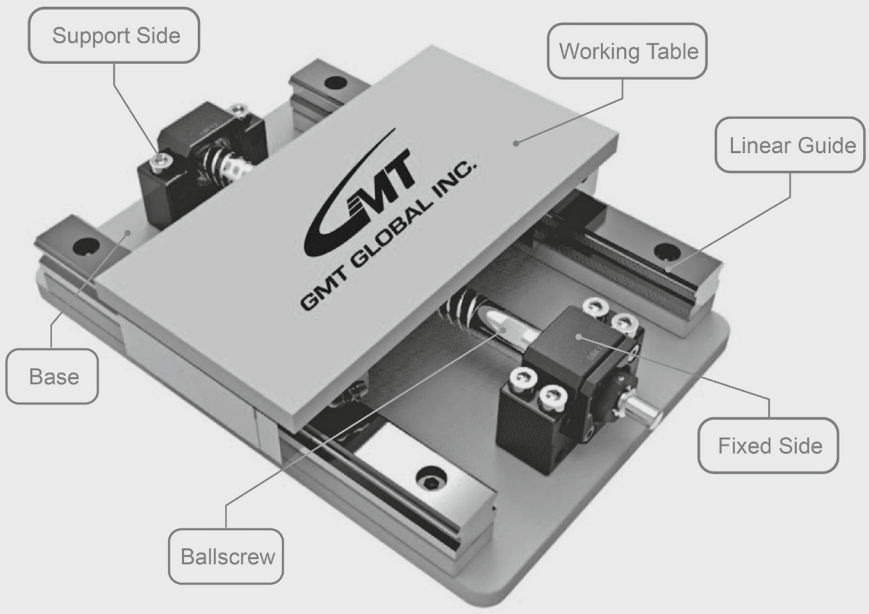
Assemble The Support Unit to Ballscrew

(1)No disassembly to the support unit fixed side.
(2)Install ballscrew to the fixed side with care not to scratch the external lip of the seal.
(3)Assembly sequence : Install the first space ring to the ballscrew→Install ballscrew to the Fixed Side→Install the second space ring to the ballscrew→Install the Luck nut (tighten after installation)→Install the support side and deep-groove-bearings to the ballscrew→Buckle the snap ring.

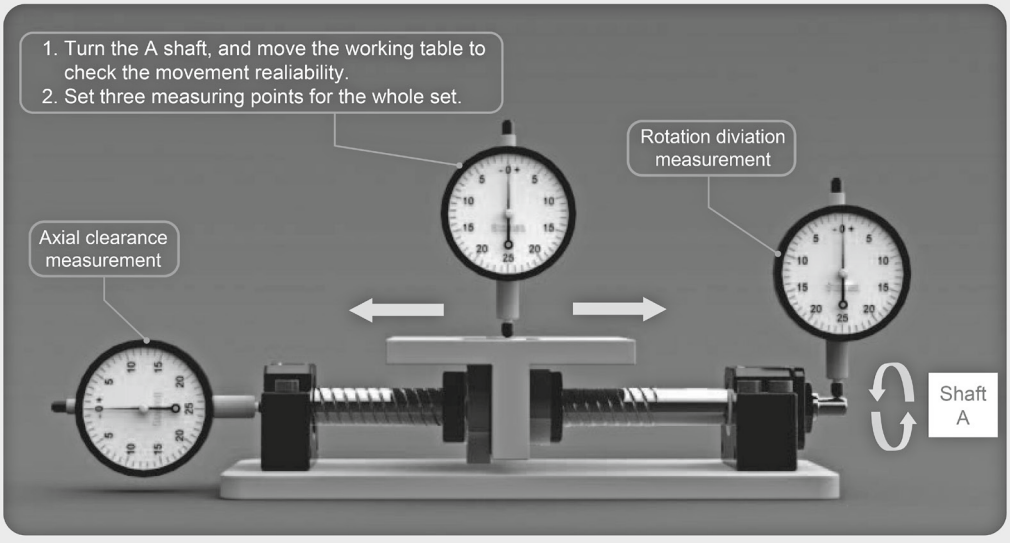


Assemble The Working Table and Base

Combine ballscrew with the working table→Combine the fixed side with the base→Combine ballscrew with the fixed side→Combine support side and ballscrew→Combine the support side and the base.

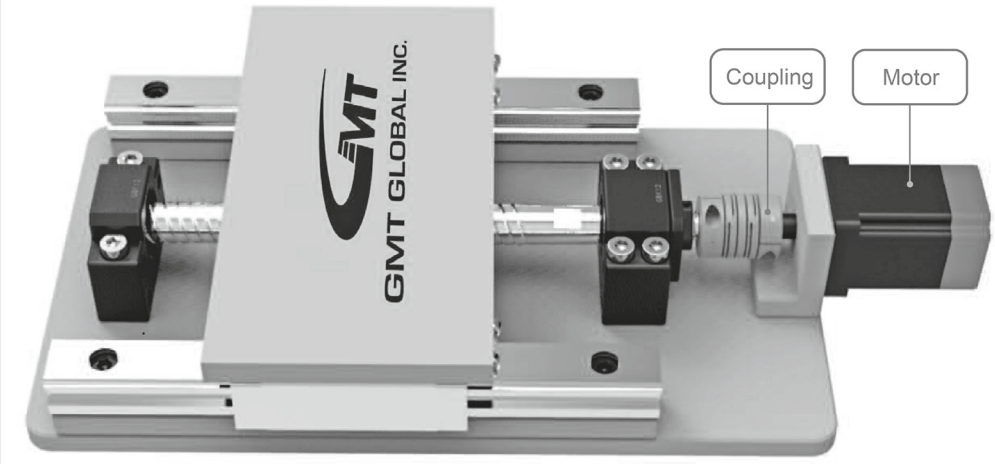


Calibration and Adjustment

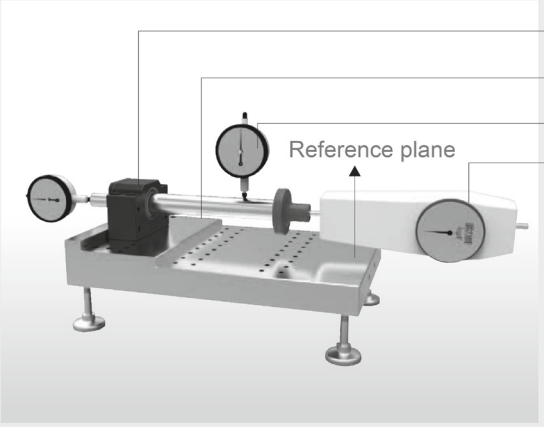


Assembly with motor

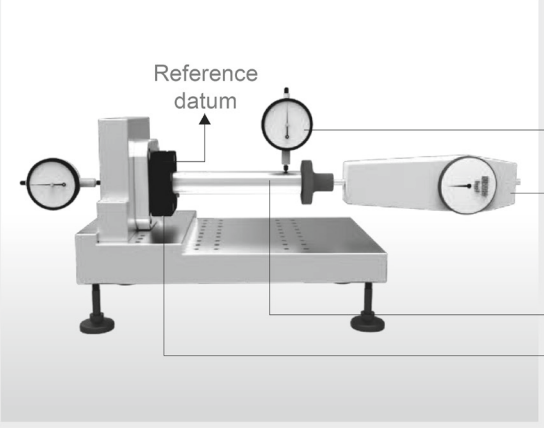
1. Combine the base with the motor bracket.
2. Install the coupling to the motor shaft with the bracket, and calibrate the assembly accuracy.
3. Make trial turning of the motor after installation.

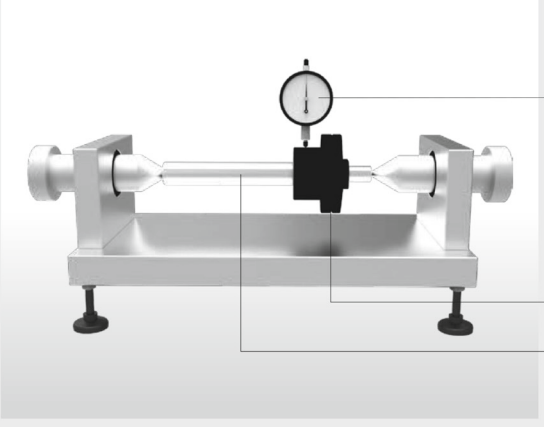


GMT Support Unit Inspection - Rectangle & Protruding Design



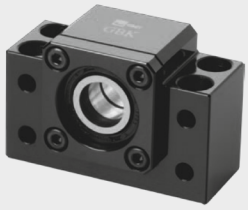
GMT Support Unit Inspection - Round Design



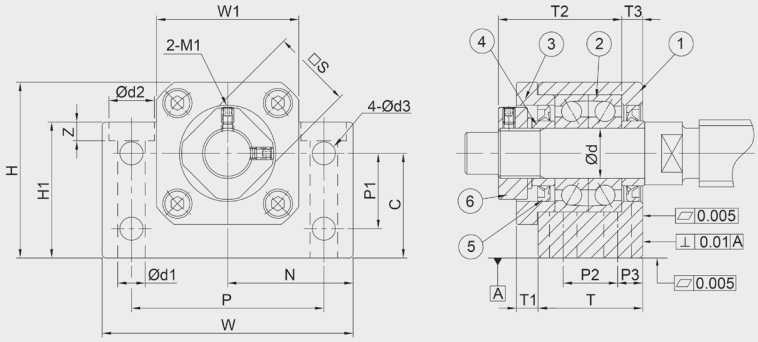


Model No.	Parts no. ①③④⑥	
	Material	Surface Finish
GBK ☐☐ - S ☐B	S50C	Black Dyed
GBK ☐☐ - S ☐N		Ni-Plating

GBK-B



GBK10 ~ GBK40



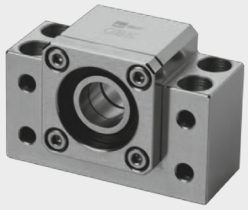
GMT

Specification

Standard Type			Dimensions														
Light pre-loaded	Medium pre-loaded	Hard pre-loaded	Ød	T	T1	T2	T3	W	W1	H	H1	N ±0.02	C	P	P1	P2	P3
GBK10-SL ☐	GBK10-SM ☐	GBK10-SH ☐	10	25	5	29.5	5	60	34	39	32.5	30	22 $^{0}_{-0.02}$	46	15	13	6
GBK12-SL ☐	GBK12-SM ☐	GBK12-SH ☐	12	25	5	29.5	5	60	34	42	32.5	30	25 $^{0}_{-0.02}$	46	18	13	6
GBK15-SL ☐	GBK15-SM ☐	GBK15-SH ☐	15	27	6	32	6	70	38	47	38	35	28 $^{0}_{-0.02}$	54	18	15	6
GBK17-SL ☐	GBK17-SM ☐	GBK17-SH ☐	17	35	9	44	7	86	48	63	55	43	39 $^{0}_{-0.02}$	68	28	19	8
GBK20-SL ☐	GBK20-SM ☐	GBK20-SH ☐	20	35	8	43	8	88	50	59	50	44	34 $^{0}_{-0.02}$	70	22	19	8
GBK25-SL ☐	GBK25-SM ☐	GBK25-SH ☐	25	42	12	54	9	106	62	79	70	53	48 $^{0}_{-0.02}$	85	33	22	10
GBK30-SL ☐	GBK30-SM ☐	GBK30-SH ☐	30	45	14	61	9	128	74	88	78	64	51 $^{0}_{-0.02}$	102	33	23	11
GBK35-SL ☐	GBK35-SM ☐	GBK35-SH ☐	35	50	14	67	12	140	86	95	79	70	52 $^{0}_{-0.02}$	114	35	26	12
GBK40-SL ☐	GBK40-SM ☐	GBK40-SH ☐	40	61	18	76	15	160	98	109	90	80	60 $^{0}_{-0.02}$	130	37	33	14

Ordering Example	GBK	-	10	-	SL	-	N	-	J
	Model No.		Shaft Dia.		Grade/Pre-loaded		Surface finish		Bearing category

GBK-N

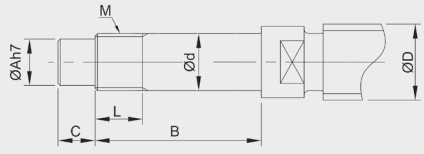


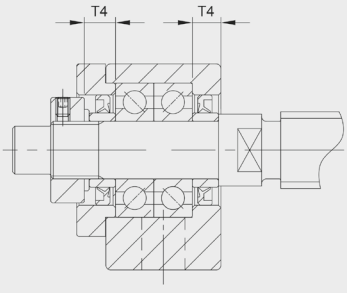
Components

No.	Parts	Material	Q´ty
①	Main housing	S50C	1
②	Bearing	SUJ2	1 pair
③	Cover	S50C	1
④	Space ring	S50C	2
⑤	Seal (<Ø8 one seal only)	NBR	2
⑥	Lucknut	S50C	1

- ①②③ are in one unit. No disassemble for accuracy concern.
- Bearing filled with proper lithium soap lubricant and sealed.

Recommended processing dimensions of shaft





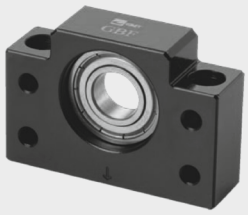
Unit：mm

						Recommended processing dimensions of shaft							
						Ball Screw Shaft O. D.	Shaft End Diameter	Processing sizes of shaft			Nominal thread		Space ring length
Ød1	Ød2	Z	Ød3	M1	□S	ØD	Ød	ØA	B	C	M	L	T4
6.3	10.5	6.5	5.5	M3	16	12 / 14 / 15	$10^{-0.005}_{-0.012}$	8	36	15	M10*P1.0	16	5.5
6.3	10.5	1.5	5.5	M3	19	14 / 15 / 16	$12^{-0.005}_{-0.012}$	10	36	15	M12*P1.0	14	5.5
6.3	10.5	6.5	5.5	M3	22	18 / 20	$15^{-0.005}_{-0.014}$	12	40	20	M15*P1.0	12	6
8.7	14	8.6	6.6	M4	24	20 / 25	$17^{-0.005}_{-0.014}$	15	53	23	M17*P1.0	17	7
8.7	14	8.5	6.6	M4	30	25 / 28	$20^{-0.005}_{-0.014}$	17	53	25	M20*P1.0	15	8
10.7	17.5	10.8	9	M5	35	32 / 36	$25^{-0.005}_{-0.014}$	20	65	30	M25*P1.5	18	9
13.7	20	13	11	M6	40	36 / 40	$30^{-0.005}_{-0.015}$	25	72	38	M30*P1.5	25	9
13.7	20	13	11	M8	50	45	$35^{-0.005}_{-0.015}$	30	81	45	M35*P1.5	28	12
17.7	26	17.5	14	M8	50	50	$40^{-0.005}_{-0.015}$	35	93	50	M40*P1.5	35	15

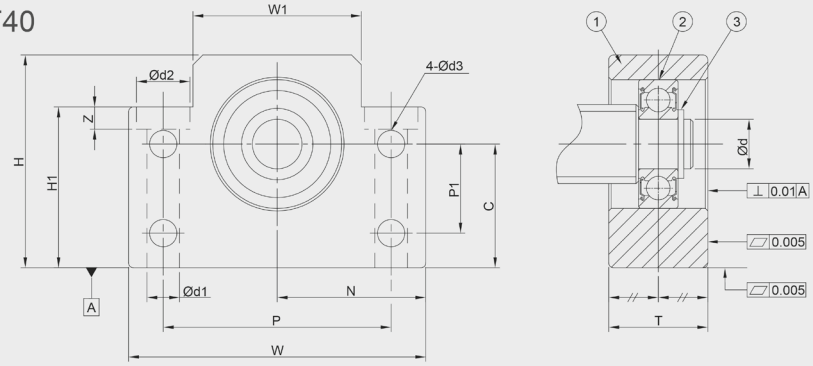
• Supported side spec refer to P.32~P.33

Model No.	Parts no. ①	
	Material	Surface Finish
GBF ☐☐ - SB	S50C	Black Dyed
GBF ☐☐ - SN		Ni-Plating

GBF-B



GBF10 ~ GBF40

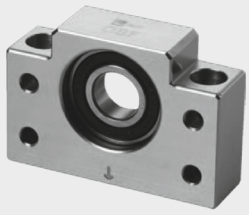


Specification

Standard Type	Dimensions											
	Ød	T	W	W1	H	H1	P	P1	Ød1	Ød2	Z	Ød3
GBF10-S ☐	8	20	60	34	39	32.5	46	15	6.3	10.8	5	5.5
GBF12-S ☐	10	20	60	34	43	32.5	46	18	6.3	10.8	1.5	5.5
GBF15-S ☐	15	20	70	40	48	38	54	18	6.3	11	6.5	5.5
GBF17-S ☐	17	23	86	50	64	55	68	28	8.7	14	8.6	6.6
GBF20-S ☐	20	26	88	52	60	50	70	22	8.7	14	8.6	6.6
GBF25-S ☐	25	30	106	64	80	70	85	33	10.7	17.5	11	9
GBF30-S ☐	30	32	128	76	89	78	102	33	13.7	20	13	11
GBF35-S ☐	35	32	140	88	96	79	114	35	13.7	20	13	11
GBF40-S ☐	40	37	160	100	110	90	130	37	17.7	26	17.5	14

Ordering Example	GBF	-	10	-	S	-	N	-	J
	Model No.		Shaft Dia.		Grade		Surface finish		Bearing category

GBF-N

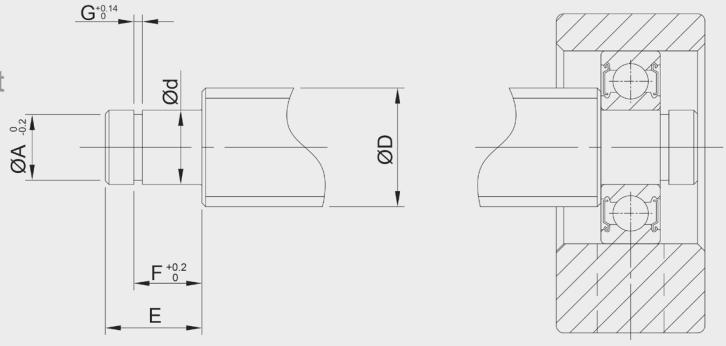


Components

No.	Parts	Material	Q´ty
①	Main housing	S50C	1
②	Bearing	SUJ2	1
③	Snap ring	SWB	1

- Bearing filled with proper lithium soap lubricant maintenance free.
- Bearing with two steel covers in black dyed.
- Bearing with two touch-type plistic covers in Ni-plating.

Recommended processing dimensions of shaft



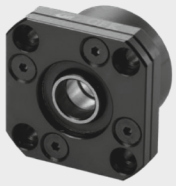
Unit：mm

		Recommended processing dimensions of shaft						Snap ring
		Ball Screw Shaft O. D.	Shaft End Diameter	Groove sizes machined for snap ring				
N ±0.02	C	ØD	Ød	ØA	E	F	G	
30	22 0 -0.04	12 / 14 / 15	8 -0.005 -0.012	7.6	10	7.9	0.9	S 08
30	25 0 -0.02	14 / 15 / 16	10 -0.005 -0.012	9.6	11	9.15	1.15	S 10
35	28 0 -0.02	18 / 20	15 -0.005 -0.014	14.3	13	10.15	1.15	S 15
43	39 0 -0.02	20 / 25	17 -0.005 -0.014	16.2	16	13.15	1.15	S 17
44	34 0 -0.02	25 / 28 / 30	20 -0.005 -0.014	19	19	15.35	1.35	S 20
53	48 0 -0.02	30 / 32 / 36	25 -0.005 -0.014	23.9	20	16.35	1.35	S 25
64	51 0 -0.02	36 / 40	30 -0.005 -0.015	28.6	21	17.75	1.75	S 30
70	52 0 -0.02	40 / 45	35 -0.005 -0.015	33	22	18.75	1.75	S 35
80	60 0 -0.02	50	40 -0.005 -0.015	38	23	19.95	1.95	S 40

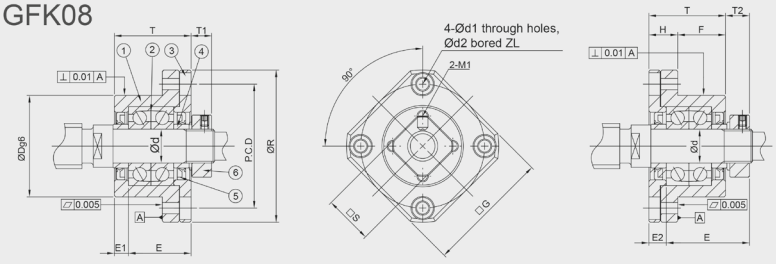
• Fixed Side spec please refer to P.16~P.17 and P.24~P.25

Model No.	Parts no. ①③④⑥	
	Material	Surface Finish
GFK ☐☐ - S ☐B	S50C	Black Dyed
GFK ☐☐ - S ☐N		Ni-Plating

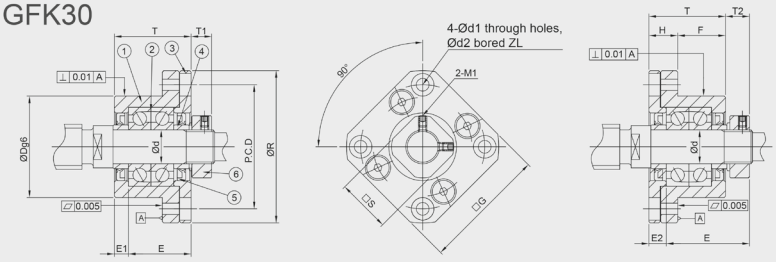
GFK-B



GFK06 ~ GFK08



GFK10 ~ GFK30

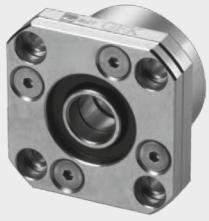


Specification

Standard Type			Dimensions												
Light pre-loaded	Medium pre-loaded	Hard pre-loaded	Ød	ØR	□G	T	H	F	ØDg6	E	Installation (A)		Installation (B)		PCD
											T1	E1	T2	E2	
GFK06-SL☐	GFK06-SM☐	GFK06-SH☐	6	36	28	20	7	13	$22^{-0.007}_{-0.020}$	22	5.5	3.5	6.5	4.5	28
GFK08-SL☐	GFK08-SM☐	GFK08-SH☐	8	43	35	23	9	14	$28^{-0.007}_{-0.020}$	26	7	4	8	5	35
GFK10-SL☐	GFK10-SM☐	GFK10-SH☐	10	52	42	27	10	17	$34^{-0.009}_{-0.025}$	29.5	7.3	5	8.5	6	42
GFK12-SL☐	GFK12-SM☐	GFK12-SH☐	12	54	44	27	10	17	$36^{-0.009}_{-0.025}$	29.5	7.3	5	8.5	6	44
GFK15-SL☐	GFK15-SM☐	GFK15-SH☐	15	63	52	32	15	17	$40^{-0.009}_{-0.025}$	36	9.8	6	12	8	50
GFK17-SL☐	GFK17-SM☐	GFK17-SH☐	17	77	61	45	22	23	$50^{-0.009}_{-0.025}$	47	11	9	14	12	62
GFK20-SL☐	GFK20-SM☐	GFK20-SH☐	20	85	68	52	22	30	$57^{-0.010}_{-0.029}$	50	7.8	10	12	14	70
GFK25-SL☐	GFK25-SM☐	GFK25-SH☐	25	98	79	57	27	30	$63^{-0.010}_{-0.029}$	60	12.8	10	20	17	80
GFK30-SL☐	GFK30-SM☐	GFK30-SH☐	30	117	93	62	30	32	$75^{-0.010}_{-0.029}$	61	10.8	12	17	18	95

Ordering Example	GFK	-	10	-	SL	-	N	-	J
	Model No.		Shaft Dia.		Grade/Pre-loaded		Surface finish		Bearing category

GFK-N

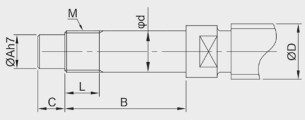


Components

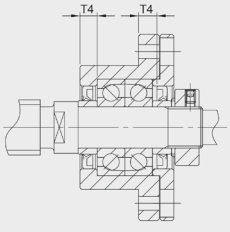
No.	Parts	Material	Q´ty
①	Main housing	S50C	1
②	Bearing	SUJ2	1 pair
③	Cover	S50C	1
④	Space ring	S50C	2
⑤	Seal (<Ø8 one seal only)	NBR	2
⑥	Lucknut	S50C	1

- ①②③ are in one unit. No disassemble for accuracy concern.
- Bearing filled with proper lithium soap lubricant and sealed.

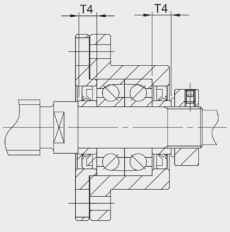
Recommended processing dimensions of shaft



Installation(A)



Installation(B)



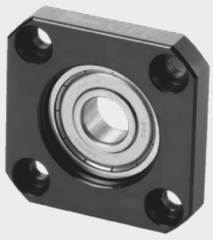
Unit：mm

					Recommended processing dimensions of shaft							
					Ball Screw Shaft O. D.	Shaft End Diameter	Processing sizes of shaft			Nominal thread		Space ring length
Ød1	Ød2	Z	M1	□S	ØD	Ød	ØA	B	C	M	L	T4
3.4	6	3.3	M3	12	8	6 $^{-0.005}_{-0.012}$	4	28	8	M6*P0.75	8	5
3.4	6	3.3	M3	14	10 / 12	8 $^{-0.005}_{-0.012}$	6	32	9	M8*P1.0	10	5.5
4.5	8	4	M3	16	12 / 14 / 15	10 $^{-0.005}_{-0.012}$	8	36	15	M10*P1.0	11	5.5
4.5	8	4	M3	19	14 / 15 / 16	12 $^{-0.005}_{-0.012}$	10	36	15	M12*P1.0	11	5.5
5.5	9.5	6	M3	22	18 / 20	15 $^{-0.005}_{-0.014}$	12	47	20	M15*P1.0	13	10
6.6	11	10	M4	24	20 / 25	17 $^{-0.005}_{-0.014}$	15	53	23	M17*P1.0	17	7
6.5	11	10	M4	30	25 / 28 / 30	20 $^{-0.005}_{-0.014}$	17	62	25	M20*P1.0	17	11
9	15	13	M5	35	30 / 32 / 36	25 $^{-0.005}_{-0.014}$	20	76	30	M25*P1.5	20	15
11	17.5	15	M6	40	36 / 40	30 $^{-0.005}_{-0.015}$	25	72	38	M30*P1.5	25	9

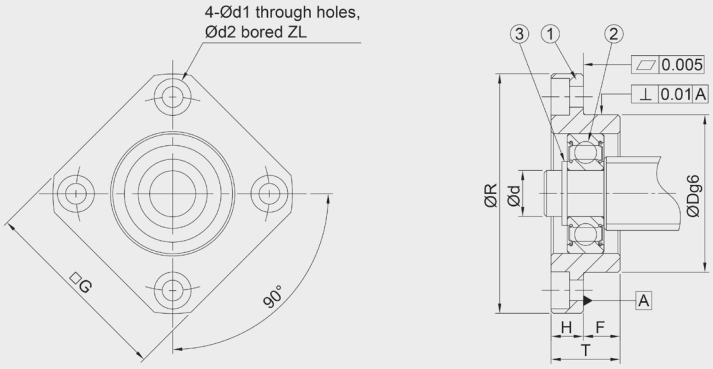
• Supported side spec refer to P.36~P.37

Model No.	Parts no. ①	
	Material	Surface Finish
GFF ☐☐-☐	S50C	Black Dyed
GFF ☐☐-☐		Ni-Plating

GFF-B



GFF06 ~ GFF30



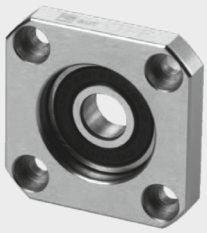
GMT

Specification

Standard Type	Dimensions									
	Ød	ØR	□G	T	H	F	ØDg6	PCD	Ød1	Ød2
GFF06-☐	6	36	28	10	6	4	22 $^{-0.007}_{-0.020}$	28	3.4	6
GFF10-☐	8	43	35	12	7	5	28 $^{-0.007}_{-0.020}$	35	3.4	6
GFF12-☐	10	52	42	15	7	8	34 $^{-0.009}_{-0.025}$	42	4.2	8
GFF15-☐	15	63	52	17	9	8	40 $^{-0.009}_{-0.025}$	50	5.2	9.5
GFF17-☐	17	77	61	20	11	9	50 $^{-0.009}_{-0.025}$	62	6.6	11
GFF20-☐	20	85	68	20	11	9	57 $^{-0.010}_{-0.029}$	70	6.3	11
GFF25-☐	25	98	79	24	14	10	63 $^{-0.010}_{-0.029}$	80	8.7	14
GFF30-☐	30	117	93	27	18	9	75 $^{-0.010}_{-0.029}$	95	10.7	17.5

Ordering Example	GFF	-	10	-	N	-	J
	Model No.		Shaft Dia.		Surface finish		Bearing category

GFF-N

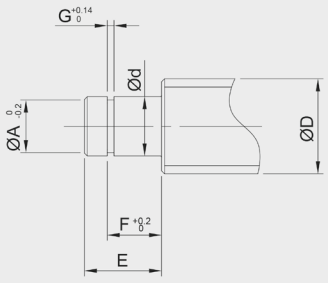


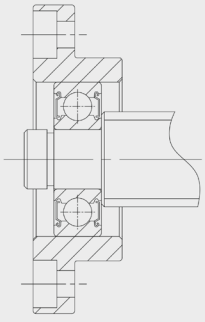
Components

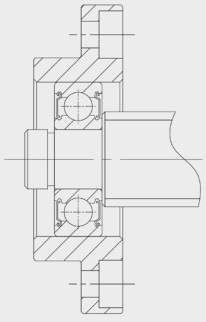
No.	Parts	Material	Q´ty
①	Main housing	S50C	1
②	Bearing	SUJ2	1
③	Snap ring	SWB	1

- Bearing filled with proper lithium soap lubricant maintenance free.
- Bearing with two steel covers in black dyed.
- Bearing with two touch-type plistic covers in Ni-plating.

Recommended processing dimensions of shaft







Unit : mm

	Recommended processing dimensions of shaft						Snap ring
	Ball Screw Shaft O. D.	Shaft End Diameter	Groove sizes machined for snap ring				
Z	ØD	Ød	ØA	E	F	G	
3.3	8	6 -0.005 -0.012	5.7	9	6.8	0.8	S 06
3.3	12 / 14 / 15	8 -0.005 -0.012	7.6	10	7.9	0.9	S 08
4.4	14 / 15 / 16	10 -0.005 -0.012	9.6	11	9.15	1.15	S 10
5.4	18 / 20	15 -0.005 -0.014	14.3	13	10.15	1.15	S 15
8.6	20 / 25	17 -0.005 -0.014	16.2	16	13.15	1.15	S 17
6.5	25 / 28 / 30	20 -0.005 -0.014	19	19	15.35	1.35	S 20
8.6	30 / 32 / 36	25 -0.005 -0.014	23.9	20	16.35	1.35	S 25
10.8	36 / 40	30 -0.005 -0.015	28.6	21	17.75	1.75	S 30

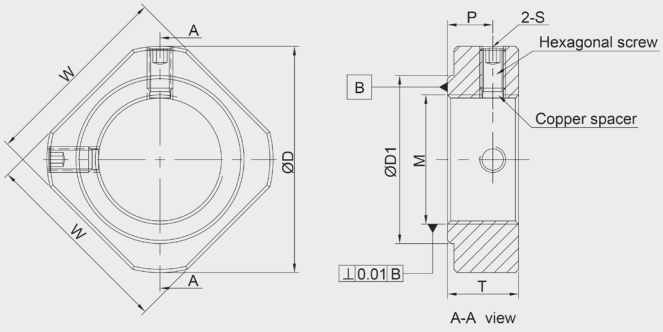
• Fixed Side spec please refer to P.28~P.29

GRLN-B



GRLN-N



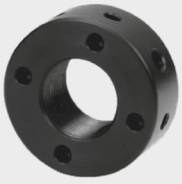


Specification (Material : S50C)

Unit : mm

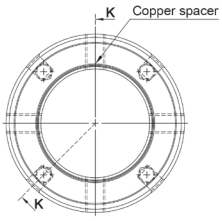
Model No.		M	W	T	ØD	ØD1	P	S
Black Dyed	Ni Plating							
GRLN06-B	GRLN06-N	M6*P0.75	12	5	14.5	9	2.7	M3
GRLN08-B	GRLN08-N	M8*P1.0	14	6.5	17	13	4	
GRLN10-B	GRLN10-N	M10*P1.0	16	8	19	14	5.5	
GRLN12-B	GRLN12-N	M12*P1.0	19	8	22	17	5.5	
GRLN15-B	GRLN15-N	M15*P1.0	22	8	25	21	4.5	
GRLN17-B	GRLN17-N	M17*P1.0	24	13	30	25	9.5	M4
GRLN20-B	GRLN20-N	M20*P1.0	30	11	35	26	7	
GRLN25-B	GRLN25-N	M25*P1.5	35	15	43	33	10	M5
GRLN30-B	GRLN30-N	M30*P1.5	40	20	48	39	14	M6
GRLN35-B	GRLN35-N	M35*P1.5	50	21	60	46	14	M8
GRLN40-B	GRLN40-N	M40*P1.5	50	25	63	50	18	

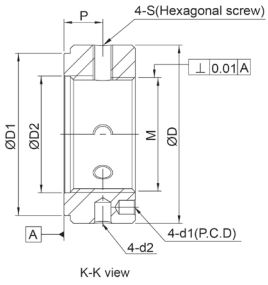
GCLN-B



GCLN-N







K-K view

Specification (Material : S50C)

Unit : mm

Model No.		M	T	ØD	ØD1	ØD2	P.C.D	Ød1	Ød2	P	S	Wrench torque
Black Dyed	Ni Plating											(N.cm)
GCLN17-B	GCLN17-N	M17*P1.0	18	37	27	/	27	4.3	4	10	M6	5400
GCLN20-B	GCLN20-N	M20*P1.0	18	40	30	21	30		4	10		7350
GCLN25-B	GCLN25-N	M25*P1.5	20	45	40	26	35		4	12		13200
GCLN30-B	GCLN30-N	M30*P1.5	20	50	40	31	40		5	11		19600
GCLN35-B	GCLN35-N	M35*P1.5	22	55	50	36	45		5	12		29400
GCLN40-B	GCLN40-N	M40*P1.5	22	60	50	41	50		5	12		39200

• Copper space integrated to the set scren.

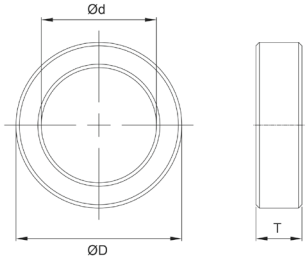
Space Ring

GSR-B



GSR-N





Specification (Material : S50C)

Unit : mm

Model No.		Ød	ØD	T
Black Dyed	Ni Plating			
GSR06-B	GSR06-N	6	9.4	5
GSR08-B	GSR08-N	8	11.4	5.5
GSR10-B	GSR10-N	10	14.4	5.5
GSR12-B	GSR12-N	12	15.4	5.5
GSR12-1-B	GSR12-1-N	12	14.4	5.5
GSR15-B	GSR15-N	15	19.4	6
GSR15-1-B	GSR15-1-N	15	19.4	10
GSR17-B	GSR17-N	17	24.4	7
GSR17-1-B	GSR17-1-N	17	29.4	15
GSR17-2-B	GSR17-2-N	17	24.4	10
GSR20-B	GSR20-N	20	25.4	8
GSR20-1-B	GSR20-1-N	20	25.4	11

Model No.		Ød	ØD	T
Black Dyed	Ni Plating			
GSR20-2-B	GSR20-2-N	20	29.4	15
GSR25-B	GSR25-N	25	31.4	9
GSR25-1-B	GSR25-1-N	25	31.4	15
GSR25-2-B	GSR25-2-N	25	39.4	18
GSR30-B	GSR30-N	30	39.4	9
GSR30-1-B	GSR30-1-N	30	39.4	18
GSR35-B	GSR35-N	35	44.4	12
GSR35-1-B	GSR35-1-N	35	48.4	18
GSR40-B	GSR40-N	40	48.4	15

F	A	C	E		Ø40R	10*10	Custom made
F	A	C	H	S	Ø32	6*8	LK
Type	Material	Axis fixing	Coupling model	Length	O.D. / (Jaw type option)	Ød1*Ød2	Key way
F: Flexible R: Rigid	A: Aluminum S: Stainless Steel C: Carbon steel	M: Set screw fixing C: Clamping fixing B: 2 Pieces S: Zero backlash type	S: Spiral beam type(for servo motor) M: Spiral beam type (for stepping motor) C: Metal disk with high rigid design H: Metal disk in straight type T: Metal disk in steps type B: Bellows design G: Oldham type - phosphor bronze spacer P: Oldham type - carbon resin spacer J: Oldham type - Black POM spacer N: Oldham type - POM spacer E: Jaw type U: Aluminum spacer	L: Long design S: Short design	◆Refer to dimension table to decide the O.D. ◆Jaw Spider options: B: Blue (80 ShoreA) W: White (92 ShoreA) R: Red (98 ShoreA)	◆Bore diameter of two sides of the coupling	◆LK: left side Ød1 ◆RK: right side Ød2 ◆WK: Both sides (Ød1 & Ød2)

Note：◆ Material AL, surface in anodized finished.

◆ Accessories are clamping screws and set screws.

◆ Shaft dia. Ød1, Ød2 accepted by custom sizes.(Within specified Max. bore dimensions)

◆ GMT coupling series are all processed in cryogenic treatment.(Refer to P.73)

(1) Coupling is a mechanism unit used in transmitting torque and rotating angle. Each model is purposed. Please select as your requirement from the table below.
(2) Take spec and hole size on the list for reference to select product you need.
(3) Confirm rated torque、Max. speed and dimension of selected coupling matched with the equipment you are going to use.
(4) Max. torque is double of allowable torque in coupling, and torque produced in continuous rotation shall not exceed to allowable torque.

		Spiral Beam type									
	Flexible coupling	FAMS	FACS	FAMML	FAMMS	FSMML	FSMMS	FACML	FACMS	FSCML	FSCMS
	page	P.12	P.13	P.14	P.15	P.16	P.17	P.18	P.19	P.20	P.21
Advantages comparison	Zero backlash	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
	High torque rigidity	Excellent	Excellent	Good	Good	Good	Good	Good	Good	Good	Good
	High torque	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
	Allowable axis deviation			Good		Good		Good		Good	
Character	Flexibility			●		●		●		●	
	Complete miniature	●	●		●		●		●		●
	Stainless steel					●	●			●	●
	Constant velocity										
	Screw fixing type	●		●	●	●	●				
	Clamp fixing type		●					●	●	●	●
	Allowable angular deflection	●	●	●	●	●	●	●	●	●	●
	Allowable parallel offset	●	●	●	●	●	●	●	●	●	●
	Low inertial torque	●	●	●	●	●	●	●	●	●	●
	Torque range(N·m)	0.5～3	0.5～3	0.1～4	0.1～8	0.1～8	0.1～4	0.4～8	0.4～4	0.4～8	0.4～4
	Product character	◆ Coupling slitted in aluminum or stainless steel material is as structure as spiral beam type allowable offset. ◆ Difference of material and beam types cause variation in transmitting torque and allowable offset. ◆ Due to zero backlash required in high rotation accuracy, meanwhile, position accuracy meets the same requirement.									

		Oldham type				Jaw type				(Large shaft diameter use)	Zero Backlash type(Spindle use)	
	Flexible coupling	FACPL	FACPS	FAMN	FACU	FAME	FAMK	FACE	FACK	FACE	FASE	FCSE
	page	P.38	P.39	P.40	P.41	P.45	P.46	P.47	P.48	P.49	P.50	P.50
Advantages comparison	Zero backlash				Good	Good	Good	Good	Good	Good	1. Zero rotation backlash 2. Hight torsion 3. High torque 4. Low Inertia 5. High rigidity 6. Variation resistance 7. High fricition 8. Intergrated clamping nut for bolt assembly easily	1. Zero rotation backlash 2. Hight torsion 3. High torque 4. Low Inertia 5. High rigidity 6. Variation resistance 7. High fricition 8. Intergrated clamping nut for bolt assembly easily
	High torque rigidity	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent		
	High torque	Excellent	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent		
	Allowable axis deviation	Excellent	Excellent	Excellent	Good	Good	Good	Good	Good	Good		
	Vibration absorbability	Good	Good	Good		Good	Good	Good	Good	Good		
	Isolation	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent		
Character	Flexibility					●	●	●	●	●		
	Complete miniature	●	●	●								
	Screw fixing type			●		●	●					
	Clamp fixing type	●	●		●			●	●	●		
	Key way type						●		●	●		
	Allowable angular deflection	●	●	●	●	●	●	●	●	●		
	Allowable parallel offset	●	●	●	●	●	●	●	●	●		
	Low inertial torque	●	●	●	●	●	●	●	●	●		
	Torque range(N·m)	0.7～9	0.2～2.8	0.7～9	0.3～6	0.7～17	4～17	0.7～17	4～17	60～190	◆ Usage temperature: -20°C ~ 90°C ◆ Offset of angular and axial deviation are individual allowed values. Thus, the coupling unit allowable value will be reduced in case couple reasons of axial offset appearing at the same time. ◆ No rotation backlash, high accuracy clamping prestress design. ◆ Light aluminum shaft bushing offers small inertia. ◆ Tight clamping force to bring high friction moment. ◆ Stable rotation to perform a high linear speed 40m/s.	◆ Usage temperature: -20°C ~ 90°C ◆ Offset of angular and axial deviation are individual allowed values. Thus, the coupling unit allowable value will be reduced in case couple reasons of axial offset appearing at the same time. ◆ No rotation backlash, high accuracy clamping prestress design. ◆ Tight clamping force to bring high friction moment. ◆ Stable rotation to perform a high linear speed 40m/s.
	Product character	◆ Oldham type ◆ Few friction resistance, apply to braking system (Ex: braking mechanism, relay shfat). Light torque corresponds to larger parallel offset and angular deviation. ◆ Jaw type ◆ Press-in type of the PU insert; select hardness through Polyurethane to make difference of vibration absorbability technically. ◆ Press-in type applied in low torque makes zero backlash, and equipped with good adjustment of vibration absorbability as well.								◆ Usage temperature: -20°C ~ 90°C ◆ Offset of angular and axial deviation are individual allowed values. Thus, the coupling unit allowable value will be reduced in case couple reasons of axial offset appearing at the same time. ◆ Available to make key ways on request. Refer to P. 2 for Key way marking options.		

GMT

Metal Disk type						Bellows type				Oldham type					
FACCL	FACCS	FACHL	FACHS	FACTL	FACTS	FAMB	FSMB	FACB	FSCB	FSMG	FSCG	FSMP	FSCP	FAMJ	FACJ
															
P.22	P.23	P.24	P.25	P.26	P.27	P.28	P.29	P.30	P.31	P.32	P.33	P.34	P.35	P.36	P.37
Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent						
Excellent	Good	Excellent	Excellent	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Good	Good	Good	Good
Good	Good	Good	Excellent	Good	Good	Good	Good	Good	Good	Excellent	Excellent	Good	Good	Good	Good
Good		Good		Good		Good	Good	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
●		●		●											
	●		●		●										
							●		●						
						●	●	●	●	●		●		●	
						●		●			●		●		●
●	●	●	●	●	●		●		●	●	●	●	●	●	
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
1.2~25	1.2~25	0.7~9	0.7~9	2~10	2~10	0.3~2	0.5~3	0.3~2	0.5~3	3~50	3~50	0.3~28	1.6~18	30~80	26~72
◆ Composed of body and disc, which is bended, to creat its allowable offset structure. ◆ Difference of body or strength & material of disc cause variation in transmitting torque and allowable offset. ◆ Due to zero backlash required in rotation accuracy, meanwhile, position accuracy meets the same requirement. ◆ Widely ranges from standard to high torque change due to variable matches of dimesnions and materials for disc.						◆ Uniform turning with allowable offset suits for constant velocity like encoder application.				◆ Oldham type ◆ Few friction resistance, apply to braking system (Ex: braking mechanism, relay shfat). Light torque corresponds to larger parallel offset and angular deviation. ◆ Jaw type ◆ Press-in type of the PU insert; select hardness through Polyurethane to make difference of vibration absorbability technically. ◆ Press-in type applied in low torque makes zero backlash, and equipped with good adjustment of vibration absorbability as well.					

Rigidity coupling	RAM	RSM	RACS	RSCS	RAB	RSB	RACL	RSCL
								
page	P.53	P.54	P.55	P.56	P.57	P.58	P.59	P.60
Zero backlash	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High rigidity torque	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
High torque	Good	Good	Good	Good	Good	Good	Good	Good
Stainless steel		●		●		●		●
Screw fixing type	●	●						
Clamp fixing type			●	●	●		●	●
2-piece type					●	●		
Low inertial torque	●	●	●	●	●	●	●	●
Torque range(N·m)	0.3~4	0.3~2	0.3~4	0.3~2	0.3~2	0.3~2	0.3~2	0.3~2
Product character	◆ Coupling having frequently powerful shaft-combination. ◆ Having no allowable offset applys to condition in axial side absorbing angular deviation. ◆ To install lock screw on coupling secures the shaft well.							

(1) There are five ways to fix coupling onto shaft as below. Please select coupling as your demand.

(2) Set screw or clamping screw (hexagonal countersink screw) shall be secured by screw driver or torque wrench. Securing torque refer to product specifications.



Set screw fixing

This fixing in low cost is the most traditional.
Front of screw contacting with shaft directly may cause damage or difficult disassembly.



Clamping fixing

Use sink screw securing to narrow the slit for clamping shaft tightly. Clamped fix and easy disassembly won't cause damage of shaft.



Separation fixing

Use separated bushings to fix and disassemble without moving your equipment.



Key way fixing

This type is also traditonal, like set screw fixing, suits for transmission in higher torque. Prevent from parallel movement, it's usually used with set screw fixing and clamp fixing together.

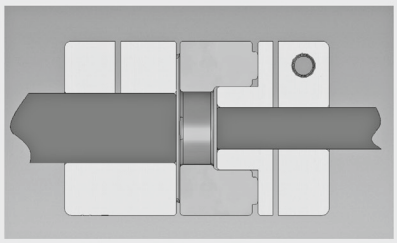


Zero Backlash type

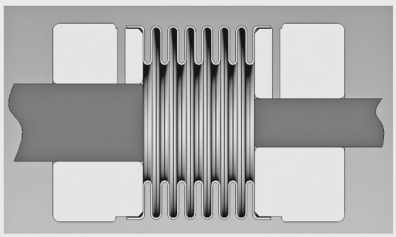
Zero backlash type coupling is designed to be equipped high precision clamping nut as one unit, performs high friction moment and reliable movement which is suitable for spindle transmission of the machine.

To maintain installation completeness of all kinds of couplings, it's recommended to install as follow charts to avoid direct contact of two shafts and to have a regular run.

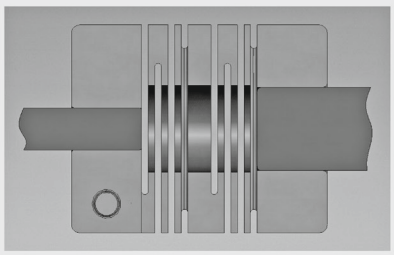
Oldham type



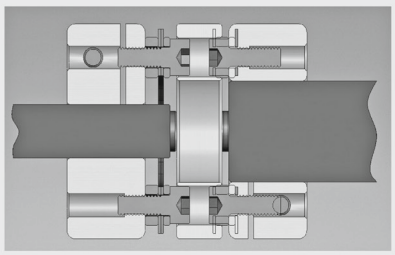
Bellows type



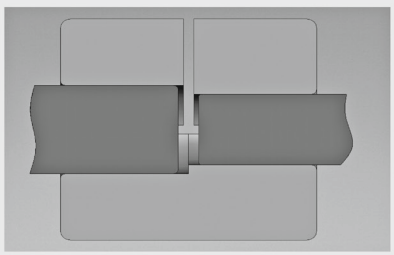
Spiral beam type



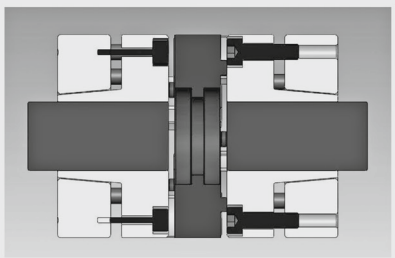
Metal Disk type



Rigidity coupling



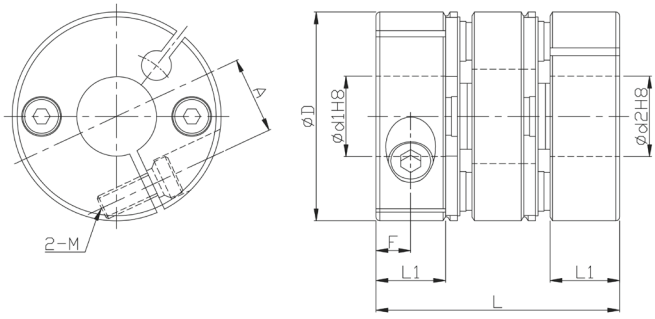
Zero Backlash type



FACCL



- High wrench torque load, high wrench torque rigidity capacity and excellent sensibility.
- Zero backlash.
- The flexure allowed by the stainless steel disk portion of the couping is capable of accommodating angular, parallel, and axial misalignment.
- Clockwise character is exactly the same as anti-clockwise one.
- Free maintenance, oil-resist and anti-corrosiveness.
- Teethless screw to lock disks.
- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.



Component	Material	Surface finish	Accessories
Main frame	Aluminum Alloy	Anodized	Clamping screw
Disk	SUS303	—	

Dimensions		Ød1&Ød2 selection *Ød1 ≦ Ød2																L	L1	A	F	Clamping screw	
Model no.	ØD	4	5	6	8	9	10	11	12	14	15	17	19	20	22	24	25					M	Lock torque (N·m)
FACCL	21	●	●	●	●	●												24.5	7	7	3.5	M2.5	1.2
	28		●	●	●	●	●											32	9	9.5	4	M3	1.5
	34			●	●	●	●	●	●	●								35	9.8	12	5	M3	1.5
	46				●	●	●	●	●	●	●	●	●					44	12.6	16.5	6	M4	3.5
	55								●	●	●	●	●	●	●	●	●	55	16	20.5	7	M5	6

★Moment of inertial torque and weight calculated by maximum diameter.

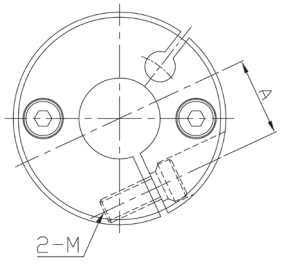
Specification		Allowable wrench torque (N·m)	Allowable misalignment			Static torsional stiffness (N·m/rad)	Max. RPM (r/min^{-1})	★ Moment of inertia ($kg \cdot m^2$)	★ Weight (g)
Model no.	ØD		Angular (°)	Parallel (mm)	Axial (mm)				
FACCL	21	1.2	1.0	0.10	±0.20	1000	10000	$1.11*10^{-6}$	17
	28	1.6	1.2	0.15		1300		$4.68*10^{-6}$	42
	34	4	1.5	0.20		2800		$1.10*10^{-5}$	65
	46	10		0.25	±0.30	6200		$4.70*10^{-5}$	151
	55	25				12000		$1.19*10^{-4}$	260

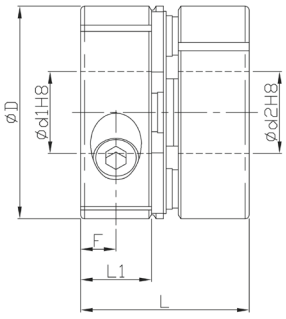
Ordering Example:	FACCL46	-	10	-	12	-	100 PCS
	Model no.		Ød1		Ød2		Q'ty

FACCS



- High wrench torque load, high wrench torque rigidity capacity and excellent sensibility.
- Zero backlash.
- The flexure allowed by the stainless steel disk portion of the couping is capable of accommodating angular, and axial misalignment.
- No accommodating to parallel misalignment.
- Clockwise character is exactly the same as anti-clockwise one.
- Free maintenance, oil-resist and anti-corrosiveness.
- Teethless screw to lock disks.
- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.





Component	Material	Surface finish	Accessories
Main frame	Aluminum Alloy	Anodized	Clamping screw
Disk	SUS303	—	

Dimensions		Ød1&Ød2 selection *Ød1 ≦ Ød2															L	L1	A	F	Clamping screw	
Model no.	ØD	4	5	6	8	9	10	11	12	14	15	17	19	20	22	24	25					M	Lock torque (N·m)
FACCS	21	●	●	●	●	●												16.7	7	7	3.5	M2.5	1.2
	28		●	●	●	●	●											21	9	9.5	4	M3	1.5
	34			●	●	●	●	●	●	●								23.3	9.8	12	5	M3	1.5
	46				●	●	●	●	●	●	●	●	●					29.8	12.6	16.5	6	M4	3.5
	55								●	●	●	●	●	●	●	●	●	37.2	16	20.5	7	M5	6

★Moment of inertial torque and weight calculated by maximum diameter.

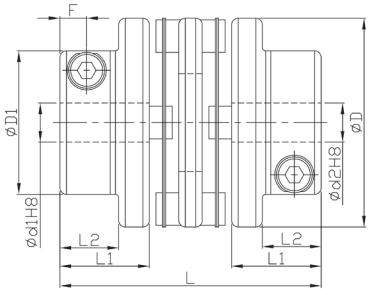
Specification		Allowable wrench torque (N·m)	Allowable misalignment		Static torsional stiffness (N·m/rad)	Max. RPM (r/min^{-1})	★ Moment of inertia ($kg \cdot m^2$)	★ Weight (g)
Model no.	ØD		Angular (°)	Axial (mm)				
FACCS	21	1.2	1.0	±0.10	1500	10000	$7.90*10^{-7}$	12
	28	1.6	1.2		1800		$3.24*10^{-6}$	30
	34	4	1.5		3600		$7.60*10^{-6}$	45
	46	10		±0.15	10000		$3.23*10^{-5}$	105
	55	25			20000		$8.19*10^{-5}$	180

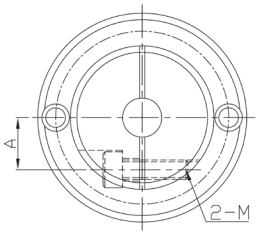
Ordering Example:	FACCS34	-	10	*	14	-	100 PCS
	Model no.		Ød1		Ød2		Q'ty

FACTL



- High wrench torque load, high wrench torque rigidity capacity and excellent sensibility.
- Zero backlash.
- Dual stainless steel rings to correct radial、angular and axial deviation.
- Clockwise character is exactly the same as anti-clockwise one.
- Free maintenance, oil-resist and anti-corrosiveness.
- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.





Component	Material	Surface finish	Accessories
Main frame	Aluminum Alloy	Anodized	Clamping screw
Disk	SUS301	—	

Dimensions		ØD1	Ød1&Ød2 selection *Ød1 ≦ Ød2													L	L1	L2	A	F	Clamping screw	
Model no.	ØD		6	7	8	10	11	12	14	15	16	18	19	20	25						M	Lock torque (N·m)
FACTL	32	22	●	●	●	●										40	13.7	9	8	4	3	1.5
	40	28		●	●	●	●	●	●							46	16.5	12	10.5	6	4	2.5
	50	39						●	●	●	●	●	●	●		52	19.4	15	14.8	7	5	7
	63	45								●	●	●	●	●	●	58	22.3	18	17	8	6	12

★Moment of inertial torque and weight calculated by maximum diameter.

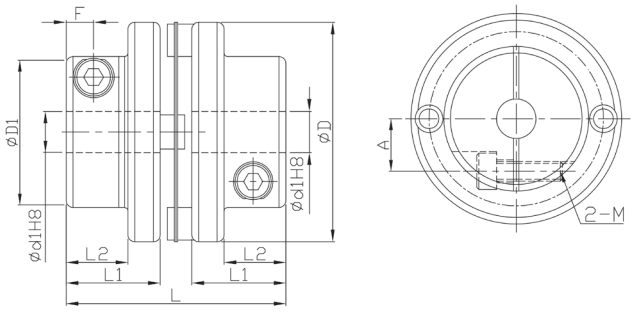
Specification		Allowable wrench torque (N·m)	Allowable misalignment			Static torsional stiffness (N·m/rad)	Max. RPM (r/min^{-1})	★ Moment of inertia ($kg \cdot m^2$)	★ Weight (g)
Model no.	ØD		Angular (°)	Parallel (mm)	Axial (mm)				
FACTL	32	2	2	0.15	±0.4	1000	4800	$6.2*10^{-6}$	48
	40	4		0.2	±0.5	1500	3800	$1.6*10^{-5}$	81
	50	7.5			±0.6	2000	3100	$4.6*10^{-5}$	150
	63	10		0.3	±0.8	2500	2400	$1.1*10^{-4}$	230

Ordering Example:	FACTL40	-	12	*	14	-	100 PCS
	Model no.		Ød1		Ød2		Q'ty

FACTS



- Hard torque load、high torque rigidity and excellent sensibility.
- Zero backlash.
- Miniature coupling has short length.
- Dual stainless steel disk to correct angular and axial deviation.
- No correction for radial deviation.
- Clockwise character is exactly the same as anti-clockwise one.
- Free maintenance, oil-resist and anti-corrosiveness.
- FACH-S can't allow axial deviation caused by offset.
- Offset, deflection, shaft deviation are individual allowed value.



Component	Material	Surface finish	Accessories
Main frame	Aluminum Alloy	Anodized	Clamping screw
Disk	SUS301	—	

Dimensions		ØD1	Ød1&Ød2 selection *Ød1 ≦ Ød2													L	L1	L2	A	F	Clamping screw	
Model no.	ØD		6	7	8	10	11	12	14	15	16	18	19	20	25						M	Lock torque (N·m)
FACTS	32	22	●	●	●	●										32	13.7	9	8	4	3	1.5
	40	28		●	●	●	●	●	●							38	16.5	12	10.5	6	4	2.5
	50	39						●	●	●	●	●	●	●		44	19.4	15	14.8	7	5	7
	63	45								●	●	●	●	●	●	50	22.3	18	17	8	6	12

★Moment of inertial torque and weight calculated by maximum diameter.

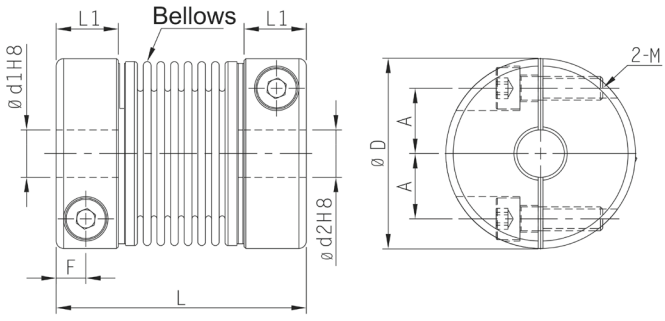
Specification		Allowable wrench torque (N·m)	Allowable misalignment		Static torsional stiffness (N·m/rad)	Max. RPM (r/min^{-1})	★ Moment of inertia ($kg \cdot m^2$)	★ Weight (g)
Model no.	ØD		Angular (°)	Axial (mm)				
FACTS	32	2	1	±0.2	1300	4800	$4.5*10^{-6}$	38
	40	4			2800	3800	$1.2*10^{-5}$	66
	50	7.5			3700	3100	$3.7*10^{-5}$	120
	63	10			5000	2400	$8.4*10^{-5}$	190

Ordering Example:	FACTS32	-	10	*	12	-	100 PCS
	Model no.		Ød1		Ød2		Q'ty

FSCB



- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.



Component	Material	Accessories
Main frame	SUS303	Clamping screw
Bellows	SUS316	

Dimensions		Ød1&Ød2 selection *Ød1 ≦ Ød2									L	L1	F	A	Clamping screw	
Model no.	ØD	4	5	6	6.35	8	9.525	10	12	14					M	Lock torque (N·m)
FSCB	12	●	●								23.5	7.5	2.3	4	2	0.5
	16	●	●	●	●						26.5	9	3	5	2.5	1
	20		●	●	●	●					32	10	3.5	6.5		
	25			●	●	●	●	●			36.5	12	4.5	9	3	1.5
	32					●	●	●	●	●	42	13.5	5	11	4	2.5

★Moment of inertial torque and weight calculated by maximum diameter.

Specification		Allowable wrench torque (N·m)	Allowable misalignment			Static torsional stiffness (N·m/rad)	Max. RPM (r/min^{-1})	★ Moment of inertia ($kg \cdot m^2$)	★ Weight (g)
Model no.	ØD		Angular (°)	Parallel (mm)	Axial (mm)				
FSCB	12	0.5	1.5	0.10	+0.4	100	13000	$2.1*10^{-7}$	9
	16	1			-1.2	150	9500	$8.1*10^{-7}$	22
	20	1.5	2	0.15	+0.6	220	7700	$2.3*10^{-6}$	38
	25	2			-1.8	330	6100	$6.9*10^{-6}$	74
	32	3		0.20	+0.8 -2.5	490	4800	$2.1*10^{-5}$	130

Ordering Example:	FSCB20	-	6	*	8	-	100 PCS
	Model no.		Ød1		Ød2		Q'ty

GMT

FACE



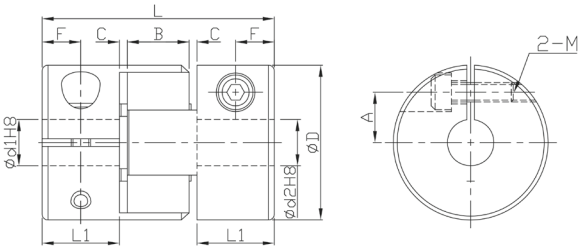
(B)



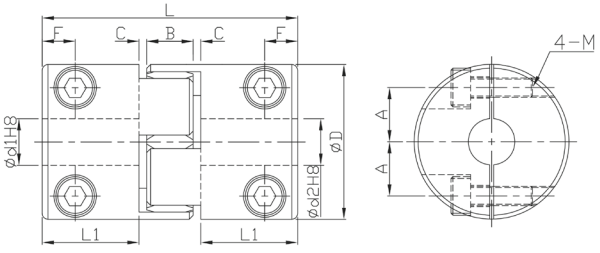
(W)



(R)



FACE ØD=14.20.30



FACE ØD=40

- Operating temperature : -20°C~60°C
- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.

Component	Material	Surface finish	Accessories
Main frame	Aluminum Alloy	Anodized	Clamping screw
Spider	Urethane(PU)	—	

★ Dimension "C", must be previously reserved while assemly by users, otherwise it would affect allowed deflection, accelerating shaft and coupling damage.

Dimensions		Spider (color selection)	Ød1&Ød2 selection *Ød1 ≦ Ød2														L	L1	B	C	F	A	Clamping screw	
Model no.	ØD		3	4	5	6	6.35	7	8	9.525	10	11	12	14	15	16							M	Lock torque (N·m)
FACE	14	B (Blue)	●	●	●												22	7	6	1	3.5	4	2	0.5
	20	W (White)			●	●	●	●	●								30	10	8		5	6.5	2.5	1
	30							●	●	●	●	●	●				35	11	10	1.5	5.5	10	4	2.5
	40	R (Red)									●	●	●	●	●	●	66	25	12	2	8.5	14	5	4

★Moment of inertial torque and weight calculated by maximum diameter.

Specification		Allowable wrench torque (N·m)			Allowable misalignment					Static torsional stiffness (N·m/rad)			Max. RPM (r/min^{-1})	★ Moment of inertia ($kg \cdot m^2$)	★ Weight (g)
					Angular (°)	Parallel (mm)			Axial (mm)						
Model no.	ØD	B	W	R		B	W	R		B	W	R			
FACE	14	0.7	1.2	2	1.0	0.15	0.10	0.10	+0.6 0	8	14	22	11000	$1.6*10^{-7}$	6
	20	1.8	3	5		0.20	0.15		+0.8 0	16	29	55	7600	$1.1*10^{-6}$	19
	30	4	7.5	12.5		0.20	0.15		+1.0 0	46	73	130	5100	$6.2*10^{-6}$	50
	40	4.9	10	17		0.15	0.10		+1.2 0	380	570	1200	3800	$3.9*10^{-5}$	160

Ordering Example: FACE14 (Model no.) - 10 (Ød1) x 12 (Ød2) - 100 PCS (Q'ty)

FACE

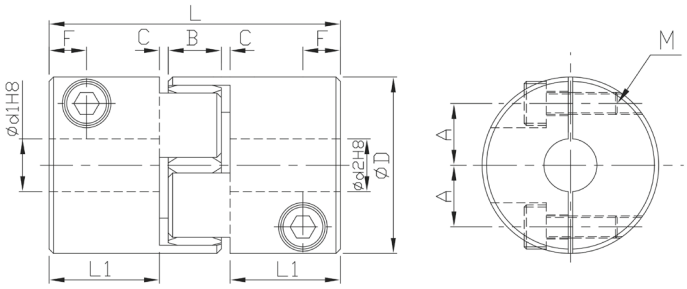


(W)



(R)

- Operating temperature : -20°C~90°C
- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.
- Key way available on request per indicated as LK(Ød1 bore), RK(Ød2 bore), WK(Ød1.Ød2 bore)



FACE D=55,65,80

Component	Material	Surface finished	Accessories
Main frame	AL6061T651	Anodized	Clamping
Spider	Urethane(PU)	—	

Key way Ød1 . Ød2	W		H		Key way dimension W□
	Dimension	Alloable tolerance	Dimension	Alloable tolerance	
6~7	2	±0.015	1.0	±0.1	2*2
8~10	3		1.4		3*3
11~12	4	±0.02	1.8		4*4
13~16	5		2.3		5*5
18~22	6		2.8		6*6
24~30	8	±0.025			8*8
32~42	10		3.3		10*10

Size		Spider Elestic strength (Color)	Ød1&Ød2 options * Ød1≦Ød2							L	L1	B	C	F	A	Clamping screw	
Model	ØD		16	20	24	32	35	40	42							M	Lock Torque (N·m)
FACE	55	92sh A(W) 98sh A(R)	●	●	●					78	30	14	2	10.5	20	M6	10.5
	65		●	●	●	●	●			90	35	15	2.5	11.5	25	M8	25
	80		●	●	●	●	●	●	●	114	45	18	3	15.5	25	M8	30

★Moment of inertial torque and weight calculated by maximum diameter.

Specifications		Allowable Torque (N.m)		Allowable Angle Mis-alignment	Allowable Parallel Mis-alignment (mm)		Allowable Axile Mis-alignment (mm)	Static torsional stiffness (N·m/rad)		Max. RPM (r/min^{-1})	Moment of inertia (kg·m)	Weight (g)
Model	ØD	R	W		R	W		R	W			
FACE	55	60	35	0.9°	0.1	0.1	1.2	2600	1600	8650	$1.6*10^{-4}$	330
	65	160	95				1.2	4900	3000	7350	$3.8*10^{-4}$	560
	80	325	190				1.2	6500	5300	5950	$1.0*10^{-3}$	560

Ordering Example: FACE65 (Model no.) - 24 (Ød1) - 55 (Ød2) - 100 PCS (Q'ty)

GMT

FASE

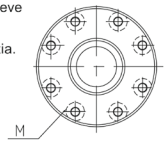


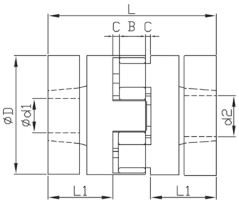
(W)



(R)

- Operating temperature：-20°C~90°C
- Offset of angular, parallel, or axial deviation are individual allowed value, so couple reasons of axial offset appearing at same time would reduce the unit allowable value.
- Zero blacklash and high precision expansion sleeve design.
- Aluminum sleeve, light and low rotatary inertia.
- Tighted axle to have high friction torque.
- Stable rotation in maximum speed to 40m/s.





Component	Material	Surface finished	Accessories
Main frame	Aluminum	Anodized	Clamping
Spider	Urethane(PU)	—	

Size		Spider Elestic strength (Color)	Ød1&Ød2 Options * Ød1≦Ød2									L	L1	B	C	Cinch Bolt	
Model	ØD		16	20	24	26	28	29	32	36	38					M	Lock Torque (N·m)
FASE FCSE	55	92sh A(W) 98sh A(R)	●	●	●							78	30	14	2	M5	6
	65					●	●	●	●	●	●	90	35	15	2.5	M5	7
	80					●	●	●	●	●	●	114	45	18	3	M6	12
	95						●	●	●	●	●	126	50	20	3	M8	30

★Moment of inertial torque and weight calculated by maximum diameter.

Specifications		Allowable Torque (N·m)		Allowable Angle Misalignment	Allowable Parallel Misalignment (mm)		Allowable Axile Misalignment (mm)	Static torsional stiffness (N·m/rad)		Max. RPM (r/min^{-1})	Moment of inertia (kg·m)	Weight (g)
Model	ØD	R	W		R	W		R	W			
FASE	55	60	35	0.9°	0.1	0.1	1.2	2600	1600	8650	$0.78*10^{-4}$	162
	65	160	95				1.2	2600	1600	7350	$1.70*10^{-4}$	240
	80	325	190				1.2	4900	3000	5950	$5.17*10^{-4}$	490
	95	450	265				1.2	2600	1600	5000	$11.7*10^{-4}$	772

FCSE

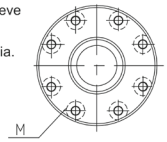


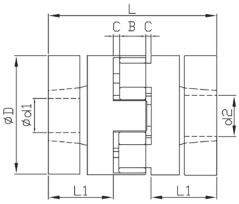
(W)



(R)

- Operating temperature：-20°C~90°C
- Offset of angular, parallel, or axial deviation are individual allowed value , so couple reasons of axial offset appearing at same time would reduce the unit allowable value.
- Zero blacklash and high precision expansion sleeve design.
- Aluminum sleeve, light and low rotatary inertia.
- Tighted axle to have high friction torque.
- Stable rotation in maximum speed to 40m/s.





Component	Material	Surface finished	Accessories
Main frame	Mid-carbon steel	Black dyed	Clamping screw
Spider	Urethane(PU)	—	

Specifications		Allowable Torque (N·m)		Allowable Angle Misalignment	Allowable Parallel Misalignment (mm)		Allowable Axile Misalignment (mm)	Static torsional stiffness (N·m/rad)		Max. RPM (r/min^{-1})	Moment of inertia (kg·m)	Weight (g)
Model	ØD	R	W		R	W		R	W			
FCSE	55	60	35	0.9°	0.1	0.1	1.2	2600	1600	6950	$1.91*10^{-4}$	399
	65	160	95				1.2	2600	1600	5850	$4.18*10^{-4}$	592
	80	325	190				1.2	4900	3000	4758	$12.9*10^{-4}$	1225
	95	450	265				1.2	2600	1600	4000	$31.7*10^{-4}$	2300

Ordering Example:	FCSE80	-	28	°	36	-	100 PCS
	Model no.		Ød1		Ød2		Q'ty

GR V 03 - 75 - S - H

	Rail Type		Roller Diameter (mm)	Rail Length (mm)	Rail Material	Precision Level
Transmission of Roller or Ball Beaing	V-Rails	D-Rails	03	75	S	H
GR : Roller SUS304 Retainer			0 : Ø1.0 01 : Ø1.5 02 : Ø2.0 03 : Ø3.0 04 : Ø4.0 06 : Ø6.0 09 : Ø9.0	Length selection as specification table	S:SUS440C + Ni	P:Precision Grade H:High Grade
GB : Ball Phosphor Bronze Retainer						
GR : Roller POM Retainer			P - POM Retainer 01 : Ø1.5 02 : Ø2.0 03 : Ø3.0 04 : Ø4.0 06 : Ø6.0			
GR : Roller Anti-Creep			02 : Ø2.0 03 : Ø3.0 04 : Ø4.0 06 : Ø6.0			

Model no.	Material			
	Rail	Retainer	Roller	Ball Bearing
GRV	SUJ2	SUS304	SUJ2	X
GRD				
GRV-S	SUS440C+Ni	SUS304	SUS440C	X
GRD-S				
GRVG-S		Brass+Ni-plating		X
GRVP	SUJ2	POM	SUJ2	
GRDP				X
GRVG		Brass		
GBV	SUJ2	Phosphor bronze (C5191)	X	SUJ2
GBD				

GRV-S;GRD-S;GRVG-S Series are suitable for application to clean rooms.

◎Rails have been finished with cryogentic treatment (Refer to P.96)

Roller type

- GRV / GRD / GRV-S / GRD-S / GRVG / GRVG-S / GRVP / GRDP are composed of precise crossed rollers with hardened steel formed precisely to be V-grooves rail guides to create linear motion element in high accuracy.
- Limited stroke linear motion system with high rigidity, mid-hard load and spry moment.
- Roller type

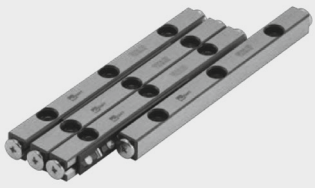
GRV (GRV-S)



GRD (GRD-S)



GRVP



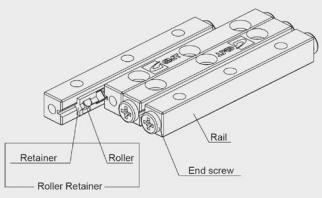
GRVG



GRDP

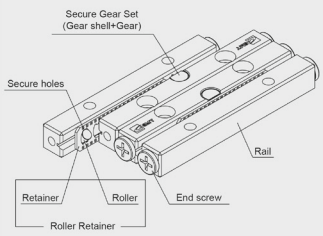


GRV (GRV-S/GRVP)



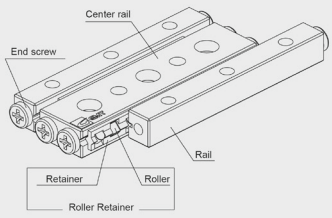
1 set =
4 rails + 2 roller retainers
+ 8 end screws

GRVG (GRVG-S)



1 set =
4 rails + 2 roller retainers
+ 8 end screws

GRD (GRD-S/GRDP)



1 set =
1 center rail + 2 rails + 2 roller retainers
+ 8 end screws

Ball type

- GBV&GBD are composed of ball retainer combined with precise ball bearings arranged in smaller clearance, with the exclusive rails been heat treatment and cryogenic finish, then, forming precisely grinding V-grooves.
- Limited stroke linear motion system with low friction, light load and high accuracy.
- Ball type

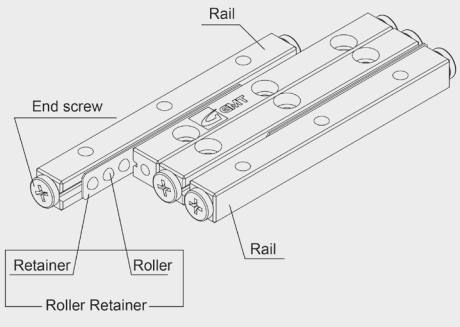
GBV



GBD

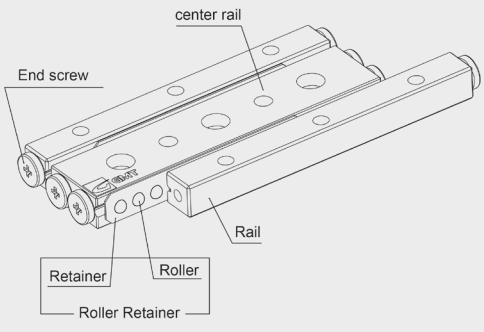


GBV

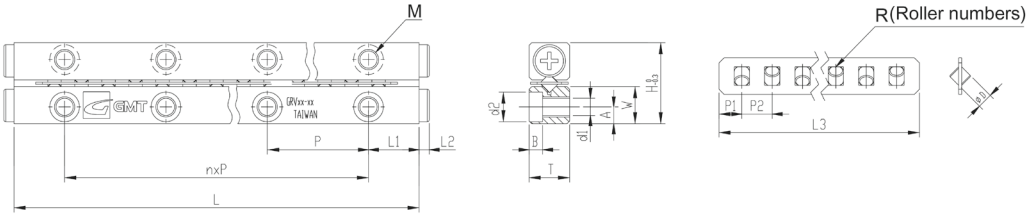


1 set =
4 rails + 2 ball retainers + 8 end screws

GBD



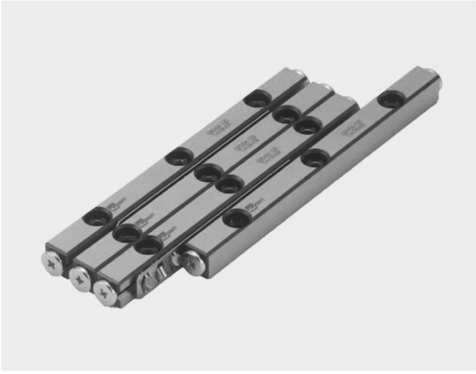
1 set =
1 center rail + 2 rails + 2 ball retainers + 8 end screws



Specification

Model no.		Max. stroke (mm)	Main dimensions (mm)							Retainer dimensions (mm)				
Standard	Antirust		H	T	W	L	n*p	L1	L2	ØD	L3	R	P1	P2
GRV00-20	GRV00-20-S	17	6.2	3	2.9	20	1*10	5	0.7	Ø1	12.4	6	1.3	2
GRV00-30	GRV00-30-S	21				30	2*10				16.4	8		
GRV00-40	GRV00-40-S	25				40	3*10				20.4	10		
GRV00-50	GRV00-50-S	29				50	4*10				24.4	12		
GRV00-60	GRV00-60-S	33				60	5*10				28.4	14		
GRV00-70	GRV00-70-S	37				70	6*10				32.4	16		
GRV00-80	GRV00-80-S	41				80	7*10				36.4	18		
GRV01-20	GRV01-20-S	13	8.5	4	3.9	20	1*10	5	1.3	Ø1.5	15.8	5	1.9	3
GRV01-30	GRV01-30-S	21				30	2*10				21.8	7		
GRV01-40	GRV01-40-S	29				40	3*10				27.8	9		
GRV01-50	GRV01-50-S	37				50	4*10				33.8	11		
GRV01-60	GRV01-60-S	45				60	5*10				39.8	13		
GRV01-70	GRV01-70-S	53				70	6*10				45.8	15		
GRV01-80	GRV01-80-S	61				80	7*10				51.8	17		
GRV02-30	GRV02-30-S	24	12	6	5.5	30	1*15	7.5	1.5	Ø2	21.6	5	2.8	4
GRV02-45	GRV02-45-S	30				45	2*15				33.6	8		
GRV02-60	GRV02-60-S	44				60	3*15				41.6	10		
GRV02-75	GRV02-75-S	58				75	4*15				49.6	12		
GRV02-90	GRV02-90-S	72				90	5*15				57.6	14		
GRV02-105	GRV02-105-S	86				105	6*15				65.6	16		
GRV02-120	GRV02-120-S	100				120	7*15				73.6	18		
GRV02-135	GRV02-135-S	106				135	8*15				85.6	21		
GRV02-150	GRV02-150-S	120				150	9*15				93.6	23		
GRV02-165	GRV02-165-S	134				165	10*15				101.6	25		
GRV02-180	GRV02-180-S	148				180	11*15				109.6	27		

Ordering Example :	GR	-	V	-	01	-	40	-	S	-	P
	Roller		V rail		Roller dia.		Rail length		Antirust		Precision Level

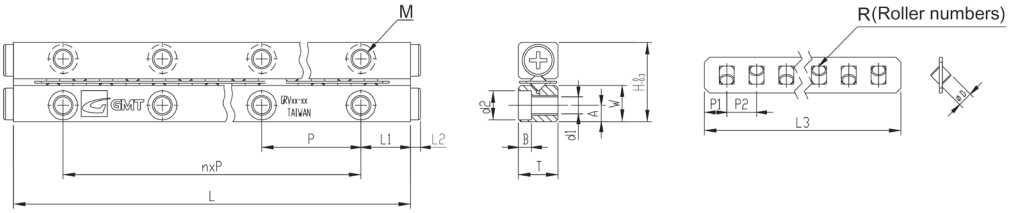


Material specification

Component / Material / Model no.	Rail	Roller	Retainer
GRV	SUJ2		SUS304
GRV - S	SUS440C +Ni	SUS440C	

GRV-S No Surface finished to V-groove surface of the rail.

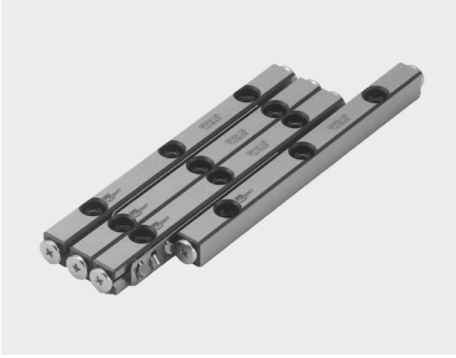
Mounting dimensions (mm)					Load per roller			Weight (g)/2 pieces	
A	M	d1	d2	B	Basic dynamic load rating	Basic static load rating	Allowable Load	Standard	Antirust
1.2	M1.4	1.1	2.1	4	62N/1pcs	72N/1pcs	24N/1pcs	2.4	2.6
								3.5	3.8
								4.6	5
								5.7	6.2
								6.8	7.4
								7.9	8.6
								9	9.8
1.8	M2	1.65	3	1.4	125N/1pcs	144N/1pcs	48N/1pcs	4	4
								6	7
								8	9
								10	11
								12	13
								14	16
								16	17
2.5	M3	2.55	4.4	2	293N/1pcs	292N/1pcs	97N/1pcs	13	14
								20	21
								26	28
								32	35
								39	42
								45	48
								51	55
								58	62
								64	69
								70	76
								77	82



Specification

Model no.		Max. stroke (mm)	Main dimensions (mm)							Retainer dimensions (mm)				
Standard	Antirust		H	T	W	L	n*p	L1	L2	ØD	L3	R	P1	P2
GRV03-50	GRV03-50-S	34	18	8	8.3	50	1*25	12.5	2	Ø3	36.4	7	3.2	5
GRV03-75	GRV03-75-S	54				75	2*25				51.4	10		
GRV03-100	GRV03-100-S	74				100	3*25				66.4	13		
GRV03-125	GRV03-125-S	104				125	4*25				76.4	15		
GRV03-150	GRV03-150-S	124				150	5*25				91.4	18		
GRV03-175	GRV03-175-S	144				175	6*25				106.4	21		
GRV03-200	GRV03-200-S	164				200	7*25				121.4	24		
GRV03-225	GRV03-225-S	184				225	8*25				136.4	27		
GRV03-250	GRV03-250-S	204				250	9*25				151.4	30		
GRV03-275	GRV03-275-S	224				275	10*25				166.4	33		
GRV03-300	GRV03-300-S	244				300	11*25				181.4	36		
GRV04-80	GRV04-80-S	54	22	11	10	80	1*40	20	2	Ø4	57.6	8	4.3	7
GRV04-120	GRV04-120-S	92				120	2*40				78.6	11		
GRV04-160	GRV04-160-S	130				160	3*40				99.6	14		
GRV04-200	GRV04-200-S	154				200	4*40				127.6	18		
GRV04-240	GRV04-240-S	192				240	5*40				148.6	21		
GRV04-280	GRV04-280-S	230				280	6*40				169.6	24		
GRV04-320	GRV04-320-S	254				320	7*40				197.6	28		
GRV04-360	GRV04-360-S	292				360	8*40				218.6	31		
GRV04-400	GRV04-400-S	330				400	9*40				239.6	34		
GRV04-440	GRV04-440-S	354				440	10*40				267.6	38		
GRV04-480	GRV04-480-S	392				480	11*40				288.6	41		

Ordering Example :	GR	-	V	-	03	-	75	-	S	-	P
	Roller		V rail		Roller dia.		Rail length		Antirust		Precision Level

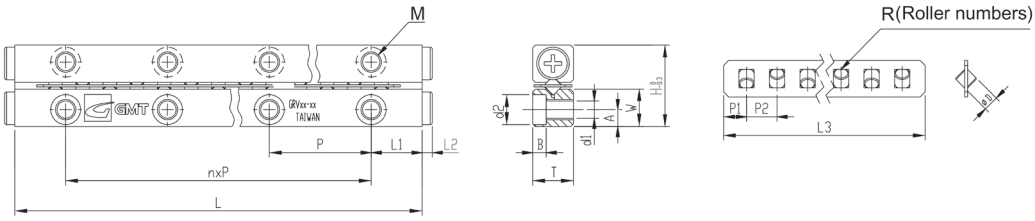


Material specification

Component / Material / Model no.	Rail	Roller	Retainer
GRV	SUJ2		SUS304
GRV - S	SUS440C +Ni	SUS440C	

GRV-S No Surface finished to V-groove surface of the rail.

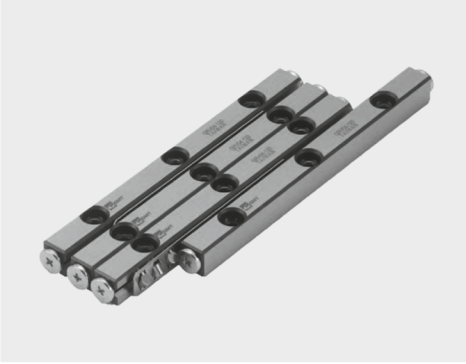
Mounting dimensions (mm)					Load per roller			Weight (g)/2 pieces	
A	M	d1	d2	B	Basic dynamic load rating	Basic static load rating	Allowable Load	Standard	Antirust
3.5	M4	3.3	6	3.1	638N/1pcs	761N/1pcs	254N/1pcs	46	49
								68	73
								90	97
								112	120
								134	144
								157	168
								179	191
								201	215
								223	239
								245	262
								267	286
4.5	M5	4.3	7.5	4.1	1230N/1pcs	1170N/1pcs	390N/1pcs	122	130
								180	193
								238	254
								296	317
								355	380
								413	442
								472	505
								530	568
								589	631
								647	694
								706	756



Specification

Model no.		Max. stroke (mm)	Main dimensions (mm)							Retainer dimensions (mm)				
Standard	Antirust		H	T	W	L	n*p	L1	L2	ØD	L3	R	P1	P2
GRV06-100	GRV06-100-S	80	31	15	14	100	1*50	25	2	Ø6	64.8	7	5.4	9
GRV06-150	GRV06-150-S	108				150	2*50				100.8	11		
GRV06-200	GRV06-200-S	154				200	3*50				127.8	14		
GRV06-250	GRV06-250-S	200				250	4*50				154.8	17		
GRV06-300	GRV06-300-S	246				300	5*50				181.8	20		
GRV06-350	GRV06-350-S	274				350	6*50				217.8	24		
GRV06-400	GRV06-400-S	320				400	7*50				244.8	27		
GRV06-450	GRV06-450-S	366				450	8*50				271.8	30		
GRV06-500	GRV06-500-S	412				500	9*50				298.8	33		
GRV06-550	GRV06-550-S	458				550	10*50				325.8	36		
GRV06-600	GRV06-600-S	486				600	11*50				361.8	40		
GRV09-200	/	158	44	22	20.2	200	1*100	50	3.5	Ø9	130.0	9	9	14
GRV09-300	/	246				300	2*100				186.0	13		
GRV09-400	/	306				400	3*100				256.0	18		
GRV09-500	/	394				500	4*100				312.0	22		
GRV09-600	/	482				600	5*100				368.0	26		
GRV09-700	/	570				700	6*100				424.0	30		
GRV09-800	/	658				800	7*100				480.0	34		
GRV09-900	/	746				900	8*100				536.0	38		
GRV09-1000	/	806				1000	9*100				606.0	43		
GRV09-1100	/	894				1100	10*100				662.0	47		
GRV09-1200	/	982				1200	11*100				718.0	51		
GRV12-200	/	160	58	28	26.9	200	1*100	50	3.5	Ø12	130.0	7	11	18
GRV12-300	/	216				300	2*100				202.0	11		
GRV12-400	/	308				400	3*100				256.0	14		
GRV12-500	/	400				500	4*100				310.0	17		
GRV12-600	/	492				600	5*100				364.0	20		
GRV12-700	/	548				700	6*100				436.0	24		
GRV12-800	/	640				800	7*100				490.0	27		
GRV12-900	/	732				900	8*100				544.0	30		
GRV12-1000	/	824				1000	9*100				598.0	33		
GRV12-1100	/	916				1100	10*100				652.0	36		
GRV12-1200	/	972				1200	11*100				724.0	40		

Ordering Example :	GR	-	V	-	06	200	-	S	-	P
	Roller		V rail		Roller dia.	Rail length		Antirust		Precision Level



Material specification

Component / Material / Model no.	Rail	Roller	Retainer
GRV	SUJ2		SUS304
GRV - S	SUS440C +Ni	SUS440C	

GRV-S No Surface finished to V-groove surface of the rail.

Mounting dimensions (mm)					Load per roller			Weight (g)/2 pieces	
A	M	d1	d2	B	Basic dynamic load rating	Basic static load rating	Allowable Load	Standard	Antirust
6	M6	5.3	9.5	5.2	2570N/1pcs	2632N/1pcs	877N/1pcs	287	311
								435	466
								577	618
								721	773
								864	925
								1006	1078
								1150	1232
								1292	1385
								1436	1539
								1579	1691
								1273	1846
9	M8	6.8	10.5	6.2	7190N/1pcs	7274N/1pcs	2425N/1pcs	1267	/
								1891	/
								2509	/
								3133	/
								3756	/
								4628.1	/
								4915.2	/
								5525.3	/
								6140.9	/
								6751.1	/
								7361.2	/
12	M10	8.5	13.5	8.2	14700N/1pcs	13187N/1pcs	4396N/1pcs	2114	/
								3161	/
								4195	/
								5242	/
								6276	/
								7734.8	/
								8829.2	/
								9261.2	/
								10281.7	/
								11302.3	/
								12336.4	/

GR A 30 65 - S

unit : mm

GR	A					30	65	N
Transmission	Model	Normal	Black coating	Antirust(N)	Corrosionresisting (S)	Table width	Table length	Material
GR: roller	A	 P.54~P.57	 P.54~P.57	 P.54~P.57	 P.72~P.75	30、40、60 80、100、145	As shown SPEC	N:S50C+Ni S:SUS440C+Ni B:S50C+phosphate
	B	 P.58~P.61	 P.58~P.61	 P.58~P.61	 P.76~P.79	30、40、60 80、100、145		
	C	 P.62~P.63	 P.62~P.63	 P.62~P.63	 P.80~P.81	20、30、40		
	M	 P.64~P.67	 P.64~P.67	 P.64~P.67	 P.82~P.87	30、40、60 80、100		
	H	 P.68~P.69	 P.68~P.69	 P.68~P.69	 P.88~P.89	20、30、40		
	S	 P.70~P.71	 P.70~P.71	 P.70~P.71	 P.90~P.91	20、30、40		

- Table in N series ,is antirust, apply to clean room environment.
- Table in S series, is antirust and corrosion-resisting, apply to clean room environment.
- Table in B series ,is antirust, apply to clean room environment.
- All parts are cryogenic finished to increase 30% durability. (See P.96)

Component material introduction

Apply to	Model no.	Material indication			
		Table	Rail	Retainer	Roller
Normal	GRA/GRB/GRC CRM/GRH/GRS	Aluminum+anodized black	SUJ2	SUS304	SUJ2
Antirust	GRA-N/GRB-N GRC-N/GRM-N GRH-N/GRS-N	S50C+Ni	SUJ2+Ni • V-groove in rail, no surface finished	SUS304	SUJ2
Antirust	GRA-B/GRB-B GRC-B/GRM-B GRH-B/GRS-B	S50C+PHOSPHATE	SUJ2	SUS304	SUJ2
Corrosion-resisting	GRA-S/GRB-S GRC-S/GRM-S GRH-S/GRS-S	SUS440C+Ni • Table and rail in 1 unit in this series • V-groove in rail, no surface finished		SUS304	SUS440C

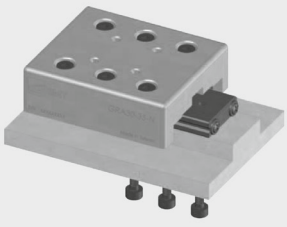
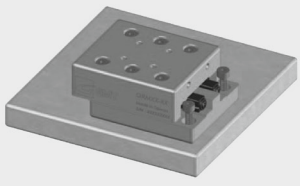
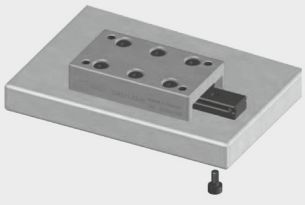
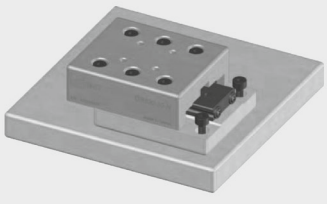
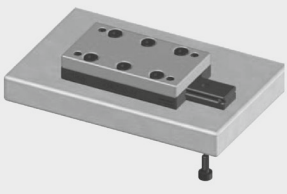
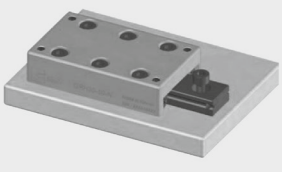
Crossed Roller Slide table

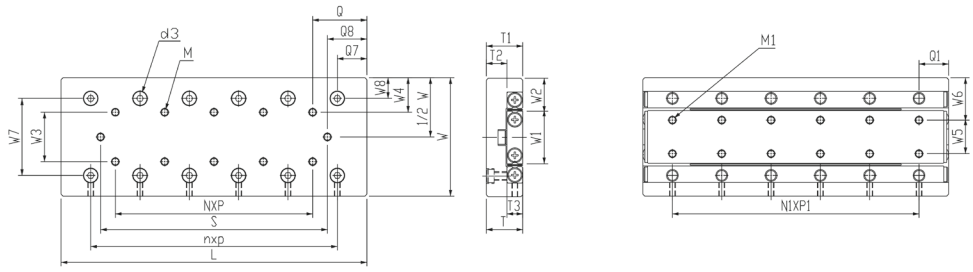
Table is composed of GMT crossed roller type slide rail set, V-grooved, crossed rollers matched with assembly plane in high accuracy processing,and base; installed with limit mechanism between two ends of table, is small type of limit stroke linear motion product in high rigidity. Performance as high accuracy and low friction, apply to electric parts used in automatic installation equipment and optical gauge.

Slide table unit seclection procedure

1.Select unit width and length
2. Select model per installation.
3. Acquire model no. from catalogs.
4. Select standard, antirust or corrosion-resisting per environment request

Installation selection

Screw lock	Countersink lock
GRA 	GRM 
GRS 	GRB 
GRC 	GRH 



Specification

Model no.			Max. stroke (mm)	Roller dia. (mm)	Main dimensions (mm)			Table mounting dimensions (mm)												
Standard	Antirust	Black coating			W	T	L	W_3	W_4	W_7	W_8	Q	Q_7	Q_8	N*P	M	n*p	S	d_3	T_1	T_2
GRA30-25	GRA30-25-N	GRA30-25-B	12	Ø1.5	30±0.1	11±0.1	25	10	10	18.4	5.8	12.5	7.5	2.5	/	M2	1*10	20	4.1	11	7
GRA30-35	GRA30-35-N	GRA30-35-B	18				35							4.5	1*10		2*10	26			
GRA30-45	GRA30-45-N	GRA30-45-B	25				45							6	2*10		3*10	33			
GRA30-55	GRA30-55-N	GRA30-55-B	32				55							7.5	3*10		4*10	40			
GRA30-65	GRA30-65-N	GRA30-65-B	40				65							8.5	4*10		5*10	48			
GRA30-75	GRA30-75-N	GRA30-75-B	45				75							11	5*10		6*10	53			
GRA30-85	GRA30-85-N	GRA30-85-B	50				85							13.5	6*10		7*10	58			
GRA40-35	GRA40-35-N	GRA40-35-B	18	Ø2.0	40±0.1	14±0.1	35	15	12.5	25	7.5	17.5	10	3	/	M3	1*15	29	7.5	15	7
GRA40-50	GRA40-50-N	GRA40-50-B	30	Ø3.0		15±0.1	50			25.5	7.25		12.5	4.5	1*15		1*25	41			
GRA40-65	GRA40-65-N	GRA40-65-B	40				65						20	7	2*15		1*25	51			
GRA40-80	GRA40-80-N	GRA40-80-B	50				80						15	9.5	3*15		2*25	61			
GRA40-95	GRA40-95-N	GRA40-95-B	60				95						22.5	12	4*15		2*25	71			
GRA40-110	GRA40-110-N	GRA40-110-B	70				110						17.5	14.5	5*15		3*25	81			
GRA40-125	GRA40-125-N	GRA40-125-B	80				125						25	17	6*15		3*25	91			
GRA60-55	GRA60-55-N	GRA60-55-B	30	Ø3.0	60±0.1	18.5±0.1	55	25	17.5	39	10.5	27.5	15	5.5	/	M4	1*25	44	7.5	18.5	10.5
GRA60-80	GRA60-80-N	GRA60-80-B	45				80							10.5	1*25		2*25	59			
GRA60-105	GRA60-105-N	GRA60-105-B	60				105							15.5	2*25		3*25	74			
GRA60-130	GRA60-130-N	GRA60-130-B	75				130							20.5	3*25		4*25	89			
GRA60-155	GRA60-155-N	GRA60-155-B	90				155							25.5	4*25		5*25	104			
GRA60-180	GRA60-180-N	GRA60-180-B	105				180							30.5	5*25		6*25	119			
GRA60-205	GRA60-205-N	GRA60-205-B	130				205							30.5	6*25		7*25	144			

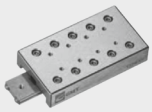
Ordering Example :	GRA	-	30	-	25	-	N
	A type table		Table width		Table length		Antirust

GMT

GRA



GRA-N



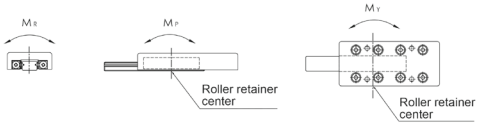
GRA-B



Material specification

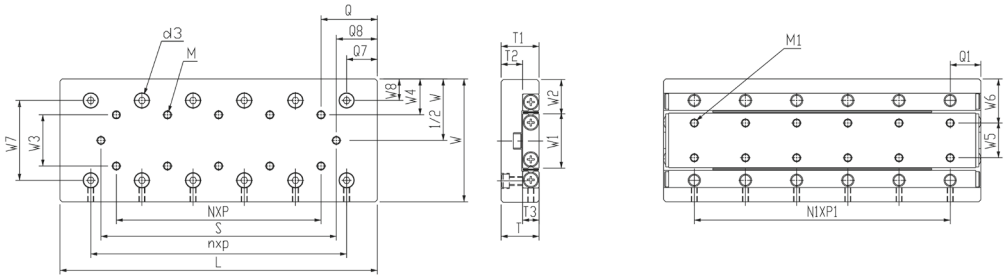
Component / Material / Model no.	Table	Rail	Retainer	Roller
GRA	Aluminum alloy +black anodized	SUJ2	SUS304	SUJ2
GRA - N	S50C+Ni	SUJ2+Ni	SUS304	SUJ2
GRA - B	S50C +phosphate	SUJ2	SUS304	SUJ2

GRA-N No Surface finished to V-groove surface of the rail.



★ Each of load and torque changes oppositely in stroke variation

Base mounting dimensions (mm)								Basic dynamic load rating C(N)	Basic static load rating Co(N)	Allow-able load Fu(N)	Static rated moment			Weight (kg)		Table moving accuracy (μm)	
T_3	W_1	W_2	W_5	W_6	N_1*P_1	Q_1	M_1				M_R (N•m)	M_P (N•m)	M_Y (N•m)	Standard	Antirust	Center parallelism	Side parallelism
4	12.8	8.6	/	15	1*10	7.5	M2	379	576	192	2.6	1.2	1.4	0.03	0.05	2	4
					2*10			523	865	288	3.9	2.6	3.0	0.04	0.08		
					3*10			657	1,153	384	5.2	4.6	5.2	0.05	0.10		5
					4*10			783	1,441	480	6.5	7.2	7.9	0.06	0.12		
					5*10			903	1,729	576	7.8	10.4	11.2	0.07	0.15		
					6*10			1,131	2,306	769	10.4	18.4	17.3	0.09	0.17		
					7*10			1,240	2,594	865	11.7	23.3	22.0	0.10	0.19		
6	17	11.5	/	20	1*15	10	M3	8,95	1,170	390	7.0	3.1	3.9	0.07	0.13	2	4
8	13.1	13.5			1*25			2,901	4,567	1,522	42.6	22.8	26.6	0.13	0.21		
					1*25	17.5		2,901	4,567	1,522	42.6	22.8	19.0	0.14	0.25		5
					2*25	10		4,338	7,611	2,537	71.0	63.4	57.1	0.20	0.33		
					2*25	17.5		3,640	6,089	2,030	56.8	40.6	45.7	0.21	0.36		
					3*25			5,005	9,133	3,044	85.2	91.3	98.9	0.27	0.45	3	6
					3*25	25		5,005	9,133	3,044	85.2	91.3	83.7	0.28	0.48		
8	26.6	16.7	17	21.5	1*25	15	M4	2,901	4,567	1,522	42.6	22.8	26.6	0.23	0.43	2	5
					2*25			4,338	7,611	2,537	71.0	63.4	57.1	0.34	0.62		
					3*25			5,646	10,655	3,552	99.5	124.3	115.4	0.45	0.82	3	6
					4*25			6,268	12,178	4,059	113.7	162.4	172.5	0.57	1.02		
					5*25			7,462	15,222	5,074	142.1	253.7	266.4	0.66	1.21		
					6*25			8,603	18,266	6,089	170.5	365.3	350.1	0.77	1.41		7
					7*25			9,157	19,789	6,596	184.7	428.8	445.2	0.87	1.60		



Specification

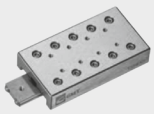
Model no.			Max. stroke (mm)	Roller dia. (mm)	Main dimensions (mm)			Table mounting dimensions (mm)												
Standard	Antirust	Black coating			W	T	L	W_3	W_4	W_7	W_8	Q	Q_7	Q_8	N*P	M	n*p	S	d_3	T_1	T_2
GRA80-85	GRA80-85-N	GRA80-85-B	50	Ø4.0	80±0.1	24±0.1	85	40	20	53	13.5	42.5	22.5	10.5	/	M5	1*40	64	9.5	24	13
GRA80-125	GRA80-125-N	GRA80-125-B	75				125							18	1*40		2*40	89			
GRA80-165	GRA80-165-N	GRA80-165-B	105				165							23	2*40		3*40	119			
GRA80-205	GRA80-205-N	GRA80-205-B	135				205							28	3*40		4*40	149			
GRA80-245	GRA80-245-N	GRA80-245-B	155				245							38	4*40		5*40	169			
GRA80-285	GRA80-285-N	GRA80-285-B	185				285							43	5*40		6*40	199			
GRA80-325	GRA80-325-N	GRA80-325-B	215				325							48	6*40		7*40	229			
GRA100-110	GRA100-110-N	GRA100-110-B	60	Ø6.0	100±0.1	31±0.1	110	50	25	64	18	55	30	16.5	/	M6	1*50	77	11	31	16
GRA100-160	GRA100-160-N	GRA100-160-B	95				160							23.5	1*50		2*50	113			
GRA100-210	GRA100-210-N	GRA100-210-B	130				210							31	2*50		3*50	148			
GRA100-260	GRA100-260-N	GRA100-260-B	165				260							38.5	3*50		4*50	183			
GRA100-310	GRA100-310-N	GRA100-310-B	200				310							46	4*50		5*50	218			
GRA100-360	GRA100-360-N	GRA100-360-B	235				360							53.5	5*50		6*50	253			
GRA100-410	GRA100-410-N	GRA100-410-B	265				410							63.5	6*50		7*50	283			
GRA145-210	GRA145-210-N	GRA145-210-B	130	Ø9.0	145±0.1	42.5±0.1	210	85	30	98	23.5	105	55	27	/	M8	1*100	156	14	43	21
GRA145-310	GRA145-310-N	GRA145-310-B	180				310							52	1*100		2*100	206			
GRA145-410	GRA145-410-N	GRA145-410-B	350				410								2*100		3*100	376			
GRA145-510	GRA145-510-N	GRA145-510-B	450				510							17	3*100		4*100	476			
GRA145-610	GRA145-610-N	GRA145-610-B	550				610								4*100		5*100	576			

Ordering Example :	GRA	-	30	-	25	-	N
	A type table		Table width		Table length		Antirust

GRA



GRA-N



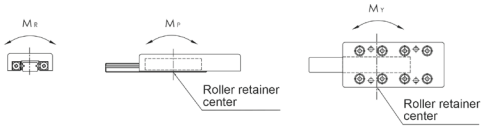
GRA-B



Material specification

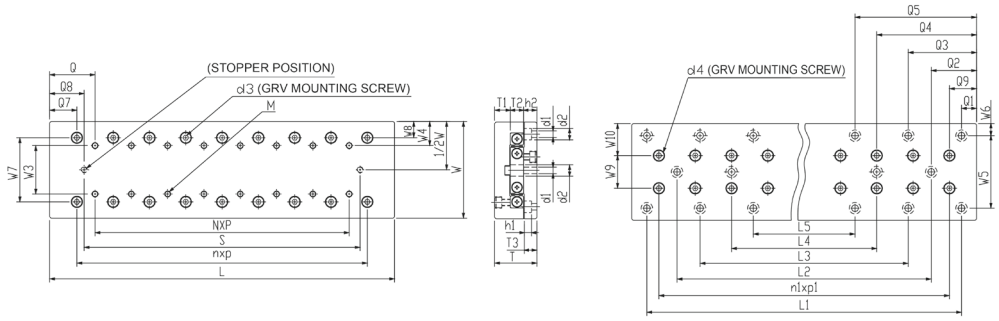
Component / Material / Model no.	Table	Rail	Retainer	Roller
GRA	Aluminum alloy +black anodized	SUJ2	SUS304	SUJ2
GRA - N	S50C+Ni	SUJ2+Ni	SUS304	SUJ2
GRA - B	S50C +phosphate	SUJ2	SUS304	SUJ2

GRA-N No Surface finished to V-groove surface of the rail.



★ Each of load and torque changes oppositely in stroke variation

Base mounting dimensions (mm)								Basic dynamic load rating C(N)	Basic static load rating Co(N)	Allow-able load Fu(N)	Static rated moment			Weight (kg)		Table moving accuracy (μm)	
T_3	W_1	W_2	W_5	W_6	N_1*P_1	Q_1	M_1				M_R (N·m)	M_P (N·m)	M_Y (N·m)	Standard	Antirust	Center parallelism	Side parallelism
11	38	21	27	26.5	1*40	22.5	M5	6,617	9,357	3,119	124.8	87.3	76.4	0.64	1.17	2	5
					2*40			9,097	14,035	4,678	187.1	196.5	180.1	0.95	1.72	3	6
					3*40			10,264	16,375	5,458	218.3	267.5	286.6	1.25	2.27		7
					4*40			12,496	21,053	7,018	280.7	442.1	466.7	1.56	2.83		
					5*40			14,612	25,732	8,577	343.1	660.4	690.5	1.87	3.39		
					6*40			16,646	30,410	10,137	405.5	922.4	957.9	2.18	3.94		
					7*40			18,612	35,089	11,696	467.8	1228.1	1187.2	2.49	4.50	4	8
15	42	29	26	37	1*50	30	M6	13,923	21,053	7,018	315.8	2525.6	221.1	1.31	2.39	3	6
					2*50			16,592	26,316	8,772	394.7	394.7	434.2	1.93	3.50		
					3*50			21,592	36,842	12,281	552.6	773.7	828.9	2.56	4.61		7
					4*50			26,285	47,369	15,790	710.5	1279.0	1207.9	3.16	5.70		
					5*50			30,744	57,895	19,298	868.4	1910.5	1823.7	3.78	6.81		
					6*50			35,024	68,421	22,807	1026.3	2668.4	2565.8	4.41	7.93	4	8
					7*50			39,160	78,948	26,316	1184.2	3552.6	3434.2	5.03	9.04		
21	68.4	38.3	46	49.5	1*100	55	M8	46,991	72,741	24,247	1745.8	1697.3	1527.6	5.35	9.30	3	7
					2*100			61,165	101,838	33,946	2444.1	3326.7	3564.3	7.96	13.79		
					3*100			67,898	116,386	38,795	2793.3	4345.1	4073.5	10.47	18.18	4	8
					4*100			80,829	145,482	48,494	3491.6	6789.2	6449.7	13.06	22.66		
					5*100			93,191	158,400	52800	2640.0	8870.4	8500.8	15.65	27.14		



Specification

Model no.			Max. stroke (mm)	Roller dia. (mm)	Main dimensions (mm)						Table mounting dimensions (mm)																
Standard	Antirust	Black coating			W	T	L	T_1	T_2	T_3	N*P	n*p	M	S	d_3	Q	Q_7	Q_8	W_3	W_4	W_7	W_8	L_1	L_2	L_3	n_1*p_1
GRB30-25	GRB30-25-N	GRB30-25-B	12	Ø1.5	30±0.1	17±0.1	25	7	4	5.5	/	1*10	M2	20	4.1	12.5	7.5	2.5	10	10	18.4	5.8	18	/	28	1*10
GRB30-35	GRB30-35-N	GRB30-35-B	18				35				1*10	2*10		26				4.5					28			2*10
GRB30-45	GRB30-45-N	GRB30-45-B	25				45				2*10	3*10		33				6					38			3*10
GRB30-55	GRB30-55-N	GRB30-55-B	32				55				3*10	4*10		40				7.5					48			4*10
GRB30-65	GRB30-65-N	GRB30-65-B	40				65				4*10	5*10		48				8.5					58		38	5*10
GRB30-75	GRB30-75-N	GRB30-75-B	45				75				5*10	6*10		53				11					68		48	6*10
GRB30-85	GRB30-85-N	GRB30-85-B	50				85				6*10	7*10		58				13.5					78		58	7*10
GRB40-35	GRB40-35-N	GRB40-35-B	18	Ø2.0	40±0.1	21±0.1	35	8	6	6.5	/	1*15	M3	29	6	17.5	10	3	15	12.5	25	7.5	25	/	40	1*15
GRB40-50	GRB40-50-N	GRB40-50-B	30	Ø3.0			50	7	8	5.5	1*15	1*25		41	7.5		12.5	4.5					40			1*25
GRB40-65	GRB40-65-N	GRB40-65-B	40				65				2*15			51			20	7					55			1*25
GRB40-80	GRB40-80-N	GRB40-80-B	50				80				3*15	2*25		61			15	9.5					70			2*25
GRB40-95	GRB40-95-N	GRB40-95-B	60				95				4*15			71			22.5	12					85		55	2*25
GRB40-110	GRB40-110-N	GRB40-110-B	70				110				5*15	3*25		81			17.5	14.5					100		70	3*25
GRB40-125	GRB40-125-N	GRB40-125-B	80				125				6*15			91			25	17					115		85	3*25
GRB60-55	GRB60-55-N	GRB60-55-B	30	Ø3.0	60±0.1	28±0.1	55	10.5	8	9	/	1*25	M4	44	7.5	27.5	15	5.5	25	17.5	39	10.5	35	/	/	1*25
GRB60-80	GRB60-80-N	GRB60-80-B	45				80				1*25	2*25		59				10.5					60			2*25
GRB60-105	GRB60-105-N	GRB60-105-B	60				105				2*25	3*25		74				15.5					85			3*25
GRB60-130	GRB60-130-N	GRB60-130-B	75				130				3*25	4*25		89				20.5					110			4*25
GRB60-155	GRB60-155-N	GRB60-155-B	90				155				4*25	5*25		104				25.5					135	85		5*25
GRB60-180	GRB60-180-N	GRB60-180-B	105				180				5*25	6*25		119				30.5					160	110		6*25
GRB60-205	GRB60-205-N	GRB60-205-B	130				205				6*25	7*25		144				30.5					185	135	85	7*25

Ordering Example :	GRB	-	30	-	25	-	N
	B type table		Table width		Table length		Antirust

GRB



GRB-N



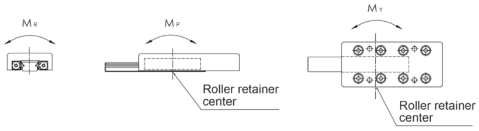
GRB-B



Material specification

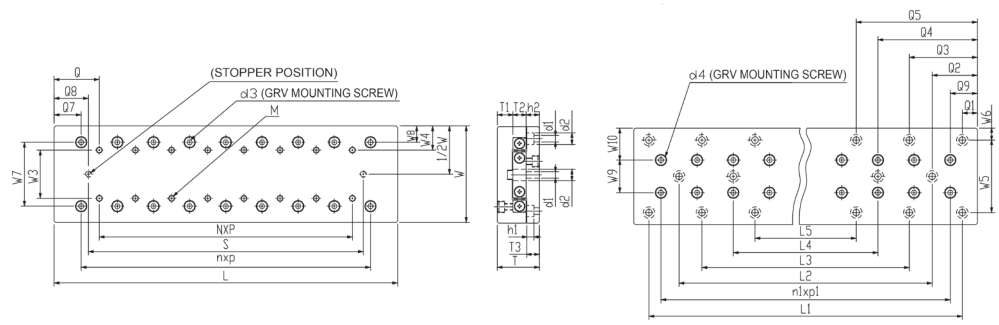
Component / Material / Model no.	Table	Rail	Retainer	Roller
GRB	Aluminum alloy +black anodized	SUJ2	SUS304	SUJ2
GRB - N	S50C+Ni	SUJ2+Ni	SUS304	SUJ2
GRB - B	S50C +phosphate	SUJ2	SUS304	SUJ2

GRB-N No Surface finished to V-groove surface of the rail.



★ Each of load and torque changes oppositely in stroke variation

Base mounting dimensions (mm)													Basic dynamic load rating C(N)	Basic static load rating Co(N)	Allow-able load Fu(N)	Static rated moment			Weight (kg)		Table moving accuracy (μm)	
Q_1	Q_2	Q_3	Q_9	W_5	W_6	W_9	W_{10}	d_1	d_2	d_4	h_1	h_2				M_R (N•m)	M_P (N•m)	M_Y (N•m)	Standard	Antirust	Center parallelism	Side parallelism
3.5	/	/	7.5	22	4	/	15	2.55	4.1	4.1	2.5	6	379	576	192	2.6	1.2	1.4	0.04	0.09	2	4
													523	865	288	3.9	2.6	3.0	0.06	0.12		
													657	1,153	384	5.2	4.6	5.2	0.07	0.16		
		13.5											783	1,441	480	6.5	7.2	7.9	0.09	0.19		5
													903	1,729	576	7.8	10.4	11.2	0.10	0.23		
													1,131	2,306	769	10.4	18.4	17.3	0.12	0.27		
													1,240	2,594	865	11.7	23.3	22.0	0.14	0.30		
5	/	/	10	30	5	/	20	3.5	6	6	3.5	7	895	1,170	390	7.0	3.1	3.9	0.10	0.20	2	4
											3.2	6	2,901	4,567	1,522	42.6	22.8	26.6	0.16	0.29		
			17.5										2,901	4,567	1,522	42.6	22.8	19.0	0.18	0.36		5
		20	10										4,338	7,611	2,537	71.0	63.4	57.1	0.25	0.46		
			17.5										3,640	6,089	2,030	56.8	40.6	45.7	0.27	0.53		
			25										5,005	9,133	3,044	85.2	91.3	98.9	0.34	0.63	3	6
													5,005	9,133	3,044	85.2	91.3	83.7	0.36	0.69		
10	/	/	15	40	10	17	21.5	4.5	7.5	7.5	4.5	9.5	2,901	4,567	1,522	42.6	22.8	26.6	0.31	0.65	2	5
													4,338	7,611	2,537	71.0	63.4	57.1	0.46	0.96		
													5,646	10,655	3,552	99.5	124.3	115.4	0.61	1.27		
													6,268	12,178	4,059	113.7	162.4	172.5	0.76	1.57		6
	35												7,462	15,222	5,074	142.1	253.7	266.4	0.90	1.87	3	
													8,603	18,266	6,089	170.5	365.3	350.1	1.05	2.18		7
		60											9,157	19,789	6,596	184.7	428.8	445.2	1.20	2.47		



Specification

Model no.			Max. stroke (mm)	Roller dia. (mm)	Main dimensions (mm)						Table mounting dimensions (mm)																
Standard	Antirust	Black coating			W	T	L	T_1	T_2	T_3	N*P	n*p	M	S	d_3	Q	Q_7	Q_8	W_3	W_4	W_7	W_8	L_1	L_2	L_3	L_4	L_5	n_1*p_1
GRB80-85	GRB80-85-N	GRB80-85-B	50	Ø4.0	80±0.1	35±0.1	85	13	11	10.5	/	1*40	M5	64	9.5	42.5	22.5	10.5	40	20	53	13.5	40	/	/	/	/	1*40
GRB80-125	GRB80-125-N	GRB80-125-B	75				125				1*40	2*40		89				18					80					2*40
GRB80-165	GRB80-165-N	GRB80-165-B	105				165				2*40	3*40		119				23					120					3*40
GRB80-205	GRB80-205-N	GRB80-205-B	135				205				3*40	4*40		149				28					160		80			4*40
GRB80-245	GRB80-245-N	GRB80-245-B	155				245				4*40	5*40		169				38					200		120			5*40
GRB80-285	GRB80-285-N	GRB80-285-B	185				285				5*40	6*40		199				43					240		160			6*40
GRB80-325	GRB80-325-N	GRB80-325-B	215				325				6*40	7*40		229				48					280		200		120	7*40
GRB100-110	GRB100-110-N	GRB100-110-B	60	Ø6.0	100±0.1	45±0.1	110	16	15	13	/	1*50	M6	77	11	55	30	16.5	50	25	64	18	90	/	/	/	/	1*50
GRB100-160	GRB100-160-N	GRB100-160-B	95				160				1*50	2*50		113				23.5					140					2*50
GRB100-210	GRB100-210-N	GRB100-210-B	130				210				2*50	3*50		148				31					190	90	/			3*50
GRB100-260	GRB100-260-N	GRB100-260-B	165				260				3*50	4*50		183				38.5					240	140				4*50
GRB100-310	GRB100-310-N	GRB100-310-B	200				310				4*50	5*50		218				46					290	190				5*50
GRB100-360	GRB100-360-N	GRB100-360-B	235				360				5*50	6*50		253				53.5					340	240	140			6*50
GRB100-410	GRB100-410-N	GRB100-410-B	265				410				6*50	7*50		283				63.5					390	290	190			7*50
GRB100-510	GRB100-510-N	GRB100-510-B	350				450				7*50	8*50		390				60					450	390	290			8*50
GRB145-210	GRB145-210-N	GRB145-210-B	130	Ø9.0	145±0.1	60±0.1	210	21	22	16	/	1*100	M8	156	14	105	55	27	85	30	98	23.5	100	/	/	/	/	1*100
GRB145-310	GRB145-310-N	GRB145-310-B	180				310				1*100	2*100		206				52					200					2*100
GRB145-410	GRB145-410-N	GRB145-410-B	350				410				2*100	3*100		376									300	100				3*100
GRB145-510	GRB145-510-N	GRB145-510-B	450				510				3*100	4*100		476				17					400	200				4*100
GRB145-610	GRB145-610-N	GRB145-610-B	550				610				4*100	5*100		576									500	300				5*100

Ordering Example :	GRB	-	30	-	25	-	N
	B type table		Table width		Table length		Antirust

GRB



GRB-N



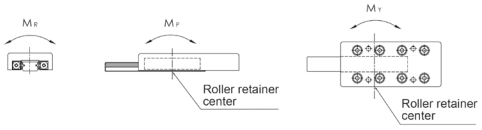
GRB-B



Material specification

Component / Material / Model no.	Table	Rail	Retainer	Roller
GRB	Aluminum alloy +black anodized	SUJ2	SUS304	SUJ2
GRB - N	S50C+Ni	SUJ2+Ni	SUS304	SUJ2
GRB - B	S50C +phosphate	SUJ2	SUS304	SUJ2

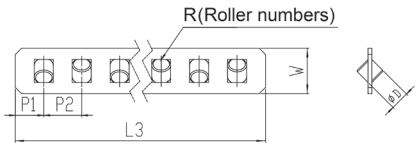
GRB-N No Surface finished to V-groove surface of the rail.



★ Each of load and torque changes oppositely in stroke variation

Base mounting dimensions (mm)														Basic dynamic load rating C(N)	Basic static load rating Co(N)	Allow-able load Fu(N)	Static rated moment			Weight (kg)		Table moving accuracy (μm)	
Q_1	Q_2	Q_3	Q_4	Q_5	Q_9	W_5	W_6	W_9	W_{10}	d_1	d_2	d_4	h_1	h_2				M_R (N•m)	M_P (N•m)	M_Y (N•m)	Standard	Antirust	Center parallelism	Side parallelism
22.5	/	/	/	/	22.5	60	10	27	26.5	5.5	9.5	9.5	6	11	6,617	9,357	3,119	124.8	87.3	76.4	0.84	1.72	2	5
															9,097	14,035	4,678	187.1	196.5	180.1	1.25	2.55	3	6
															10,264	16,375	5,458	218.3	267.5	286.6	1.65	3.37		
		62.5													12,492	21,053	7,018	280.7	442.1	466.7	2.06	4.18		7
															14,612	25,732	8,577	343.1	660.4	690.5	2.46	5.00		
				102.5											16,646	30,410	10,137	405.5	922.4	957.9	2.87	5.83		
															18,612	35,089	11,696	467.8	1228.1	1187.2	3.27	6.64	4	8
10	/	/	/	/	30	60	20	26	37	7	11	11	6.5	14	13,923	21,053	7,018	315.8	252.6	221.1	1.72	3.51	3	6
															16,592	26,316	8,772	394.7	394.7	434.2	2.53	5.15		
		/													21,596	36,842	12,281	552.6	773.7	828.9	3.34	6.79		7
															26,285	47,369	15,790	710.5	1279.0	1207.9	4.13	8.39		
	60														30,744	57,895	19,298	868.4	1910.5	1823.7	4.95	10.04		
															35,024	68,421	22,807	1026.3	2668.4	2565.8	5.75	11.64	4	8
		110													39,160	78,948	26,316	1184.2	3552.6	3434.2	6.56	13.28		
															45,141	84,600	28,200	1269.0	4568.4	4441.5	8.17	16.52		
55	/	/	/	/	55	90	27.5	46	49.5	9	14	14	8.5	17.5	46,991	72,741	24,247	1745.8	1697.3	1527.6	6.75	13.23	3	7
															61,165	101,838	33,946	2444.1	3326.7	3564.3	10.03	19.62		
	155														67,898	116,386	38,795	2793.3	4345.1	4073.5	13.21	25.88	4	8
															80,829	145,482	48,494	3491.6	6789.2	6449.7	16.48	32.26		
															87,562	160,030	53,343	3840.8	7807.6	6958.9	19.75	38.64		





Guide code：EX : GR0206 GR= roller (GB=ball), 02=diameter, 06= roller numbers

Model no.	Retainer dimensions (mm)					Basic dynamic load rating	Basic static load rating	Material standard / Antirust		Material corrosion-resisting	
	ØD	P1	P2	T (thickness)	W (width)	C N	Co N	Retainer	Roller	Retainer	Roller
GR01	Ø1.5	1.9	3	0.2	3.75	125	144	SUS304	SUJ2	SUS304	SUS440C
GR02	Ø2.0	2.8	4	0.3	5.50	293	292				
GR03	Ø3.0	3.2	5	0.4	7.50	638	761				
GR04	Ø4.0	4.3	7	0.5	9.80	1230	1170				
GR06	Ø6.0	5.4	9	0.8	14.00	2570	2632				
GR09	Ø9.0	9.0	14	1.0	20.50	7190	7274				
GR12	Ø12.0	11.0	18	1.2	26.50	14700	13187				

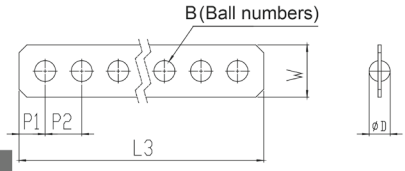
Model no.	Retainer dimensions (mm)							Rail length	Model no.	Retainer dimensions (mm)							Rail length
	ØD	P1	P2	T (thickness)	W (width)	L3 (length)	R (roller qyt)			ØD	P1	P2	T (thickness)	W (width)	L3 (length)	R (roller qyt)	
GR0105	Ø1.5	1.9	3	0.2	3.75	15.8	5	GRV01-20	GR0408	Ø4	4.3	7	0.5	9.8	57.6	8	GRV04-80
GR0107						21.8	7	GRV01-30	GR0411						78.6	11	GRV04-120
GR0109						27.8	9	GRV01-40	GR0414						99.6	14	GRV04-160
GR0111						33.8	11	GRV01-50	GR0418						127.6	18	GRV04-200
GR0113						39.8	13	GRV01-60	GR0421						148.6	21	GRV04-240
GR0115						45.8	15	GRV01-70	GR0424						169.6	24	GRV04-280
GR0117						51.8	17	GRV01-80	GR0428						197.6	28	GRV04-320
GR0205	Ø2	2.8	4	0.3	5.5	21.6	5	GRV02-30	GR0431						218.6	31	GRV04-360
GR0208						33.6	8	GRV02-45	GR0434						239.6	34	GRV04-400
GR0210						41.6	10	GRV02-60	GR0438						267.6	38	GRV04-440
GR0212						49.6	12	GRV02-75	GR0441						288.6	41	GRV04-480
GR0214						57.6	14	GRV02-90	GR0607	Ø6	5.4	9	0.8	14	64.8	7	GRV06-100
GR0216						65.6	16	GRV02-105	GR0611						100.8	11	GRV06-150
GR0218						73.6	18	GRV02-120	GR0614						127.8	14	GRV06-200
GR0221						85.6	21	GRV02-135	GR0617						154.8	17	GRV06-250
GR0223						93.6	23	GRV02-150	GR0620						181.8	20	GRV06-300
GR0225						101.6	25	GRV02-165	GR0624						217.8	24	GRV06-350
GR0227						109.6	27	GRV02-180	GR0627						244.8	27	GRV06-400
GR0307	Ø3	3.2	5	0.4	7.5	36.4	7	GRV03-50	GR0630						271.8	30	GRV06-450
GR0310						51.4	10	GRV03-75	GR0633						298.8	33	GRV06-500
GR0313						66.4	13	GRV03-100	GR0636						325.8	36	GRV06-550
GR0315						76.4	15	GRV03-125	GR0640						361.8	40	GRV06-600
GR0318						91.4	18	GRV03-150	GR0909	Ø9	9	14	1	20.5	130	9	GRV09-200
GR0321						106.4	21	GRV03-175	GR0913						186	13	GRV09-300
GR0324						121.4	24	GRV03-200	GR0918						256	18	GRV09-400
GR0327						136.4	27	GRV03-225	GR0922						312	22	GRV09-500
GR0330						151.4	30	GRV03-250	GR0926						368	26	GRV09-600
GR0333						166.4	33	GRV03-275	GR1207	Ø12	11	18	1.2	26.5	130	7	GRV12-200
GR0336						181.4	36	GRV03-300	GR1211						202	11	GRV12-300
									GR1214						256	14	GRV12-400
									GR1217						310	17	GRV12-500
									GR1220						364	20	GRV12-600

Model no.	GR	02	08
	Roller	diameter	Roller numbers
	GR-S	02	08
	Roller Antirust Material	diameter	Roller numbers

GR	03	12	03
Type	Dia	Roller(ball) qty	Roller(ball) material
GR : Roller	01=Ø1.5	per request	S : SUS440C
	02=Ø2		
	03=Ø3		
	04=Ø4		
	06=Ø6		
GB : Ball	09=Ø9		
	12=Ø12		

★ Customized specification, purchasement per appoint roller quantity with the standard roller diameter.





Guide code：EX : GB0310 GB= BALL (GR=rollerl), 02=Diameter, 10= ball numbers

Model no.	Retainer dimensions (mm)					Basic dynamic load rating	Basic static load rating	Material standard	
	ØD	P1	P2	T (thickness)	W (width)	C N	Co N	Retainer	Ball
GB01	Ø1.5	1.75	3	0.2	3.5	7.6	21.0	Phosphoy bronze (C5191)	SUJ2
GB02	Ø2.0	2.30	4	0.3	5.0	12.0	37.0		
GB03	Ø3.0	2.86	5	0.4	7.0	26.5	84.0		
GB04	Ø4.0	3.90	7	0.5	9.0	43.0	148.0		
GB06	Ø6.0	4.80	9	0.6	13.5	92.0	330.0		
GB09	Ø9.0	8.50	14	1.0	19.0	207.0	750.0		
GB12	Ø12.0	12.50	20	1.0	25.0	300.0	1320.0		

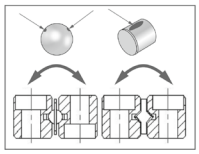
Model no.	Retainer dimensions (mm)							Rail length
	ØD	P1	P2	T (thickness)	W (width)	L3 (length)	R (ball qyt)	
GB0105	Ø1.5	1.75	3	0.2	3.5	15.5	5	GBV01-20
GB0107						21.5	7	GBV01-30
GB0109						27.5	9	GBV01-40
GB0111						33.5	11	GBV01-50
GB0113						39.5	13	GBV01-60
GB0115						45.5	15	GBV01-70
GB0117						51.5	17	GBV01-80
GB0205	Ø2	2.3	4	0.3	5	20.6	5	GBV02-30
GB0208						32.6	8	GBV02-45
GB0210						40.6	10	GBV02-60
GB0212						48.6	12	GBV02-75
GB0214						56.6	14	GBV02-90
GB0216						64.6	16	GBV02-105
GB0218						72.6	18	GBV02-120
GB0221						84.6	21	GBV02-135
GB0223						92.6	23	GBV02-150
GB0225						100.6	25	GBV02-165
GB0227						108.6	27	GBV02-180
GB0307	Ø3	2.86	5	0.4	7	35.7	7	GBV03-50
GB0310						50.7	10	GBV03-75
GB0313						65.7	13	GBV03-100
GB0315						75.7	15	GBV03-125
GB0318						90.7	18	GBV03-150
GB0321						105.7	21	GBV03-175
GB0324						120.7	24	GBV03-200
GB0327						135.7	27	GBV03-225
GB0330						150.7	30	GBV03-250
GB0333						165.7	33	GBV03-275
GB0336						180.7	36	GBV03-300

Model no.	Retainer dimensions (mm)							Rail length
	ØD	P1	P2	T (thickness)	W (width)	L3 (length)	R (ball qyt)	
GB0408	Ø4	3.9	7	0.5	9	56.8	8	GBV04-80
GB0411						77.8	11	GBV04-120
GB0414						98.8	14	GBV04-160
GB0418						126.8	18	GBV04-200
GB0421						147.8	21	GBV04-240
GB0424						168.8	24	GBV04-280
GB0428						196.8	28	GBV04-320
GB0431						217.8	31	GBV04-360
GB0434						238.8	34	GBV04-400
GB0438						266.8	38	GBV04-440
GB0441						287.8	41	GBV04-480
GB0607	Ø6	4.8	9	0.6	13.5	63.6	7	GBV06-100
GB0611						99.6	11	GBV06-150
GB0614						126.6	14	GBV06-200
GB0617						153.6	17	GBV06-250
GB0620						180.6	20	GBV06-300
GB0624						216.6	24	GBV06-350
GB0627						243.6	27	GBV06-400
GB0630						270.6	30	GBV06-450
GB0633						297.6	33	GBV06-500
GB0636						324.6	36	GBV06-550
GB0640						360.6	40	GBV06-600

Model no.	GB	-	03	-	10
	ball		Dia.		Ball qty

★ Customized specification, purchasement per appoint roller quantity with the standard roller diameter.

● Character comparison of roller & ball



● Suggestion：

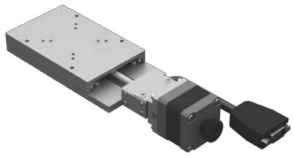
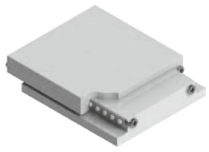
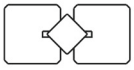
(1)Ball type：Usually in light load, high speed, retainer is made of bronze alloy.
(2)Roller type：Usually in mid-high load, high speed, retainer is made per enviornment request.
(3)Running inertial, temperature rise,and environment shall be all taken into account while using.

Item	Roller	Ball
Rigidity	◎◎◎◎	◎◎
Load	◎◎◎◎	◎◎
Accuracy	◎◎◎◎	◎◎◎
Life	◎◎◎◎	◎◎◎
Friction	◎◎	◎◎◎◎
Speed	◎◎	◎◎◎◎

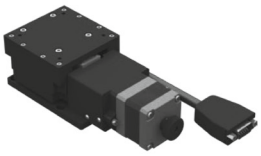
◎：Normal ◎◎：Good
◎◎◎：Better ◎◎◎◎：Best

GMT

X axis (XY axis)

AX6020-A2/HP	AX6030-A2/HP	AX7050-S2/HP
		
Material		**Material**
Aluminum alloy		Stainless steel
Guiding - Crossed roller		**Guiding - Linear ball**
		
V grooved rail		**Gothic rail**
		
Drive type - Ball screw	**Drive type - Ball screw**	**Drive type - Ball screw**
		
Table size (mm)	**Table size (mm)**	**Table size (mm)**
□60	60X70	70X110
Travel stroke (mm)	**Travel stroke (mm)**	**Travel stroke (mm)**
20	30	50
Load capacity (kgf)		**Load capacity (kgf)**
5		10
Repeatability accuracy		**Repeatability accuracy**
±0.3μm		±0.5μm
Page		**Page**
C129~130		**C131~132**
Electrical Specification Page		
D10		

Slide wedge driven horizontal elevator Z axis

AZ7010-A6/HP	AZ□-A6/HP
	

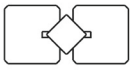
Material

Aluminum alloy

Guiding - Crossed roller



V grooved rail



Drive type - Ball screw	Drive type - Ball screw
	

Table size (mm)	Table size (mm)	
□70	60X88	70X76
Travel stroke (mm)	**Travel stroke (mm)**	
10	4	
Load capacity (kgf)	**Load capacity (kgf)**	
10	8	

Repeatability accuracy

±0.5μm

Page	Page
C133~134	**C135~136**
Electrical Specification Page	**Electrical Specification Page**
D11	**D12**

GMT

NOTES:

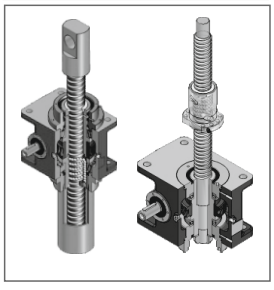
Screwjacks & Industrial Linear Actuators

Servomech®
new ideas in linear motion

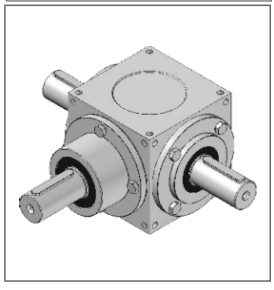
Acme Screwjacks



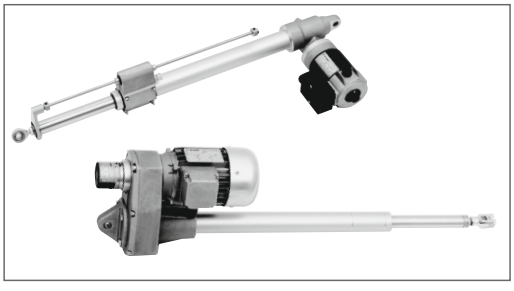
Ball Screwjacks

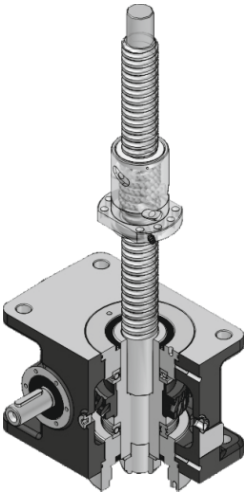


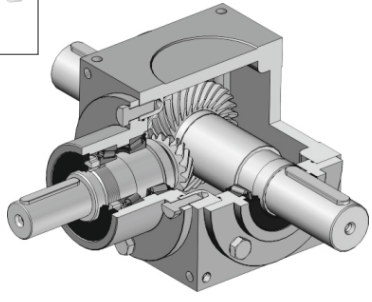
Bevel Gearboxes



Industrial Actuators







SERVOMECH

Servomech®
new ideas in linear motion

Linear-Mech®
electromechanical actuators

The right alternative to hydraulic and pneumatic cylinders

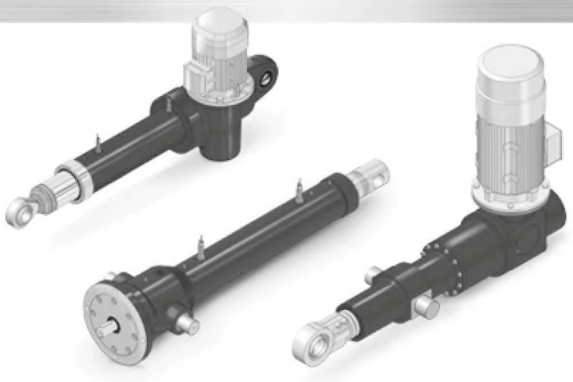


GOOD REASONS TO GO ELECTRIC

Servomech®

ELECTROMECHANICAL CYLINDERS

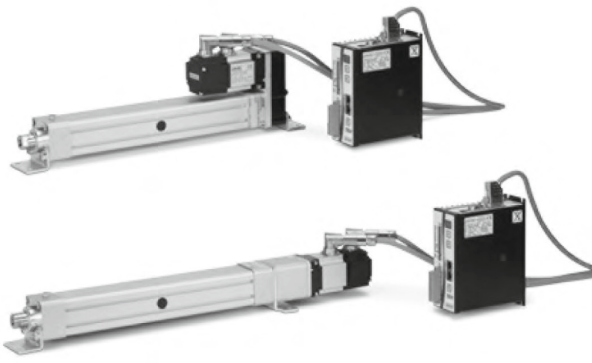
ATL SERIES | ILA SERIES



Linear-Mech®

LINEAR SERVOACTUATORS

SA IL SERIES | SA PD SERIES



The right alternative to hydraulic cylinders and pneumatic cylinders



GOOD REASONS TO GO ELECTRIC

- IMPROVE THE EFFICIENCY BY REDUCING ENERGY CONSUMPTION
- BETTER CONTROL: POSITION - SPEED - FORCE
- ADD VALUE TO YOUR PRODUCT
- GREATER SAFETY AND RELIABILITY
- SAVE MONEY: EASIER INSTALLATION AND LESS MAINTENANCE

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Web: www.endo.com.tr
Mail: satis@endo.com.tr
Tel: +90 232 433 85 15

Servomech. Linear-Mech.

The right alternative to hydraulic and pneumatic cylinders

LINEAR ACTUATORS
Acme and ball screw drive
Standard IEC motor flange, AC or DC motors
Load capacity from 300 N to 350 kN
Linear speed from 1 mm/s to 875 mm/s

LINEARANTRIEBE
Trapez- und Kugelumlaufspindeln
Standard IEC Motorflansch
AC oder DC Motoren
Hubkraft von 300 N bis zu 350 kN
Hubgeschwindigkeit von 1 mm/s bis zu 875 mm/s



BALL SCREWS AND NUTS
100% Made in Italy by Servomech
Accuracy grade IT3 and IT5, rolled ball screw IT7
Diameter from 12 mm to 120 mm
Standard DIN 69051 or customized execution available

KUGELUMLAUFSPINDELN - UND MUTTERN
100% Made in Italy von Servomech
Toleranzklasse IT3 und IT5
Gerollte Kugelumlaufspindel Toleranzklasse IT7
Durchmesser von 12 mm bis zu 120 mm
Standard DIN 69051 oder
Kundenausführungen lieferbar



LINEAR SERVO ACTUATORS
In-Line Design or Parallel Design
fitting Linearmech brushless servomotors and drives
Load capacity up to 42 kN
Linear speed up to 1,5 m/s

SERVO-LINEARANTRIEBE
In-Line Design oder Parallel Design
mit Linearmech brushless
Servomotoren und Steuerungen
Hubkraft bis zu 42 kN
Hubgeschwindigkeit bis zu 1,5 m/s



BALL SCREW JACKS
Servomech Patented Design
Engineered new technology and design
for higher efficiency and performances
Positioning accuracy, high stiffness and reliability
Load capacity from 5 kN to 350 kN
Linear speed up to 2 m/s

KUGELGEWINDE HUBGETRIEBE
mit Servomech Patent-Design
Neue Technologie und Design
für einen höheren Wirkungsgrad und
Spitzenleistungen Positioniergenauigkeit,
hohe Steifigkeit und Zuverlässigkeit
Hubkraft von 5 kN bis zu 350 kN
Hubgeschwindigkeit bis zu 2 m/s



LINEAR ACTUATORS
In-Line Design or Trunnion Mounting Design
Acme and ball screw drive
Load capacity from 15 kN to 200 kN

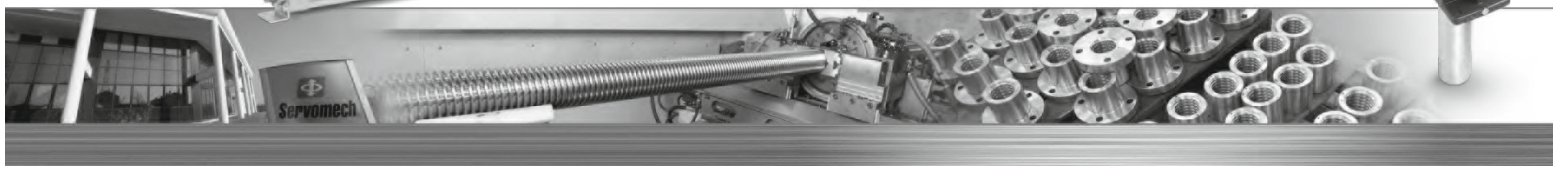
LINEARANTRIEBE
In-Line Design oder mit Schwenkzapfen
mit Trapez-und Kugelumlaufspindel
Hubkraft von 15 kN bis zu 200 kN



ACME SCREW JACKS
Load capacity from 5 kN to 1.000 kN
Acme screw diameter from 18 mm to 160 mm

TRAPEZ SPINDEL-HUBGETRIEBE
Hubkraft von 5 kN bis zu 1.000 kN
Trapezspindel-Durchmesser
von 18 mm bis zu 160 mm





Linear-Mech®

ELECTROMECHANICAL CYLINDERS

Industrial light duty applications



CLA and CLB Series



ATL and BSA Series



LMR Series

5 GOOD REASONS TO GO ELETRIC

1. IMPROVE EFFICIENCY LESS ENERGY CONSUMPTION
2. SELF-LOCKING HOLD THE POSITION UNDER LOAD
3. REPEATABILITY POSITIONING CONTROL
4. MAINTENANCE FREE
5. EASY INSTALLATION AND USE

Linearmech electromechanical linear actuators are easy-to-use and reliable products.
Great and convenient ***alternative to the use of pneumatic cylinders*** recommended in case of medium to low speed application, intermittent duty cycle operation and self-locking requirement when load is applied, both pull or push load.

The light duty electromechanical alternative to fluid driven technology

Linearmech electromechanical cylinders
Easy-to-use and reliable products



Linearmech electromechanical actuators are available with ***acme screw drive***, recommended for intermittent operation and self-locking condition; also available with ***ball screw drive***, recommended in case of medium-high operating cycle.
Linearmech cylinders are successfully applied in ***industrial applications and automation***, food industry, medical industry, construction equipment and agricultural machinery, marine applications, vehicle automation for disabled and every time is required a ***reliable, technological and good quality product*** to perform a linear movement.
Available with AC or DC motors. Wide range of mounting accessories and positioning control (limit switches, encoder, potentiometer). Linearmech linear actuators are easy-to-use products with compact dimensions, robust and maintenance-free construction.
Linearmech electromechanical cylinders consist of 3 main series: ***LMR Series, ATL and BSA Series, CLA and CLB Series.***

Limit Switches Option

Integrated
Electric limit switches, cam-operated, available on LMR Series actuators.
The set-up of switches position is very easy and intuitive.
The cam design hold the position detection in every condition.
Built-in limit switches, placed inside the profile dimensions.
Available on request FC2X option (switches internally wired between power supply and electric motor, to switch-off the motor supply directly without relays).



Protected in limit switches box (IP65)
Electric limit switches, cam-operated, protected under a sealed cover (IP65), available on ***CLA and CLB Series*** actuators.
Available on request FC2X option (switches internally wired between power supply and electric motor, to switch-off the motor supply directly without relays, DC and AC 1-phase motor only).



External
Magnetic reeds fixed with support clamps to actuator's protective tube. Available on ***ATL and BSA Series*** actuators.
Used to determine any intermediate position in the working stroke.
The set-up of switches position is very easy and intuitive.



LMR Series

Compact design linear actuators

Electromechanical actuators with right angle design motor
Acme screw drive
Input drive with worm gear

3 standard sizes available
Load capacity push-pull up to ***6.000 N***
Linear speed up to 52 mm/s

Electric motors available: DC motors (12V, 24V, 36V).
Electric limit switches, integrated and easy to set-up.
Incremental encoder for position control.





ATL and BSA Series

Robust and reliable linear actuators

Electromechanical actuators with right angle design motor
Aluminum alloy housing with high resistance
Input drive with worm gear

ATL Series: acme screw drive
BSA Series: ball screw drive

5 standard sizes available
Load capacity push-pull up to ***11.000 N***
Linear speed up to 150 mm/s

Electric motors available: DC motors,
AC motors (1-phase or 3-phase).

Magnetic and electromechanical external limit switches available.

CLA and CLB Series

Linear actuators with limit switches and potentiometer

Electromechanical actuators with right angle design motor
Aluminum alloy housing with high resistance
Input drive with worm gear

CLA Series: acme screw drive
CLB Series: ball screw drive

5 standard sizes available
Load capacity push-pull up to ***10.000 N***
Linear speed up to 100 mm/s

Electric motors available: DC motors,
AC motors (1-phase or 3-phase).
Cam-operated limit switches and rotary potentiometer protected under a sealed cover (IP65).



Main features

Linearmech electromechanical cylinders consist of 3 main series: ***LMR Series, ATL and BSA Series, CLA and CLB Series.***
Each family is designed and developed to represent a series of sizes with an adequate reciprocal gauge, to allow an easier selection of the most suitable size in terms of performances and costs for each application.

LMR Series	ATL and BSA Series	CLA and CLB Series
Motors available: DC 12V, 24V, 36V Integrated electric limit switches	Motors available: DC12V, DC24V, AC 1-phase, AC 3-phase External limit switches (magnetic/electric)	Motors available: DC12V, DC24V, AC 1-phase, AC 3-phase Electric limit switches and potentiometer (IP65)
3 standard sizes Load capacity up to 6.000 N	5 standard sizes Load capacity up to 11.000 N	5 standard sizes Load capacity up to 10.000 N
Standard stroke length up to 500 mm Linear speed up to 52 mm/s	Standard stroke length up to 500 mm Linear speed up to 150 mm/s	Standard stroke length up to 1.000 mm Linear speed up to 100 mm/s
Acme screw drive	***ATL Series*** acme screw drive ***BSA Series*** ball screw drive	***CLA Series*** acme screw drive ***CLB Series*** ball screw drive

Quality, Technology and Innovation. Our commitment.



Servomech produce ***a wide range of electromechanical linear actuators and screw jacks***, ball screw and nuts, electromechanical servo actuators, completely manufactured inside the Servomech factory in Bologna - ITALY.

High technology and accuracy in manufacturing, inspections and controls during the entire production process for a constant quality over the time.

Technical support in product selection; on request, ***custom-based product*** execution to meet your specific application requirements.

Ball screw and nuts made by Servomech.
Available on request:
- Ball screws with ISO IT3 or IT5 accuracy grade, according to application requirements
- Ball nuts zero backlash or preloaded

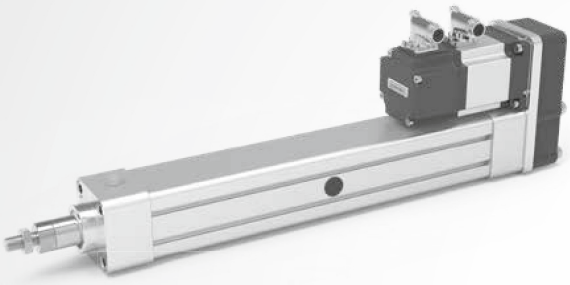
For more information, please contact our sales/technical support at *sales@servomech.com* or visit our web site *www.servomech.com*

SERVOMECH

Linear-Mech®

ELECTROMECHANICAL SERVOACTUATORS

High Performance



SA PD Series



SA Series



SA IL Series

5 GOOD REASONS TO GO ELETRIC

1. IMPROVE THE EFFICIENCY BY REDUCING ENERGY CONSUMPTION
2. BETTER CONTROL: POSITION - SPEED - FORCE
3. POSITIONING ACCURACY AND REPEATABILITY
4. GREAT SAFETY AND REALIABILITY
5. SAVE MONEY: EASIER INSTALLATION AND LESS MAINTENANCE

Linearmech electromechanical servo-actuators with brushless servomotors are a powerful alternative to the use of pneumatic cylinders in case of high dynamics (high speed, acceleration and deceleration, frequent back and forth inversion of the movement), precise positioning and high energy efficiency.

The right alternative to pneumatic cylinders

Linearmech servo-actuators
Modular construction system

Features

Characterized by sturdy and compact structure, the Linearmech servo-actuators adopt fully innovative solutions, ranking in the high-end segment of automation components. All internal parts have been purposely studied and designed to operate under conditions of high dynamics: ***high linear speeds, low inertia of components, extreme positioning precision and repeatability, reliability and long service life.***
Integrated ball screw drive, manufactured by Servomech.
Wide range of fixing elements according to the ISO 15552 standard of pneumatic cylinders, for a total and simple interchangeability with the existing pneumatic cylinders.

Modular structure, in-line or parallel design configuration.
Available with a ***complete servomotor package*** or the mechanical linear unit only with customized motor interface for ***servomotors of the main brands on trade.***

7 different standard sizes available
Ball screw from ***Ø 12 mm to Ø 40 mm***
Load capacity up to ***46 kN***
Linear speed up to ***1.500 mm/s***
Electric limit switches
Incremental or absolute encoder

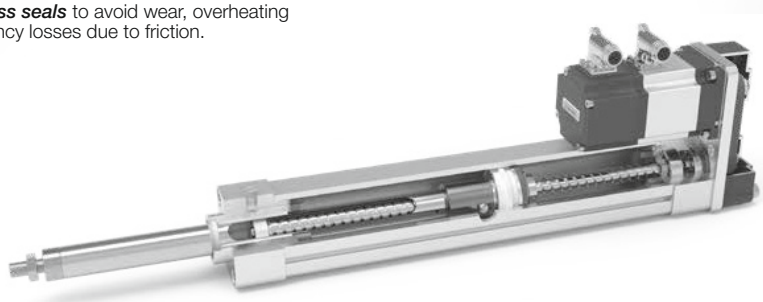
Construction Technologies

HDE TECHNOLOGY

Low inertia to operate in highly dynamic conditions.
High quality materials for great strength and reduced weight.
Internal compensation of air flows to avoid waste of energy during functioning.
Contactless seals to avoid wear, overheating and efficiency losses due to friction.

S4M TECHNOLOGY

Precise and stiff transmission of motion without angular backlash.
Angular ball bearings or tapered roller bearings as standard option.
Thrust frontal guide to improve the support even in case of lateral loads.



ARMS TECHNOLOGY

Positioning accuracy and repeatability.
Components 100% made by Servomech: machining accuracy and ***constant quality over time.***
Ball screw standard ISO IT7.
Available on request ***ISO IT3 or IT5.***
Zero axial clearance.

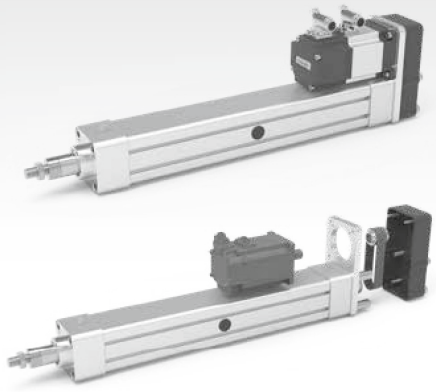
LIFE+ TECHNOLOGY

System ***safety and reliability*** over the time.
Limit switches.
Safety dumpers to protect the mechanical parts in event of accidental shocks.
Integrated re-lubrication system of the ball nut specifically designed for Linearmech electromechanical servo-actuators.

New

SA PD Series

Paralell Design linear servo-actuators

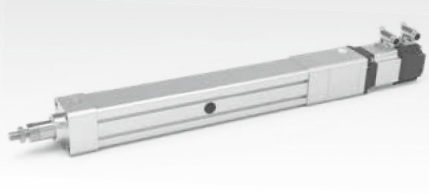


Execution with motor

Transmission of motion driven by high performance, efficiency and accuracy timing belt. Direct fitting of the pulley on the motor shaft with conical clamping joint.
Greater compact dimensions, ***no angular backlash*** and reduced inertia of the moving masses.
Motors available: brushless servomotors with encoder
Optional: brake on motor

Execution with customized motor interface

Mechanical linear unit only prepared to be interfaced with the ***servomotors of the main brands on trade*** (motor adapter and coupling included in the supplying).



SA IL Series

In-Line Design linear servo-actuators

Execution with motor

Motor assembly on the mechanical linear unit with bell housing and torsionally rigid clamping coupling for a ***better control and precision*** in movement.

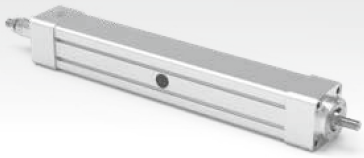


Execution with customized motor interface

Mechanical linear unit only prepared to be interfaced with the ***servomotors of the main brands on trade*** (motor adapter and coupling included in the supplying).

SA Series

Mechanical linear unit



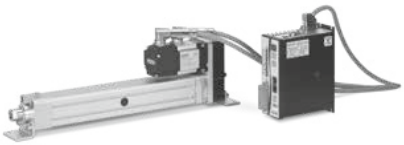
Mechanical linear unit with ***cylindrical input shaft***, supplied without motor and without motor interface.
Available on request different input shafts executions, customized dimensions, with or without key.

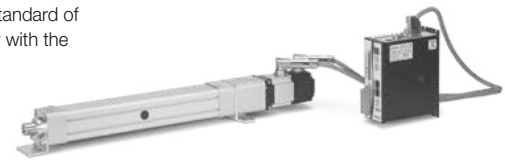
Main features

High performance electromechanical servoactuators from ***Linearmech*** consist of 3 main series: ***SA PD Series, SA IL Series, SA Series.***

Modular structure, in-line or parallel design configuration.
Available with a ***complete servomotor package*** or the mechanical linear unit only can be easily interfaced with the ***servomotors of the main brands on trade.***
Wide range of fixing elements according to the ISO 15552 standard of pneumatic cylinders, for a total and simple interchangeability with the existing pneumatic cylinders.

7 different standard sizes available
Linear speed up to ***1.500 mm/s***
Load capacity up to ***46 kN***





Servoactuators Series and Sizes		SA 0 SA 0 IL SA 0 PD	SA 1 SA 1 IL SA 1 PD	SA 2 SA 2 IL SA 2 PD	SA 3 SA 3 IL SA 3 PD	SA 4 SA 4 IL SA 4 PD	SA 5 SA 5 IL SA 5 PD	SA 6 SA 6 IL SA 6 PD
Cover profile (ISO 15552)	[mm]	□ 45	□ 52	□ 65	□ 75	□ 95	□ 115	□ 140
Push rod diameter	[mm]	Ø 20	Ø 22	Ø 25	Ø 30	Ø 35	Ø 50	Ø 60
Ball screw (diameter x lead)	[mm]	12 × P_h	14 × P_h	16 × P_h	20 × P_h	25 × P_h	32 × P_h	40 × P_h

Quality, Technology and Innovation. Our commitment.



Servomech produce ***a wide range of electromechanical linear actuators and screw jacks***, ball screw and nuts, electromechanical servo actuators, completely manufactured inside the Servomech factory in Bologna - ITALY.

High technology and accuracy in manufacturing, inspections and controls during the entire production process for a constant quality over the time.

Technical support in product selection; on request, ***custom-based product*** execution to meet your specific application requirements.

Ball screw and nuts made by Servomech.
Available on request:
- Ball screws with ISO IT3 or IT5 accuracy grade, according to application requirements
- Ball nuts zero backlash or preloaded

For more information, please contact our sales/ technical support at *sales@servomech.com* or visit our web site *www.servomech.com*

SERVOMECH

Servomech®
new ideas in linear motion

BALL SCREW JACKS

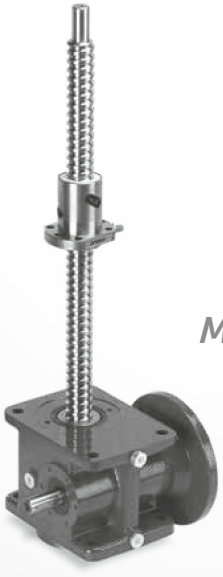
High Performance



SJ BS Series



HS Series



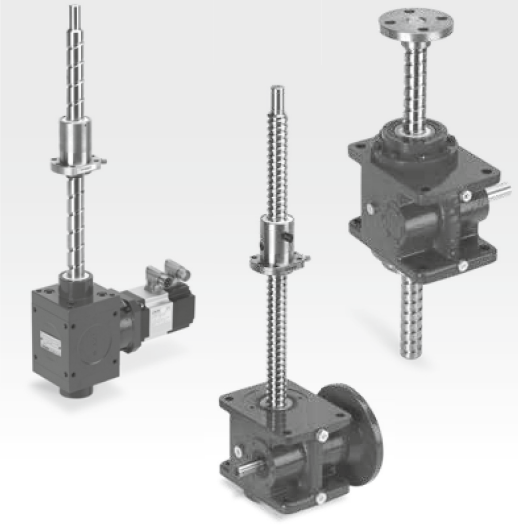


MA BS Series

High perfomance ***ball screw jacks***, from Servomech are high efficiency products designed and produced for high linear speed, continuous duty cycle and less energy consumption.
The right product to cover a wide range of needs and higher performance cost-effectively.

Technology and innovative solutions for higher efficiency and performance

Servomech Ball Screw Jacks
High Performance



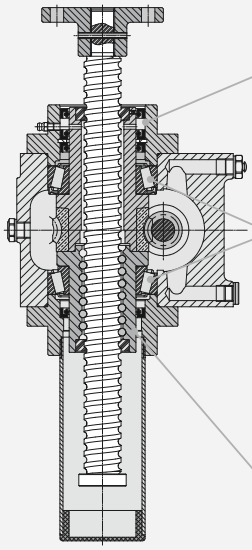
The new range of Servomech ball screw jacks exceeds the application limits of traditional acme scre jacks. High linear speeds, operations up to continuous duty cycle, no wear of the nut, zero axial clearance, exact estimation of expected lifetime, halving of energy consumption and installed power.
Servomech screw jacks are able to work under either push or pull load, in different mounting positions (vertically upward / downward or horizontally).
SERVOMECH high performance ball screw jacks consist of 3 main series:
MA BS Series, SJ Series, HS Series.

Industrial Patent by Servomech

All the parts have been specifically designed for a completely integrated structure between the gear parts and the ball screw. That allows higher performances in terms of:

- **Efficiency**
- **Load capacity**
- **Service life**
- **Stiffness**

The native integration of all the components together with the innovative Servomech production technology leads to a significant weight reduction by removing all the unnecessary material with a great benefit for the costs.



Re-lubrication system
of the ball nut with lubricant reserve chamber for easier maintenace efforts and longer service life.

Tapered roller bearings
tapered roller bearings back-to-back mounted.
High rigidity and best alignment of the ball screw and nut system.

Safety nut
to prevent the accidental fall of the load in case of working nut failure. Integrated inside the system, available for push and pull load.

Ball nut
with axial recirculation of the balls for higher load capacity.



SJ BS Series

Compact design screw jacks

Recommended for intermittent duty cycle (up to 70%)
Long life ***synthetic grease lubricated*** worm gear
High precision worm gearbox, ZI involute profile, reduced angular backlash
Monobloc gearbox housing, robust and compact shape
Input speed up to ***1.500 rpm***
Ball screw dive, travelling nut (Model B)

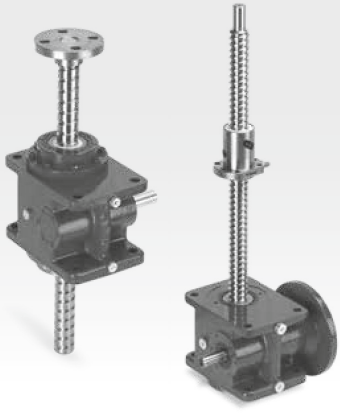
11 sizes standard available
Load capacity from 5 kN to ***800 kN***
Ball screw from ***Ø 16 mm to Ø 140 mm***

MA BS Series

High efficiency screw jacks

Recommended for continuous operation, duty cycle up to 100%
Long life ***synthetic oil lubricated*** worm gear
High precision worm gearbox, ZI involute profile, reduced angular backlash
Gearbox housing shape for a better heat dissipation
Input speed up to ***3.000 rpm***
Ball screw dive, travelling screw (Model A)
and travelling nut (Model B)

8 sizes standard available
Load capacity from 5 kN to ***350 kN***
Ball screw from ***Ø 16 mm to Ø 120 mm***





HS Series

High speed screw jacks

Recommended for continuous operation, duty cycle up to 100%
Long life ***synthetic oil lubricated*** bevel gear
Bevel gear, GLEASON spiral toothing system, high efficiency and low noise functioning
Angular backlash on output shaft max 10' (available on request reduced backlash)
Cubic design housing, compact and robust
Input speed up to ***3.000 rpm***
Ball screw dive, travelling nut (Model B)

6 sizes standard available
Load capacity from 10 kN to ***200 kN***
Ball screw from ***Ø 25 mm to Ø 80 mm***

Main features

High performance ball screw jacks from ***SERVOMECH*** consist of 3 main series:
MA BS Series, SJ Series, HS Series.
Each family is designed and developed to represent a series of sizes with an adequate reciprocal gauge, to allow an easier selection of the most suitable size in terms of performances and costs for each application.

MA BS Series	SJ BS Series	HS Series
High efficiency screw jacks Recommended for continuous operation (duty cycle up to 100%) Ratio from 1:4 to 1:32 Input speed up to 3.000 rpm	Compact design screw jacks Recommended for intermittent operation (duty cycle up to 70%) Ratio from 1:4 to 1:36 Input speed up to 1.500 rpm	High speed screw jacks Recommended for continuous operation (duty cycle up to 100%) Ratio from 1:1 to 1:4 Input speed up to 3.000 rpm
8 standard sizes Load capacity from 5 kN to 350 kN	11 standard sizes Load capacity from 5 kN to 800 kN	6 standard sizes Load capacity from 10 kN to 200 kN
Model A: travelling ball screw Model B: travelling ball nut	Model B: travelling ball nut	Model B: travelling ball nut
Ball screw drive from Ø 16 mm to Ø 120 mm	Ball screw drive from Ø 16 mm to Ø 140 mm	Ball screw drive from Ø 25 mm to Ø 80 mm

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- Ball nuts zero backlash or preloaded

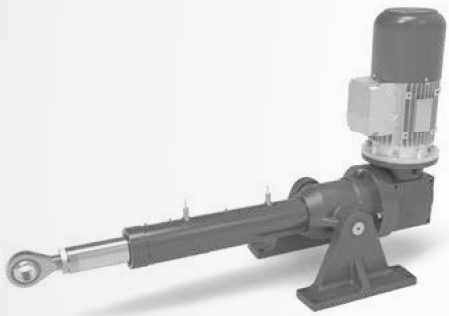
For more information, please contact our sales/ technical support at *sales@servomech.com* or visit our web site *www.servomech.com*

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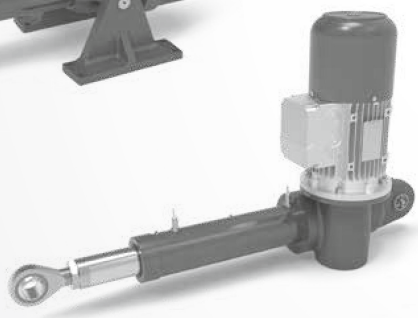
Servomech®
new ideas in linear motion

ELECTROMECHANICAL CYLINDERS

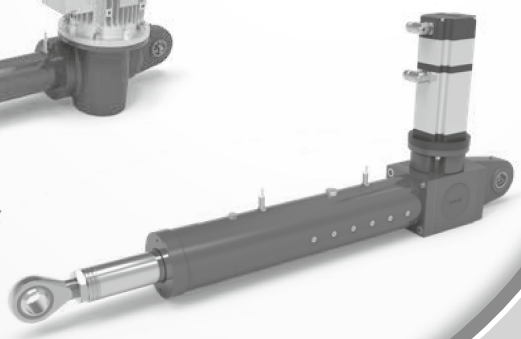
Heavy duty applications



ILA Series



ATL and BSA Series



HSA Series

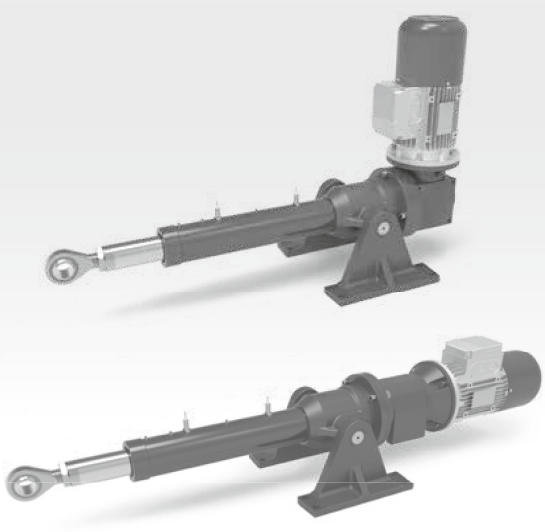
5 GOOD REASONS TO GO ELETRIC

1. IMPROVE THE EFFICIENCY BY REDUCING ENERGY CONSUMPTION
2. BETTER CONTROL: POSITION - SPEED - FORCE
3. POSITIONING ACCURACY AND REPEATABILITY
4. GREAT SAFETY AND REALIABILITY
5. SAVE MONEY: EASIER INSTALLATION AND LESS MAINTENANCE

Heavy duty electromechanical cylinders from Servomech are the right alternative to the use of hydraulic cylinders: ***high linear speed even at high*** loads, precise control of positioning, speed and force, ***less energy consumption*** and lower installation costs.

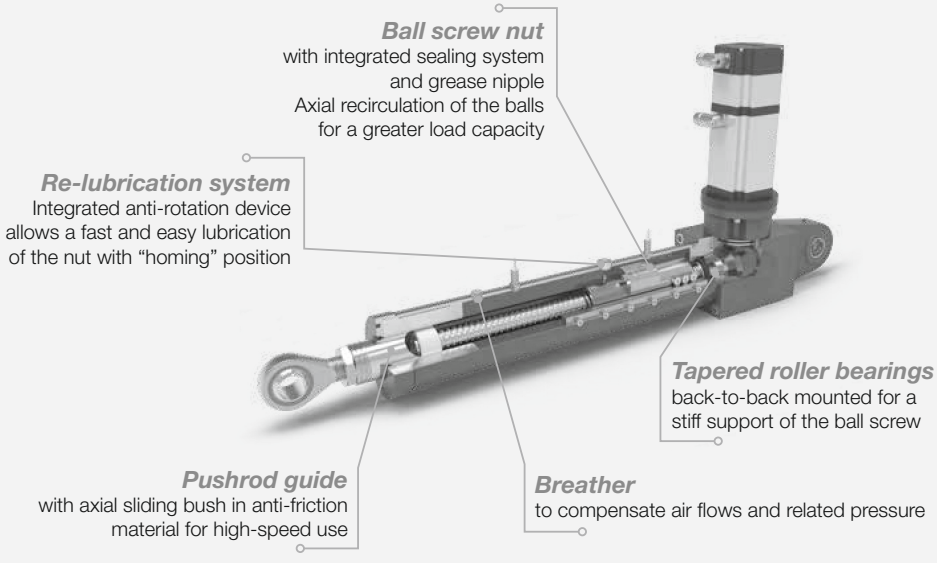
The right alternative to hydraulic cylinders

Servomech electromechanical cylinders for heavy duty applications



Servomech electromechanical cylinders are available with ***high precision ball screw and acme screw drive***. High linear speed even at high loads, improved efficiency by reducing energy consumption, better control of position, speed and force, great positioning accuracy and repeatability are only some of the reasons that make them the ***right alternative to hydraulic cylinders***. Also available on different assembly configurations for a total interchangeability with the existing hydraulic units.
SERVOMECH heavy duty electromechanical cylinders consist of 3 main series: ***ATL and BSA Series, ILA Series, HSA Series.***

Servomech innovative solutions for high speed and long service life



ATL and BSA Series

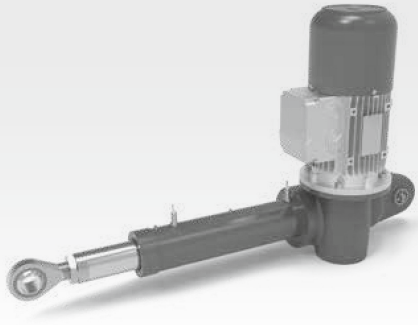
Right angle design linear actuators

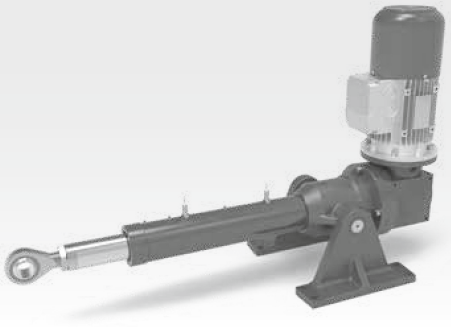
Rear hinged attachments
High precision worm gearbox, ZI involute profile

ATL Series, acme screw drive:
6 sizes, load capacity from 15 kN to ***600 kN***
Acme screw from ***Ø 30 mm to Ø 120 mm***

BSA Series, ball screw drive:
6 sizes, load capacity from 15 kN to ***600 kN***
Ball screw from ***Ø 32 mm to Ø 120 mm***

Lubrication with synthetic grease
(gearbox long life lubricated, screw drive regreasable)
Standard stroke length up to 1.000 mm
Proximity limit switches
Incremental or absolute encoder for positioning control
Prepared for IEC standard AC motors





ILA Series

In-line modular design linear actuators

Housing mounting with pins
In-line or right angle gearbox mounting

ILA A Series, acme screw drive:
6 sizes, load capacity from ***5 kN to 200 kN***
Acme screw from ***Ø 22 mm to Ø 80 mm***

ILA B Series, ball screw drive::
6 sizes, load capacity from ***5 kN to 200 kN***
Ball screw from ***Ø 25 mm to Ø 80 mm***

Gearbox long life lubricated, screw drive regreasable
Standard stroke length up to 1.500 mm
Proximity limit switches
Incremental or absolute encoder for positioning control
Prepared for IEC standard AC motors and brushless servomotors

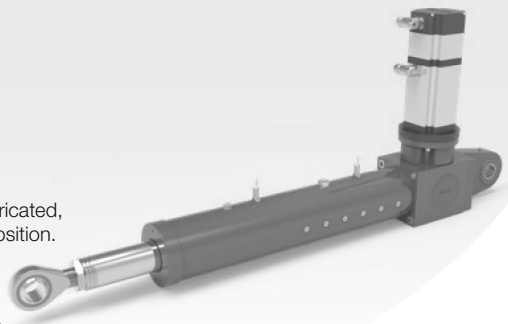
HSA Series

High-speed linear actuators

Rear hinged attachments
Gleason bevel gear
Ball screw drive

6 sizes, load capacity from 5 kN to ***150 kN***
Ball screw from ***Ø 25 mm to Ø 80 mm***

Lubrication with synthetic grease, gearbox long life lubricated,
fast and easy re-lubrication of the nut with “homing” position.
Linear speed up to ***1.500 mm/s***
Standard stroke length up to 1.000 mm
Proximity limit switches
Incremental or absolute encoder for positioning control
Prepared for IEC standard AC motors and brushless servomotors



Main features

Heavy duty electromechanical cylinders from Servomech consist of 3 main series:
ATL and BSA Series, ILA Series, HSA Series.
SERVOMECH linear actuators have a wide application field. They are intended for industrial applications which require safe operation and/or linear motion control while moving, turning over or lifting a load. The ***wide range of sizes, stroke lengths, motor types, linear speeds and available accessories*** enables to adapt these products for new applications, replace even complex mechanical solutions and hydraulic cylinders, improving the result in terms of performance and with economical advantages.

ATL and BSA Series	ILA Series	HSA Series
Linear actuators with right angle design Rear hinged attachments Worm gear drive	Linear actuators with in-line modular design Housing mounting with pins Gearbox mounting in-line / right angle	Linear actuators for high-speed performance Rear hinged attachments ***Gleason*** bevel gear
6 standard sizes Load capacity from 15 kN to 600 kN	6 standard sizes Load capacity from 5 kN to 200 kN	6 standard sizes Load capacity from 5 kN to 150 kN
Standard stroke length up to 1.000 mm Linear speed up to 140 mm/s	Standard stroke length up to 1.500 mm	Standard stroke length up to 1.000 mm Linear speed up to 1.500 mm/s
ATL Series acme screw drive ***BSA Series*** ball screw drive	***ILA A Series*** acme screw drive ***ILA B Series*** ball screw drive	Ball screw drive

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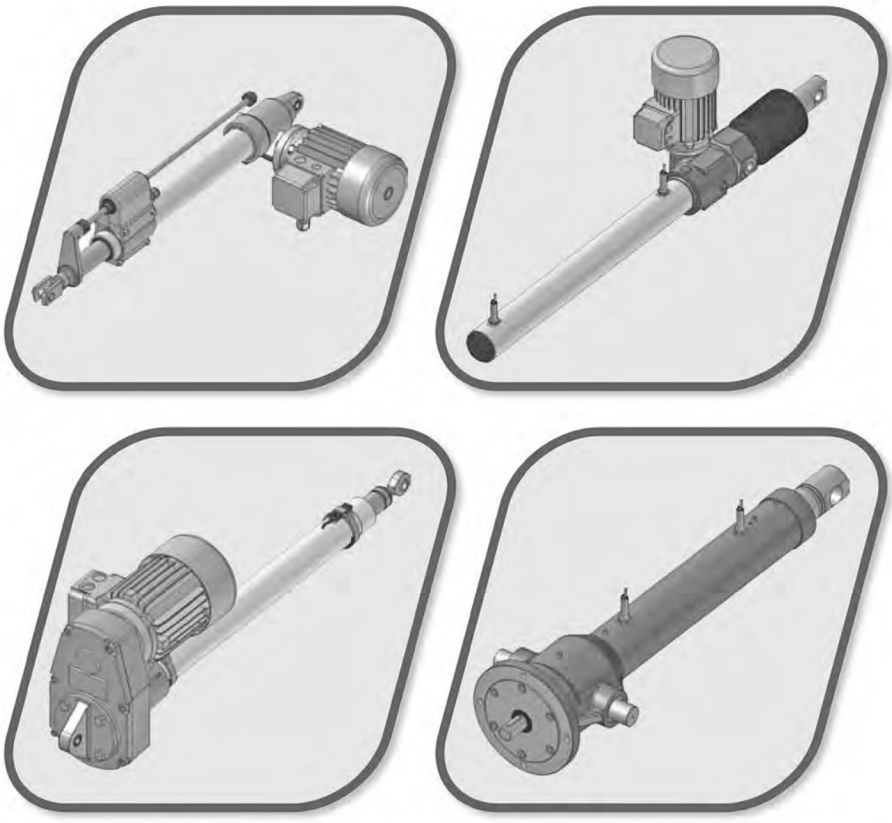
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SERVOMECH

NOTES:

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new ideas in linear motion

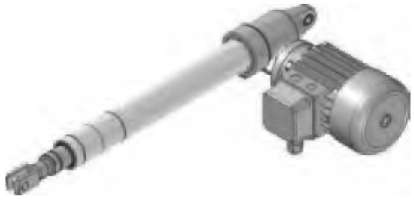
Mechanical Linear Actuators

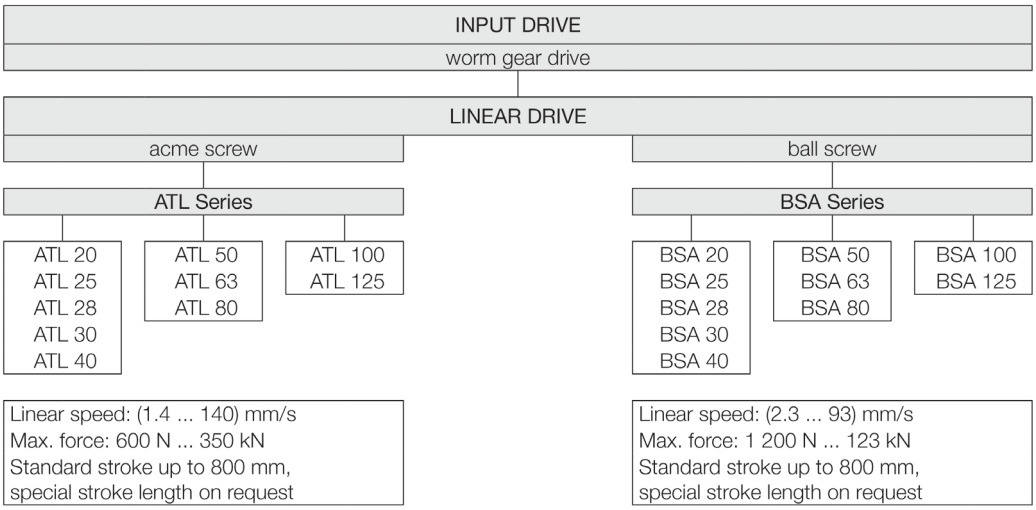


Catalogue 01/13 NEW EDITION

Linear actuators **ATL Series**:
- input drive: worm gear drive
- linear drive: 1 or more starts acme screw

Linear actuators **BSA Series**:
- input drive: worm gear drive
- linear drive: ball screw





Input shaft axis at 90° with respect to actuator axis

Input:
- attachment for IEC electric motor
- solid shaft

Electric motor:
- AC 3-phase or 1-phase
- DC 24 V or 12 V

Stroke end switches:
- electric switches, activated by adjustable rings along the support rod
- magnetic reed switches, adjustable position along the outer tube
- proximity switches, fix position on outer tube
- cam-operated electric switches, fix position on outer tube

Positioning control:
- rotary encoder on the input shaft
- linear potentiometer mounted parallel to the push rod

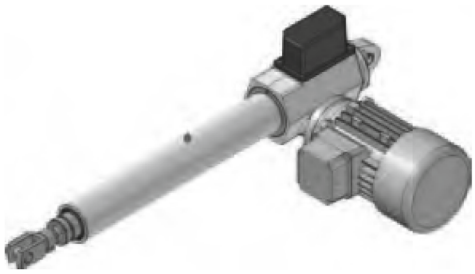
Wide range of accessories

It is possible to create drive systems consisting of two or more actuators whose input shafts are mechanically connected by transmission shafts.

1.2 SERVOMECH linear actuators range

Linear actuators **CLA Series**:
- input drive: worm gear drive
- linear drive: 1 or more starts acme screw

Linear actuators **CLB Series**:
- input drive: worm gear drive
- linear drive: ball screw



INPUT DRIVE	
worm gear drive	
LINEAR DRIVE	
acme screw	ball screw
CLA Series	CLB Series
CLA 30 CLA 40 CLA 50	CLB 30 CLB 40 CLB 50
Linear speed: (2 ... 56) mm/s Max. force: 2 500 N ... 25 kN Standard stroke up to 800 mm, special stroke length on request (more details on pages 108 ... 110)	Linear speed: (2.5 ... 60) mm/s Max. force: 3 300 N ... 25 kN Standard stroke up to 800 mm, special stroke length on request (more details on pages 108 ... 110)

Input shaft axis at 90° with respect to actuator axis

Input:
- attachment for IEC electric motor
- solid shaft

Electric motor:
- AC 3-phase or 1-phase

Stroke end switches:
- adjustable cam-operated electric switches

Positioning control:
- rotary potentiometer

Wide range of accessories

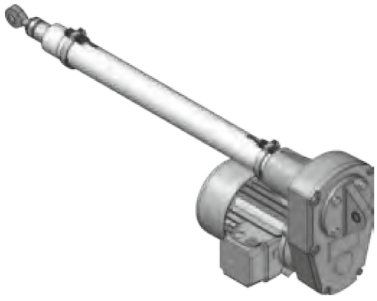
It is possible to create drive systems consisting of two or more actuators whose input shafts are mechanically connected by transmission shafts.

SERVOMECH Linear Actuators

1.2 SERVOMECH linear actuators range

Linear actuators **UBA Series**:
- input drive: timing belt transmission
- linear drive: ball screw

Linear actuators **UAL Series**:
- input drive: timing belt transmission
- linear drive: 1 or more starts acme screw



INPUT DRIVE		
timing belt transmission		
LINEAR DRIVE		
ball screw		acme screw
UBA Series		UAL Series
UBA 1 UBA 2 UBA 3 UBA 4 UBA 5		UAL 1 UAL 2 UAL 3 UAL 4 UAL 5
Linear speed: (40 ... 875) mm/s Max. force: (290 ... 10 650) N Standard stroke up to 800 mm, special stroke length on request		Linear speed: (23 ... 529) mm/s Max. force: (300 ... 10 400) N Standard stroke up to 800 mm, special stroke length on request

Motor axis parallel to actuator axis

Input:
- attachment for IEC electric motor

Electric motor:
- AC 3-phase or 1-phase **with brake**
- DC 24 V or 12 V **with brake**

Stroke end switches:
- magnetic reed switches, adjustable position along the outer tube
- proximity switches, fix position on outer tube

Positioning control:
- rotary encoder on the input axis
- linear potentiometer mounted parallel to the push rod

Wide range of accessories

1.2 SERVOMECH linear actuators range

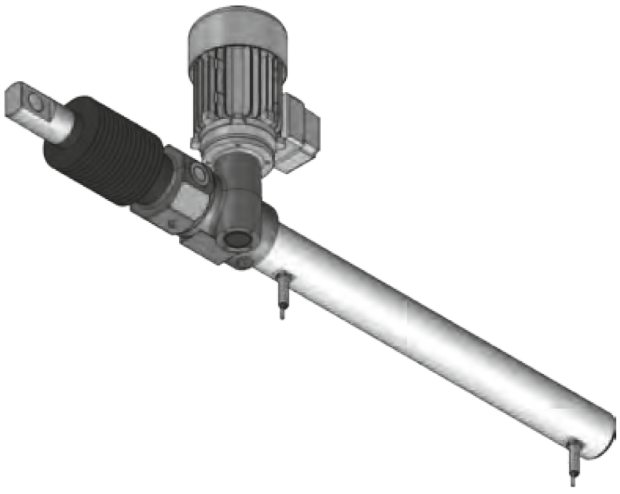
Linear actuators **TMA Series**:
- input drive: worm gear drive
- linear drive: 1-start acme screw

INPUT DRIVE
worm gear drive

LINEAR DRIVE
acme screw

TMA Series
TMA 15 TMA 25 TMA 50 TMA 100 TMA 150 TMA 200

Linear speed: (0.12 ... 40) mm/s Max. force: (2.6 ... 200) kN Stroke up to 1 500 mm



Trunnion mounted housing fixed with pins or bronze bushes

Input shaft axis at 90° with respect to actuator axis

Input:
- attachment for IEC electric motor
- solid shaft

Electric motor:
- AC 3-phase

Stroke end switches:
- proximity switches, fix position on outer tube
- cam-operated electric switches, fix position on outer tube

Positioning control:
- rotary encoder on the input shaft

Wide range of accessories

It is possible to create drive systems consisting of two or more actuators whose input shafts are mechanically connected by transmission shafts.

1.2 SERVOMECH linear actuators range

Linear actuators **ILA Series**:

- linear drive: 1 or more starts acme screw (**ILA . A Series**)
- linear drive: ball screw (**ILA . B Series**)



INPUT DRIVE	
acme screw	ball screw
ILA . A Series	ILA . B Series
ILA 15 A ILA 25 A ILA 50 A ILA 100 A ILA 150 A ILA 200 A	ILA 15 B ILA 25 B ILA 50 B ILA 100 B ILA 150 B ILA 200 B
Max. force: (15 ... 200) kN Stroke up to 1 500 mm	Max. force: (15 ... 200) kN Stroke up to 1 500 mm

IN-LINE actuators

Housing mounting with pins

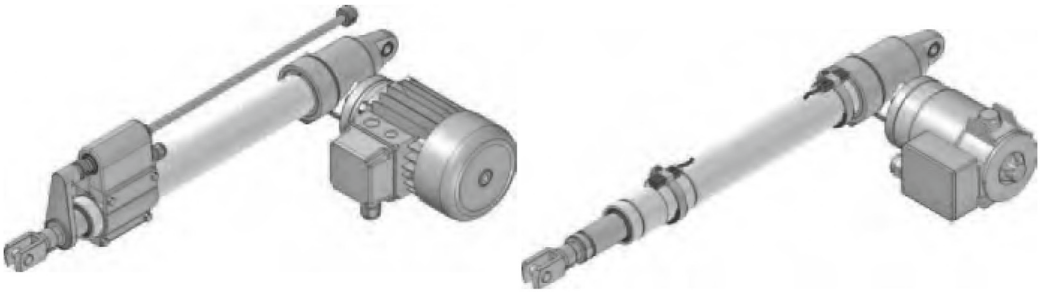
Input: shaft and flange as input drive attachment

Stroke end switches:

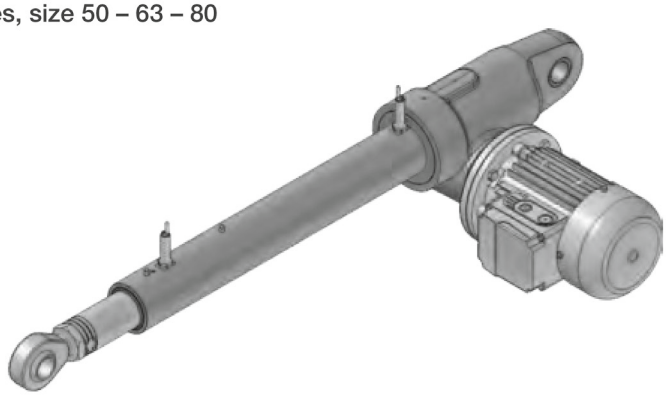
- proximity switches, fixed position on outer tube

Wide range of accessories

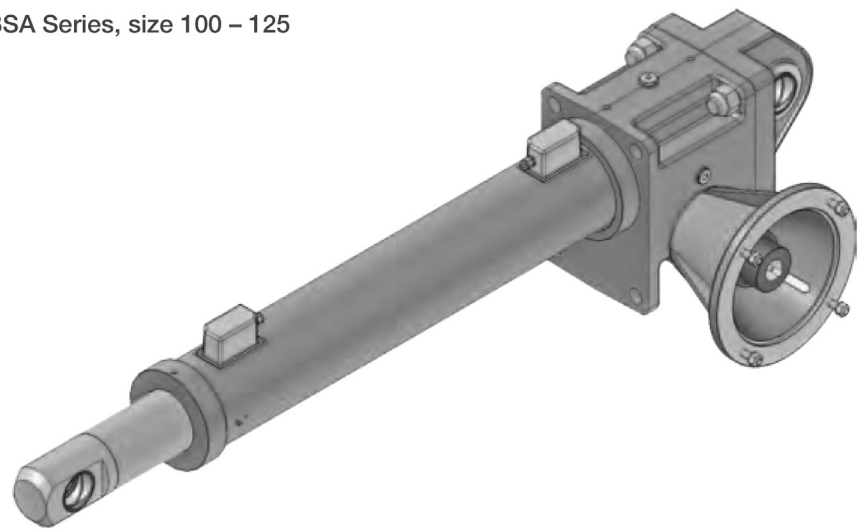
ATL - BSA Series, size 20 – 25 – 28 – 30 – 40



ATL - BSA Series, size 50 – 63 – 80



ATL - BSA Series, size 100 – 125



2.1 MANUFACTURING FEATURES

Input drive: worm gear - precision helical wheel, geometric design for high performance, involute profile ZI (UNI 4760 : Part 4), low angular backlash. Worm in case hardened steel 20 MnCr 5 (UNI EN 10084), with thread and input shafts ground. Helical wormwheel in bronze EN 1982 – CuSn12-C.

Housing: designed and manufactured in monobloc form to obtain a compact body able to sustain heavy axial loads and high machining accuracy. High quality materials are used:
- castings in hardened aluminium alloy EN 1706 AC-AlSi10Mg T6
- castings in spheroidal graphite cast iron EN-GJS-500-7 (UNI EN 1563).

Acme screw:
- ISO trapezoidal thread ISO 2901 ... ISO 2904
- material: steel C 43 (UNI 7847)
- rolled or whirled
- subjected to straightening, to ensure accurate alignment in operation
- max. pitch error ± 0.05 mm over 300 mm length

Bronze nut:
- ISO trapezoidal thread ISO 2901 ... ISO 2904
- material: bronze EN 1982 – CuAl9-C (1-start thread)
- material: bronze EN 1982 – CuSn12-C (multiple start thread)
- max. axial backlash for new nut (0.10 ... 0.12) mm

Outer tube:
- material: aluminium alloy EN AW-6060 thick cold-drawn tube anodized ARC 20 (UNI 4522/66) inner diameter tolerance ISO H9
- steel St 52.2 (DIN 2391) cold-drawn tube inner diameter tolerance ISO H10 ... H11

Ball screw:
- designed and manufactured by SERVOMECH
- rolled and hardened material: steel 42 CrMo 4 (UNI EN 10083) accuracy grade: ISO IT 7
- hardened and machined material: steel 42 CrMo 4 (UNI EN 10083) accuracy grade: ISO IT 5

Ball nut:
- designed and manufactured by SERVOMECH
- material: steel 18 NiCrMo 5 (UNI EN 10084), case hardened
- max. axial backlash (0.07 ... 0.08) mm
- on request, ball nut with ZERO backlash or pre-loaded using selected diameter balls

Push rod:
- material: steel St 52 (DIN 2391) thick tube chrome-plated, min. chrome thickness 5/100 mm inner diameter tolerance ISO f7
- push rod in stainless steel INOX AISI 304 or special stainless steel on request

Bearings:
- on motor axis: radial ball bearings or taper roller bearings
- on actuator axis: angular contact ball bearings or taper roller bearings, to avoid axial backlash and to assure high push-pull load capacity

Front attachment:
- standard – with threaded hollow bore, in stainless steel AISI 303 or steel C 43 (UNI 7847)

Rear bracket:
- in aluminium alloy for ATL-BSA 20, 25, 28, 30, 40
- in spheroidal graphite cast iron for ATL-BSA 50, 63, 80
- pin in stainless steel AISI 303

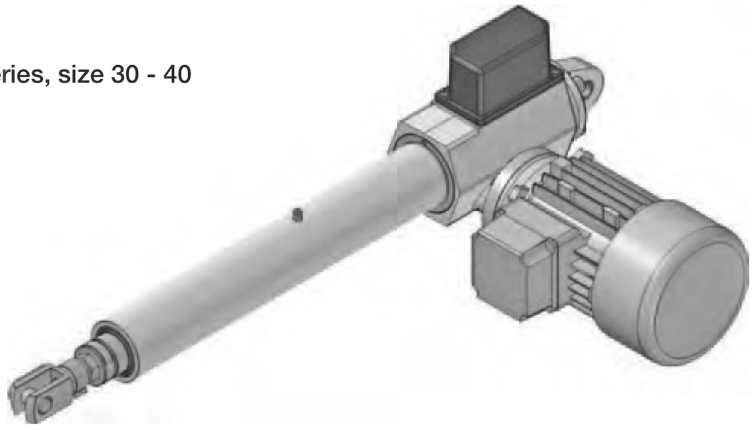
Electric stroke length limit device FCE:
- electric micro-switches activated by a shaped sleeve, for ATL-BSA 20, 25, 28, 30, 40, 50, 63, 80

Magnetic stroke end switches FCM:
- magnetic switches activated by a magnetic ring, for ATL-BSA 20, 25, 28, 30, 40

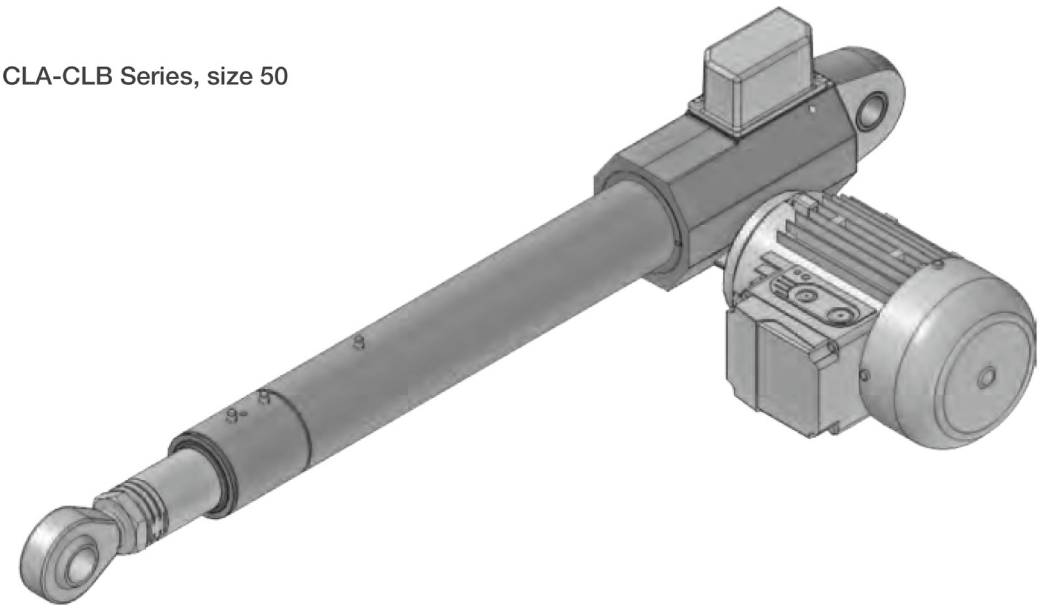
Proximity stroke end switches FCP:
- proximity switches activated by the nut, for ATL-BSA 50, 63, 80 and on request for ATL-BSA 100, 125

Electric stroke end switches FC:
- cam-operated electric switches for ATL-BSA 100, 125

CLA-CLB Series, size 30 - 40



CLA-CLB Series, size 50



3.1 MANUFACTURING FEATURES

Input drive: worm gear - precision helical wheel, geometric design for high performance, involute profile ZI (UNI 4760 : Part 4), low angular backlash. Worm in case hardened steel 20 MnCr 5 (UNI EN 10084), with thread and input shafts ground. Helical wormwheel in bronze EN 1982 – CuSn12-C.

Housing: designed and manufactured in monobloc form to obtain a compact body able to sustain heavy axial loads and high machining accuracy. High quality materials are used:
- castings in aluminium alloy EN 1706 AC-AlSi6Cu4
- castings in grey cast iron EN-GJL-250 (UNI EN 1561).

Acme screw:
- ISO trapezoidal thread ISO 2901 ... ISO 2904
- material: steel C 43 (UNI 7847)
- rolled or whirled
- subjected to straightening, to ensure accurate alignment in operation
- max. pitch error ± 0.05 mm over 300 mm length

Bronze nut:
- ISO trapezoidal thread ISO 2901 ... ISO 2904
- material: bronze EN 1982 – CuAl9-C (1-start thread)
- material: bronze EN 1982 – CuSn12-C (multiple start thread)
- max. axial backlash for new nut (0.10 ... 0.12) mm

Outer tube:
- material: aluminium alloy EN AW-6060 thick cold-drawn tube anodized ARC 20 (UNI 4522/66) inner diameter tolerance ISO H9
- steel St 52.2 (DIN 2391) cold-drawn tube inner diameter tolerance ISO H10 ... H11

Ball screw:
- designed and manufactured by SERVOMECH
- rolled and hardened material: steel 42 CrMo 4 (UNI EN 10083) accuracy grade: ISO IT 7
- hardened and machined material: steel 42 CrMo 4 (UNI EN 10083) accuracy grade: ISO IT 5

Ball nut:
- designed and manufactured by SERVOMECH
- material: steel 18 NiCrMo 5 (UNI EN 10084), case hardened
- max. axial backlash (0.07 ... 0.08) mm
- on request, ball nut with ZERO backlash or pre-loaded using selected diameter balls

Push rod:
- material: steel St 52 (DIN 2391) thick tube chrome-plated, min. chrome thickness 5/100 mm inner diameter tolerance ISO f7
- push rod in stainless steel INOX AISI 304 or special stainless steel on request

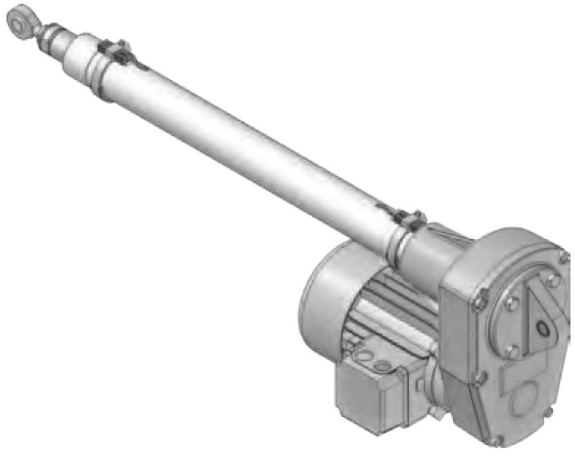
Bearings:
- on motor axis: radial ball bearings
- on actuator axis: radial ball bearings or angular contact ball bearings, to avoid axial backlash and to assure high push-pull load capacity

Front attachment:
- standard – with threaded hollow bore, in stainless steel AISI 303 or steel C 43 (UNI 7847)

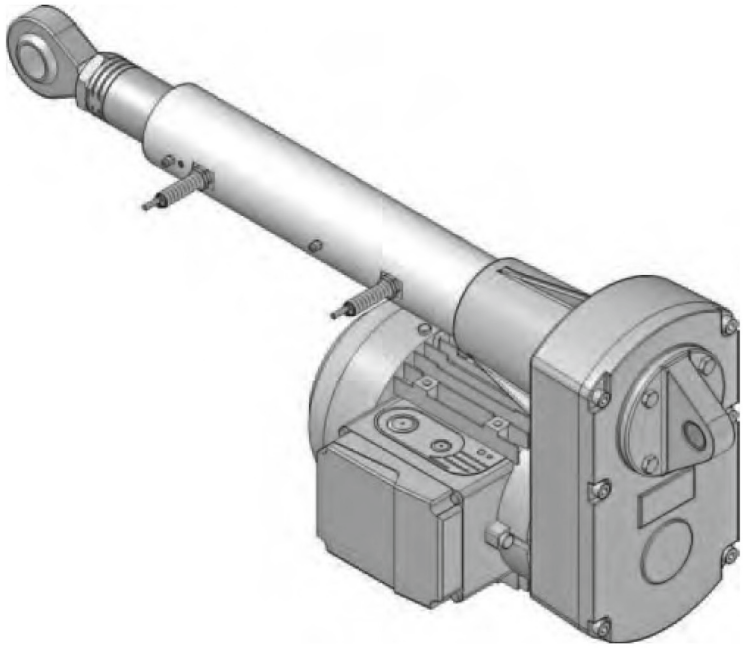
Rear bracket:
- in aluminium alloy for CLA-CLB 30, 40
- in grey cast iron for CLA-CLB 50
- pin in stainless steel AISI 303

Electric stroke end switches FC:
- cam-operated electric switches
- cover in thermoplastic material for CLA-CLB 30 and 40, in aluminium alloy for CLA-CLB 50
- drive transmission in brass OT 58 (UNI 5705/65)

UBA - UAL Series, size 1 – 2 – 3 – 4



UBA - UAL Series, size 5



4.1 MANUFACTURING FEATURES

Input drive: timing belt transmission; pulleys UNI ISO 5294:1991 in aluminium for low inertia; positive timing belts UNI ISO 5296-1:1991.

Housing: designed and manufactured in monobloc form to obtain a compact body able to sustain heavy axial loads and high machining accuracy. High quality materials are used:

- castings in hardened aluminium alloy EN 1706 AC-AlSi10Mg T6

Acme screw:

- ISO trapezoidal thread ISO 2901 ... ISO 2904
- material: steel C 43 (UNI 7847)
- rolled or whirled
- subjected to straightening, to ensure accurate alignment in operation
- max. pitch error ± 0.05 mm over 300 mm length

Bronze nut:

- ISO trapezoidal thread ISO 2901 ... ISO 2904
- material: bronze EN 1982 – CuAl9-C (1-start thread)
- material: bronze EN 1982 – CuSn12-C (multiple start thread)
- max. axial backlash for new nut (0.10 ... 0.12) mm

Outer tube:

- material: aluminium alloy EN AW-6060 thick cold-drawn tube anodized ARC 20 (UNI 4522/66) inner diameter tolerance ISO H9
- steel St 52.2 (DIN 2391) cold-drawn tube inner diameter tolerance ISO H10 ... H11

Ball screw:

- designed and manufactured by SERVOMECH
- rolled and hardened material: steel 42 CrMo 4 (UNI EN 10083) accuracy grade: ISO IT 7
- hardened and machined material: steel 42 CrMo 4 (UNI EN 10083) accuracy grade: ISO IT 5

Ball nut:

- designed and manufactured by SERVOMECH
- material: steel 18 NiCrMo 5 (UNI EN 10084), case hardened
- max. axial backlash (0.07 ... 0.08) mm
- on request, ball nut with ZERO backlash or pre-loaded using selected diameter balls

Push rod:

- material: steel St 52 (DIN 2391) thick tube chrome-plated, min. chrome thickness 5/100 mm inner diameter tolerance ISO f7
- push rod in stainless steel INOX AISI 304 or special stainless steel on request

Bearings:

- on actuator axis: angular contact ball bearings, to avoid axial backlash and to assure high push-pull load capacity

Front attachment:

- standard – with threaded hollow bore, in stainless steel AISI 303 or steel C 43 (UNI 7847)

Rear bracket:

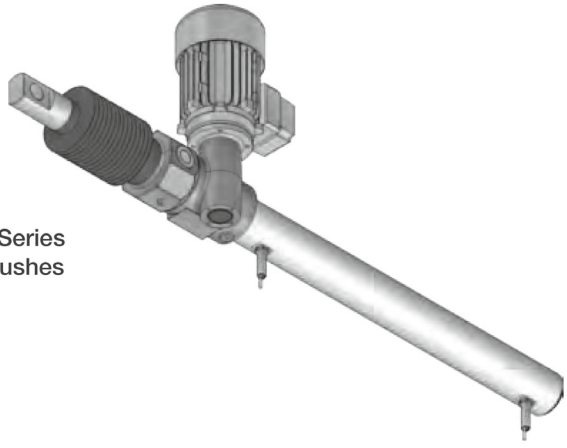
- in aluminium alloy for ATL-BSA 20, 25, 28, 30, 40
- pin in stainless steel AISI 303

Magnetic stroke end switches FCM:

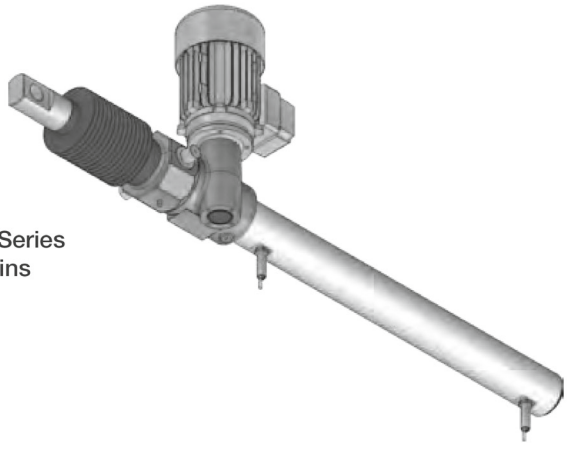
- magnetic switches activated by a magnetic ring, for UAL-UBA 1, 2, 3, 4

Proximity stroke end switches FCP:

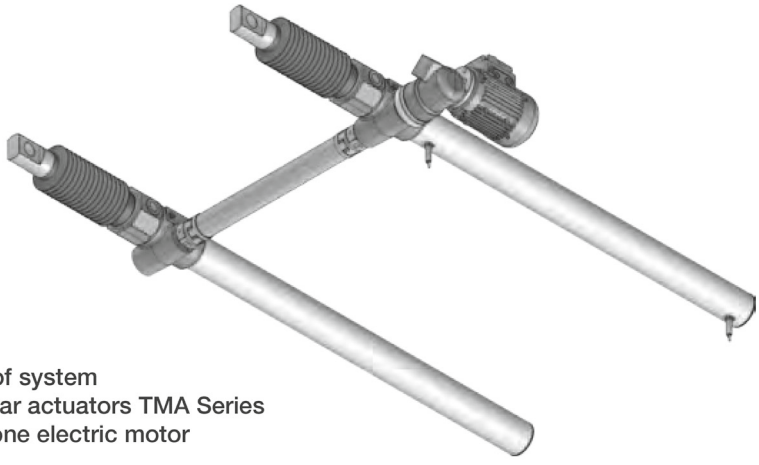
- proximity switches activated by the nut, for UAL-UBA 5



Linear Actuators TMA Series
rear attachment with bushes



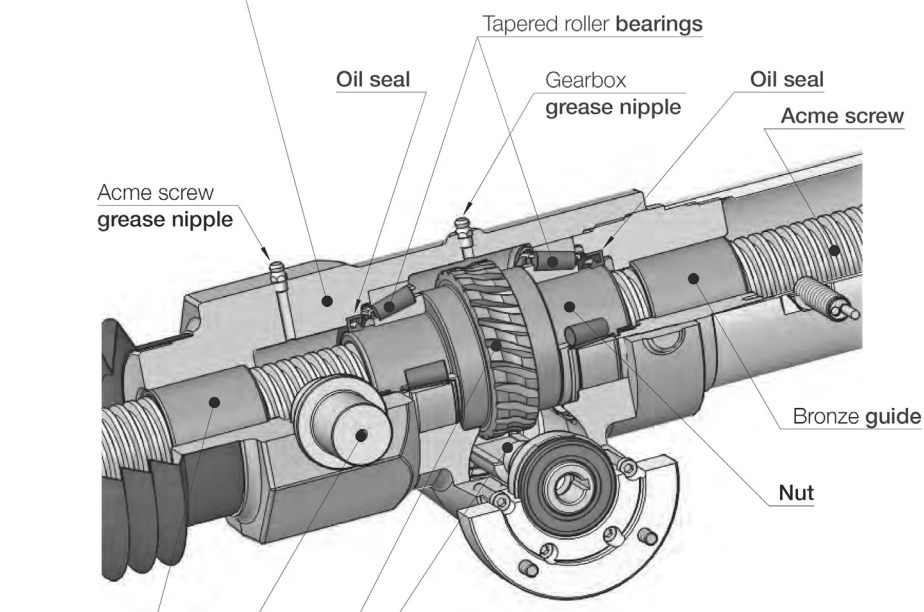
Linear Actuators TMA Series
rear attachment with pins



Example of system
with 2 linear actuators TMA Series
and only one electric motor

5.1 MANUFACTURING FEATURES

Housing:
designed and manufactured in monobloc form to achieve a compact body able to sustain heavy axial loads and have a high rigidity.
Material: grey cast iron EN-GJL-250 (UNI EN 1561)

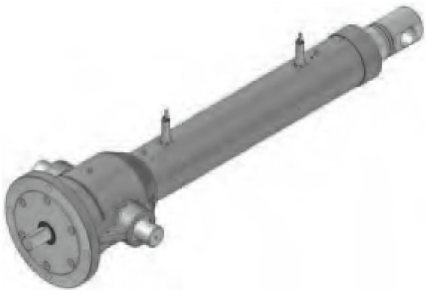


Input drive:
precision worm gear
geometric design for high efficiency,
involute profile ZI (UNI 4760 Part 4), low angular backlash.
Worm shaft in case hardened steel 20 MnCr 5 (UNI EN 10084),
with thread and input shafts ground.
Wormwheel in bronze EN 1982 – CuSn12-C.



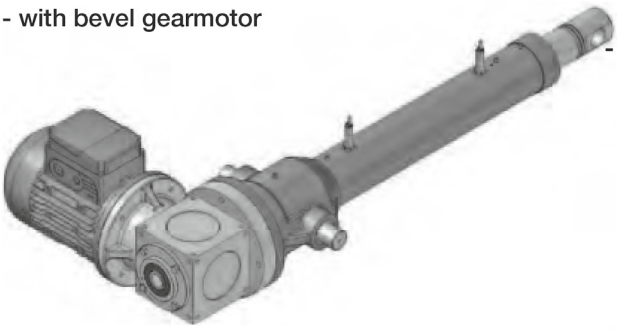
Application example of linear actuator TMA Series: solar tracker

Linear Actuator ILA Series without input drive,
with flange and input shaft

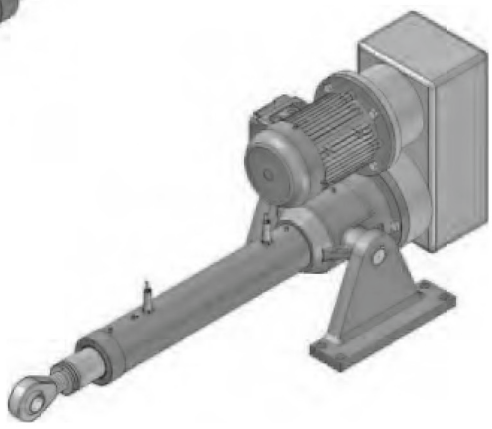


Linear Actuator ILA Series with input drive

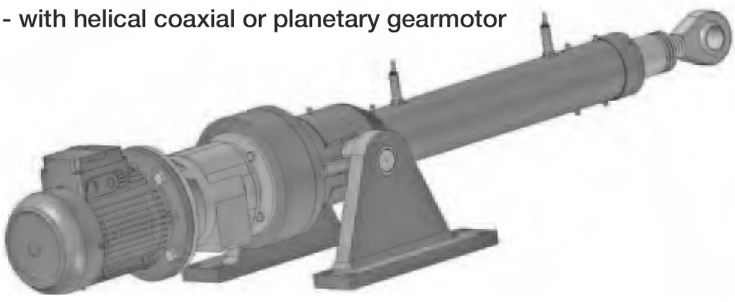
- with bevel gearmotor



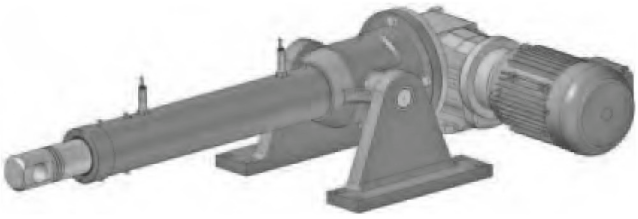
- with parallel shaft helical gearmotor



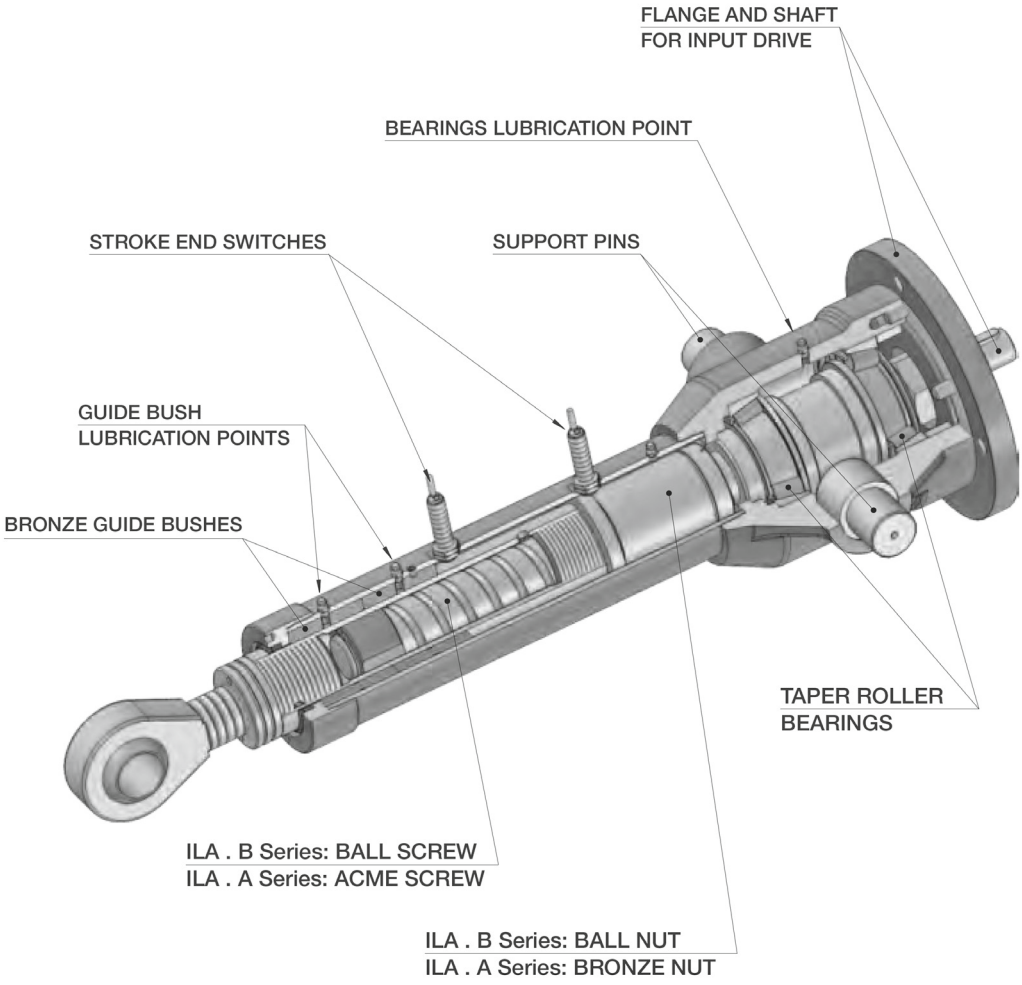
- with helical coaxial or planetary gearmotor



- with bevel-helical gearmotor



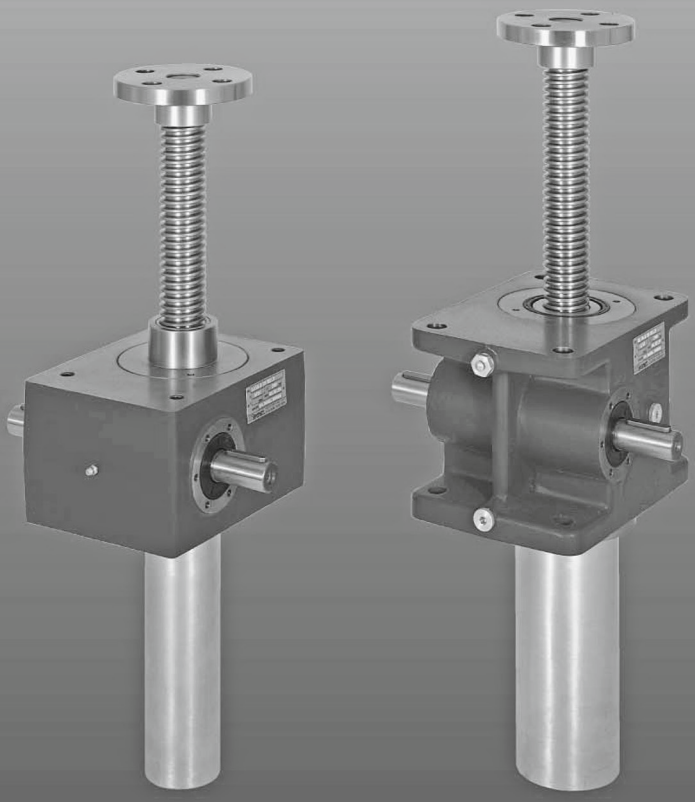
6.1 MANUFACTURING FEATURES



Servomech®

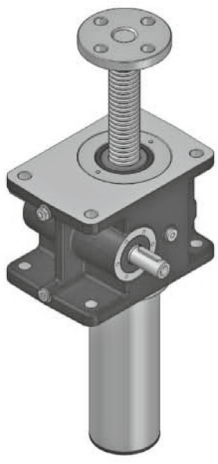
new ideas in linear motion

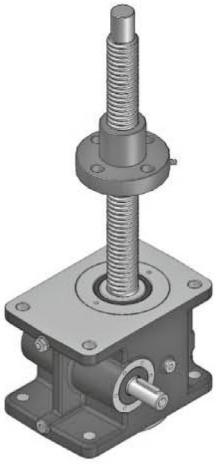
Acme Screw Jacks



Catalogue 05/11

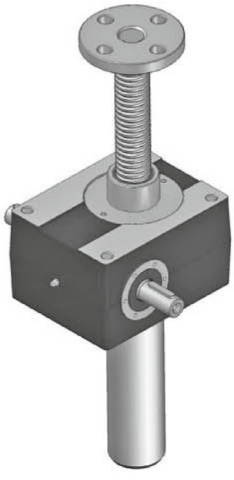
MA Series Screw Jacks - high efficiency





- Max. duty cycle:
  travelling screw: 40 % over 10 min
  (30 % over 1 hour)
  travelling nut: 30 % over 10 min
  (20 % over 1 hour)
- synthetic oil lubricated worm gearbox
- input speed up to 3 000 rpm
- 1-, 2-, 3- or 4-starts acme screw
- linear speed up to 300 mm/s
- 8 sizes
- load capacity ranging from 5 kN to 350 kN
- acme screw diameter
  from 18 mm to 100 mm

SJ Series Screw Jacks - standard performances





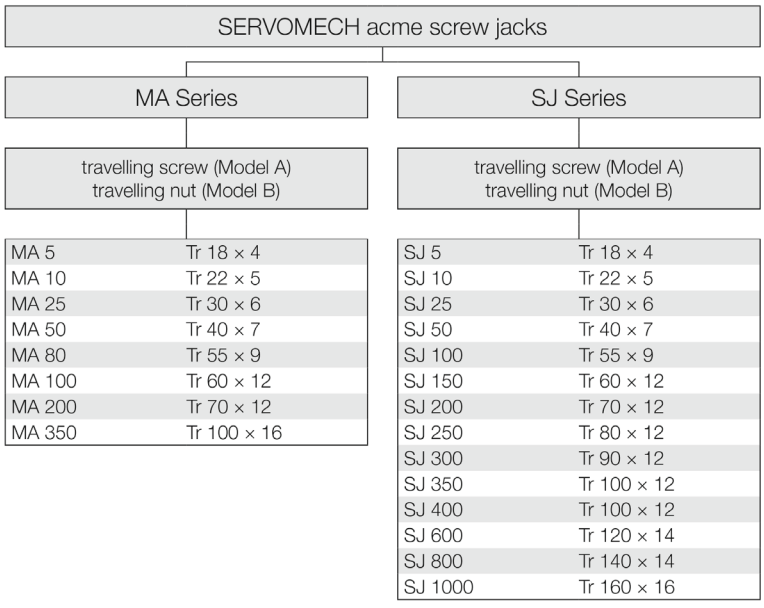
- Max. duty cycle:
  30 % over 10 min (20 % over 1 hour)
- synthetic grease lubricated worm gearbox
- input speed up to 1 500 rpm
- 1- or 2-starts acme screw
- linear speed up to 80 mm/s
- 14 sizes
- load capacity ranging
  from 5 kN to 1 000 kN
- acme screw diameter
  from 18 mm to 160 mm

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Acme screw jacks



MA 5	Tr 18 × 4
MA 10	Tr 22 × 5
MA 25	Tr 30 × 6
MA 50	Tr 40 × 7
MA 80	Tr 55 × 9
MA 100	Tr 60 × 12
MA 200	Tr 70 × 12
MA 350	Tr 100 × 16

SJ 5	Tr 18 × 4
SJ 10	Tr 22 × 5
SJ 25	Tr 30 × 6
SJ 50	Tr 40 × 7
SJ 100	Tr 55 × 9
SJ 150	Tr 60 × 12
SJ 200	Tr 70 × 12
SJ 250	Tr 80 × 12
SJ 300	Tr 90 × 12
SJ 350	Tr 100 × 12
SJ 400	Tr 100 × 12
SJ 600	Tr 120 × 14
SJ 800	Tr 140 × 14
SJ 1000	Tr 160 × 16

MA Series: high efficiency screw jacks	SJ Series: standard performances screw jacks
8 standard sizes with load capacity from 5 kN to 350 kN	14 standard sizes with load capacity from 5 kN to 1 000 kN
Model A: travelling screw Model B: travelling nut	
1- start acme screw from Tr 18 × 4 to Tr 100 × 16	1- start acme screw from Tr 18 × 4 to Tr 160 × 16
2-starts acme screw from Tr 18 × 8 (P4) to Tr 100 × 32 (P16)	2-starts acme screw from Tr 18 × 8 (P4) to Tr 160 × 32 (P16)
Screw jacks MA Series Model A with travelling screw: 3- or 4-starts acme screws available	
6 different input versions for each size and ratio Vers.1: single input shaft Vers.2: double free input shaft Vers.3: flange and hollow shaft input for IEC motor Vers.4: flange and hollow shaft input for IEC motor with second free input shaft Vers.5: Vers.1 + bell housing and coupling for IEC motor Vers.6: Vers.2 + bell housing and coupling for IEC motor	
long-life synthetic oil lubricated worm gear	long-life synthetic grease lubricated worm gear
operation with low noise level with input speed up to 3 000 rpm	max. input speed allowed 1 500 rpm
suitable for high linear speed and high duty cycle applications	competitive in industrial applications price/performance : excellent ratio
wide range of accessories available	

Ball screw jacks

SERVOMECH ball screw jacks

MA BS Series

travelling ball screw (Model A)

MA 5	BS 14×5 BS 16×5
MA 10	BS 16×5 BS 20×5
MA 25	BS 32×10; BS 32×20; BS 32×32
MA 50	BS 40×10; BS 40×20; BS 40×40
MA 100	BS 50×10; BS 50×20; BS 63×10; BS 63×20
MA 200	BS 80×16
MA 350	BS 100×16

travelling ball nut (Model B)

MA 5	BS 20×5 BS 25×6
MA 10	BS 25×6 BS 32×5
MA 25	BS 32×5; BS 32×10; BS 32×20; BS 32×32
MA 50	BS 40×10; BS 40×20; BS 40×40
MA 80	BS 50×10; BS 50×20
MA 100	BS 63×10; BS 63×20
MA 200	BS 80×16 BS 100×16
MA 350	BS 100×16

SJ BS Series

travelling ball nut (Model B)

SJ 5	BS 20×5 BS 25×6
SJ 10	BS 25×6 BS 32×5
SJ 25	BS 32×5; BS 32×10; BS 32×20
SJ 50	BS 40×10; BS 40×20
SJ 100	BS 50×10; BS 50×20
SJ 150	BS 63×10; BS 63×20
SJ 200	BS 80×16
SJ 250	BS 100×16

MA BS Series:	SJ BS Series:
high efficiency screw jacks, suitable for continuous operation also, duty cycle up to 100 %, input speed up to 3 000 rpm	standard performances screw jacks, Model B (travelling nut) available only, duty cycle up to 70 %, input speed up to 1 500 rpm
8 standard sizes with load capacity from 5 kN to 350 kN	8 standard sizes with load capacity from 5 kN to 250 kN
Model A: travelling ball screw Model B: travelling ball nut	Model B: travelling ball nut
ball screw from BS 14 × 5 to BS 100 × 16	ball screw from BS 20 × 5 to BS 100 × 16
6 different input versions for each size and ratio Vers.1: single input shaft Vers.2: double free input shaft Vers.3: flange and hollow shaft input for IEC motor Vers.4: flange and hollow shaft input for IEC motor with second free input shaft Vers.5: Vers.1 + bell housing and coupling for IEC motor Vers.6: Vers.2 + bell housing and coupling for IEC motor	
long-life synthetic oil lubricated worm gear	long-life synthetic grease lubricated worm gear
wide range of accessories available	

NOTE: Performances, features and dimensions of ball screw jacks and ball screws are quoted in the specific catalogues:

- catalogue **Ball screw jacks**,
- catalogue **Ball screws and nuts**.

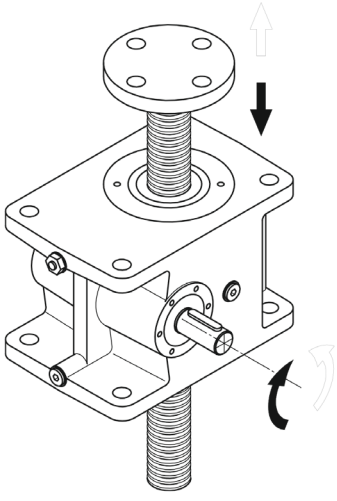
Models

Both MA and SJ Series screw jacks are available in two models:

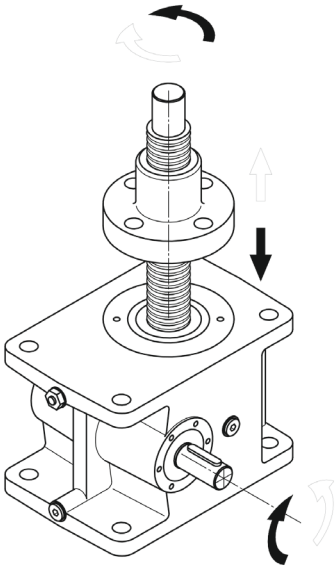
with travelling screw (Model A)
with travelling nut (Model B)

The choice of the model depends on the configuration and requirements of the application. The performances are in general the same for both models.

SERVOMECH screw jacks can be operated in vertical or horizontal planes, or angles in-between. Input options available: free shaft, double free shaft, motor flange with or without second shaft.



travelling ball screw (Model A)



travelling ball nut (Model B)

The bronze nut is integral with the worm wheel.

The linear motion is given by the acme screw being driven through the centre of the worm wheel. In operation, the screw does not rotate. Space must be available on both screw jacks sides for the screw to protrude below the gear housing.

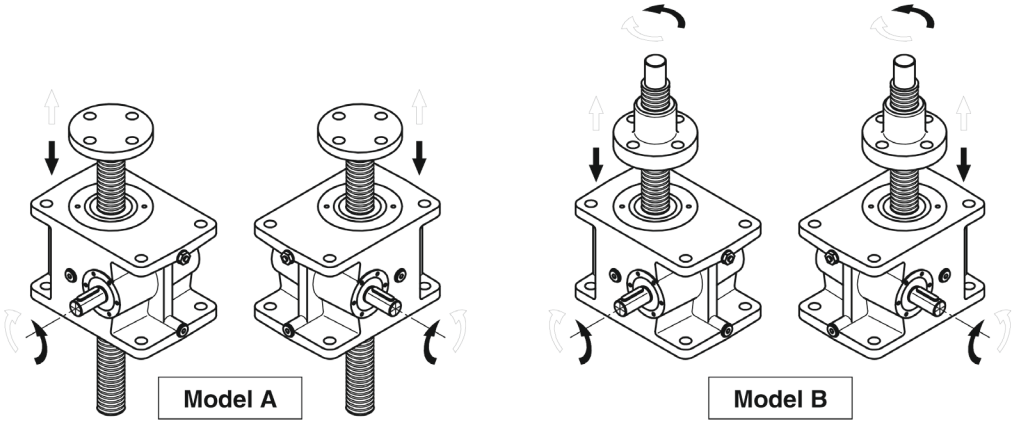
Options:
protective tube
protective bellows
safety bronze nut
various screw end fixings
stroke end switches
anti-turn device
wear indicator switch
adjustable backlash
stop nut
trunnion mounting
stainless steel acme screw
bronze guides

The acme screw is fixed to the worm wheel. In operation the screw rotates with the worm wheel at the same speed, driving the bronze nut up and down. The linear motion of the nut is possible only if the reacting torque is applied, avoiding the integral rotation with the acme screw.

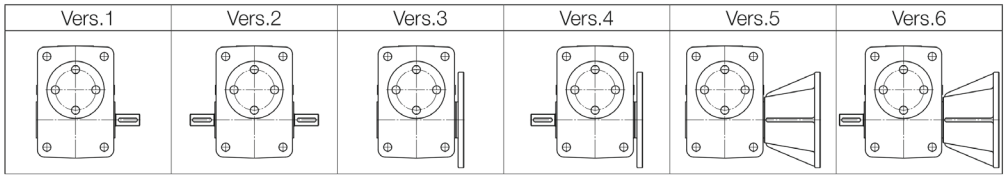
Options:
protective bellows
safety bronze nut
wear indicator switch
adjustable backlash
stainless steel acme screw
trunnion mounting travelling nut
travelling nut at customer's drawing

Versions

INPUT SHAFT ROTATION – SCREW OR NUT LIFTING DIRECTION

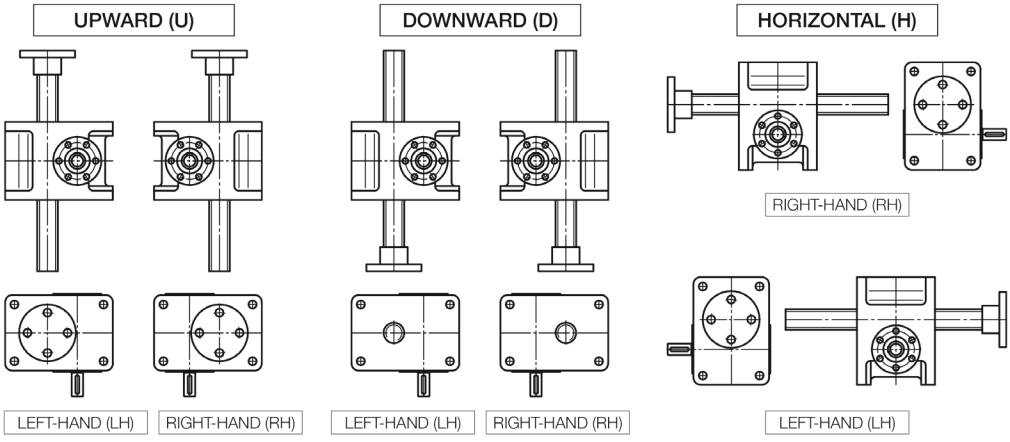


INPUT VERSIONS

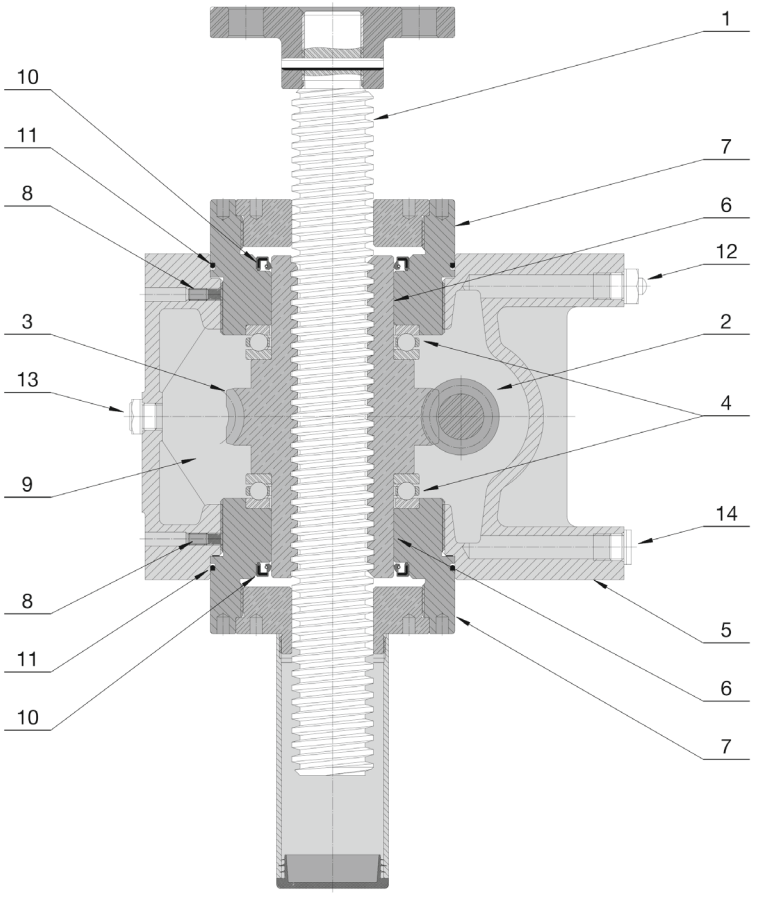


Vers.1: single input shaft
Vers.2: double free input shaft
Vers.3: flange and hollow shaft input for IEC motor
Vers.4: flange and hollow shaft input for IEC motor with second free input shaft
Vers.5: Vers.1 + bell housing and coupling for IEC motor
Vers.6: Vers.2 + bell housing and coupling for IEC motor

SCREW JACK MOUNTING POSITIONS



Screw jacks MA Series with travelling screw (Mod.A)
STRUCTURAL ELEMENTS

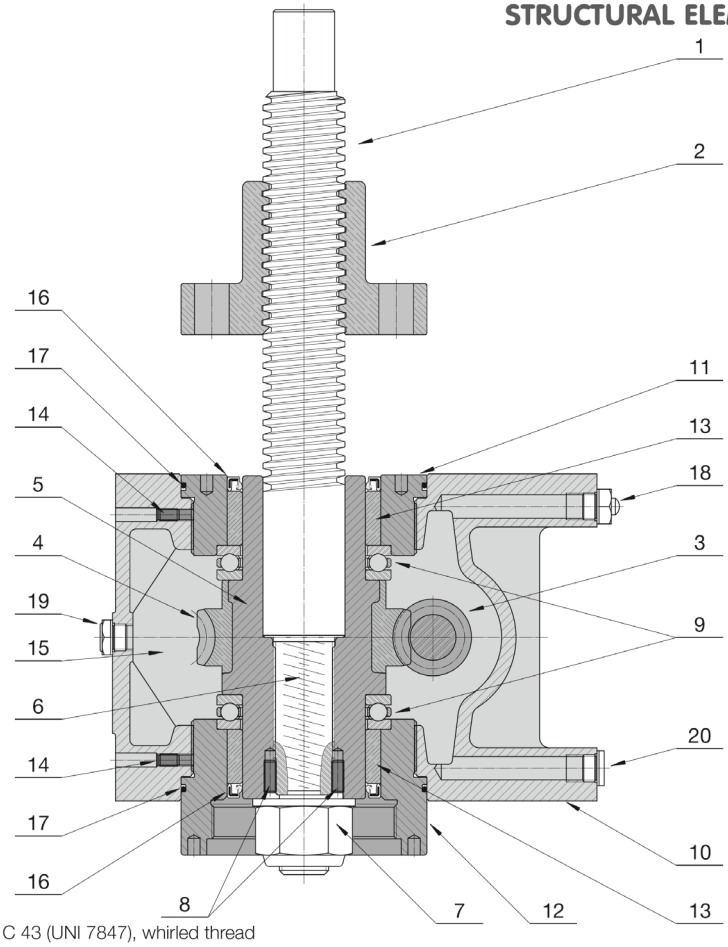




1 - acme screw in steel C 43 (UNI 7847), whirled thread
2 - worm shaft with true involute, ground worm profile ZI (UNI 4760), made in steel, case-hardened
3 - bronze wormwheel with true involute profile ZI (UNI 4760), the length of the internal nut is double respect to SJ Series; the bigger mass of the bronze nut allows a higher duty cycle and a longer life
4 - thrust ball bearing for high load capacity
5 - gear box shape which allows effective heat dissipation giving increased duty cycle
6 - radial guide of the wormwheel for increased stiffness and improved efficiency
7 - raised cover with bronze guide against radial load for acme screw; the raised cover may also be used as a spigot diameter
8 - grub screw which prevents the threaded cover unscrewing
9 - synthetic oil lubricated worm gearbox for a better heat dissipation; this allows higher input speed, improved efficiency and longer life
10 - radial lubricant seal
11 - O-Ring as lubricant seal
12 - breather
13 - oil level plug
14 - oil drain plug

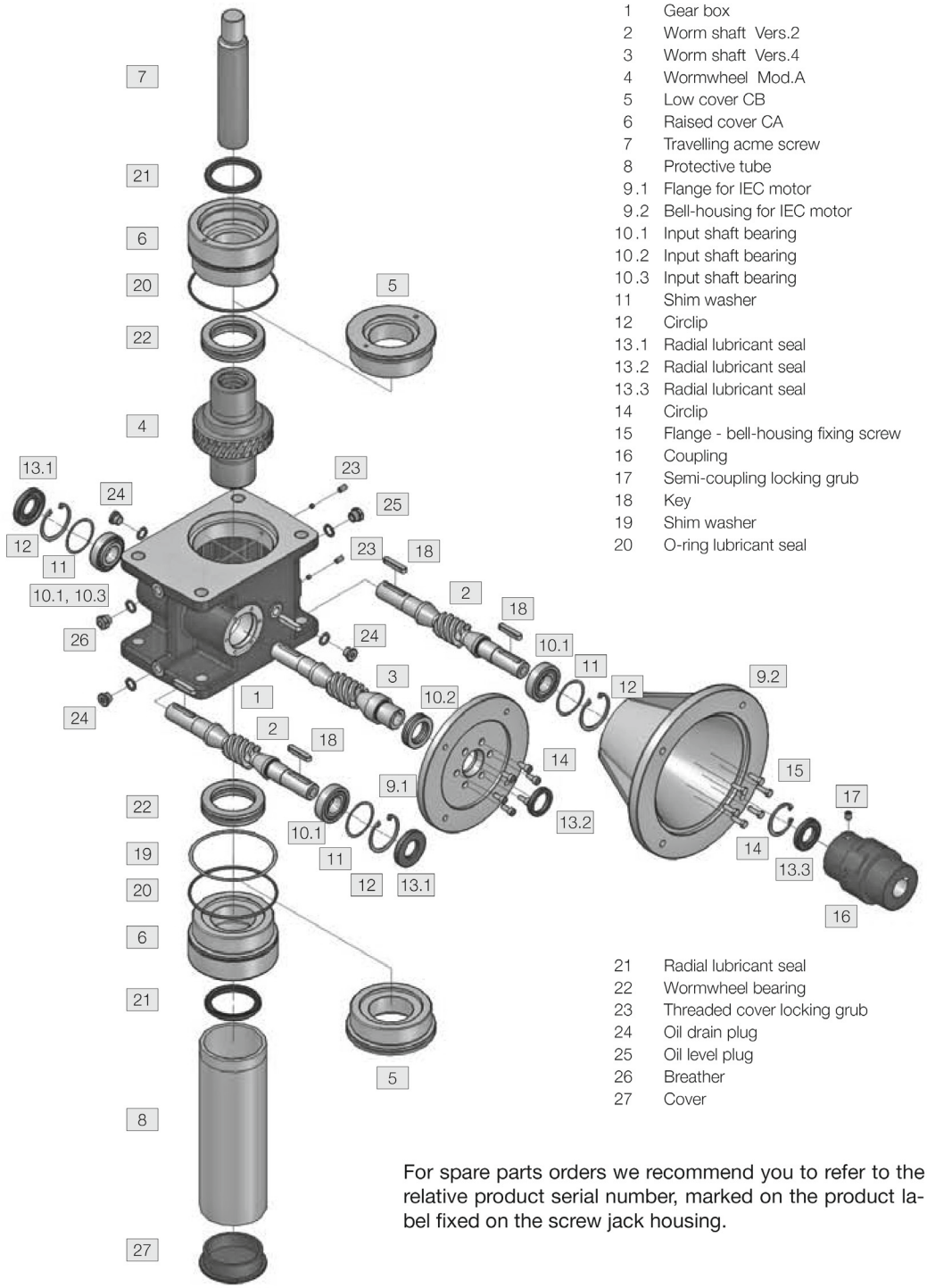
Screw jacks MA Series with travelling nut (Mod.B)
STRUCTURAL ELEMENTS





1 - acme screw in steel C 43 (UNI 7847), whirled thread
2 - bronze travelling nut with flange
3 - worm shaft with true involute, ground worm profile ZI (UNI 4760), made in steel, case-hardened
4 - bronze wormwheel with true involute profile ZI (UNI 4760)
5 - cast iron support of the wormwheel bronze rim
6 - acme screw fixed to the wormwheel through the cylindrical centring part and LEFT-HAND (for push load) or RIGHT-HAND (for pull load) metric thread
7 - lock nut with the opposite direction metric thread to ensure safe acme screw fixing
8 - acme screw – wormwheel pins against unscrewing
9 - thrust ball bearing for high load capacity
10 - gear box
11 - low cover
12 - raised cover; may also be used as a spigot diameter
13 - radial bronze guide of the wormwheel, for increased stiffness and improved efficiency
14 - grub screw which prevents the threaded cover unscrewing
15 - synthetic oil lubricated worm gearbox
16 - radial lubricant seal
17 - O-Ring as lubricant seal
18 - breather
19 - oil level plug
20 - oil drain plug

Screw jacks MA Series with travelling screw (Mod. A) - spare parts



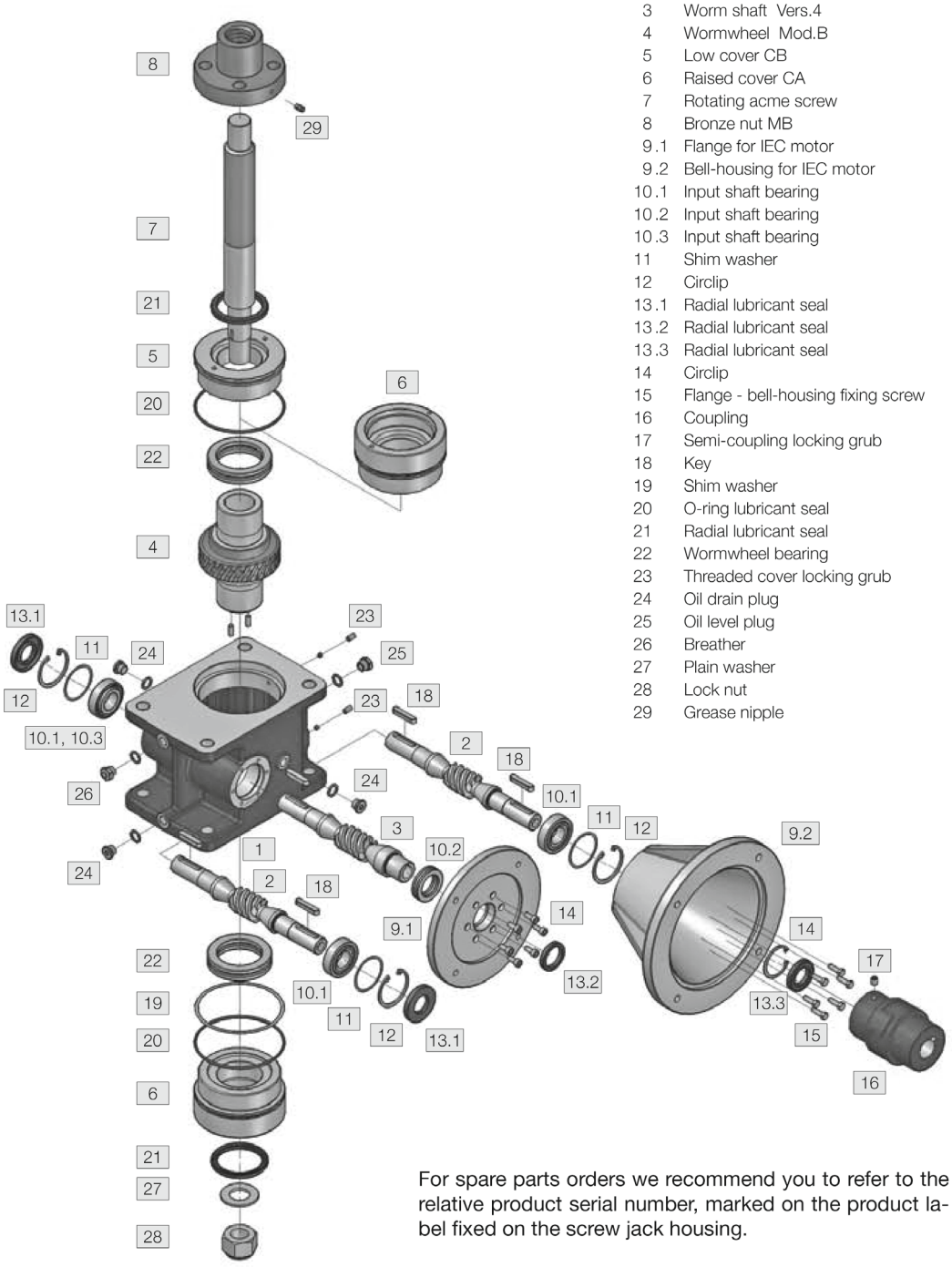
1 Gear box
2 Worm shaft Vers.2
3 Worm shaft Vers.4
4 Wormwheel Mod.A
5 Low cover CB
6 Raised cover CA
7 Travelling acme screw
8 Protective tube
9.1 Flange for IEC motor
9.2 Bell-housing for IEC motor
10.1 Input shaft bearing
10.2 Input shaft bearing
10.3 Input shaft bearing
11 Shim washer
12 Circlip
13.1 Radial lubricant seal
13.2 Radial lubricant seal
13.3 Radial lubricant seal
14 Circlip
15 Flange - bell-housing fixing screw
16 Coupling
17 Semi-coupling locking grub
18 Key
19 Shim washer
20 O-ring lubricant seal

21 Radial lubricant seal
22 Wormwheel bearing
23 Threaded cover locking grub
24 Oil drain plug
25 Oil level plug
26 Breather
27 Cover

For spare parts orders we recommend you to refer to the relative product serial number, marked on the product label fixed on the screw jack housing.

SERVOMECH

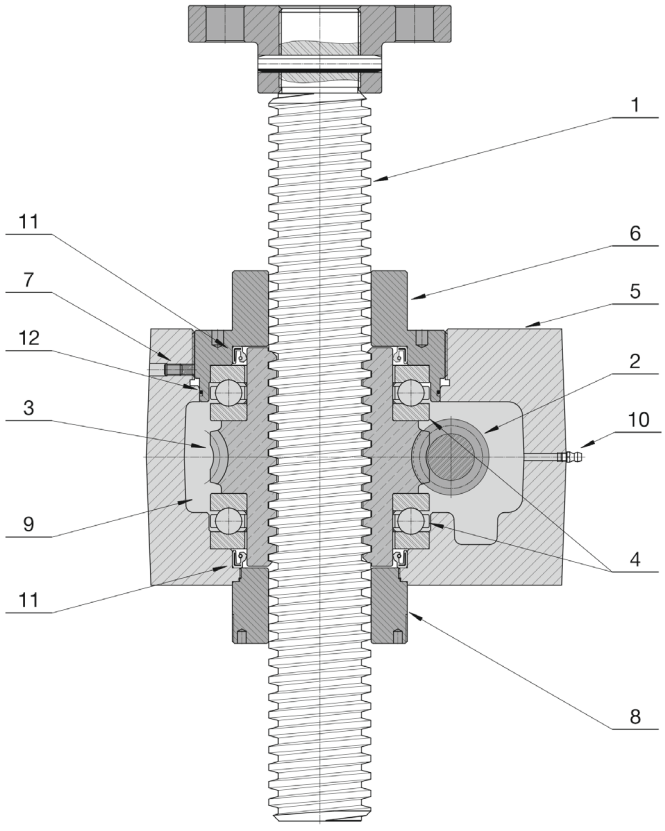
Screw jacks MA Series with travelling nut (Mod. B) - spare parts



1 Gear box
2 Worm shaft Vers.2
3 Worm shaft Vers.4
4 Wormwheel Mod.B
5 Low cover CB
6 Raised cover CA
7 Rotating acme screw
8 Bronze nut MB
9.1 Flange for IEC motor
9.2 Bell-housing for IEC motor
10.1 Input shaft bearing
10.2 Input shaft bearing
10.3 Input shaft bearing
11 Shim washer
12 Circlip
13.1 Radial lubricant seal
13.2 Radial lubricant seal
13.3 Radial lubricant seal
14 Circlip
15 Flange - bell-housing fixing screw
16 Coupling
17 Semi-coupling locking grub
18 Key
19 Shim washer
20 O-ring lubricant seal
21 Radial lubricant seal
22 Wormwheel bearing
23 Threaded cover locking grub
24 Oil drain plug
25 Oil level plug
26 Breather
27 Plain washer
28 Lock nut
29 Grease nipple

For spare parts orders we recommend you to refer to the relative product serial number, marked on the product label fixed on the screw jack housing.

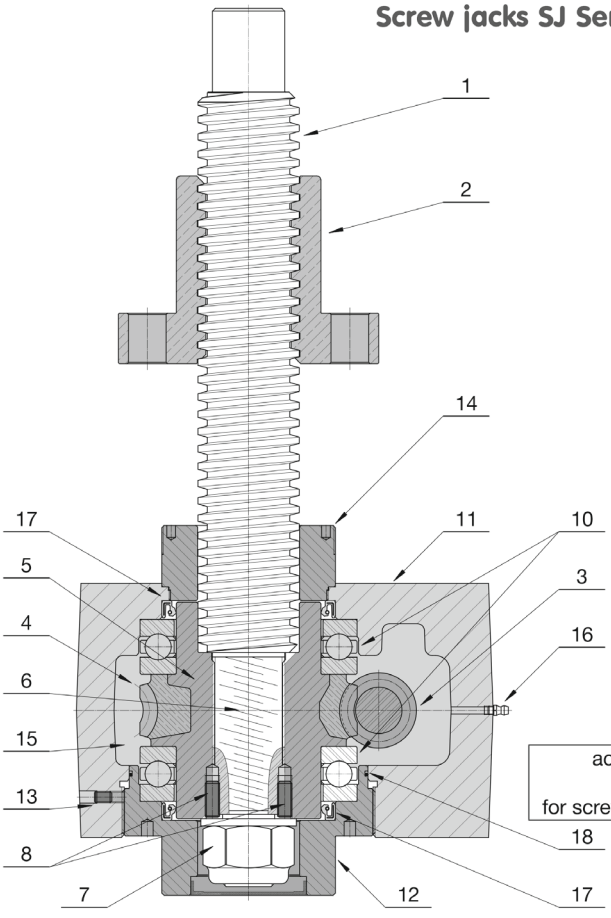
Screw jacks SJ Series with travelling screw (Mod.A)
STRUCTURAL ELEMENTS



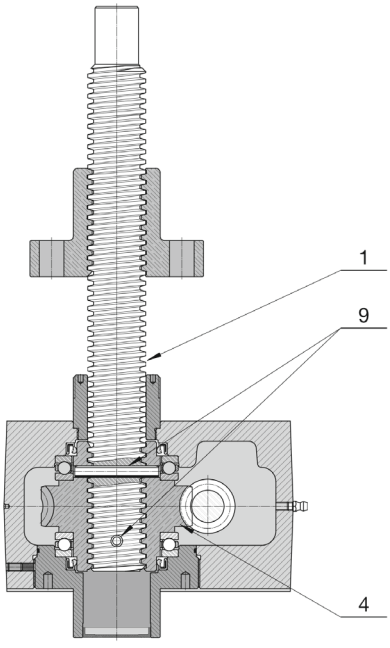


1 - acme screw in steel C 43 (UNI 7847), rolled or whirled thread
2 - worm shaft with true involute, ground worm profile ZI (UNI 4760), made in steel, case-hardened
3 - bronze wormwheel with internal nut, toothing with true involute profile ZI (UNI 4760)
4 - thrust ball bearing for high load capacity
5 - monoblock gear box
6 - threaded cover with guide for acme screw; may be used as a spigot diameter
7 - grub screw which prevents the threaded cover unscrewing
8 - guide for acme screw; may be used as a spigot diameter
9 - long-life synthetic grease lubricated worm gearbox
10 - grease nipple
11 - radial lubricant seal
12 - O-Ring as lubricant seal

Screw jacks SJ Series with travelling nut (Mod.B)
STRUCTURAL ELEMENTS



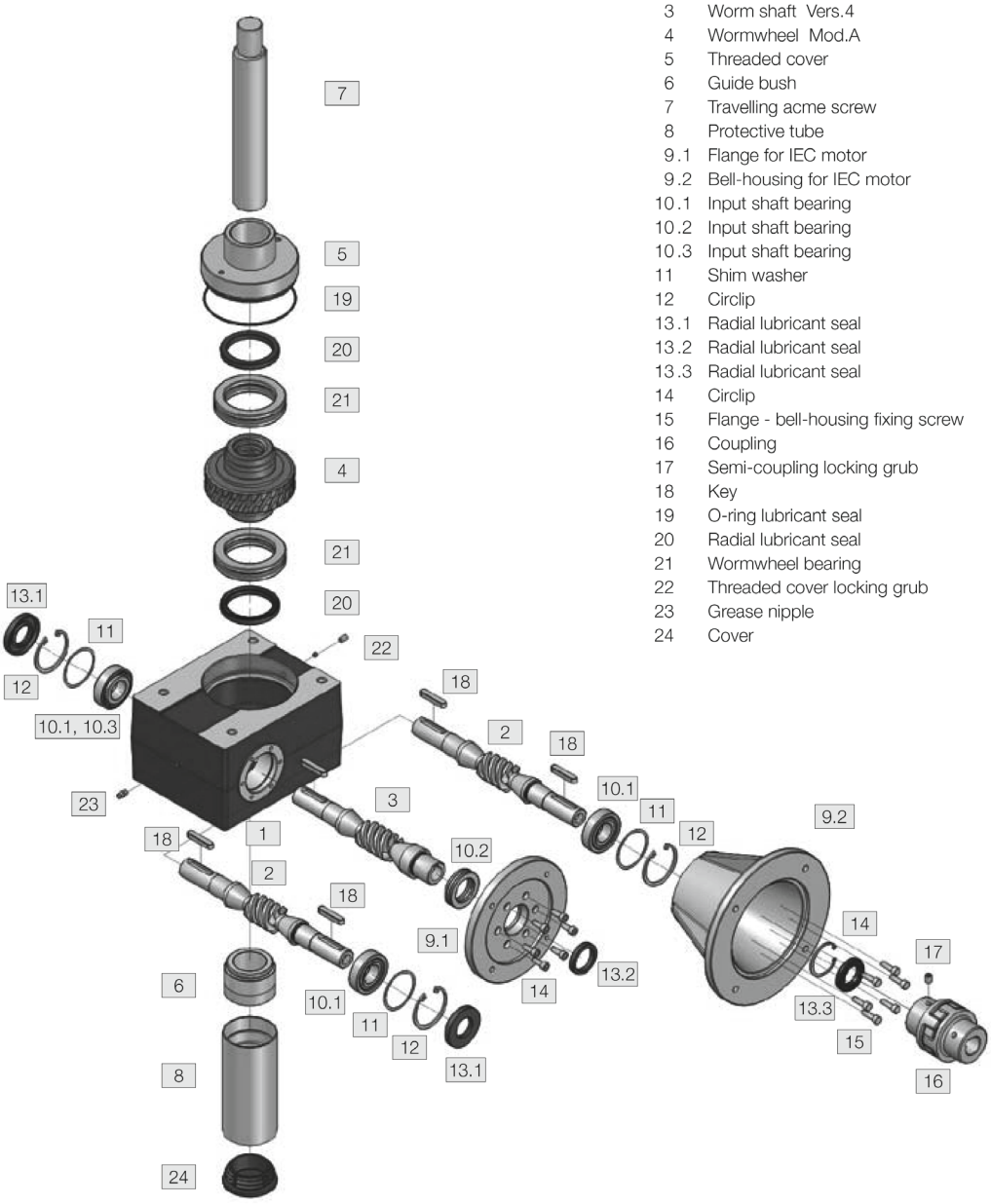
acme screw - wormwheel fixing system
with metric thread and 2 grub screws
for screw jacks with screw from Tr 60×12 to Tr 160×16



acme screw - wormwheel fixing system
through 2 slotted spring pins
for screw jacks with screw from Tr 18×4 to Tr 55×9

1 - acme screw in steel C 43 (UNI 7847), whirled thread
2 - bronze travelling nut with flange
3 - worm shaft with true involute, ground worm profile ZI (UNI 4760), made in steel, case-hardened
4 - bronze wormwheel with true involute profile ZI (UNI 4760)
5 - cast iron support of the wormwheel bronze rim
6 - acme screw fixed to the wormwheel through LEFT-HAND (for push load) or RIGHT-HAND (for pull load) metric thread
7 - lock nut with the opposite direction metric thread to ensure safe acme screw fixing
8 - acme screw – wormwheel pins against unscrewing
9 - slotted spring pin
10 - thrust ball bearing for high load capacity
11 - monoblock gear box
12 - threaded cover with guide for acme screw; may be used as a spigot diameter
13 - grub screw which prevents the threaded cover unscrewing
14 - guide for acme screw; may be used as a spigot diameter
15 - long-life synthetic grease lubricated worm gearbox
16 - grease nipple
17 - radial lubricant seal
18 - O-Ring as lubricant seal

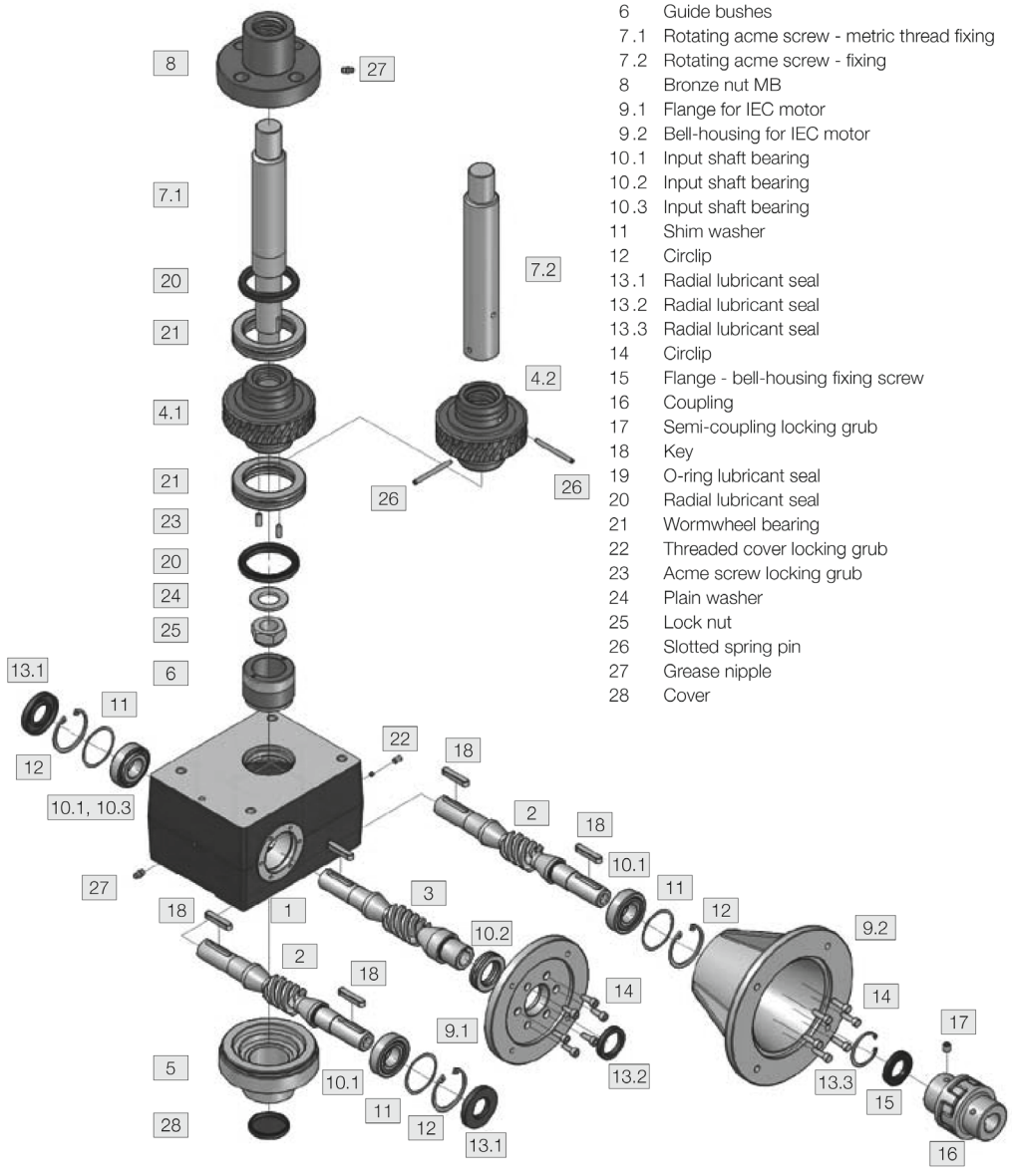
Screw jacks SJ Series with travelling screw (Mod. A) - spare parts



1	Gear box
2	Worm shaft Vers.2
3	Worm shaft Vers.4
4	Wormwheel Mod.A
5	Threaded cover
6	Guide bush
7	Travelling acme screw
8	Protective tube
9.1	Flange for IEC motor
9.2	Bell-housing for IEC motor
10.1	Input shaft bearing
10.2	Input shaft bearing
10.3	Input shaft bearing
11	Shim washer
12	Circlip
13.1	Radial lubricant seal
13.2	Radial lubricant seal
13.3	Radial lubricant seal
14	Circlip
15	Flange - bell-housing fixing screw
16	Coupling
17	Semi-coupling locking grub
18	Key
19	O-ring lubricant seal
20	Radial lubricant seal
21	Wormwheel bearing
22	Threaded cover locking grub
23	Grease nipple
24	Cover

For spare parts orders we recommend you to refer to the relative product serial number, marked on the product label fixed on the screw jack housing.

Screw jacks SJ Series with travelling nut (Mod. B) - spare parts

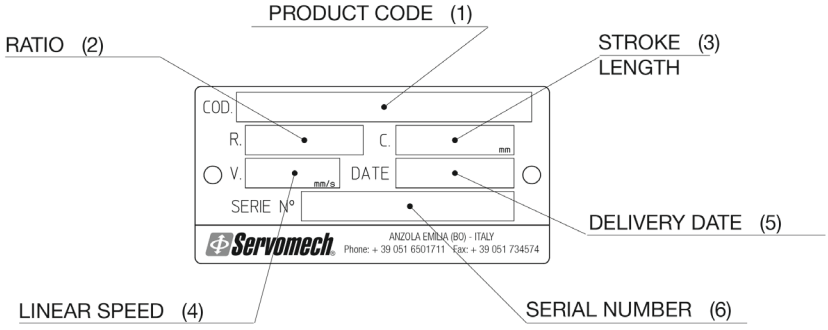


1	Gear box
2	Worm shaft Vers.2
3	Worm shaft Vers.4
4.1	Wormwheel Mod.B
4.2	Wormwheel Mod.B with elastic pins
5	Threaded cover
6	Guide bushes
7.1	Rotating acme screw - metric thread fixing
7.2	Rotating acme screw - fixing
8	Bronze nut MB
9.1	Flange for IEC motor
9.2	Bell-housing for IEC motor
10.1	Input shaft bearing
10.2	Input shaft bearing
10.3	Input shaft bearing
11	Shim washer
12	Circlip
13.1	Radial lubricant seal
13.2	Radial lubricant seal
13.3	Radial lubricant seal
14	Circlip
15	Flange - bell-housing fixing screw
16	Coupling
17	Semi-coupling locking grub
18	Key
19	O-ring lubricant seal
20	Radial lubricant seal
21	Wormwheel bearing
22	Threaded cover locking grub
23	Acme screw locking grub
24	Plain washer
25	Lock nut
26	Slotted spring pin
27	Grease nipple
28	Cover

For spare parts orders we recommend you to refer to the relative product serial number, marked on the product label fixed on the screw jack housing.

PRODUCT LABEL

Every SERVOMECH screw jack is provided with a product label, see picture below, which allows the unit identification and gives technical information about the product.



1) **Product code**: is an alphanumeric code stating the type, size ratio, input version and stroke end switches of the unit;

2) **Ratio**: is the ratio of worm gear;

3) **Stroke length**: is the stroke length in millimetres (mm) achievable by the screw jack;

4) **Linear speed**: is the screw jack linear speed in millimetres per second (mm/s), for screw jacks supplied with an electric motor; if the motor is not supplied, the field is blank;

5) **Delivery date**: is the assembly date, expressed in week/year (example: 37/10 = week 37 of year 2010), which usually is also the delivery date; this date is considered as warranty reference;

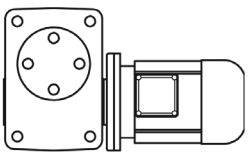
6) **Serial number**: is the number referred to the unit and assures the exact identification of the product, even after a long time; it must be given as reference when ordering spare parts for the unit.

SCREW JACK LIFTING SYSTEMS

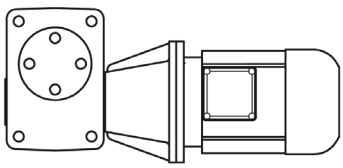
SERVOMECH can support customers by selecting the complete drive solution for screw jack systems:

- screw jacks with flange for motor mounting or with input shaft,
- AC 3-phase or 1-phase electric motors, DC electric motors, servomotors
- inverter drives
- screw jacks with control of axial position and linear speed
- bevel gears
- connecting transmission shafts and couplings
- general technical support, for example:
  - screw jack selection
  - lifetime estimation and calculation
  - lay-out system drawings
  - 3D models and 2D drawings available through web-configurator on www.servomech.com or via e-mail, on specific request to SERVOMECH Engineering Dpt.

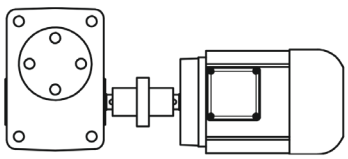
Single motorized screw jack



Screw jack
with plug-in flange and hollow input shaft+
IEC B5 or B14 motor



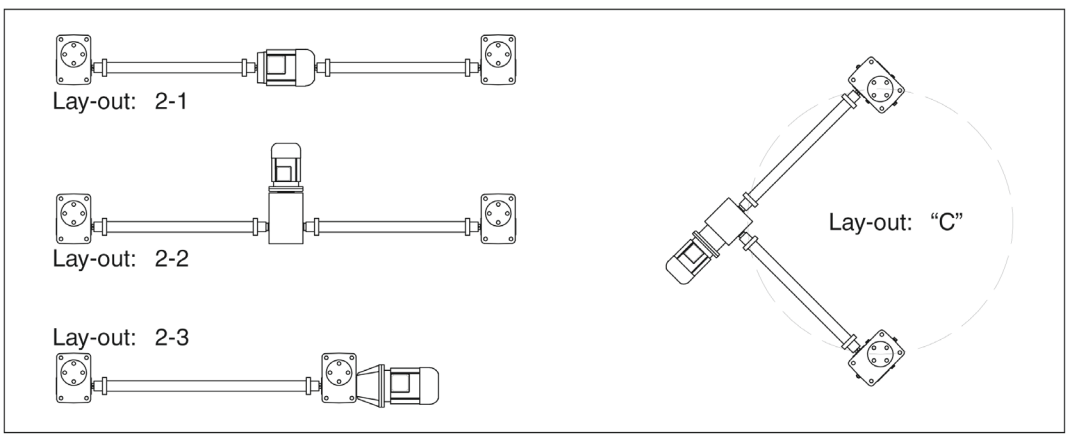
Screw jack
with bell-housing and coupling +
IEC B5 or B14 motor



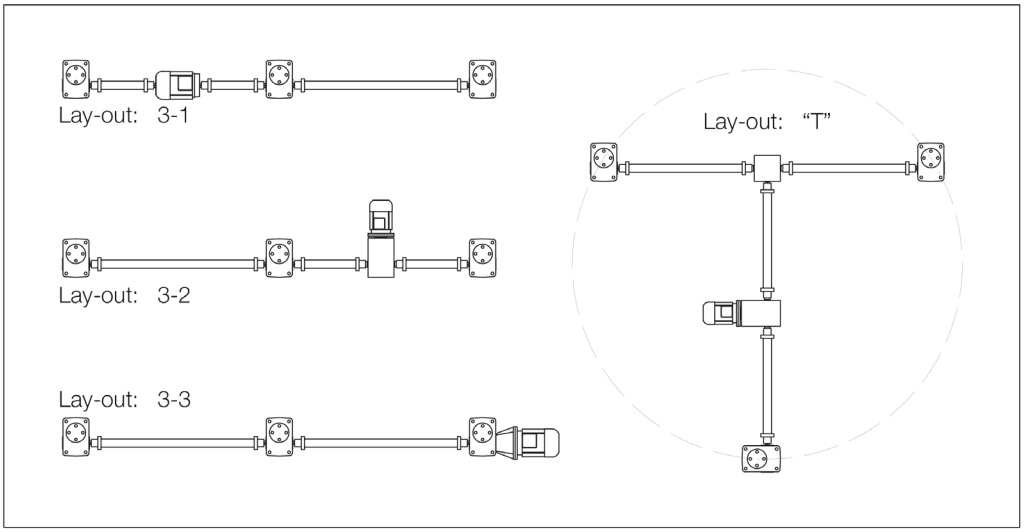
Screw jack with single input shaft +
coupling +
IEC B3 motor

SERVOMECH

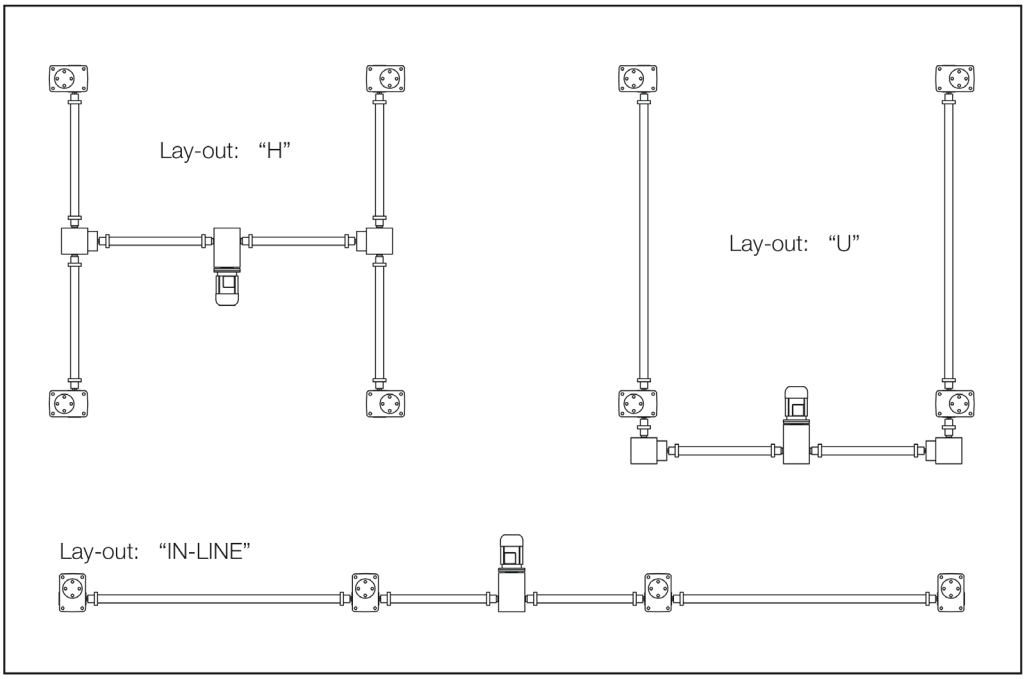
LAY-OUT: Two points lifting systems



LAY-OUT: Three points lifting systems



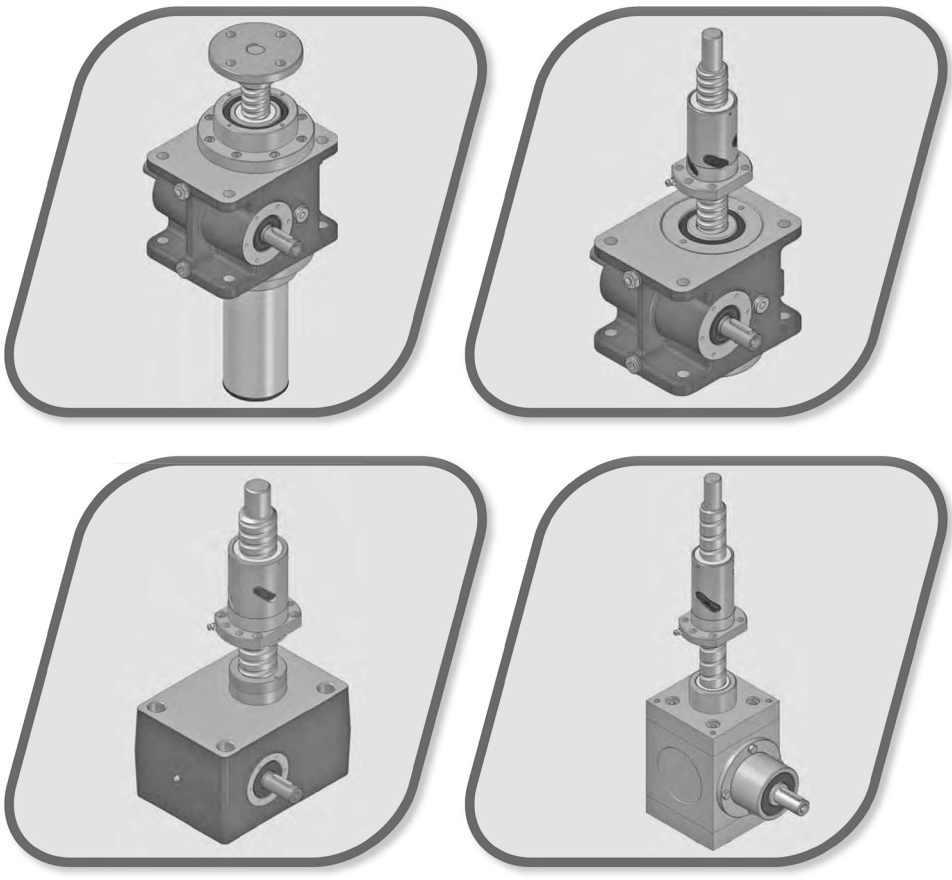
LAY-OUT: Four points lifting systems



endo

Servomech®
new ideas in linear motion

Ball Screw Jacks



Catalogue 01/13 NEW EDITION

1.4 Ball screw jacks overview

Ball screw jacks

Travelling screw (Mod. A)

MA BS Series	
MA 5	BS 16 × 5 BS 16 × 10 BS 16 × 16
MA 10	BS 25 × 5 BS 25 ×10 BS 25 × 25
MA 25	BS 32 × 10 BS 32 × 20 BS 32 × 32
MA 50	BS 40 × 10 BS 40 × 20 BS 40 × 40
MA 100	BS 50 × 10 BS 50 × 20
MA 150	BS 63 × 10 BS 63 × 20
MA 200	BS 80 × 10 BS 80 × 20
MA 350	BS 100 × 16 BS 100 × 20

Travelling nut (Mod. B)

MA BS Series	
MA 5	BS 16 × 5 BS 16 × 10 BS 16 × 16 BS 20 × 5 BS 20 × 10 BS 20 × 20
MA 10	BS 25 × 5 BS 25 ×10 BS 25 × 25
MA 25	BS 32 × 5 BS 32 × 10 BS 32 × 20 BS 32 × 32
MA 50	BS 40 × 10 BS 40 × 20 BS 40 × 40
MA 80	BS 50 × 10 BS 50 × 20
MA 150	BS 63 × 10 BS 63 × 20
MA 200	BS 80 × 10 BS 80 × 16 BS 80 × 20
MA 350	BS 100 × 16 BS 100 × 20

SJ BS Series	
SJ 5	BS 16 × 5 BS 16 × 10 BS 16 × 16 BS 20 × 5 BS 20 × 10 BS 20 × 20
SJ 10	BS 25 × 5 BS 25 × 10 BS 25 × 25
SJ 25	BS 32 × 5 BS 32 × 10 BS 32 × 20 BS 32 × 32
SJ 50	BS 40 × 10 BS 40 × 20 BS 40 × 40
SJ 100	BS 50 × 10 BS 50 × 20
SJ 150	BS 63 × 10 BS 63 × 20
SJ 200	BS 80 × 10 BS 80 × 16 BS 80 × 20
SJ 250	BS 100 × 16 BS 100 × 20
SJ 300	BS 100 × 16 BS 100 × 20
SJ 400	BS 120 × 20

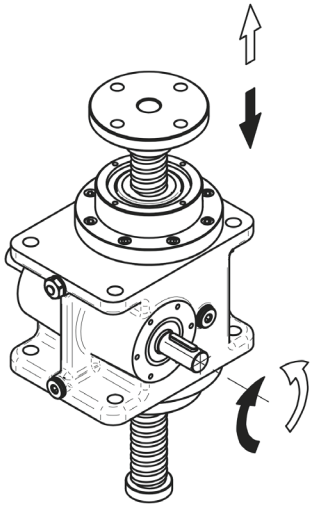
HS Series	
HS 10	BS 25 × 5 BS 25 × 10 BS 25 × 25
HS 25	BS 32 × 10 BS 32 × 20 BS 32 × 32
HS 50	BS 40 × 10 BS 40 × 20 BS 40 × 40
HS 100	BS 50 × 10 BS 50 × 20
HS 150	BS 63 × 10 BS 63 × 20
HS 200	BS 80 × 10 BS 80 × 16 BS 80 × 20

MA BS Series	SJ BS Series	HS Series
high efficiency screw jacks, suitable for continuous operation, duty cycle up to 100 %, ratio from 1 : 4 to 1 : 32, input speed up to 3 000 rpm	standard performances screw jacks, available only in Mod. B - travelling nut, duty cycle up to 70 %, ratio from 1 : 4 to 1 : 36, input speed up to 1 500 rpm	high speed screw jacks, available only in Mod. B - travelling nut, suitable for continuous operation, duty cycle up to 100 %, ratio from 1 : 1 to 1 : 4, input speed up to 3 000 rpm
8 standard sizes with load capacity from 5 kN to 350 kN	8 standard sizes with load capacity from 5 kN to 400 kN	6 standard sizes with load capacity from 10 kN to 200 kN
Model A: travelling ball screw Model B: travelling ball nut	Model B: travelling ball nut	Model B: travelling ball nut
ball screw from BS 16 × 5 to BS 100 × 20	ball screw from BS 16 × 5 to BS 120 × 20	ball screw from BS 25 × 5 to BS 80 × 20
6 different input versions for each size and ratio: Vers.1: single input shaft Vers.2: double input shaft Vers.3 / Vers.3 BM: flange and hollow shaft for IEC/servo motor Vers.4 / Vers.4 BM: flange and hollow shaft for IEC/servo motor with second input shaft Vers.5: Vers.1 + bell housing and coupling for IEC motor Vers.6: Vers.2 + bell housing and coupling for IEC motor		3 different input versions for each size and ratio S: solid shaft with key, standard diameter R: solid shaft with key, larger diameter MF: flange and hollow shaft for IEC motor MA: flange and hollow shaft for servo motor Additional output shaft (S or R)
long-life synthetic oil lubricated worm gear	long-life synthetic grease lubricated worm gear	long-life synthetic oil lubricated bevel gear
wide range of accessories available		

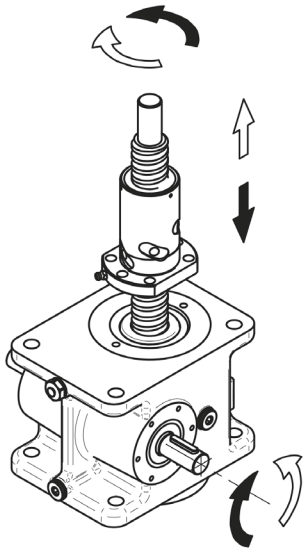
1.5 Models

Ball screw jacks are available in two different models:

- travelling screw (Model A)
- travelling nut (Model B)



Model A - travelling screw



Model B – travelling nut

The ball nut is integral with the worm wheel.

The linear motion is performed by the ball screw being driven by the nut through the screw jack housing, therefore there must be enough space on both screw jack sides. In operation, the screw does not rotate and its translation is possible only if the reacting torque is applied.

Accessories:

- protective tube
- protective bellows
- safety nut
- various screw end attachments
- limit switches
- anti-turn device
- stop nut
- trunnion mount
- bronze guides

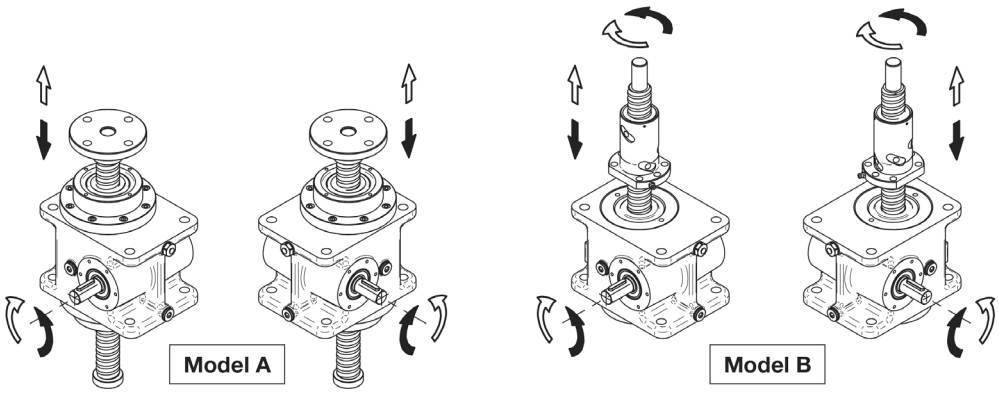
The ball screw is fixed to the worm wheel. In operation the screw rotates with the worm wheel at the same speed, driving the bronze nut up and down along the ball screw. The linear motion of the nut is possible only if the reacting torque is applied, avoiding the integral rotation with the ball screw.

Accessories:

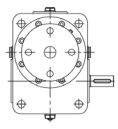
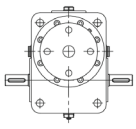
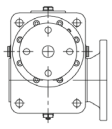
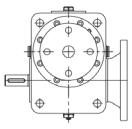
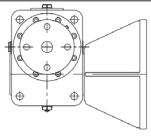
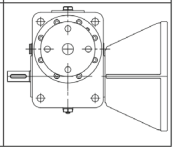
- protective bellows
- safety nut
- nut support with pivoting pins
- nut at customer's drawing
- trunnion mount

1.6 Design – screw jacks MA BS Series and SJ BS Series

INPUT SHAFT ROTATION – SCREW OR NUT LIFTING DIRECTION

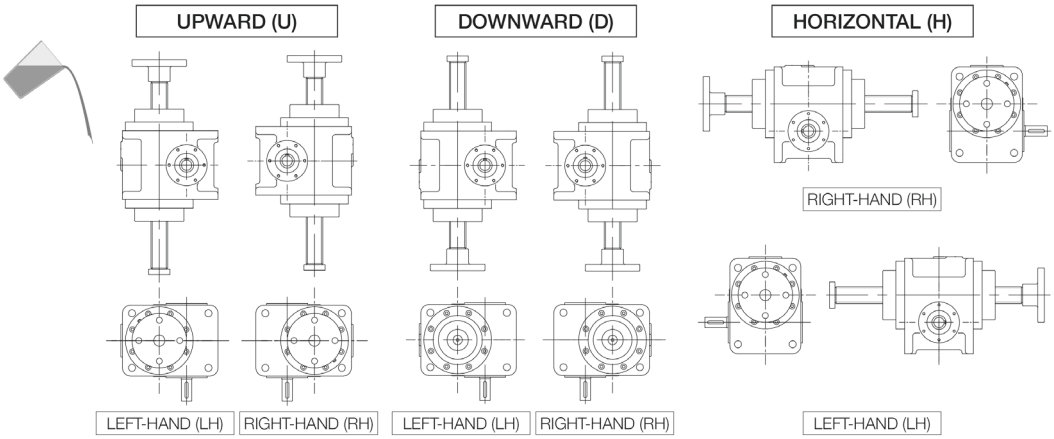


INPUT VERSIONS

Vers.1	Vers.2	Vers.3 / Vers.3 BM	Vers.4 / Vers.4 BM	Vers.5	Vers.6
					

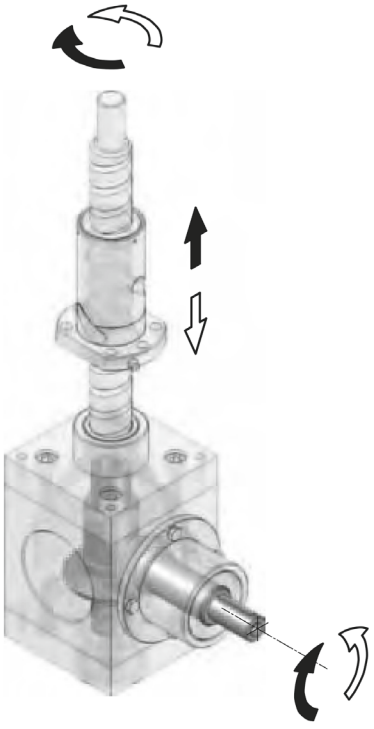
- Vers.1: single input shaft
- Vers.2: double input shaft
- Vers.3 / Vers.3 BM: flange and hollow shaft for IEC/servo motor
- Vers.4 / Vers.4 BM: flange and hollow shaft for IEC/servo motor + second input shaft
- Vers.5: Vers.1 + bell housing and coupling for IEC motor
- Vers.6: Vers.2 + bell housing and coupling for IEC motor

SCREW JACK MOUNTING POSITIONS

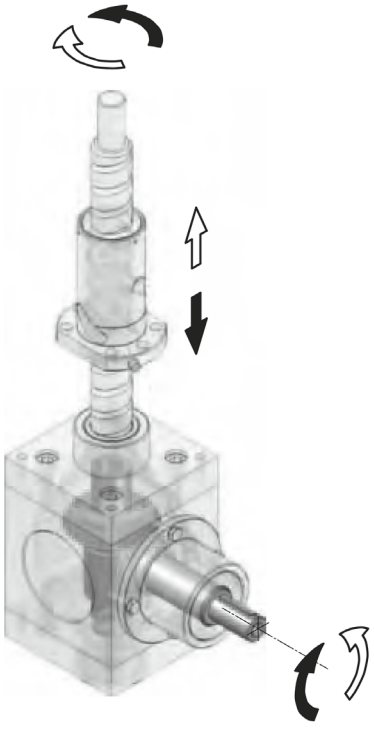


1.7 Design – screw jacks HS Series

KINEMATICS SCHEME

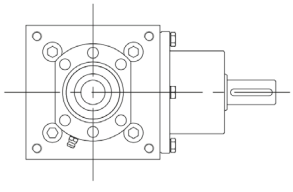
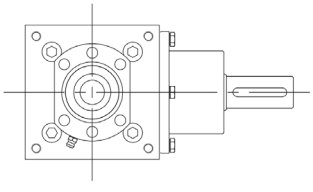
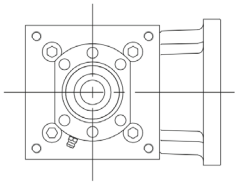


Scheme 10
Bevel gear wheel
on side opposite to nut



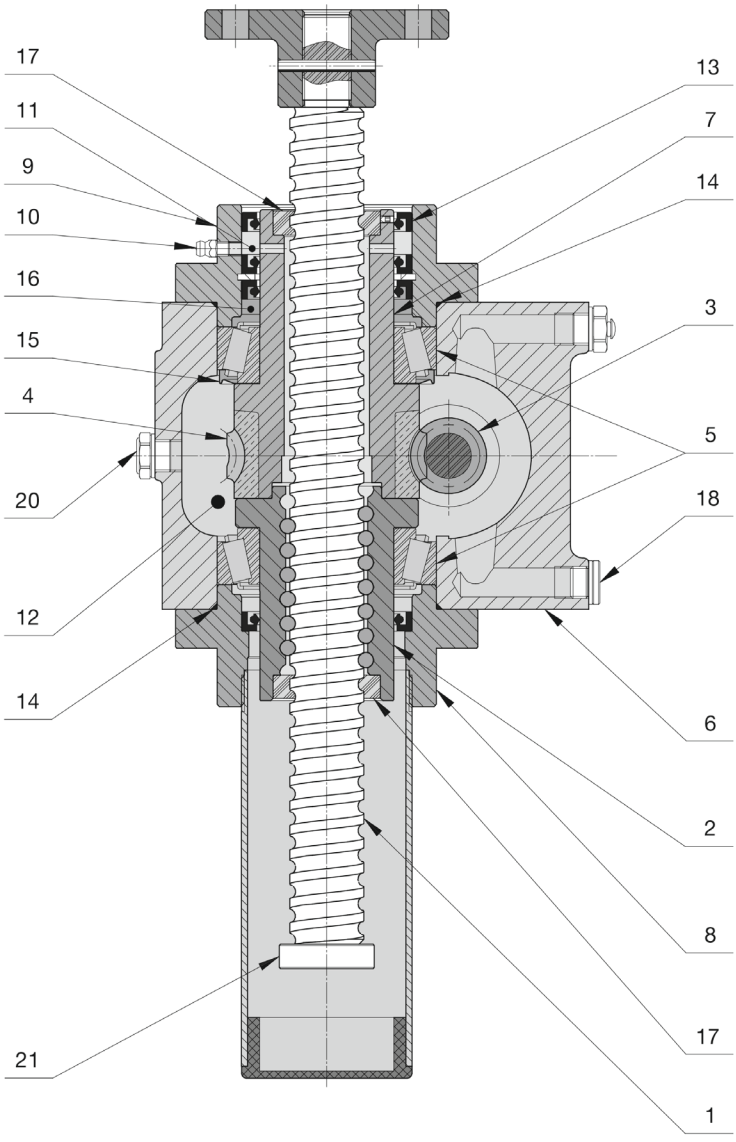
Scheme 20
Bevel gear wheel
on nut side

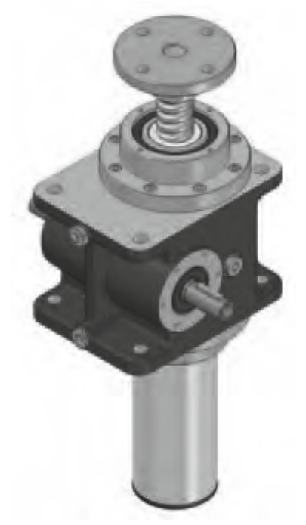
INPUT SHAFT

S	R	MF / MA
		

- Designation S: solid shaft with key, standard diameter
- Designation R: solid shaft with key, larger diameter
- Designation MF: flange and hollow shaft for IEC motor
- Designation MA: special flange for servo or hydraulic motor

2.1 MA BS Series - STRUCTURAL ELEMENTS





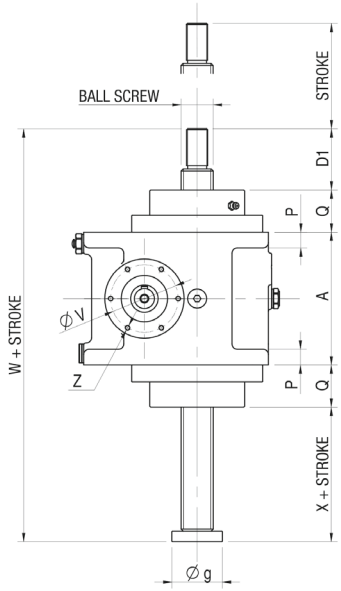
DESIGN PATENTED

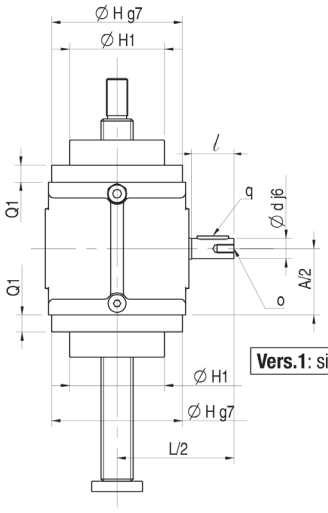
2.1 MA BS Series - STRUCTURAL ELEMENTS

1 - ball screw in quenched and tempered alloy steel
2 - ball nut in case-hardened and ground steel with frontal recirculation system that ensures higher performances compared to the radial system, because of greater number of balls which transmit the load
3 - worm with ground ZI involute thread profile (UNI 4760) in case-hardened steel
4 - bronze wormwheel with true involute profile ZI (UNI 4760)
5 - taper roller bearings that provide system high stiffness and allow to maximize the ball screw diameter thanks to the minimum radial size
6 - gear box shape which allows effective heat dissipation and 100 % duty cycle
7 - cast iron support of the worm wheel rim
8 - bottom cover with outer diameter in tolerance **g7**, it can be used for the screw jack centring
9 - top cover with re-lubrication system for the ball screw: through the grease nipple (10) it is possible to put in grease which goes through the lubrication pipe (11) and reaches the ball nut. The radial lubricant seals (13) and the sealing scrapers (17) ensure the seal and create a lubricant reserve for the ball nut. This system allows to keep the ball nut constantly lubricated increasing its life.
10 - grease nipple
11 - lubrication pipe
12 - synthetic oil lubricated worm gearbox for a better heat dissipation; this allows higher input speed, improved efficiency and a longer life
13 - radial lubricant seal
14 - O-ring as lubricant seal
15 - NILOS seal which allows to create a chamber for the lubricant (16) of the upper bearing, that would otherwise be sparsely lubricated because not reached by the gear oil; the seal is used only in case of vertical mounting position
16 - bearing lubricant chamber
17 - sealing scraper
18 - oil drain plug
19 - breather
20 - oil level plug
21 - ball screw stop nut

2.12 Overall dimensions

MA BS Series Mod.A, size 5 - 10 - 25 - 50 - 100 - 150

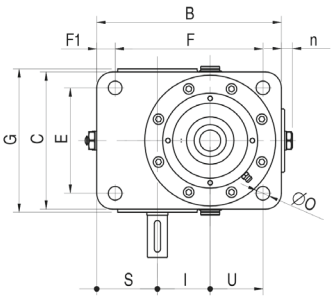


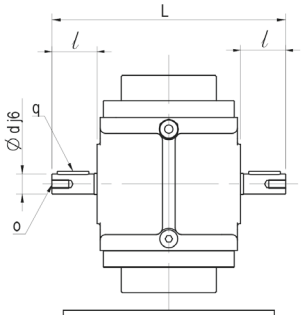


Vers.1: single input shaft

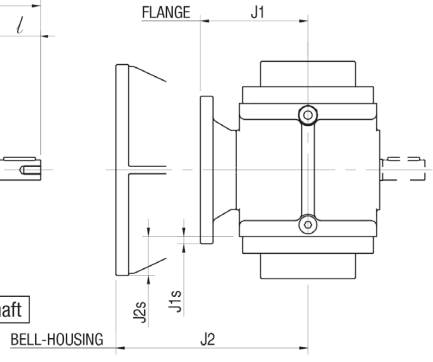
Vers.3: flange and hollow shaft IEC

Vers.4: flange and hollow shaft IEC + 2nd shaft



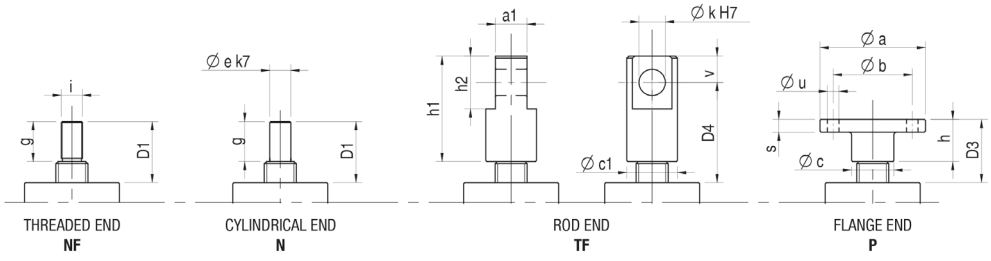


Vers.2: double input shaft



Vers.5: Vers.1 with bell-housing and coupling IEC

Vers.6: Vers.2 with bell-housing and coupling IEC



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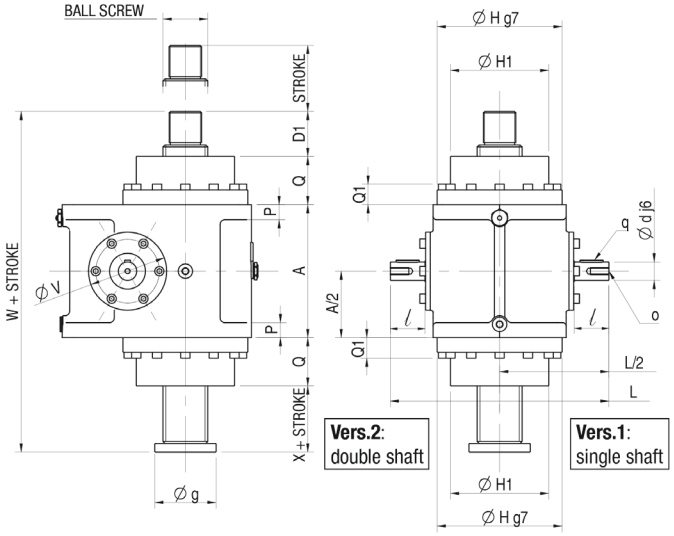
2.12 Overall dimensions

MA BS Series Mod.A, size 5 - 10 - 25 - 50 - 100 - 150

SIZE	MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS	MA 100 BS	MA 150 BS
BALL SCREW	BS 16 × P_h	BS 25 × P_h	BS 32 × P_h	BS 40 × P_h	BS 50 × P_h	BS 63 × P_h
A	80	100	126	160	200	200
B	124	140	175	235	276	276
C	80	105	130	160	200	200
D1 (min.)	39	44	58	58	68	68
D3 (min.)	40	45	60	60	70	70
D4 (min.)	65	75	95	105	120	150
E	62	80	100	120	150	150
F	95	110	140	190	220	220
F1	12.5	14	17.5	23	26	26
G	100	114	136	165	205	205
∅ H	75	95	124	145	150	150
∅ H1	54	65	90	109	185	185
I	30	40	50	63	80	80
L	149	179	221.5	269	330	330
∅ O	9	9	13	17	21	21
P	10	12	15	19	22	22
Q	29.5	32	40	41.5	64	64
Q1	11	12	16	25	29	29
S	46.5	46	57.5	80	91	91
U	31	38	50	70	75	75
∅ V	42	46	64	63	74	74
W	191.5	229	291.5	330.5	394.5	424.5
X	13.5	21	27.5	29.5	-1.5	28.5
Z	M5, depth 10	M5, depth 12	M5, depth 10	M6, depth 14	M6, depth 14	M6, depth 14
∅ a	68	75	100	120	150	150
a1	20	25	30	40	60	60
∅ b	45	55	75	85	110	110
∅ c	25	30	40	50	70	70
∅ c1	32	38	48	68	90	90
∅ d	10	14	19	24	28	28
∅ e	12	15	20	30	40	40
∅ g	30	38	48	70	82	96
g	19	24	38	38	48	48
h	20	25	40	40	50	50
h1	60	75	100	120	180	180
h2	30	40	50	70	100	100
i	M12×1.75	M16×1.5	M20×1.5	M30×2	M42×3	M42×3
∅ k	14	20	25	35	50	50
l	22	30	40	50	60	60
n	—	—	10	10	12	12
o	M5, depth 10	M6, depth 14	M8, depth 16	M8, depth 16	M8, depth 16	M8, depth 16
q	3×3×15	5×5×20	6×6×30	8×7×40	8×7×40	8×7×40
s	8	10	12	15	20	20
∅ u, n° holes	∅ 7, 4 holes	∅ 9, 4 holes	∅ 11, 4 holes	∅ 17, 4 holes	∅ 21, 4 holes	∅ 21, 4 holes
v	15	20	25	35	50	50
J1	63 B5/B14: 62	63 B5/B14: 69	63/71 B5: 102	80 B5: 100	80/90 B5: 120	80/90 B5: 120
J1s	63 B5: 30 63 B14: 5	63 B5: 20 63 B14: —	63 B5: 7 71 B5: 17	80 B5: 20	80/90 B5: —	80/90 B5: —
J2	71 B5: 122 71 B14: 131	71 B5: 129 71 B14: 138	80 B5: 182 80 B14: 176 90 B5: 182 90 B14: 182	90 B5: 200 90 B14: 200 100 B5: 220 100 B14: 220	100/112 B5 240 100/112 B14: 240	100/112 B5 240 100/112 B14: 240
J2s	71 B5: 40 71 B14: 12.5	71 B5: 30 71 B14: 3	80 B5: 37 80 B14: — 90 B5: 37 90 B14: 7	90 B5: 20 90 B14: — 100 B5: 45 100 B14: —	100/112 B5 25 100/112 B14: —	100/112 B5 25 100/112 B14: —

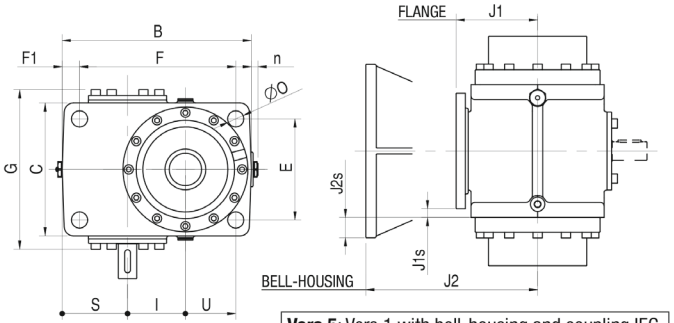
2.12 Overall dimensions

MA BS Series Mod.A, size 200 - 350



Vers.3: flange and hollow shaft IEC

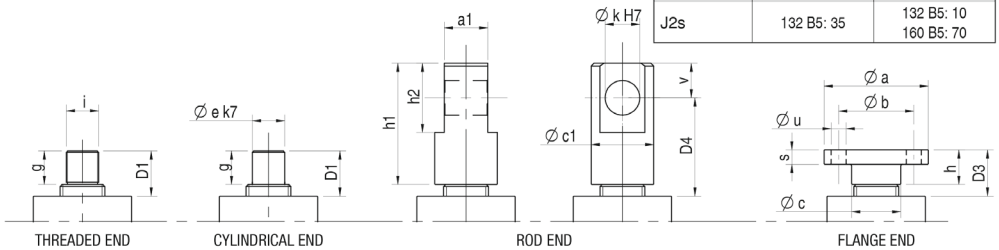
Vers.4: flange and hollow shaft IEC + 2nd shaft



Vers.5: Vers.1 with bell-housing and coupling IEC

Vers.6: Vers.2 with bell-housing and coupling IEC

SIZE	MA 200 BS	MA 350 BS
BALL SCR.	BS 80 × P_h	BS 100 × P_h
A	230	280
B	330	415
C	230	330
D1 (min.)	78	98
D3 (min.)	80	100
D4 (min.)	170	220
E	175	230
F	270	330
F1	30	42
G	256	326
∅ H	216	290
∅ H1	170	220
I	100	125
L	378	490
∅ O	28	34
P	26	30
Q	83.5	84
Q1	35.5	46
S	113	121
U	87	126
∅ V	110	118
W	489.5	549
X	14.5	3
Z	M10, depth 20	M10, depth 25
∅ a	180	250
a1	75	100
∅ b	130	180
∅ c	85	115
∅ c1	108	138
∅ d	32	38
∅ e	50	70
∅ g	106	146
g	58	78
h	60	80
h1	210	280
h2	120	160
i	M56×3	M80×3
∅ k	60	80
l	60	80
n	10	10
o	M10, depth 24	M12, depth 32
q	10×8×40	10×8×60
s	25	35
∅ u, n° holes	∅ 26, 6 holes	∅ 30, 6 holes
v	60	80
J1	90 B5: 142 100/112 B5: 142	—
J1s	90 B5: — 100/112 B5: 10	—
J2	132 B5: 297	132 B5: 353 160 B5: 365
J2s	132 B5: 35	132 B5: 10 160 B5: 70

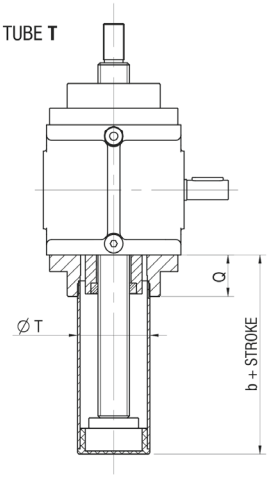


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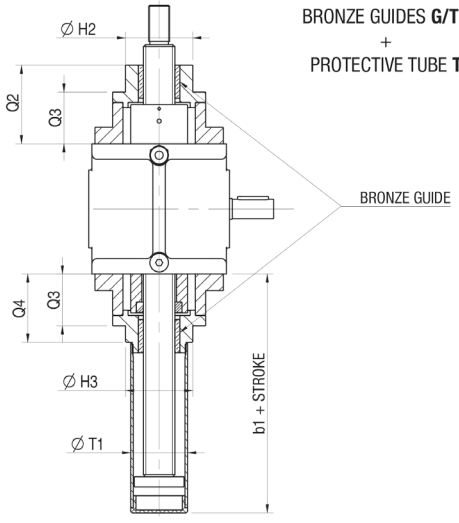
2.12 Overall dimensions

MA BS Series Mod.A with protective tube T

PROTECTIVE TUBE **T**



BRONZE GUIDES **G/TG**
+
PROTECTIVE TUBE **T**



SIZE		MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS	MA 100 BS	MA 150 BS	MA 200 BS	MA 350 BS
BALL SCREW		BS 16 × P_h	BS 25 × P_h	BS 32 × P_h	BS 40 × P_h	BS 50 × P_h	BS 63 × P_h	BS 80 × P_h	BS 100 × P_h
∅ H2		34	48	65	85	100	100	150	160
Q2		47.5	60	76	82.5	114	128	147.5	184
Q3		37.5	41	50	58.5	84	98	83.5	123
Q4		–	50	66	72.5	103	117	127.5	123
∅ T	exec. T	45	55	70	90	110	110	150	180
	exec. T+SN								
	exec. T+AR								
	exec. T+FCP								
	exec. T+AR+FCP								
	exec. T+FCM	45	55	55	55	–	–	–	–
Q	exec. T	29.5	32	40	41.5	64	64	83.5	50
	exec. T+SN								
	exec. T+AR								
	exec. T+FCP								
	exec. T+AR+FCP								
	exec. T+FCM	29.5	32	50	54.5	–	–	–	–
b	exec. T	68	78	92.5	96	107.5	137.5	143	152
	exec. T+SN	74	84	127.5	136	132.5	162.5	168	182
	exec. T+AR	97	110	132.5	136	127.5	157	164	178
	exec. T+FCP	103.5	106	112.5	116	139	137	161.5	161
	exec. T+AR+FCP	107.5	110	132.5	136	152	157	177.5	190
	exec. T+FCM	96.5	106	140	144.5	–	–	–	–
∅ T1	exec. TG	36	45	55	55	90	90	130	170
	exec. TG+FCM					–	–	–	–
	exec. TG+FCP	40	50	55	60	100	100	130	170
	exec. TG+AR	45	55	70	90	110	110	150	180
∅ H3	exec. TG	36	48	65	85	100	100	150	170
	exec. TG+FCP								
	exec. TG+FCM					–	–	–	–
	exec. TG+AR	45	55	70	90	110	110	150	180
b1	exec. TG	98.5	113	131	157.5	169	183	233.5	275
	exec. TG+FCP	122.5	135	151	157.5	188	202	238.5	269
	exec. TG+FCM	122.5	135	156	162.5	–	–	–	–
	exec. TG+AR	137.5	145	171	177.5	209	223	248.5	294

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2.15 Ordering code MA BS Series

MA	50	BS 40 × 10	Mod.A	RL	Vers. 3 (80 B5)	U-RH	C300
1	2	3	4	5	6	7	8

TF	B	G	MSA	/	G	SC	T	AR	FCP
9									

...
10

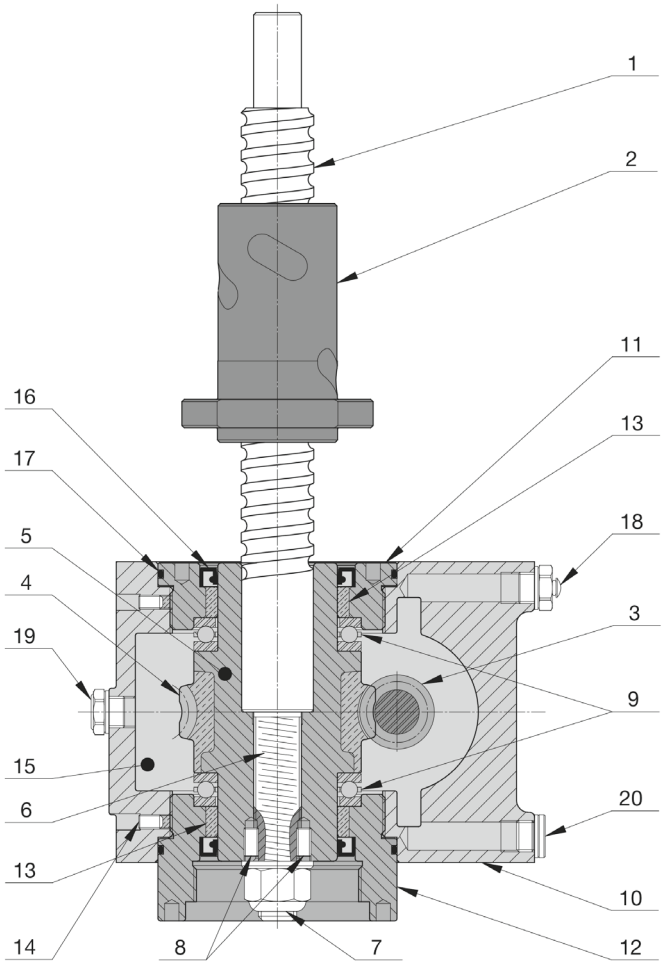
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11

AC	3-phase	brake motor	0.75 kW	4-pole	230/400 V	50 Hz	IP 55	Ins. F
12								

1	MA (screw jack MA BS Series)		
2	Screw jack size		
	5 ... 350		page 22 - 23
3	Ball screw		
	BS diameter × lead		
4	Mod.A (model: travelling screw)		
5	Worm gear ratio		
	RV , RN , RL		page 22 - 23
6	Input version		
	Vers.1, Vers.2, Vers.3, Vers.4, Vers.5, Vers.6		page 9
7	Screw jack mounting and input shaft position		
	U-RH, U-LH, D-RH, D-LH, H-RH, H-LH		page 9
8	Screw jack stroke length (ex.: C300 = 300 mm stroke)		
9	Accessories		
	NF, P, TF, N	Screw end	page 48 - 49, 50
	B	Bellows	page 57
	SC	Trunnion mount	page 57
	G	Bronze guides	page 54
	SN	Stop nut	page 54
	T	Protective tube	page 54
	AR	Anti-turn device	page 55
	FCM-NC	Magnetic limit switches (normally closed)	page 55
	FCP-NC	Proximity limit switches (PNP, normally closed)	page 56
	MSA push (pull)	Safety nut for push (or pull) load	page 58
		Worm wheel rotation detector	page 58
10	Other accessories		
	example: encoder (with all relevant data)		page 59
11	Other specifications		
	example: lubricant for low temperature		
12	Motor data		
13	Filled in selection sheet		page 61
14	Application layout		

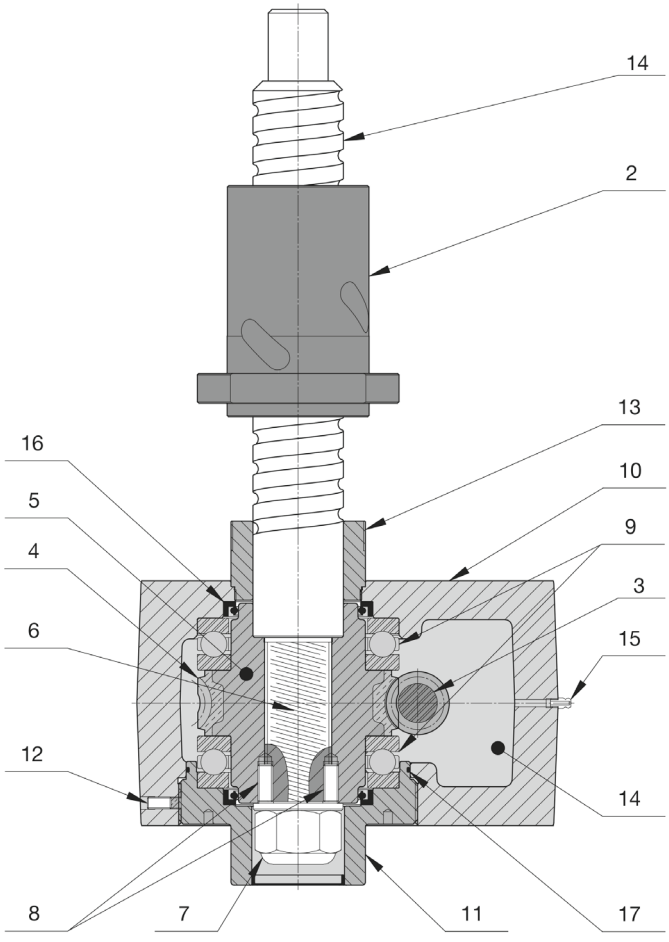
3.1 MA Series - STRUCTURAL ELEMENTS

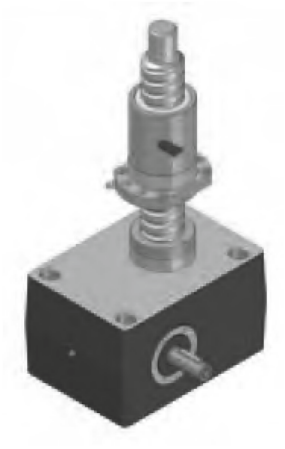




1 - ball screw in quenched and tempered alloy steel
2 - ball nut in case-hardened steel with flange according to DIN 69051 (available also with cylindrical flange), with grease nipple and end seals
3 - worm with ground ZI involute thread profile (UNI 4760) in case-hardened steel
4 - bronze worm wheel with true involute profile ZI (UNI 4760)
5 - cast iron support of the bronze worm wheel rim (size 5 and 10: entire wormwheel in bronze)
6 - ball screw fixed to the worm wheel through the cylindrical centring part and metric thread LEFT-HAND for PUSH load or RIGHT-HAND for PULL load
7 - lock nut with opposite metric thread direction to ensure a safe ball screw fixing
8 - ball screw – wormwheel pins against unscrewing
9 - thrust ball bearing for high load capacity
10- gear box
11 - low cover
12 - raised cover; may also be used as a centring diameter
13 - wormwheel radial bronze guide for higher stiffness and better efficiency
14 - grub screw to prevent the threaded cover unscrewing
15 - long-life synthetic oil lubricated worm gearbox
16 - radial lubricant seal
17 - O-ring
18 - breather
19 - oil level plug
20 - oil drain plug

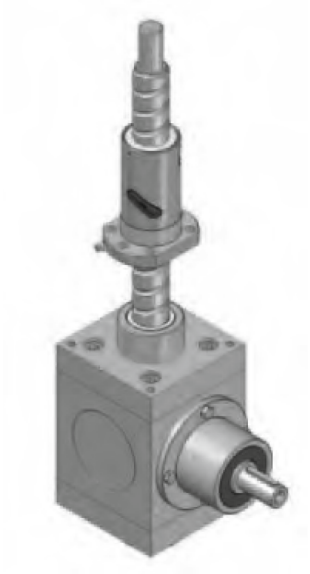
3.2 SJ Series - STRUCTURAL ELEMENTS

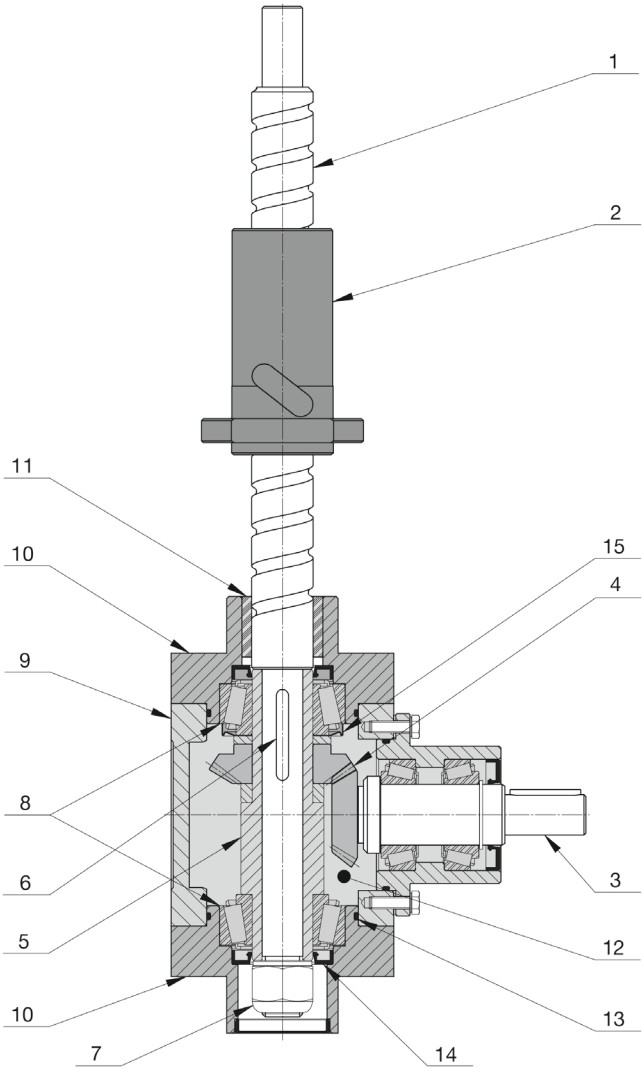




1 - ball screw in quenched and tempered alloy steel
2 - ball nut in case-hardened steel with flange according to DIN 69051 (available also with cylindrical flange), with grease nipple and end seals
3 - worm with ground ZI involute thread profile (UNI 4760) in case-hardened steel
4 - bronze worm wheel with true involute profile ZI (UNI 4760)
5 - cast iron support of the bronze worm wheel rim (size 5 ... 100: entire wormwheel in bronze)
6 - ball screw fixed to the worm wheel through the cylindrical centring part and metric thread LEFT-HAND for PUSH load or RIGHT-HAND for PULL load
7 - lock nut with opposite metric thread direction to ensure a safe ball screw fixing
8 - ball screw – wormwheel pins against unscrewing
9 - thrust ball bearing for high load capacity
10 - gear box
11 - threaded cover; may also be used as a centring diameter
12 - grub screw to prevent the threaded cover unscrewing
13 - guide bush for ball screw, may be used as a spigot diameter
14 - long-life synthetic grease lubricated worm gearbox
15 - grease nipple
16 - radial lubricant seal
17 - O-ring

3.3 HS Series - STRUCTURAL ELEMENTS





1 - ball screw in quenched and tempered alloy steel
2 - ball nut in case-hardened steel with flange according to DIN 69051 (available also with cylindrical flange), with grease nipple and end seals
3 - solid input shaft with key (or flange and hollow shaft for motor coupling)
4 - bevel gear in case-hardened and tempered steel
5 - output hollow shaft in hardened and tempered steel
6 - key to transmit the torque to the output shaft
7 - key to transmit the torque to the output shaft
8 - thrust ball bearing for high load capacity
9 - gear box
10- square covers with centring diameter for screw jack positioning
11 - plastic guide bush
12 - long-life synthetic oil lubricated worm gearbox and bearings
13 - O-ring
14 - radial lubricant seal
15 - NILOS seal which allows to create a chamber for the lubricant of the upper bearing; used only in case of vertical mounting position

3.4 Standard ball screw – gearbox arrangements

Diameter		16		20			25				32				40			50		63		80			100		120
Lead		5	10	5	10	20	5	6	10	25	5	10	20	32	10	20	40	10	20	10	20	10	16	20	16	20	20
MA	MA 5	•	•	•	•	•																					
	MA 10						•	•	•	•																	
	MA 25										•	•	•	•													
	MA 50														•	•	•										
	MA 80																	•	•								
	MA 150																			•	•						
	MA 200																					•	•	•			
	MA 350																								•	•	
SJ	SJ 5	•	•	•	•	•																					
	SJ 10						•	•	•	•																	
	SJ 25										•	•	•	•													
	SJ 50														•	•	•										
	SJ 100																	•	•								
	SJ 150																			•	•						
	SJ 200																					•	•	•			
	SJ 300																								•	•	
	SJ 400																										•
HS	HS 10						•	•	•	•																	
	HS 25										•	•	•	•													
	HS 50														•	•	•										
	HS 100																	•	•								
	HS 150																			•	•						
	HS 200																					•	•	•			

It is possible to supply screw-gearbox arrangements different from the standard ones. For more information please contact SERVOMECH.

3.5 Max. input power P_{max}

Following tables show the MAX. INPUT POWER P_{max} [kW] to the gearbox at different speeds, calculated for a gear life of 10 000 hours. For different life requirements, please contact SERVOMECH.

MA	5			10			25			50			80			150			200			350		
n_1 [rpm]	P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO		
	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL
3 000	1.20	0.38	0.32	2.05	0.85	0.67	3.31	1.19	1.22	5.10	3.04	1.99	5.10	3.04	1.99	9.10	4.36	3.06	15.9	7.82	5.84	23.0	16.1	9.87
1 500	0.87	0.25	0.23	1.49	0.60	0.48	2.36	0.80	0.80	3.76	2.19	1.43	3.76	2.19	1.43	6.32	2.90	2.08	11.4	5.29	3.91	15.7	11.4	6.57
1 000	0.67	0.20	0.17	1.15	0.47	0.38	1.89	0.64	0.69	2.99	1.73	1.14	2.99	1.73	1.14	5.16	2.38	1.70	8.76	4.27	3.12	12.7	8.81	5.27
750	0.57	0.17	0.15	1.08	0.40	0.31	1.54	0.54	0.58	2.42	1.45	0.95	2.42	1.45	0.95	4.21	2.04	1.41	7.44	3.59	2.72	10.2	7.57	4.53
500	0.43	0.13	0.12	0.78	0.32	0.25	1.23	0.43	0.46	1.87	1.11	0.74	1.87	1.11	0.74	3.23	1.53	1.10	5.95	2.79	2.14	8.28	5.98	3.60
300	0.33	0.09	0.09	0.55	0.22	0.18	0.87	0.30	0.34	1.40	0.82	0.54	1.40	0.82	0.54	2.42	1.15	0.82	4.20	1.98	1.56	5.97	4.20	2.57
100	0.15	0.04	0.04	0.26	0.10	0.08	0.43	0.14	0.15	0.66	0.38	0.25	0.66	0.38	0.25	1.16	0.52	0.39	2.08	0.95	0.72	2.76	1.93	1.23

SJ	5				10			25			50			100			150			200		300		400	
n_1 [rpm]	P_{max} [kW] RATIO				P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO			P_{max} [kW] RATIO		P_{max} [kW] RATIO		P_{max} [kW] RATIO	
	RH	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RN	RL	RV	RL	RV	RL	RV	RL
1 500	0.48	0.35	0.21	0.13	0.82	0.24	0.22	2.24	0.76	0.76	3.57	2.08	1.35	3.57	2.08	1.35	6.00	2.76	1.97	9.66	3.09	11.7	4.65	22.0	8.67
1 000	0.37	0.28	0.16	0.11	0.64	0.19	0.16	1.79	0.61	0.66	2.84	1.65	1.08	2.84	1.65	1.08	4.90	2.26	1.62	7.14	2.44	9.40	3.74	17.0	6.86
750	0.33	0.24	0.14	0.09	0.54	0.16	0.14	1.47	0.52	0.55	2.30	1.38	0.90	2.30	1.38	0.90	4.00	1.94	1.33	6.33	2.15	7.84	3.23	14.5	5.79
500	0.26	0.19	0.11	0.07	0.41	0.13	0.11	1.17	0.41	0.44	1.78	1.05	0.70	1.78	1.05	0.70	3.07	1.46	1.04	4.89	1.61	6.15	2.50	11.7	4.56
300	0.19	0.14	0.08	0.05	0.32	0.09	0.08	0.83	0.29	0.32	1.33	0.78	0.51	1.33	0.78	0.51	2.29	1.09	0.78	3.51	1.23	4.46	1.77	8.38	3.27
100	0.09	0.06	0.03	0.02	0.15	0.04	0.04	0.41	0.13	0.14	0.62	0.36	0.23	0.62	0.36	0.23	1.10	0.50	0.37	1.73	0.57	2.14	0.89	3.98	1.58

HS	10					25					50					100					150					200				
n_1 [rpm]	P_{max} [kW] RATIO					P_{max} [kW] RATIO					P_{max} [kW] RATIO					P_{max} [kW] RATIO					P_{max} [kW] RATIO					P_{max} [kW] RATIO				
	R1	R1.5	R2	R3	R4	R1	R1.5	R2	R3	R4	R1	R1.5	R2	R3	R4	R1	R1.5	R2	R3	R4	R1	R1.5	R2	R3	R4	R1	R1.5	R2	R3	R4
3 000	5.18	3.89	3.24	2.16	1.62	22.7	15.1	12.1	5.94	3.24	45.6	33.4	23.4	10.3	5.63	64.8	47.5	37.3	20.0	11.4	126	92.8	72.9	35.6	19.4	214	160	125	74.5	42.1
2 000	3.89	2.88	2.38	1.58	1.19	16.2	11.5	9.18	4.07	2.26	34.3	25.2	16.7	7.30	3.98	50.0	36.0	28.1	14.0	7.83	95.0	70.5	55.1	25.2	13.5	160	119	93.9	52.5	29.1
1 500	3.24	2.48	2.02	1.40	0.93	13.0	9.18	7.29	3.16	1.75	28.1	20.6	13.0	5.66	3.08	40.5	29.2	22.7	10.8	6.07	77.7	57.2	44.5	19.4	10.5	131	98.2	76.9	40.5	22.7
1 000	2.70	1.80	1.62	1.01	0.65	10.3	6.84	5.13	2.19	1.21	21.1	14.7	9.02	3.91	2.12	30.2	21.6	17.3	7.56	4.18	59.4	43.2	30.8	13.3	7.29	98.2	73.4	57.8	28.1	15.7
500	1.62	1.08	0.94	0.54	0.34	6.21	4.32	2.70	1.17	0.67	13.0	7.75	4.71	2.04	1.11	18.4	13.3	9.18	3.96	2.16	36.2	24.8	16.2	7.02	3.78	60.5	45.3	33.2	14.6	8.10
250	0.94	0.72	0.54	0.29	0.18	3.78	2.25	1.42	0.63	0.37	7.85	3.95	2.44	1.07	0.59	11.4	7.38	4.72	2.07	1.15	22.1	13.0	8.23	3.60	1.96	37.2	26.1	17.0	7.42	4.18

3.6 TECHNICAL DATA

MA BS Series			MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS
Load capacity [kN], (push - pull)			5	10	25	50
Worm gear centre distance [mm]			30	40	50	63
Ratio	fast	RV	1 : 4 (4 : 16)	1 : 5 (4 : 20)	1 : 6 (4 : 24)	1 : 7 (4 : 28)
	normal	RN	1 : 16 (2 : 32)	1 : 20	1 : 18 (2 : 36)	1 : 14 (2 : 28)
	slow	RL	1 : 24	1 : 25	1 : 24	1 : 28
Gear box material			casting in aluminium alloy EN 1706 - AC-AlSi10Mg T6		casting in spheroidal graphite iron EN-GJS-500-7 (UNI EN 1563)	
Mass of gear box without ball screw [kg]			2.2	4.3	13	26

SJ BS Series			SJ 5 BS	SJ 10 BS	SJ 25 BS	SJ 50 BS	SJ 100 BS
Load capacity [kN], (push - pull)			5	10	25	50	100
Worm gear centre distance [mm]			25	30	50	63	63
Ratio	high	RH	1 : 4 (5 : 20)	-	-	-	-
	fast	RV	1 : 6.25 (4 : 25)	1 : 4 (4 : 16)	1 : 6 (4 : 24)	1 : 7 (4 : 28)	1 : 7 (4 : 28)
	normal	RN	1 : 12.5 (2 : 25)	1 : 16 (2 : 32)	1 : 18 (2 : 36)	1 : 14 (2 : 28)	1 : 14 (2 : 28)
	slow	RL	1 : 25	1 : 24	1 : 24	1 : 28	1 : 28
Gear box material			casting in aluminium alloy EN 1706 - AC-AlSi10Mg T6		casting in grey cast iron EN-GJL-250 (UNI EN 1561)		
Mass of gear box without ball screw [kg]			1.5	2.3	10.4	25	35

Serie HS		HS 10	HS 25	HS 50
Load capacity [kN], (push - pull)		10	25	50
Housing side dimensions [mm]		86	110	134
Ratio	R1	1 : 1	1 : 1	1 : 1
	R1.5	1 : 1.5	1 : 1.5	1 : 1.5
	R2	1 : 2	1 : 2	1 : 2
	R3	1 : 3	1 : 3	1 : 3
	R4	1 : 4	1 : 4	1 : 4
Gear box material		casting in grey cast iron EN-GJL-250 (UNI EN 1561)		
Mass of gear box without ball screw [kg]		5.9	11.3	20

3.6 TECHNICAL DATA

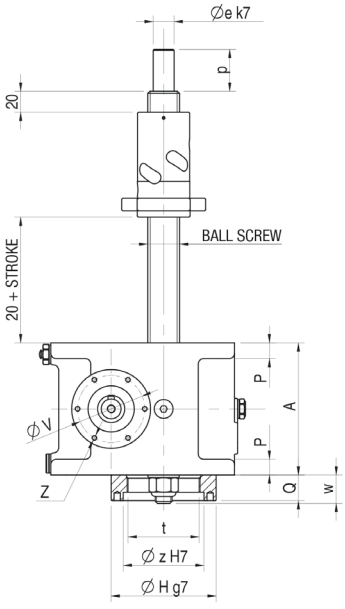
MA 80 BS	MA 150 BS	MA 200 BS	MA 350 BS	Serie MA BS Series
80	150	200	350	Load capacity [kN], (push - pull)
63	80	100	125	Worm gear centre distance [mm]
1 : 7 (4 : 28)	1 : 8 (4 : 32)	1 : 8 (4 : 32)	3 : 32	RV fast
1 : 14 (2 : 28)	1 : 24	1 : 24	1 : 16 (2 : 32)	RN normal Ratio
1 : 28	1 : 32	1 : 32	1 : 32	RL slow
casting in spheroidal graphite iron EN-GJS-500-7 (UNI EN 1563)				Gear box material
26	48	75	145	Mass of gear box without ball screw [kg]

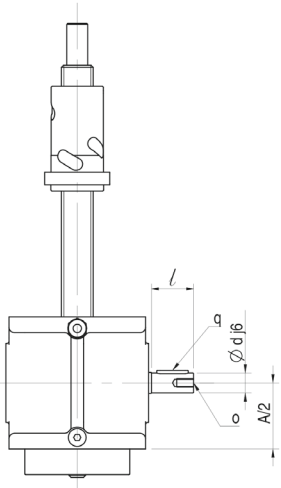
SJ 150 BS	SJ 200 BS	SJ 250 BS	SJ 300 BS	SJ 400 BS	Serie SJ BS Series
150	200	250	300	400	Load capacity [kN], (push - pull)
80	90	90	110	140	Worm gear centre distance [mm]
-	-		-	-	RH high
1 : 8 (4 : 32)	1 : 7 (4 : 28)	1 : 7 (4 : 28)	3 : 29	3 : 28	RV fast Ratio
1 : 24	-	-	-	-	RN normal
1 : 32	1 : 28	1 : 28	1 : 30	1 : 29	RL slow
casting in grey cast iron EN-GJL-250 (UNI EN 1561)				welded steel S355 J2 (UNI EN 10025)	Gear box material
55	75	75	120	260	Mass of gear box without ball screw [kg]

HS 100	HS 150	HS 200	Serie HS
80	150	200	Load capacity [kN], (push - pull)
166	200	250	Housing side dimensions [mm]
1 : 1	1 : 1	1 : 1	R1
1 : 1.5	1 : 1.5	1 : 1.5	R1.5
1 : 2	1 : 2	1 : 2	R2 Ratio
1 : 3	1 : 3	1 : 3	R3
1 : 4	1 : 4	1 : 4	R4
casting in grey cast iron EN-GJL-250 (UNI EN 1561)			Gear box material
38	67	120	Mass of gear box without ball screw [kg]

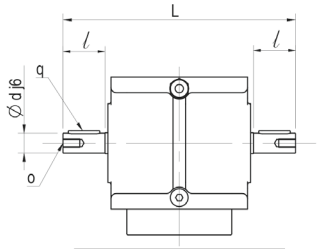
3.13 Overall dimensions

MA BS Series Mod.B

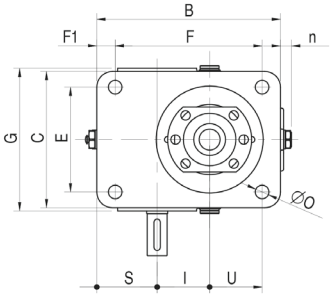




Vers.1: single input shaft

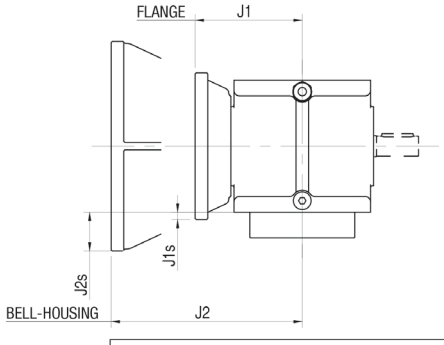


Vers.2: double input shaft



Vers.3: flange and hollow shaft IEC

Vers.4: flange and hollow shaft IEC + 2nd shaft



Vers.5: Vers.1 with bell-housing and coupling IEC

Vers.6: Vers.2 with bell-housing and coupling IEC

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3.13 Overall dimensions

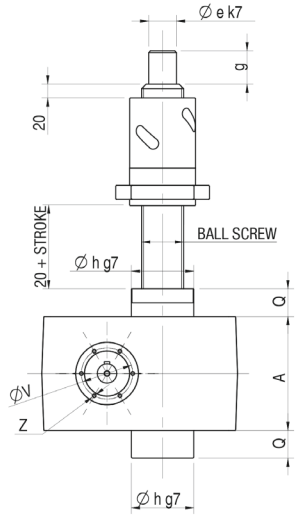
MA BS Series Mod.B

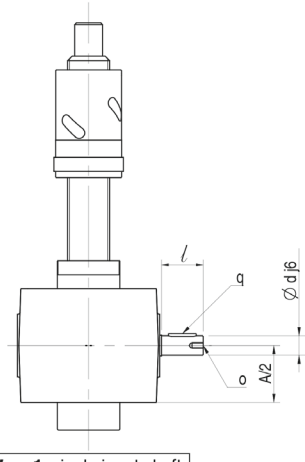
SIZE	MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS	MA 80 BS	MA 150 BS	MA 200 BS	MA 350 BS
BALL SCREW	BS 16-20 × P_h	BS 25 × P_h	BS 32 × P_h	BS 40 × P_h	BS 50 × P_h	BS 63 × P_h	BS 80 × P_h	BS 100 × P_h
A	80	100	126	160	160	200	230	280
B	124	140	175	235	235	276	330	415
C	80	105	130	160	160	200	230	300
E	62	80	100	120	120	150	175	230
F	95	110	140	190	190	220	270	330
F1	12.5	14	17.5	23	23	26	30	42
G	100	114	136	165	165	205	256	326
∅ H	65	80	100	120	120	160	190	240
I	30	40	50	63	63	80	100	125
L	149	179	221.5	269	269	330	378	490
∅ O	9	9	13	17	17	21	28	34
Q	15	16	24	26	26	30	35	40
S	46.5	46	57.5	80	80	91	113	121
U	31	38	50	70	70	75	87	126
∅ V	42	46	64	63	63	74	110	118
Z	M5, depth 10	M5, depth 12	M5, depth 10	M6, depth 14	M6, depth 14	M6, depth 14	M10, depth 20	M10, depth 25
∅ d	10	14	19	24	24	28	32	38
∅ e	12	15	20	30	40	40	50	70
/	22	30	40	50	50	60	60	80
n	—	—	10	10	10	12	10	10
o	M5, depth 10	M6, depth 14	M8, depth 16	M8, depth 16	M8, depth 16	M8, depth 16	M10, depth 24	M12, depth 32
p	19	24	40	40	45	50	60	65
q	3×3×15	5×5×20	6×6×30	8×7×40	8×7×40	8×7×40	10×8×40	10×8×60
t	M45×1.5	M55×1.5	M70×2	M90×2	M90×2	M110×2	M150×3	M180×3
w	15	17	25	36	38	41	42	45
∅ z	50	60	77	95	95	120	160	200
J1	63 B5/B14: 62	63 B5/B14: 69	63/71 B5: 102	80 B5: 100	80 B5: 100	80/90 B5: 120	90 B5: 142 100/112 B5: 142	—
J1s	63 B5: 30 63 B14: 5	6 3 B5: 20 63 B14: —	63 B5: 7 71 B5: 17	80 B5: 20	80 B5: 20	80/90 B5: —	90 B5: — 100/112 B5: 10	—
J2	71 B5: 122 71 B14: 131	71 B5: 129 71 B14: 138	80 B5: 182 80 B14: 176 90 B5: 182 90 B14: 182	90 B5: 200 90 B14: 200 100 B5: 220 100 B14: 220	90 B5: 200 90 B14: 200 100/112 B5: 220 100/112 B14: 220	100/112 B5 240 100/112 B14: 240	132 B5: 297	132 B5: 353 160 B5: 365
J2s	71 B5: 40 71 B14: 12.5	71 B5: 30 71 B14: 3	80 B5: 37 80 B14: — 90 B5: 37 90 B14: 7	90 B5: 20 90 B14: — 100 B5: 45 100 B14: —	90 B5: 20 90 B14: — 100/112 B5: 45 100/112 B14: —	100/112 B5 25 100/112 B14: —	132 B5: 35	132 B5: 10 160 B5: 70

NOTE: for ball nut dimensions, see ch. 3.8 “Ball nuts dimensions” on page 70

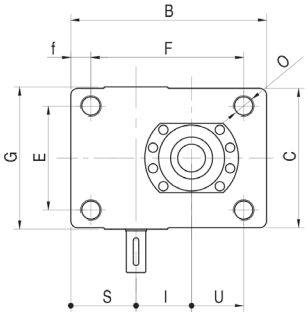
3.13 Overall dimensions

SJ BS Series Mod.B, size 5 - 10 - 25 - 50 - 100 - 150

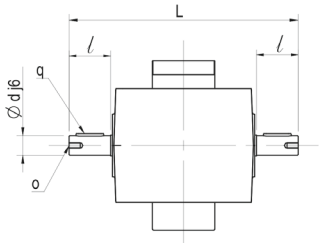




Vers.1: single input shaft



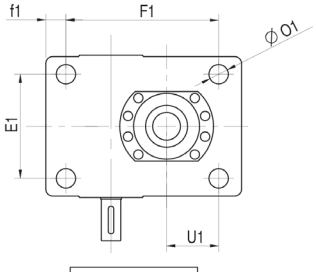
THREADED FIXING HOLES



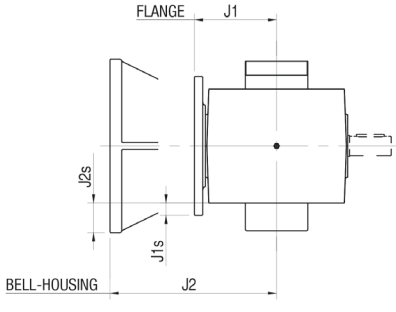
Vers.2: double input shaft

Vers.3: flange and hollow shaft IEC

Vers.4: flange and hollow shaft IEC + 2nd shaft



THROUGH FIXING HOLES



Vers.5: Vers.1 with bell-housing and coupling IEC

Vers.6: Vers.2 with bell-housing and coupling IEC

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3.13 Overall dimensions

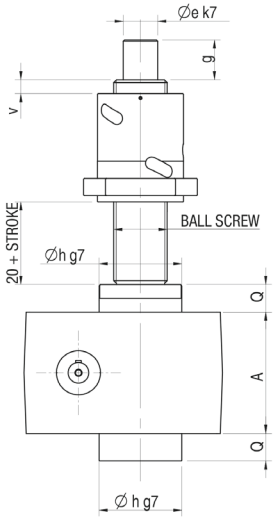
SJ BS Series Mod.B, size 5 - 10 - 25 - 50 - 100 - 150

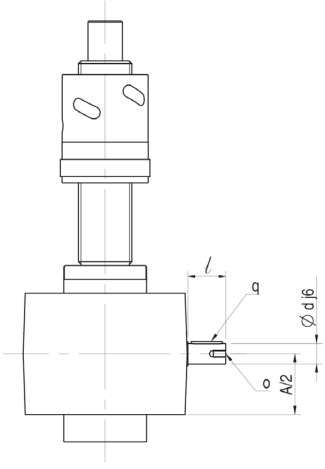
SIZE	SJ 5 BS	SJ 10 BS	SJ 25 BS	SJ 50 BS	SJ 100 BS	SJ 150 BS
BALL SCREW	BS 16-20 × P_h	BS 25 × P_h	BS 32 × P_h	BS 40 × P_h	BS 50 × P_h	BS 63 × P_h
A	62	76	82	118	160	164
B	100	110	160	200	220	282
C	86	96	130	160	170	201
E	52	63	81	115	134	150
E1	56	80	102	130	120	150
F	60	78	106	150	175	220
F1	80	85	131	165	180	220
G	90	100	136	165	165	205
I	25	30	50	63	63	80
L	135	165	221.5	269	269	330
O	M8, depth 14	M8, depth15	M10, depth 15	M12, depth 16	M20, depth 30	M30, depth 45
∅ O1	9	9	11	13	17	28
Q	12	18	23	32	40	40
S	37	40	50	59	74	94
U	21	29	42	63	60	75
U1	28	30	48	60	63	75
∅ V	46	46	64	63	63	74
Z	M6, depth13 (4 holes at 90°)	M5, depth10 (6 holes at 60°)	M5, depth10 (6 holes at 60°)	M6, depth14 (6 holes at 60°)	M6, depth14 (6 holes at 60°)	M6, depth14 (6 holes at 60°)
∅ d	9	14	19	24	24	28
∅ e	12	15	20	30	40	40
f	23	21	36	35	22	29
f1	10	15	17	17	20	29
g	19	24	38	38	48	48
∅ h	30	38.7	46	60	90	90
/	20	30	40	50	50	60
o	M4, depth 8	M6, depth14	M8, depth 16	M8, depth 16	M8, depth 16	M8, depth 16
q	3×3×15	5×5×20	6×6×30	8×7×40	8×7×40	8×7×40
v	20	20	20	20	20	20
∅ z	14	20	25	35	40	50
J1	56 B5/B14: 57.5	63 B5/B14: 62	63/71 B5: 102	80 B5: 100	80 B5: 100	80/90 B5: 120
J1s	56 B5: 29 56 B14: 9	63 B5: 32 63 B14: 7	63 B5: 29 71 B5: 39	80 B5: 41	80 B5: 20	80/90 B5: 18
J2	63 B5: 98	71 B5: 122 71 B14: 131	80 B5: 182 80 B14: 176 90 B5: 182 90 B14: 182	90 B5: 200 90 B14: 200 100 B5: 220 100 B14: 220	90 B5: 200 90 B14: 200 100/112 B5: 220 100/112 B14: 220	100/112 B5: 240 100/112 B14: 240
J2s	63 B5: 39	71 B5: 42 71 B14: 15	80 B5: 59 80 B14: 19 90 B5: 59 90 B14: 29	90 B5: 41 90 B14: 11 100 B5: 66 100 B14: 21	90 B5: 20 90 B14: — 100/112 B5: 45 100/112 B14: —	100/112 B5: 43 100/112 B14: —

NOTE: for ball nut dimensions, see ch. 3.8 “Ball nuts dimensions” on page 70

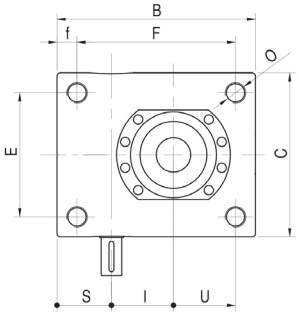
3.13 Overall dimensions

SJ BS Series Mod.B, size 200 - 250 - 300 - 350

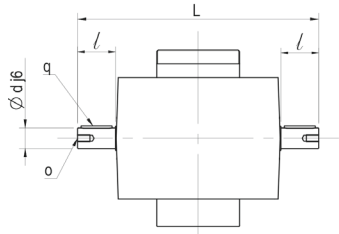




Vers.1: single input shaft



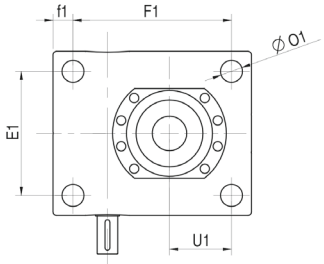
THREADED FIXING HOLES



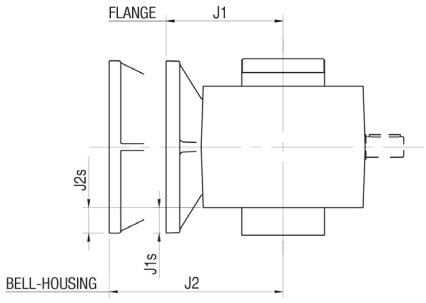
Vers.2: double input shaft

Vers.3: flange and hollow shaft IEC

Vers.4: flange and hollow shaft IEC + 2nd shaft



THROUGH FIXING HOLES



Vers.5: Vers.1 with bell-housing and coupling IEC

Vers.6: Vers.2 with bell-housing and coupling IEC

SERVOMECH

3.13 Overall dimensions

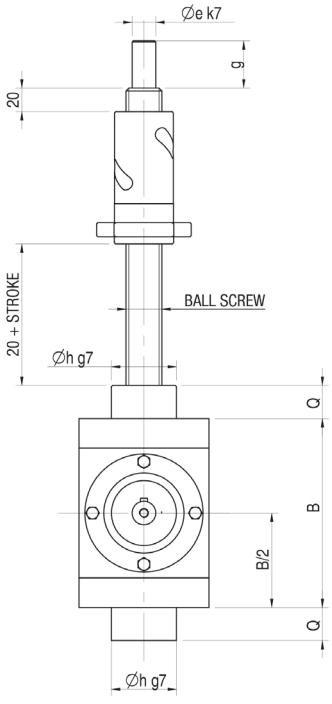
SJ BS Series Mod.B, size 200 - 250 - 300 - 350

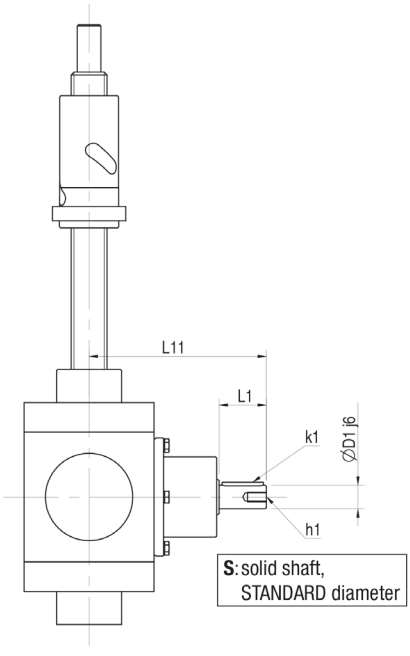
SIZE	SJ 200 BS	SJ 250 BS	SJ 300 BS	SJ 400 BS
BALL SCREW	BS 80 × P_h	BS 100 × P_h	BS 100 × P_h	BS 120 × P_h
A	176	176	230	270
B	280	280	320	428
C	230	230	250	322
E	180	180	200	230
E1	180	180	200	230
F	230	230	270	355
F1	230	230	270	355
I	90	90	110	140
L	350	350	390	490
O	M30, depth 45	M30, depth 45	M30, depth 45	M30, depth 45
∅ O1	32	32	32	32
Q	40	40	50	50
S	75	75	85	117
U	90	90	100	135
U1	90	90	100	135
∅ d	30	30	40	55
∅ e	50	50	70	85
f	25	25	25	37
f1	25	25	25	37
g	58	58	68	68
∅ h	120	120	150	210
/	55	55	65	75
o	M10, depth 18	M10, depth 18	M10, depth 22	M12, depth 28
q	8x7x45	8x7x45	12x8x55	16x10x60
v	20	20	40	40
∅ z	60	60	80	80
J1	100/112 B5: 170	100/112 B5: 170	—	—
J1s	100/112 B5: 37	100/112 B5: 37	—	—
J2	132 B5: 292	132 B5: 292	—	—
J2s	132 B5: 62	132 B5: 62	—	—

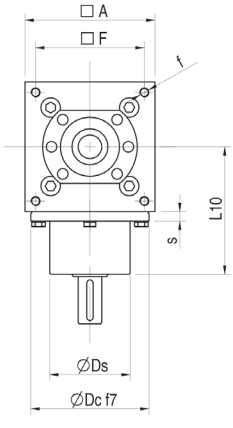
NOTE: for ball nut dimensions, see ch. 3.8 “Ball nuts dimensions” on page 70

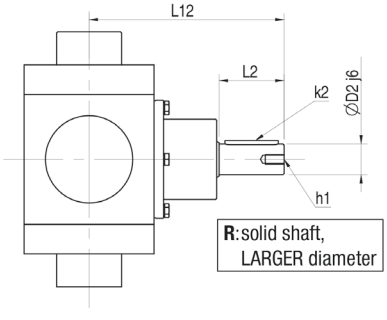
3.13 Overall dimensions

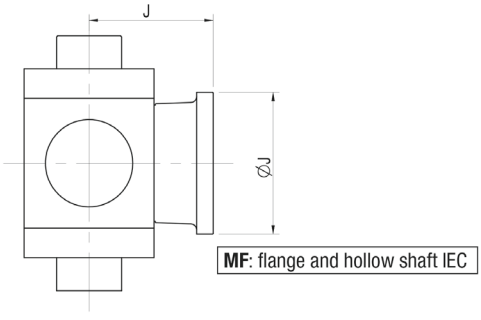
HS Series











3.13 Overall dimensions

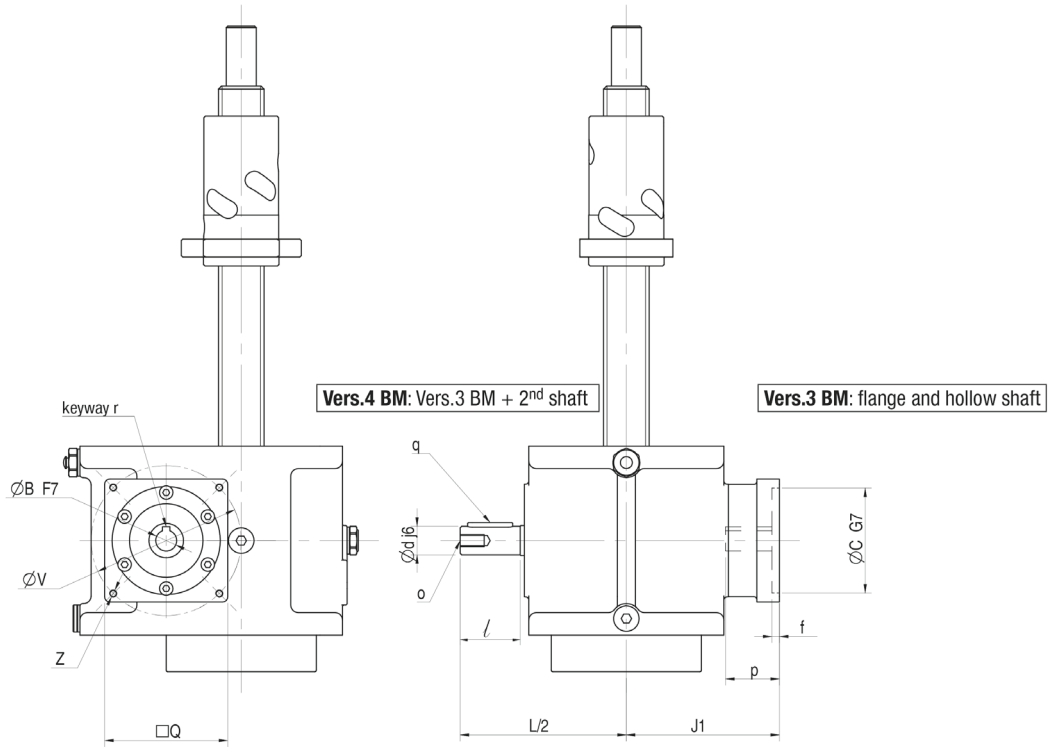
HS Series

SIZE	HS 10	HS 25	HS 50	HS 100	HS 150	HS 200
BALL SCREW	BS 25 × P_h	BS 32 × P_h	BS 40 × P_h	BS 50 × P_h	BS 63 × P_h	BS 80 × P_h
□ A	86×86	110×110	134×134	166×166	200×200	250×250
B	122	160	190	230	292	332
∅ D1	16	20	24	32	42	55
∅ D2	24	26	32	45	55	70
∅ Dc	84	100	122	156	185	230
∅ Ds	59	68	80	107	120	152
□ F	74×74	92×92	112×112	140×140	170×170	190×190
L1	30	40	50	65	85	100
L2	50	55	65	90	110	140
L10	82	108	130	150	180	216
L11	114	150	182	217	267	318
L12	134	165	197	242	292	358
Q	25	28	32	42	38	55
∅ e	15	20	30	40	40	50
f	M6, depth 18	M8, depth 25	M12, depth 28	M16, depth 32	M18, depth 46	M24, depth 41
g	24	40	40	45	50	60
∅ h	48	55	65	85	100	125
h1	M6, depth 12	M8, depth 20	M8, depth 20	M10, depth 25	M10, depth 25	M12, depth 25
k1	5×5×25	6×6×35	8×7×45	10×8×60	12×8×80	16×10×90
k2	8×7×40	8×7×45	10×8×55	14×9×80	16×10×100	20×12×120
J	71 B5: 90 80 B5: 100 80 B14: 100	80 B5: 105 80 B14: 105 90 B5: 115 90 B14: 115	90 B5: 125 100-112 B5 135: 100-112 B14: 135	90 B5: 160 100-112 B5: 160 100-112 B14: 160	100-112 B5: 220 132 B5: 220 132 B14: 220	132 B5: 250 160 B5: 250
∅ J	71 B5: 160 80 B5: 200 80 B14: 120	80 B5: 200 80 B14: 120 90 B5: 200 90 B14: 140	90 B5: 200 100-112 B5 250: 100-112 B14: 160	90 B5: 200 100-112 B5: 250 100-112 B14: 160	100-112 B5: 250 132 B5: 300 132 B14: 200	132 B5: 300 160 B5: 350

NOTE: for ball nut dimensions, see ch. 3.8 “Ball nuts dimensions” on page 70

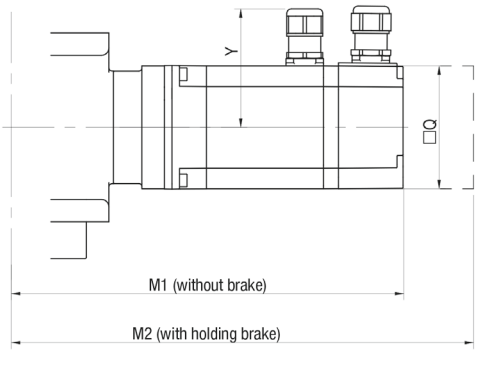
3.13 Overall dimensions

MA BS Series Mod.B, size 5 - 10 - 25 - 50: servo motor fitting



	MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS
	BS 16 × P_h	BS 25 × P_h	BS 32 × P_h	BS 40 × P_h
∅ B	11	11	14	19
∅ C	50	50	70	90
L	149	179	221.5	269
M1	186	218	262	326
M2	227	259	320	380
J1	62	69	102	99.5
□ Q	63	63	82	102
∅ V	75	75	100	115
Y	73	73	83	93
Z	M5	M5	M5	M8
∅ d	10	14	19	24
f	4	4	5	5
l	22	30	40	50
o	M5, depth 10	M6, depth 14	M8, depth 16	M8, depth 16
p	30	29	34	45
q	3×3×15	5×5×20	6×6×30	8×7×40
r	4x4	4x4	5x5	6x6

LINEARMECH servo motor

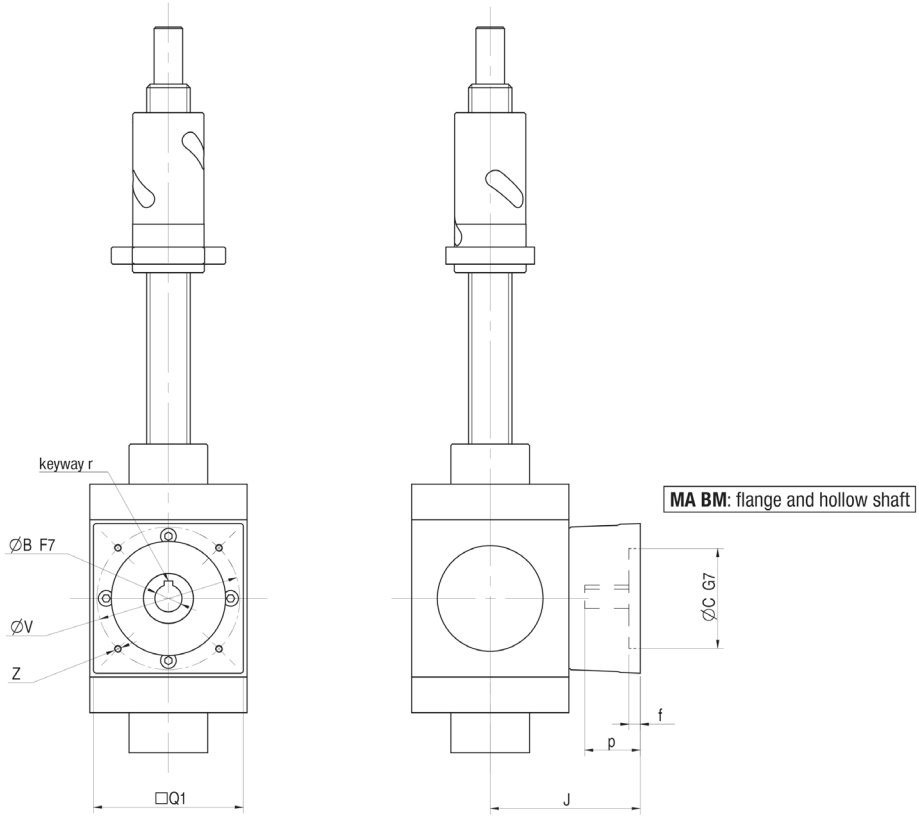


NOTE: motor attachment with bell-housing and coupling available on request

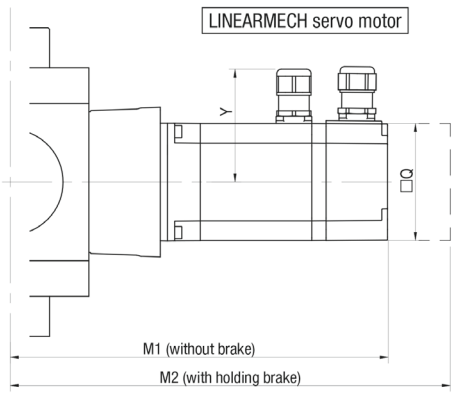
SERVOMECH

3.13 Overall dimensions

HS Series, size 10 - 25 - 50: servo motor fitting



	HS 10	HS 25	HS 50
	BS 20 × P_h	BS 32 × P_h	BS 40 × P_h
∅ B	14	19	24
∅ C	60	80	90
M1	239	265	352
M2	280	323	406
J	90	105	125
□ Q	63	82	102
□ Q1	105	75	128
∅ V	75	100	115
Y	73	83	93
Z	M5	M5	M8
f	4	5	5
p	35	45	52
r	5×5	6×6	8×7



3.14 Electric motors fitting

IEC electric motors

MA BS Series		MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS	MA 80 BS	MA 150 BS	MA 200 BS	MA 350 BS
63	B5	F	F	F					
	B14	F	F						
71	B5	B	B	F	F	F			
	B14	B	B	F					
80	B5			B	F	F	F		
	B14			B					
90	B5			B	B	B	F	F	
	B14			B	B	B			
100 - 112	B5				B	B	B	F	
	B14				B	B	B		
132	B5							B	B
160	B5								B

SJ BS Series		SJ 5 BS	SJ 10 BS	SJ 25 BS	SJ 50 BS	SJ 100 BS	SJ 150 BS	SJ 200 BS	SJ 250 BS
56	B5	F							
	B14	F							
63	B5	B	F	F					
	B14		F						
71	B5		B	F	F	F			
	B14		B	F					
80	B5			B	F	F	F		
	B14			B					
90	B5			B	B	B	F		
	B14			B	B	B			
100 - 112	B5				B	B	B	F	F
	B14				B	B	B	B	B
132	B5							B	B

HS Series		HS 10	HS 25	HS 50	HS 100	HS 150	HS 200
71	B5	F					
80	B5	F	F				
	B14	F	F				
90	B5		F	F	F		
	B14		F				
100 - 112	B5			F	F	F	
	B14			F	F		
132	B5					F	F
	B14					F	
160	B5						F

F - IEC flange with hollow shaft B - IEC bell-housing with coupling

LINEARMECH servo motors

LINEARMECH servo motors are directly fitted with flange and hollow shaft. Fitting with bell-housing and coupling is available on request.

Serie MA	MA 5 BS	MA 10 BS	MA 25 BS	MA 50 BS	MA 80 BS	MA 150 BS	MA 200 BS	MA 350 BS
Motor size	BM 63 S	BM 63 L	BM 82 L	BM 102 L	-	-	-	-

Serie HS	HS 10	HS 25	HS 50	HS 100	HS 150	HS 200
Motor size	BM 63 L	BM 82 L	BM 102 L	-	-	-

For technical data of servo motors, please refer to ch.5 “LINEARMECH servo motors” on page 117.

Flanges and bell-housings to specific drawing for hydraulic motors or servo motors are available on request.

3.16 Ordering code

MA BS Series

MA	50	BS 40 × 10	Mod.B	RL	Vers. 3 (80 B5)	U-RH
1	2	3	4	5	6	7

C300	IT 5	SFN-D.40.10.5R	N B2 B1 CB / CA
8	9	10	11

...
12

...
13

AC 3-phase brake motor 0.75 kW 4-pole 230/400 V 50 Hz IP 55 Ins. F
14

1	MA (screw jack MA BS Series)	
2	Screw jack size	
	5 ... 350	page 65, 66 - 67
3	Ball screw	
	BS diameter × lead	page 68 - 69
4	Mod.B (Model: travelling nut)	
5	Worm gear ratio	page 66 - 67
6	Input version	
	Vers.1, Vers.2, Vers.3, Vers.4, Vers.5, Vers.6	page 9
7	Screw jack mounting and input shaft position	
	U-RH, U-LH, D-RH, D-LH, H-RH, H-LH	page 9
8	Screw jack stroke length (ex.: C300 = 300 mm stroke)	
9	Ball screw accuracy grade	
	IT 3 or IT 5: whirled ball screw	page 68
	IT 7: rolled ball screw	page 69
10	Ball nut	
	Nut code	page 70 - 71
11	Accessories	
	N — Screw end	page 82
	B_1, B_2 — Bellows	page 92
	CB, CA — Low cover, raised cover	page 95
	SBC pull (push) — Safety nut for PULL (or PUSH) load	page 93
	Worm wheel rotation detector	page 93
	SC — Trunnion mount	page 95
12	Other accessories	
	example: encoder (with all relevant data)	page 94
13	Other specifications	
	example: lubricant for low temperature	
14	Motor data	
15	Filled in selection sheet	page 99
16	Application layout	

3.16 Ordering code

SJ BS Series

SJ	50	BS 40 × 10	Mod.B	RL	Vers. 3 (80 B5)	U-RH	FF
1	2	3	4	5	6	7	8

C300	IT 5	SFN-D.40.10.5R	N B2 B1
9	10	11	12

Series
13

...
14

AC 3-phase brake motor 0.75 kW 4-pole 230/400 V 50 Hz IP 55 Ins. F
14

1	SJ (screw jack SJ BS Series)	
2	Screw jack size	
	5 ... 300	page 65, 66 - 67
3	Ball screw	
	BS diameter × lead	page 68 - 69
4	Mod.B (Model: travelling nut)	
5	Worm gear ratio	page 66 - 67
6	Input version	
	Vers.1, Vers.2, Vers.3, Vers.4, Vers.5, Vers.6	page 9
7	Screw jack mounting and input shaft position	
	U-RH, U-LH, D-RH, D-LH, H-RH, H-LH	page 9
8	Gear box fixing holes	
	FF, FP	page 96
9	Screw jack stroke length (ex.: C300 = 300 mm stroke)	
10	Ball screw accuracy grade	
	IT 3 or 5: whirled ball screw	page 68
	IT 7: rolled ball screw	page 69
11	Ball nut	
	Nut code	page 70 - 71
12	Accessories	
	N — Screw end	page 84, 86
	B_1, B_2 — Bellows	page 92
	SBC pull (push) — Safety nut for PULL (or PUSH) load	page 93
	SC — Trunnion mount	page 96
	Worm wheel rotation detector	page 93
13	Other accessories	
	example: encoder (with all relevant data)	page 94
14	Other specifications	
	example: lubricant for low temperature	
15	Motor data	
16	Filled in selection sheet	page 101
17	Application layout	

SERVOMECH

3.16 Ordering code

HS Series

HS	50	R2	BS 40 × 10	S	scheme 10	S 180°	U	lato B
1	2	3	4	5	6	7	8	9

C300	IT 5	SFN-D.40.10.5R	N B2 B1
10	11	12	13

...
14

...
15

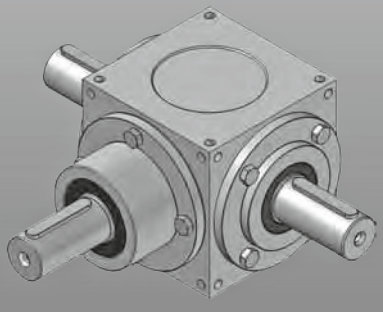
AC 3-phase brake motor 0.75 kW 4-pole 230/400 V 50 Hz IP 55 Ins. F
16

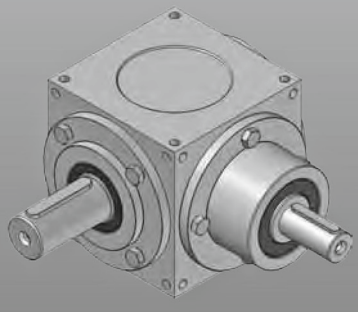
1	HS (screw jack HS Series)		
2	Screw jack size		
	10 ... 200		page 65, 66 - 67
3	Worm gear ratio		
	R1, R1.5, R2, R3, R4		page 66 - 67
4	Ball screw		
	BS diameter × lead		page 68 - 69
5	Main input		
	S, R, MF, MA		page 10
6	Kinematics scheme		
	scheme 10, scheme 20		page 10
7	Additional output shaft (version and position)		
	S, R - 90°, 180°, 270°		page 11
8	Screw jack mounting position		
	U, D, H		page 11
9	Screw jack fixing side		
	side A - B - C - D - E - F		page 12
10	Screw jack stroke length (ex.: C300 = 300 mm stroke)		
11	Ball screw accuracy grade		
	IT 3 or 5: whirled ball screw		page 68
	IT 7: rolled ball screw		page 69
12	Ball nut		
	Nut code		page 70 - 71
13	Accessories		
	N	Screw end	page 88
	B_1, B_2	Bellows	page 92
	SBC pull (push)	Safety nut for PULL (or PUSH) load	page 93
14	Other accessories		
	example: encoder (with all relevant data)		page 94
15	Other specifications		
16	Motor data		
17	Application layout		

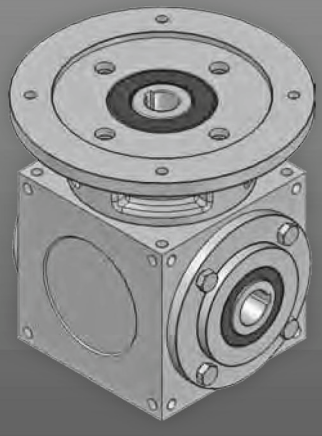
Servomech®

new ideas in linear motion

Bevel gearboxes





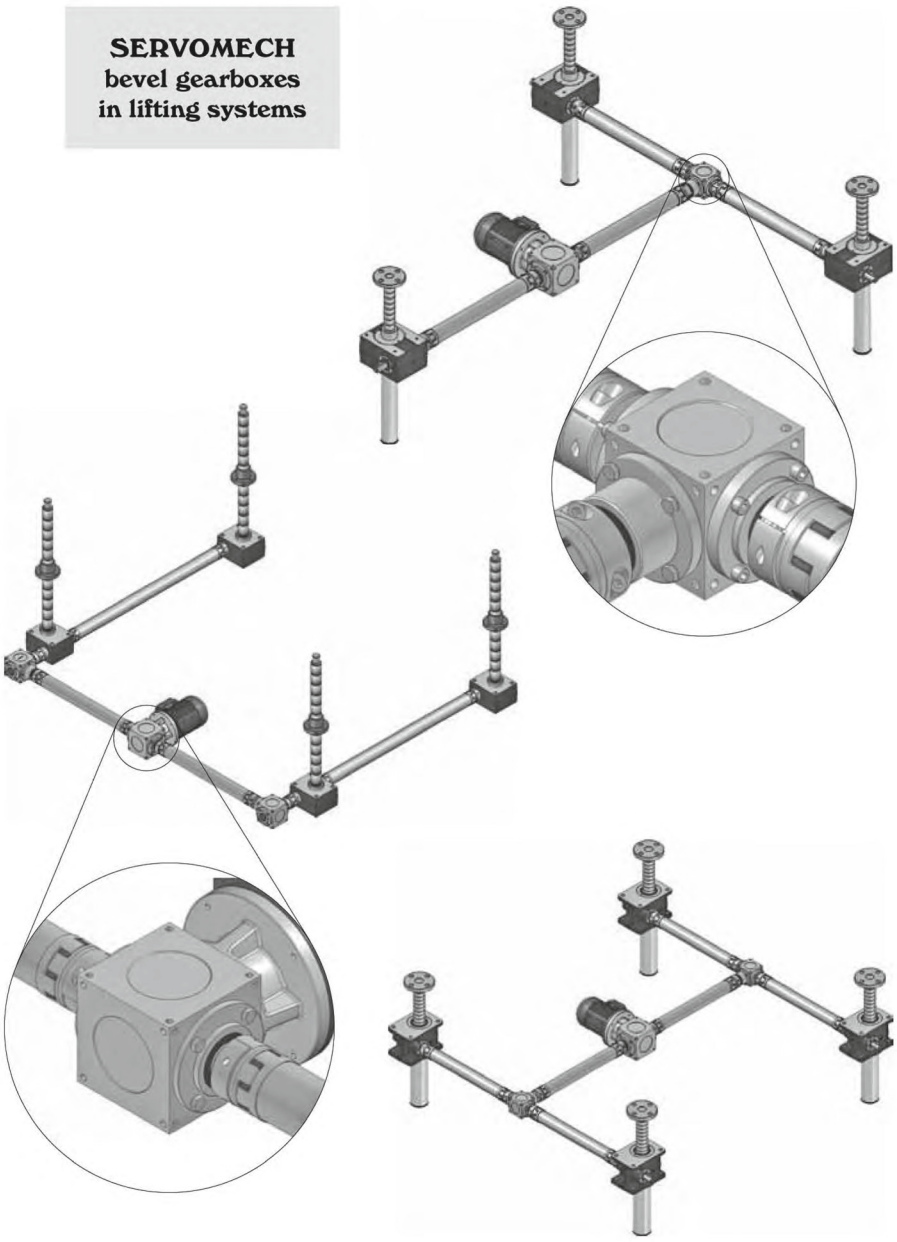


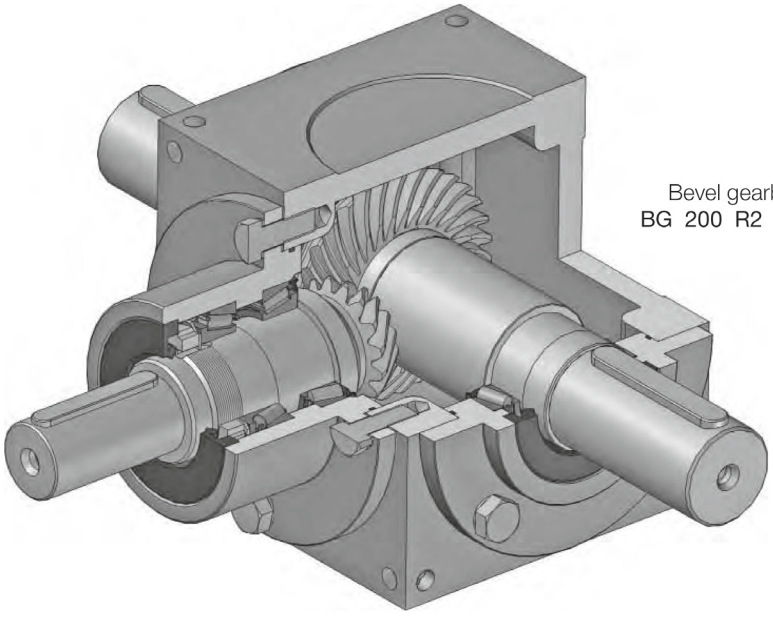
Catalogue

Servomech

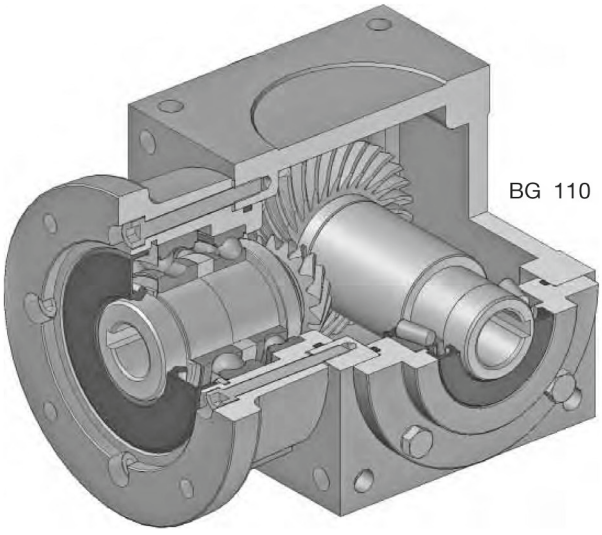
Bevel gearboxes BG Series

SERVOMECH
bevel gearboxes
in lifting systems





Bevel gearbox
BG 200 R2 S M2



Bevel gearbox
BG 110 R2 MF (IEC 80 B14) H

Materials and components

Housing
- cubic shape
- material: grey cast iron EN-GJL-250 (UNI EN 1561)
- all 6 sides machine finished
- on request: stainless steel

Covers and hubs
- material: grey cast iron EN-GJL-250 (UNI EN 1561)
- machining: internal centring tolerance **h7**, outer centring tolerance **f7**
- on request: stainless steel

Solid shafts
- material: carbon steel C45E +H +QT (UNI EN 10083-2), hardened and tempered
- machining: cylindrical end, ground in tolerance **j6**, with key according to DIN 6885 Part 1
- on request: stainless steel
  shaft end with spline profile according to DIN 5480
  shaft end machined to drawing

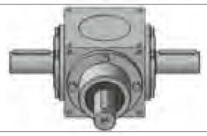
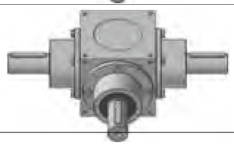
Hollow shafts
- material: input hollow shaft - carbon steel C45E +H +QT (UNI EN 10083-2), hardened and tempered
  output hollow shaft - alloy steel 39 NiCrMo 3 (UNI EN 10083-3), hardened and tempered
- machining: cylindrical end, ground in tolerance **H7**, with keyway according to DIN 6885 Part 1
- on request: stainless steel
  bore with spline profile according to ISO 14

Bevel gears
- material: alloy steel 20 MnCr 5 (UNI EN 10084), case-hardened and tempered
- toothing: GLEASON, with spiroidal tooth
- running in with lapping in pairs

Seals
- oil seals in NBR, on request in VITON
- O-rings in NBR

Bearings
- taper roller bearings on solid output shaft and input shafts
- ball bearings on hollow input shaft for motor flange
- on request: larger bearings for higher radial and/or axial load capacity

Design

	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** solid shaft, cylindrical with key on one of the two sides (designation: M1)	**BG • • S M1**
	**input:** solid shaft, cylindrical with key, LARGE diameter (designation: R) **output:** solid shaft, cylindrical with key on one of the two sides (designation: M1)	**BG • • R M1**
	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** solid shaft, cylindrical with key on both sides (designation: M2)	**BG • • S M2**
	**input:** solid shaft, cylindrical with key, LARGE diameter (designation: R) **output:** solid shaft, cylindrical with key on both sides (designation: M2)	**BG • • R M2**
	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** hollow shaft, cylindrical hole with keyway (designation: H)	**BG • • S H**
	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** solid shaft with hub, cylindrical with key on one of the two sides STANDARD diameter (designation: S1)	**BG • • S S1**
	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** solid shaft with hub, cylindrical with key on one of the two sides LARGE diameter (designation: R1)	**BG • • S R1**
	**input:** solid shaft, cylindrical with key, LARGE diameter (designation: R) **output:** solid shaft with hub, cylindrical with key on one of the two sides LARGE diameter (designation: R1)	**BG • • R R1**
	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** two solid shafts with hub, cylindrical with key with opposite rotation direction STANDARD diameter (designation: S2)	**BG • • S S2**
	**input:** solid shaft, cylindrical with key, STANDARD diameter (designation: S) **output:** two solid shafts with hub, cylindrical with key with opposite rotation direction LARGE diameter (designation: R2)	**BG • • S R2**
	**input:** solid shaft, cylindrical with key, LARGE diameter (designation: R) **output:** two solid shafts with hub, cylindrical with key with opposite rotation direction LARGE diameter (designation: R2)	**BG • • R R2**

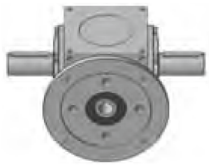
Design



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: solid shaft, cylindrical with key
on one of the two sides (designation: M1)

BG • • MF M1



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: solid shaft, cylindrical with key
on both sides (designation: M2)

BG • • MF M2



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: hollow shaft, cylindrical hole with keyway
(designation: H)

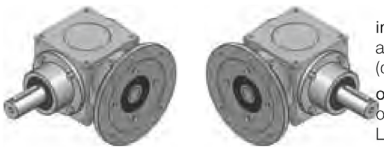
BG • • MF H



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: solid shaft with hub, cylindrical with key
on one of the two sides
STANDARD diameter (designation: S1)

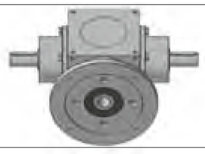
BG • • MF S1



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: solid shaft with hub, cylindrical with key
on one of the two sides
LARGE diameter (designation: R1)

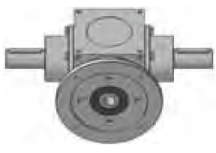
BG • • MF R1



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: two solid shafts with hub, cylindrical with key
with opposite rotation direction
STANDARD diameter (designation: S2)

BG • • MF S2



input: IEC motor flange
and hollow shaft with cylindrical hole and keyway
(designation: MF)

output: two solid shafts with hub, cylindrical with key
with opposite rotation direction
LARGE diameter (designation: R2)

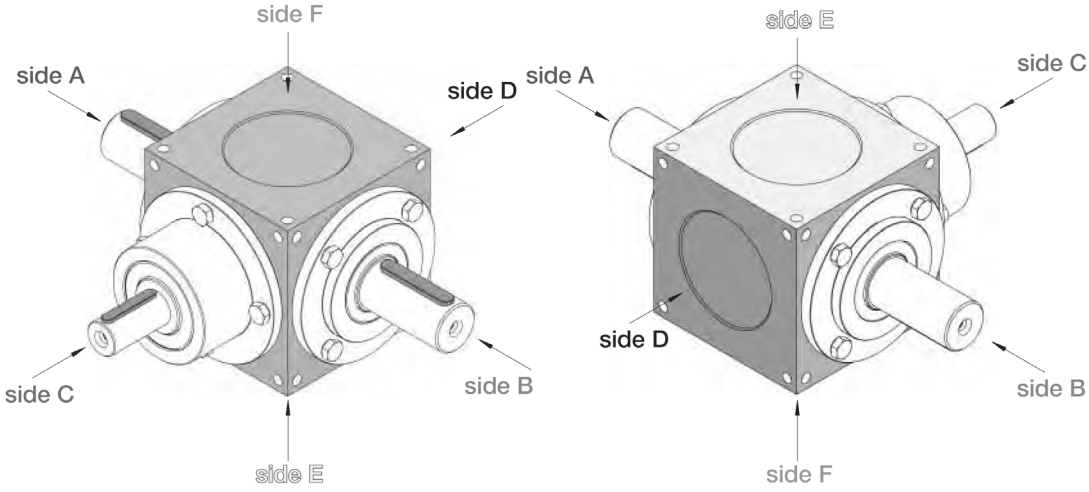
BG • • MF R2

SERVOMECH

Identification of bevel gearbox housing sides

To describe and define a bevel gearbox accurately, to indicate the mounting side of the bevel gear on the external structure or to determine the side of the oil plugs and air breather, it is necessary to identify each side of the gearbox housing.

In the following scheme, each side of the gearbox housing is identified with a letter and a colour. These references are used hereafter to show the direction of shafts rotation and the mounting – operating position of the bevel gearbox.



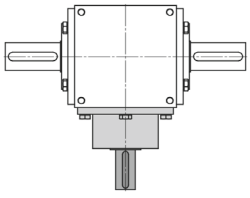
Side C is the side of the main input (solid shaft or IEC motor flange).

Side A and **side B** correspond to the **main output** axis of the gearbox (solid shaft, cylindrical with key, on one or both sides, or hollow shaft with cylindrical hole and keyway).

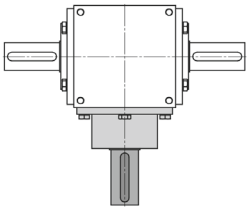
On **side D** and/or **side E** and/or **side F** it is possible to mount a solid shaft with hub, cylindrical with key, as **additional output**.

SERVOMECH

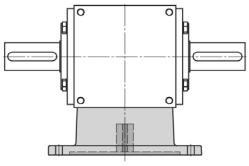
Bevel gearbox input: type and designation



Solid shaft, cylindrical with key, STANDARD diameter
Designation: S

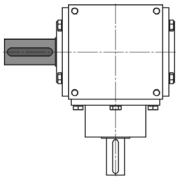


Solid shaft, cylindrical with key, LARGE diameter
Designation: R

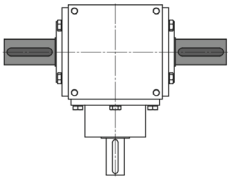


IEC motor flange and hollow shaft with cylindrical hole and keyway
Designation: MF

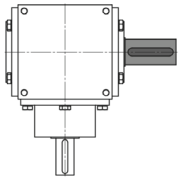
Bevel gearbox main output: type and designation



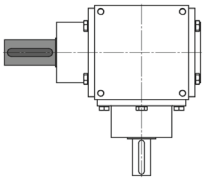
Solid shaft, one output
Designation: M1



Solid shaft, double output
Designation: M2

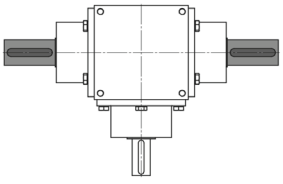


Solid shaft, one output
Designation: M1

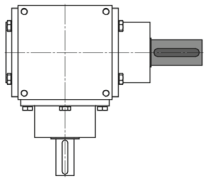


One solid shaft with hub

Diameter: STANDARD
Designation: S1
Diameter: LARGE
Designation: R1



Two solid shafts with hub
with opposite rotation direction
Diameter: STANDARD
Designation: S2
Diameter: LARGE
Designation: R2



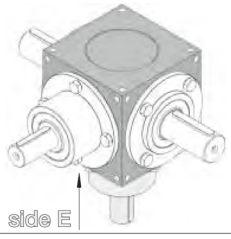
One solid shaft with hub

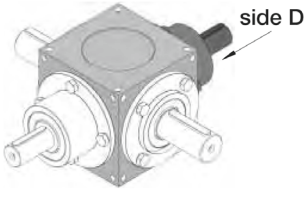
Diameter: STANDARD
Designation: S1
Diameter: LARGE
Designation: R1

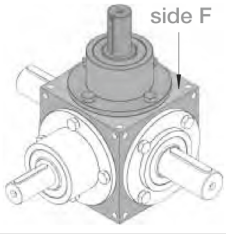


Hollow shaft:
cylindrical hole and keyway
Designation: H

Bevel gearbox additional output: type, designation and position







Solid shaft with hub, cylindrical with key		
Diameter: STANDARD Designation: S	Diameter: LARGE Designation: R	
Position: E	Position: **D**	Position: F

Ordering code

BG	166	R2	S	M2	scheme 1.20	S	F	E	HO	...
	1	2	3	4	5	6	7	8	9	10

1 Bevel gearbox size pg. 10 - 11

86 - 110 - 134 - 166 - 200 - 250

2 Ratio pg. 10 - 11

R1 - R1.5 - R2 - R3 - R4

3 Main gearbox input pg. 14

S - solid shaft, cylindrical with key, STANDARD diameter
R - solid shaft, cylindrical with key, LARGE diameter
MF - IEC motor flange and hollow shaft with keyway
MA - special motor flange adapter

4 Main gearbox output pg. 15

M1 - solid shaft, cylindrical with key, on one side
M2 - solid shaft, cylindrical with key, on both sides
H - hollow shaft with cylindrical hole and keyway
S1 - solid shaft with hub, cylindrical with key, STANDARD diameter
R1 - solid shaft with hub, cylindrical with key, LARGE diameter
S2 - two solid shafts with hub, cylindrical with key, STANDARD diameter
R2 - two solid shafts with hub, cylindrical with key, LARGE diameter

5 Kinematic scheme pg. 30 ... 36

6 Additional gearbox output pg. 15

S - solid shaft, cylindrical with key, STANDARD diameter
R - solid shaft, cylindrical with key, LARGE diameter

7 Housing side with additional output pg. 15

D - E - F

8 Mounting side pg. 14

A - B - C - D - E - F

9 Operating position pg. 28 - 29

HO - VD - VU - SD - SU

10 Other specifications

example: lubricant type – **grease** (standard) or **oil** (on request)
example: ambient temperature ___°C

Example:

BG 134 R1.5 S M2 10 _ _ E HO

BG 166 R1 MF (IEC 112 B14) H 1.20 S F D VU

Lubrication and maintenance

SERVOMECH bevel gearboxes BG Series are supplied already lubricated.

Standard lubrication with grease, suitable for applications with low input speed and low daily duty cycle.

For applications with high speeds and/or high daily duty cycle oil lubrication is recommended. In such cases, the gearbox housing is equipped with oil plugs and visual oil level indicator, while the air breather is supplied as separate component and must be fitted by the customer on the top upon installation.

Grease-lubricated gearboxes are maintenance-free. With no occasional seals damage nor disassembling of components due to maintenance, an inspection every 4 years, in case of daily operation up to 8 hours, is sufficient.

Oil-lubricated gearboxes require the first oil change after 500 operating hours and thereafter every 3000 operating hours.

Recommended type of lubricant, based on input speed												
Size	grease lubrication					oil lubrication					Q.ty grease [kg]	Q.ty oil [l]
BG 86											0.2	0.22
BG 110											0.4	0.45
BG 134											0.5	0.55
BG 166											1	1.1
BG 200											2.5	2.8
BG 250											5	5.5
	0	200	400	600	800	1000	1200	1400	1600	1800	2000	

Input speed [rpm]

NOTE: the quantity of oil lubricant, expressed in litres, is approximate; please refer to the oil level for a correct filling.

Operating conditions different from the above should be specified for a correct evaluation and choice of lubricant type and quantity.

Mounting positions where input and output shafts are not all on the horizontal plane should be specified to evaluate the correct lubrication of the bearings and the shafts mounted on the vertical top position.

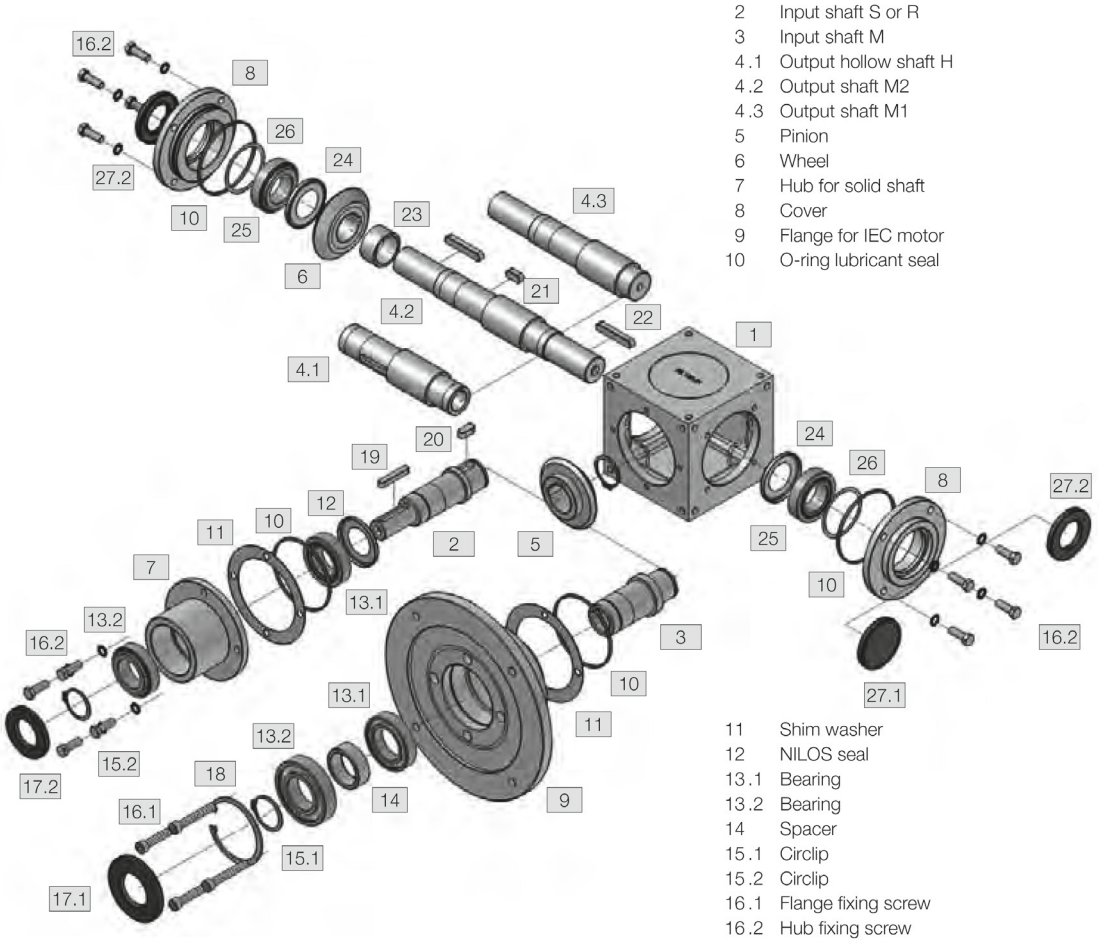
By ordering, please specify lubrication requirements: **grease** or **oil**.

Recommended lubricants:

grease: AGIP Grease SLL 00 (first filling) or SHELL Gadus S5 V142W

oil: AGIP Blasia S 220 (first filling) or SHELL Omala S4 GX

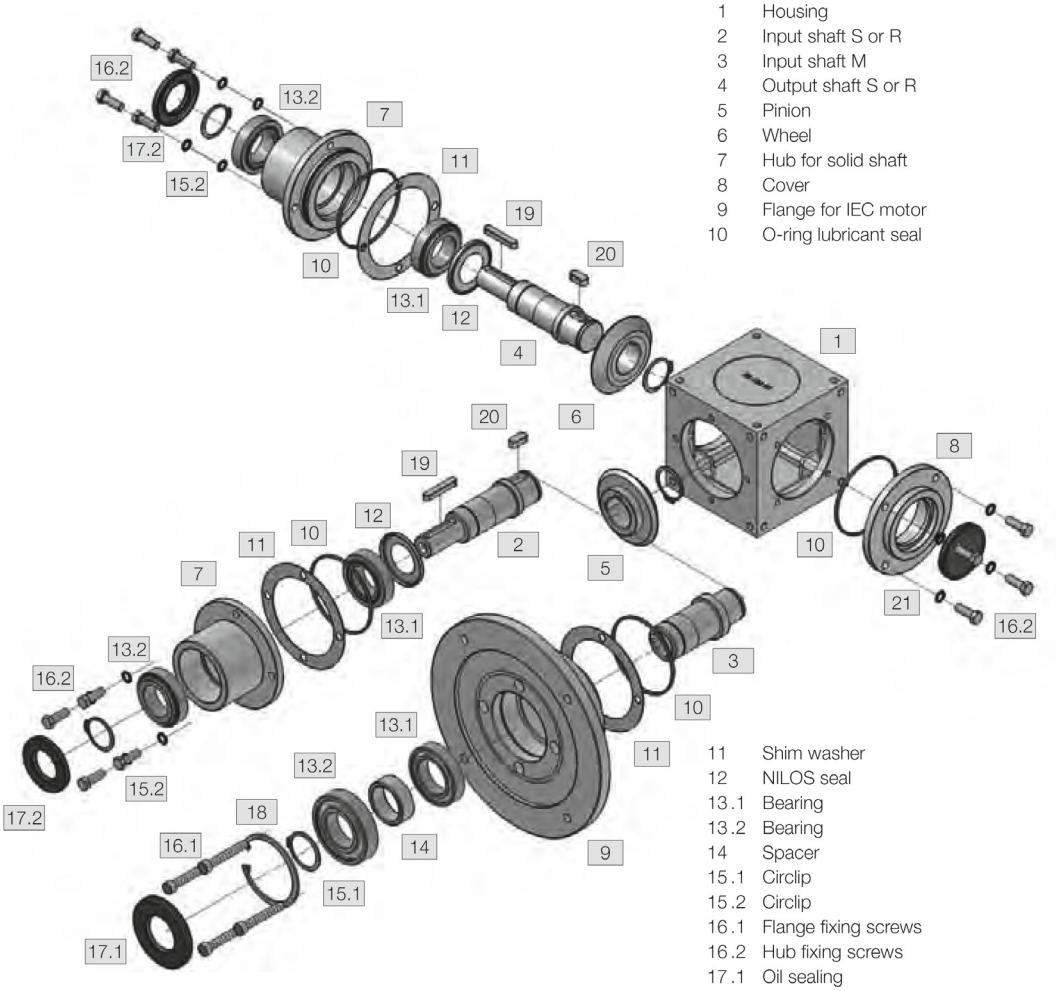
Spare parts
bevel gearboxes with output shaft M1 or M2 or H



1 Housing
2 Input shaft S or R
3 Input shaft M
4.1 Output hollow shaft H
4.2 Output shaft M2
4.3 Output shaft M1
5 Pinion
6 Wheel
7 Hub for solid shaft
8 Cover
9 Flange for IEC motor
10 O-ring lubricant seal
11 Shim washer
12 NILOS seal
13.1 Bearing
13.2 Bearing
14 Spacer
15.1 Circlip
15.2 Circlip
16.1 Flange fixing screw
16.2 Hub fixing screw
17.1 Oil sealing
17.2 Oil sealing
18 Circlip
19 Key
20 Key
21 Key
22 Key
23 Spacer
24 NILOS seal
25 Tapered roller bearing
26 Shim washer
27.1 Sealing cover
27.2 Oil sealing

For all spare parts order we recommend to indicate the bevel gearbox serial number written on the product label fixed on the housing.

Spare parts
bevel gearboxes with output shaft S1 o R1

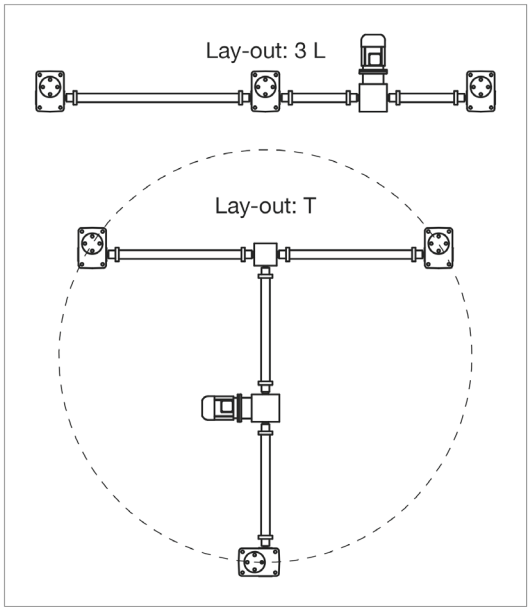


1	Housing
2	Input shaft S or R
3	Input shaft M
4	Output shaft S or R
5	Pinion
6	Wheel
7	Hub for solid shaft
8	Cover
9	Flange for IEC motor
10	O-ring lubricant seal
11	Shim washer
12	NILOS seal
13.1	Bearing
13.2	Bearing
14	Spacer
15.1	Circlip
15.2	Circlip
16.1	Flange fixing screws
16.2	Hub fixing screws
17.1	Oil sealing
17.2	Oil sealing
18	Circlip
19	Key
20	Key
21	Sealing cover

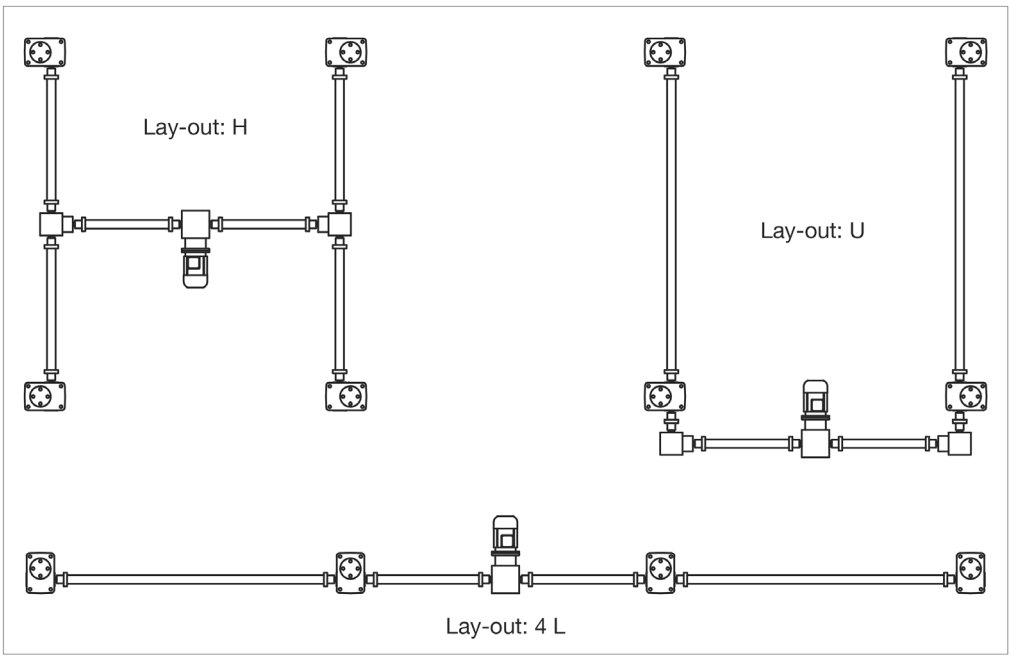
For all spare parts order we recommend to indicate the bevel gearbox serial number written on the product label fixed on the housing.

Bevel gearboxes in lifting systems

Lay-out with 3 lifting points



Lay-out with 4 lifting points



Bevel gearboxes in lifting systems

Choice and selection of bevel gearboxes for lifting systems should be done considering not only the lifting speed and load, i.e. the required power, but also and above all the **lay-out type, the distance between the lifting points to be connected** and **the duty cycle**.

We would like to draw your attention while determining the ratio of different components: gearmotors, bevel gearboxes and screw jacks. The ratio shall be determined in order to achieve the required linear speed while reducing at the same time the shafts' and couplings' rotation speed as much as possible, especially in case of big distance between the points to be mechanically connected.

A reduced speed of shafts and couplings prevents from buckling vibrations and avoids to reach critical rotation speed.

Some indications in case of high lifting speeds:
- screw jacks with high ratio
- acme or ball screws with long lead
- bevel gears with ratio 1 : 1
- gearmotor (depending on the required speed)

This solution allows shafts and couplings to rotate slower, preventing vibrations and noise during operation and improve safety and lifetime of all system components.

In case of big distance between lifting points, it is necessary to support transmission shafts in one or more points.

Do not forget to verify the transmitted torque and rotation speed of shafts and couplings!

The lay-out type obliges to pay attention to:
- direction of rotation of the shafts
- disposal of screw jacks and direction of rotation, lead angle of acme or ball screw
- kinematic schemes of gears inside bevel gearboxes (see pages 30 ... 36)

We recommend to verify the direction of the shaft rotation on the schemes in order to select the right kinematic scheme of the rotation of the bevel gearbox shafts.

Type of working cycle:

Generally, the traditional lifting systems operate with low duty cycle, medium-to-high or heavy load, medium-to-low lifting speed.

Usually, they consist of acme screw jacks, worm or bevel gearmotors (depending on the required ratio), and grease lubricated bevel gearboxes with ratio 1 : 1.

In the last years, more frequently required conditions in industrial lifting applications have been as follows:
- medium-to-high duty cycle
- high lifting speed
- medium-to-light load.

The reason of these requirements has not been only the specific process cycle, but also the general need to reduce energy consumption.

NOTES:

Electromechanical Actuators

Linear-Mech®

electromechanical actuators

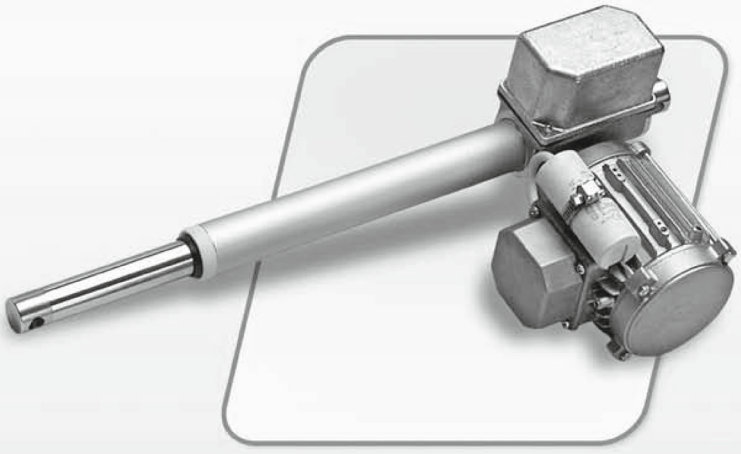







Linear-Mech®

electromechanical actuators





Linear and rotative actuators

Catalogue Ed. 02/12

Linearmech linear actuators range consists of two main product groups determined by their different linear drives:

- **Acme screw linear actuators;**
- **Ball screw linear actuators.**

LINEARMECH ELECTROMECHANICAL ACTUATORS

Acme screw LINEAR ACTUATORS
Duty cycle
15% on 10 min
30% on 10 min

LMR 01	F_{max} =	1300 N	V_{max} =	52 mm/s
LMR 02	F_{max} =	3000 N	V_{max} =	40 mm/s
LMR 03	F_{max} =	6000 N	V_{max} =	25 mm/s

ATL 02	F_{max} =	2000 N	V_{max} =	48 mm/s
ATL 05	F_{max} =	2500 N	V_{max} =	32 mm/s
ATL 08	F_{max} =	4000 N	V_{max} =	150 mm/s
ATL 10	F_{max} =	5000 N	V_{max} =	150 mm/s
ATL 12	F_{max} =	11000 N	V_{max} =	93 mm/s

CLA 20	F_{max} =	2000 N	V_{max} =	48 mm/s
CLA 25	F_{max} =	5000 N	V_{max} =	100 mm/s
CLA 25S	F_{max} =	5000 N	V_{max} =	100 mm/s
CLA 25M	F_{max} =	5000 N	V_{max} =	100 mm/s
CLA 28	F_{max} =	10000 N	V_{max} =	8 mm/s
CLA 28T	F_{max} =	10000 N	V_{max} =	8 mm/s

LMI 02	F_{max} =	750 N	V_{max} =	19 mm/s
LMP 03	F_{max} =	280 N	V_{max} =	190 mm/s
UAL 0	F_{max} =	390 N	V_{max} =	600 mm/s

Ball screw LINEAR ACTUATORS
Duty cycle
50% on 10 min
100% on 10 min

BSA 08	F_{max} =	4000 N	V_{max} =	63 mm/s
BSA 10	F_{max} =	5000 N	V_{max} =	63 mm/s
BSA 11	F_{max} =	5000 N	V_{max} =	125 mm/s
BSA 12	F_{max} =	9000 N	V_{max} =	58 mm/s

CLB 25	F_{max} =	5000 N	V_{max} =	125 mm/s
CLB 27	F_{max} =	7000 N	V_{max} =	58 mm/s

UBA 0	F_{max} =	420 N	V_{max} =	500 mm/s

GEARMOTORS
for rotative actuators

MR 15	Mt = 3 Nm	n = 520 rpm
MR 31	Mt = 15 Nm	n = 185 rpm
MR 40FC	Mt = 15 Nm	n = 185 rpm

LMR Series
Acme screw linear actuators, 3 sizes available. DC motor.
Built-in adjustable stroke end switches activated by self-keeping commutation devices.
Load capacity up to 6 000 N, linear speed up to 52 mm/s

ATL Series
Acme screw linear actuators, 5 sizes available. DC or AC 1-phase or 3-phase motors.
Adjustable stroke end magnetic reed switches and external adjustable stroke end electric switches.
Load capacity up to 11 000 N, linear speed up to 150 mm/s

CLA Series
Acme screw linear actuators, 6 sizes available. DC or AC 1-phase or 3-phase motors.
Adjustable electric cam-operated stroke end switches fitted in closed box.
Rotative potentiometer for positioning control.
Load capacity up to 10 000 N, linear speed up to 100 mm/s

LMI 02
Acme screw linear actuator with compact cylindrical shape, small overall dimensions. DC motor.
Max load 750 N, linear speed up to 20 mm/s

LMP 03
Acme screw linear actuator with motor mounted parallel to actuator axis. DC motor.
Max load 280 N, linear speed up to 190 mm/s

UAL 0
Acme screw linear actuator, timing belts and pulleys transmission, with parallel motor design. DC motor.
Adjustable stroke end magnetic reed switches.
Max load 390 N, linear speed up to 600 mm/s

BSA Series
Ball screw linear actuators, 4 sizes available. DC or AC 1-phase or 3-phase motors. Motor brake available.
Adjustable stroke end magnetic reed switches and external adjustable stroke end electric switches.
Load capacity up to 9 000 N, linear speed up to 125 mm/s

CLB Series
Ball screw linear actuators, 2 sizes available. DC or AC 1-phase or 3-phase motors. Motor brake available.
Adjustable electric cam-operated stroke end switches fitted in closed box.
Rotative potentiometer for positioning control.
Load capacity up to 7 000 N, linear speed up to 125 mm/s

UBA 0
Ball screw linear actuator, timing belts and pulleys transmission with motor mounted parallel to actuator axis.
DC motor. Adjustable stroke end magnetic reed switches.
Max. load 420 N, linear speed up to 500 mm/s

MR Series
Motorgears for rotative actuators. DC motor. Bi-directional, incremental encoder with 2 output channels
Adjustable electric cam-operated stroke end switches. Rotative potentiometer single turn 5 kOhm.

Linearmech linear actuators are totally manufactured in Italy and assembled in our plant located in Bologna. All materials used in the production are of Italian origin.

Methodical controls are carried out in-line during manufacturing process to monitor the production quality and functional checks are carried out on every finished assembled product to ensure the total quality and reliability of the final product.

Input drives

- Worm gear, geometric design for high performances and efficiency.
  Worm shaft fitted or extracted directly on the electric motor shaft for a more compact and cost effective solution, allowing the integrated electric motor mounting on the actuator housing.
  Helical wormwheel in bronze EN 1982 – CuSn12-C or in plastic material and high resistance Delrin® 500
- Timing pulleys UNI ISO 5294:1991 in aluminium for low inertia
  Timing belts UNI ISO 5296-1:1991

Housing

- Casting in aluminium alloy EN 1706 AC-AlSi9T6 machined with CNC machinery to ensure a high precision level.
- Die casting in aluminium EN 1706 AC-AlSi11Cu2(Fe) machined in the bearing housing.

Trapezoidal acme screws Tr profile ISO 2901 ... ISO 2904
Material: steel C 43 (UNI 7847)
Rolled and subjected to straightening process to ensure the regular alignment in operation and avoiding undesirable noises and loss of efficiency.
Max pitch error ± 0.5 mm over 300 mm thread length

Bronze nuts Tr profile ISO 2901 ... ISO 2904
Material: Bronze EN 1982 – CuAl9 Tr 1-start
Bronze EN 1982 CuSn12 Tr 2 or 3 starts
Delrin® 500

Ball screws
Rolled and hardened, manufactured by Servomech SpA S.U.
Material: steel 42 CrMo 4 (UNI EN 10083)
Precision Class ISO IT 7
Max pitch error ± 0.5 mm over 300 mm thread length

Ball nuts
Manufactured by Servomech SpA S.U.
Material: steel 18 NiCrMo 5 (UNI EN 10084)
Hardened and ground
Microfinishing
Max axial backlash (0.07 ÷ 0.08)
Ball nut without play or pre-loaded on request

Push rods

- Material: Chrome plated steel ST 52 DIN 2391 - tolerance on outer diameter f7
- Anodized aluminium for small size actuators
- Push rods in stainless steel AISI 304 on request

Outer protective tubes

- Drawn profiles in aluminium EN AW 6060 T5
- Aluminium alloy tubes 6060 UNI 90005/1 anodizing 20 μm
- Cold-drawn steel St 52.2 DIN 2391

Front and rear attachments
Wide range of options: clevis ends and ball joints
Both front and rear attachments are provided with self-lubricating bronze bushes to reduce frictions and sticking and to improve the efficiency (not available for small size actuators).

In order to select the most suitable linear actuator, it is first necessary to analyse the application to determine the required performances and the working conditions.

1. Basic performances required

- Stroke
- Push or pull load
- Linear speed

1.1 The load and the linear speed, if considered separately, determine the required type of linear actuator to be selected; if considered as contemporaneous performances they determine the required power and, therefore, the actuator's size.

1.2 The stroke length may influence the selection of the actuator's size only in case of very long stroke lengths and high push loads; in such a case, the buckling resistance of the screw should be checked. For more details and support, please contact our Technical Dpt.

2. Working and duty cycle

The single working cycle and the total actuator's duty cycle determine the choice of an actuator with acme screw or, alternatively, with ball screw.

The section "**Performances and Features**" states the duty cycle with max load admitted for each actuator.

The duty cycle, expressed in % over a 10 minutes period, is the percentage of time referred to 10 minutes, during which the actuator can operate under the maximum load conditions stated in this catalogue at (-10 ... +40) °C environment temperature.

Generally, the acme screw linear actuators can work with duty cycle of 15% or 30% over 10 minutes (depending on the electric motor type), while the ball screw linear actuators can work with duty cycle of 50% up to 100% (depending on the electric motor type).

For preliminary checks or any doubt concerning the selection, please contact our Technical Dpt.

3. Electric motor type

Depending on the series and the type, linear actuators are available with 12, 24 or 36 V DC motor or with AC 1-phase or 3-phase motor.

Some types of motors are available also with positioning or stopping brake.

The motors available for each actuator are stated in the specific section "**Performances and Features**" and in the table concerning the motors specifications at the end of this catalogue.

Series	LMR	ATL	CLA	LMI	LMP	UAL	BSA	CLB	UBA
Linear actuators									
Products available	**LMR01** (1300 N) **LMR02** (3000 N) **LMR03** (6000 N)	**ATL02** (2000 N) **ATL05** (2500 N) **ATL08** (4000 N) **ATL10** (5000 N) **ATL12** (11000 N)	**CLA20** (2000 N) **CLA25** (5000 N) **CLA25S** (5000 N) **CLA25M** (5000 N) **CLA28** (10000 N) **CLA28T** (10000 N)	**LMI02** (750 N)	**LMP03** (280 N)	**UAL0** (390 N)	**BSA08** (5000 N) **BSA10** (5000 N) **BSA11** (5000 N) **BSA12** (9000 N)	**CLB25** (5000 N) **CLB27** (7000 N)	**UBA0** (420 N)
Performances and features									
Design	90° Design	90° Design	90° Design	In-Line	Parallel	Parallel	90° Design	90° Design	Parallel
Screw type	Acme screw	Acme screw	Acme screw	Acme screw	Acme screw	Acme screw	Ball screw	Ball screw	Ball screw
Input voltage	DC	DC/AC	DC/AC	DC	DC	DC	DC/AC	DC/AC	DC
Load capacity up to [N]	6000	11000	10000	750	280	390	9000	7000	420
Linear speed up to [mm/s]	52	150	100	19	190	600	125	125	500
Max stroke length [mm] [1]	500	800	1000	300	300	500	800	500	500
Protection class [2]	IP 65	65/55/54	65/55/54	65	30	54	65/55/54	55/54	54
Duty cycle	Intermittent	Intermittent	Intermittent	Intermittent	Intermittent	Intermittent	100%	100%	100%

Web: www.endo.com.tr
Mail: satis@endo.com.tr
Tel: +90 232 433 85 15

Optional features									
Stroke end switches	Integrated	External (Magnetic/Electric)	Protected under sealed cover	External (Magnetic)	External (Magnetic)	External (Magnetic)	External (Magnetic/Electric)	Protected under sealed cover	External (Magnetic)
Potentiometer feedback	-	-	✓	-	-	-	-	✓	-
Encoder feedback	✓	✓	-	✓	✓	✓	✓	-	✓
Electronic overload protection [3]	✓	✓	✓	✓	✓	✓	✓	✓	✓
Electronic dynamic braking [3]	✓	✓	✓	✓	✓	✓	✓	✓	✓
Brake-motor	-	✓	✓	-	-	✓	✓	✓	✓

Notes

[1] Contact Customer Support for more information

[2] IP protection class according to the electric motor type. Contact Customer Support for more information

[3] For DC motors only

Web: www.endo.com.tr
Mail: satis@endo.com.tr
Tel: +90 232 433 85 15



Industrial Enclosure Systems

ROSE

A Phoenix Mecano Company



Operating and display enclosures, suspension systems

Human - Machine - Interfaces, HMIs, are used for machine operation. These complex modules - from a simple emergency stop switch up to complete industrial PCs or CNC controllers - must be adapted to the rough environmental conditions placed on the machines. ROSE operating and display enclosures ensure guaranteed protection for the built-in electronic components and offer the very best in operator comfort.



Commander
For stationary application areas and fitting of control units and industrial PCs, the ROSE range offers a variety of enclosure types with more than 140 individual solutions - depending on controller size and construction. If your individual solution is not available here, please contact us.

Heat management
Operating and control systems need an enclosure system, which makes an optimal handling possible for the accommodation at the machine in the production process. ROSE offers for these applications special commander systems. These operating and control systems, usually realized on PC basis, produce a thermal power loss. For the avoidance of the loss of the devices or components and for the security of the production process there is air conditioning necessary. Therfore ROSE offers a complete range of cooling systems with additional heat sinks up to the modern Peltier cooling systems - all options are possible.

Suspension systems
Suspension systems link control enclosures with the respective machine. In addition to covering cable routing, they have the task of providing the control enclosure in an optimum position to the user. For this reason they have a variety of swivel joints, inclination sets and coupling elements available. The selection of a suitable suspension system depends on the weight and construction of the complete equipped control enclosure.

Height adjustment units GTN II
Height adjustment for flexible work place design

Moterm
Mobile console trolley for acceptance of Commander systems for flexible use with one or more machines.

For detailed information see our catalogue "Operating and display enclosures"

Stainless steel Commander and suspension system - see stainless steel enclosure system chapter page 102



- Aluminium profile compact commander in 2 widths
- Applications: control equipment and display systems
- Integrated cooling system
- External system groove
- Variable profile lengths

Included in delivery
Profile enclosure body, on rear side door or screwed wall; fastening elements for front panel; front panel order separately

Technical data

Material:
enclosure profile: DIN EN 573 EN AW-AlMgSi
enclosure lid: DIN EN 1706 EN AC-AlSi 12 (Fe)

Ingress protection:
IP 65 to EN 60529

Painting:
powder coating

Colour:
enclosure body and enclosure lid:
RAL 7035, light grey
multi function profile:
RAL 9005, jet black

Temperature range:
-30°C to +65°C

ComTronic

Product range

Type	Order No.	Order No. front plate	Weight (g)
CT 110-350-S	**20.80 10 10**	**20.80 91 01**	7000
CT 110-520-S	**20.80 10 20**	**20.80 91 02**	8500
CT 110-SL-S	**20.80 10 99**	**20.80 91 98**	-
CT 110-350-S-GT	**20.80 11 10**	**20.80 91 01**	7000
CT 110-520-S-GT	**20.80 11 20**	**20.80 91 02**	8500
CT 110-SL-S-GT	**20.80 11 99**	**20.80 91 98**	-
CT 145-350-S	**20.80 40 10**	**20.80 91 03**	9600
CT 145-520-S	**20.80 40 20**	**20.80 91 04**	11400
CT 145-SL-S	**20.80 40 99**	**20.80 91 99**	-
CT 145-350-S-GT	**20.80 42 10**	**20.80 91 03**	9600
CT 145-520-S-GT	**20.80 42 20**	**20.80 91 04**	11400
CT 145-SL-S-GT	**20.80 42 99**	**20.80 91 99**	-

SL = special length

Accessories

Type	Order No.
Wall holder - CT	**20.80 90 01**
Handle set 350 (length 350 mm)	**20.80 90 02**
Handle set 500 (length 500 mm)	**20.80 90 03**
Handle set SL	**20.80 90 99**
Cover plates 80 for CT 110 (4 pcs.)	**20.80 90 04**
Cover plates 120 for CT 145 (4 pcs.)	**20.80 90 05**
NoVoTronic-adapter P80	**20.80 90 06**
NoVoTronic-adapter P100	**20.80.90 07**
NoVoTronic-adapter P160	**20.80 90 08**
Ventilator 60 for CT 110 (1 piece)	**83.90 00 04**
Ventilator 92 for CT 145 (1 piece)	**83.90 00 05**
Mounting angle with screws and spring nuts M5 (set 4 pcs.)	**10.03 31 01**
Spring nuts M5 (set 8 pcs.) for internal mounting	**10.03 60 01**

Switches and push button on request



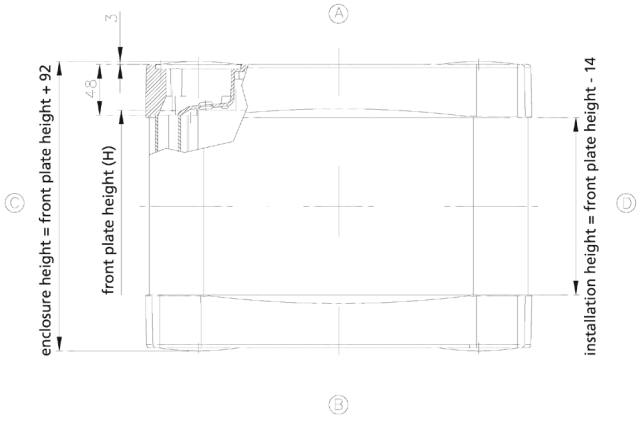
Suspension adaptation
for adaptation of ROSE suspension systems
- GT 48 and GTK electronic for ComTronic 110
- GTN II for ComTronic 145
- other machining by version “without coupling hole“ available

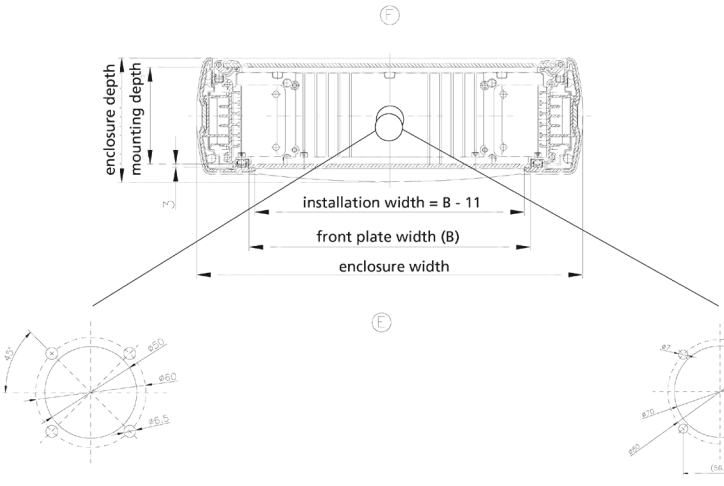
Typ	GT 48/2	GTK electronic	GTN II	without coupling hole
CT110-350-S				X
CT110-520-S				X
CT110-SL-S				X
CT110-350-S-GT	X	X		
CT110-520-S-GT	X	X		
CT110-SL-S-GT	X	X		
CT145-350-S				X
CT145-520-S				X
CT145-SL-S				X
CT145-350-S-GT			X	
CT145-520-S-GT			X	
CT145-SL-S-GT			X	

Dimensions

Type	Order No.	Front plate W x H in mm	Installation W x H in mm	Enclosure W x H in mm	Mounting depth	Enclosure depth
CT 110-350-S	**20.80 10 10**	266 x 350	255 x 336	365 x 442	91	118
CT 110-350-S-GT	**20.80 11 10**	266 x 350	255 x 336	365 x 442	91	118
CT 110-520-S	**20.80 10 20**	266 x 520	255 x 506	365 x 612	91	118
CT 110-520-S-GT	**20.80 11 20**	266 x 520	255 x 506	365 x 612	91	118
CT 110-SL-S	**20.80 10 99**	266 x SL	255 x SL	365 x SL	91	118
CT 110-SL-S-GT	**20.80 11 99**	266 x SL	255 x SL	365 x SL	91	118
CT 145-350-S	**20.80 40 10**	351 x 350	340 x 336	453 x 442	127	153
CT 145-350-S-GT	**20.80 42 10**	351 x 350	340 x 336	453 x 442	127	153
CT 145-520-S	**20.80 40 20**	351 x 520	340 x 506	453 x 612	127	153
CT 145-520-S-GT	**20.80 42 20**	351 x 520	340 x 506	453 x 612	127	153
CT 145-SL-S	**20.80 40 99**	351 x SL	340 x SL	453 x SL	127	153
CT 145-SL-S-GT	**20.80 42 99**	351 x SL	340 x SL	453 x SL	127	153

SL = special length



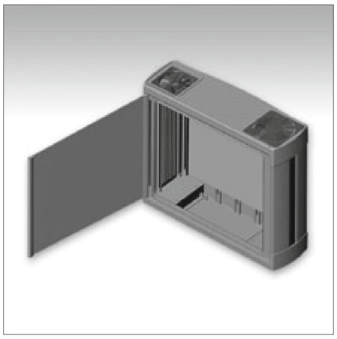


Drilling hole GT 48/2 and GTK electronic

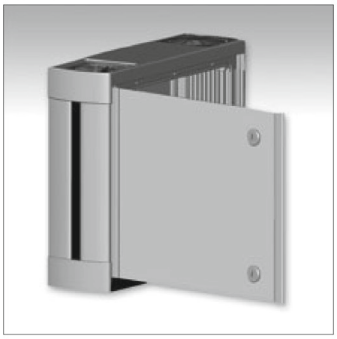
Drilling hole GTN II

ComTronic

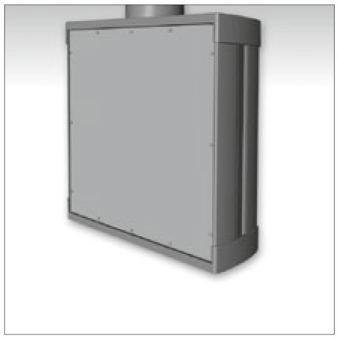
Rear wall mounting



1. Door with fast lock system
- Standard version
- Hinge side is fixed by pin screw with blind plugs
- Lock side is provided only by pin screws



2. Door with turn bolt fastener
- Option available
- Hinge side is fixed by pin screw with blind plugs
- Lock side is provided with two turn bolt fasteners



3. Rear wall completely closed
- Optional available
- Rear wall fixed by screws

Accessories



Wall holder - CT
Swivelling wall fixing unit

Order No. **20.80 90 01**



Ventilator
Option available for solving heat problems
To optain an optinal cooling effect, 2 ventilators are recommended

Order No.	
83.90 00 04	Ventilator 60 for ComTronic 110 (1 pc.)
83.90 00 05	Ventilator 92 for ComTronic 145 (1 pc.)



NoVoTronic adapter
Combination element at ComTronic

Order No.	for
20.80 90 06	NoVoTronic adapter P80
20.80 90 07	NoVoTronic adapter P100
20.80 90 08	NoVoTronic adapter P160

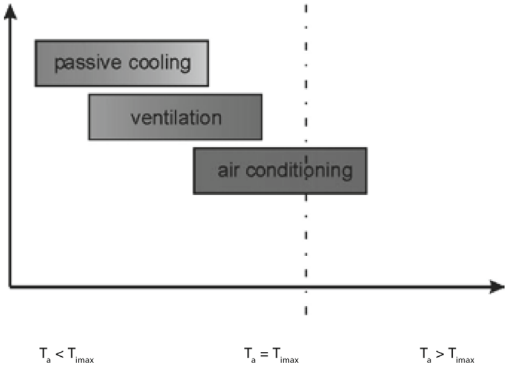


- Climatic systems for ROSE Commander systems, co-ordinated with the application
- Filter ventilators upto 25 m³/h discharge flow
- Compressor cooling systems upto 430 W cooling capacity
- Peltier cooling elements upto 150 W cooling capacity

Included in delivery:
Climatic system depending upon execution completely Commander system

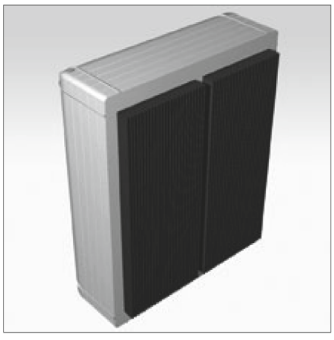
Heat management

Operating and control systems need an eclosure system, which makes an optimal handling possible for the accommodation at the machine in the production process. ROSE offers for this special commander systems. These operating and control systems, usually realized on PC basis, produce a thermal power loss. For the avoidance of the loss of the devices or components and for the securing of the production process air conditioning is necessary. Rose offers here a complete aligned cooling system. With additional heat sinks up to the modern Peltier cooling systems - all options are possible.

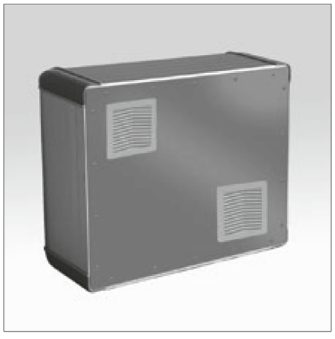


T_a: ambient temperature
T_{imax}: max. permissible interior enclosure temperature

For all our Commander systems we offer particularly devised cooling systems to you:



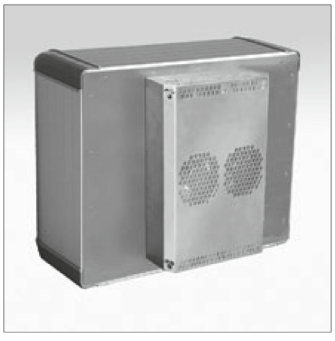
Passive cooling
with heat sink rear walls



Active cooling
with filter ventilator systems



Active cooling
with compressor cooling systems



Active cooling
with peltier cooling elements

ROSE



Filter ventilators with snatching assembly

Application and function
for the ventilation of cabinets, operating and control enclosures.
Two versions: for the electrical connection at 24 V DC and to 230 V AC.
The simple assembly takes place by cutout in door, side wall, rear wall or roof of the enclosure.

Advantages
Generally high protection classification (IP 54) by fin mounting.
Short assembly time by simple snatching assembly.
The ventilator used has UL-, CSA-, VDE- and CE-approvals.

Technical data

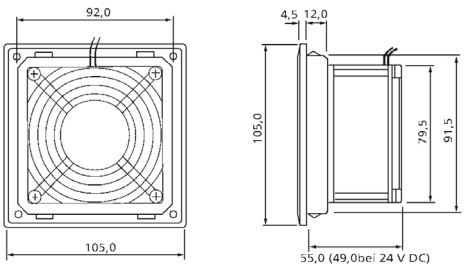
Material	Enclosure: plastic
Ingress protection	IP 54
Nominal voltage	24 V DC / 230 V AC

Product range

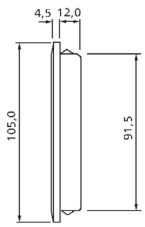
Order No.	Type	Name	Nominal voltage	Discharge flow
83.10 01 01	RLV 100 230 D	Filter ventilator	230 V AC	25 m³/h
83.10 01 02	RLV 100 24 D	Filter ventilator	24 V DC	25 m³/h
83.10 01 11	RGV 100 D	Exhaust filter		15 m³/h

Dimensions

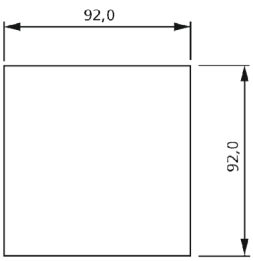
RLV 100 230 D / RLV 100 24 D

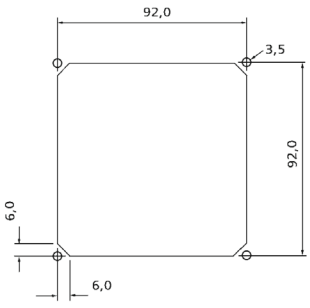


RGV 100 D



Mounting outcut





Octagonal cutout and drillings only by screw fastener

ROSE



Mini cooling systems in compressor technology

Application an function
for the active cooling of cabinets, operating and controll enclosures.
The simple assembly takes place by cutout in rear wall of the enclosure.

Advantages
This new generation of mini cooling systems provides maximum cooling with minimal space requirements. The maintenance-free cooling systems with 200 to 450 W are designed to operate without filters.
The heat exchanger condenser profile has been optimized using wide aluminium fins and improved air in- and outlets. Collectively, they provide an increased cooling output of 20 %, thus guaranteeing performance for demanding industrial environments.
These mini cooling units can be operated through mini controllers according to operational requirements.
With a depth of only 110 mm the mini cooling units are currently the smallest and most compact built-in mount and side mount units on the market.
Due to the environment there is used the safe refrigerant R134a.

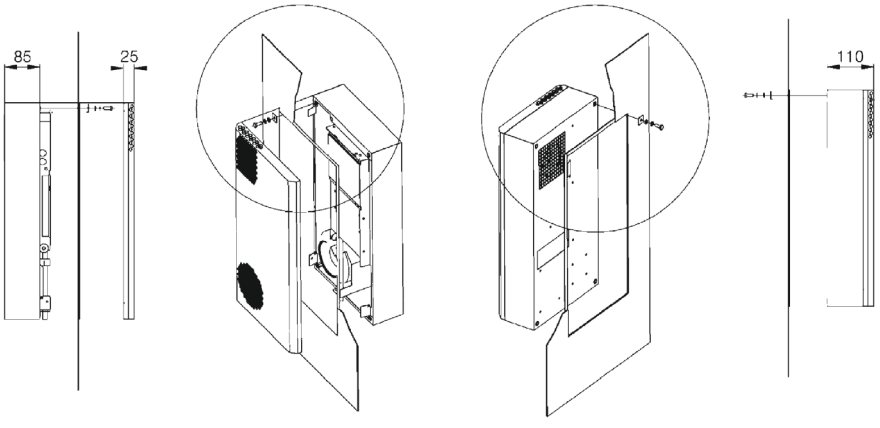
Technical data

Material	Enclosure: sheet steel powdered RAL 7035 optional stainless steel
Ingress protection inside / outside	IP 54 / IP 24
Operating temperature	+20°C to +50°C
Compressor	Cattail compressor
Nominal voltage	230 V AC 50/60 Hz

Product range

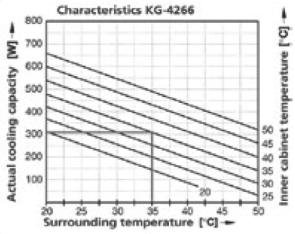
Order No.	Type	Cooling capacity	Dimensions H x W x D (mm)	Nominal voltage	Nominal currency	Weight (g)
83.10 02 01	RKG-4266	320 W	520 x 270 x 110	230 V AC	1,4 A	13300
83.10 02 02	RKG-4267	400 W	340 x 520 x 110	230 V AC	1,5 A	14800
83.10 02 03	RKG-4268	400 W	520 x 320 x 110	230 V AC	1,5 A	14200
83.10 02 04	RKG-4269	430 W	600 x 320 x 110	230 V AC	1,5 A	16000

Kind of assembly

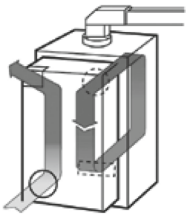


Cooling system RKG-4266

Characteristics



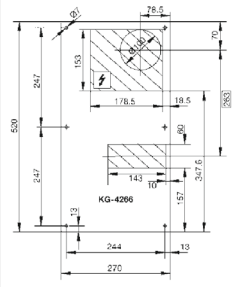
Cooling circuit



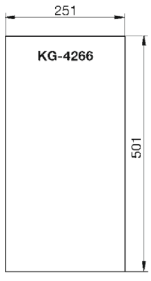
Technical data

Cooling capacity DIN 3168:	
Cooling capacity L35L35	320 W
Cooling capacity L35L50	140 W
Max. air volume flow:	
Ambient air circuit	170 m³/h
Cabinet air circuit	125 m³/h
Electrical data:	
Nominal voltage	230 V AC
Nominal power	280 W
Nominal current	1,4 A
Rated current	3,2 A
Fuse rating	6 A
Connection	Terminals

Dimensions

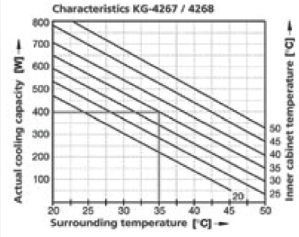


Panel cutout

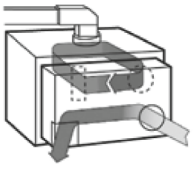


Cooling system RKG-4267

Characteristics



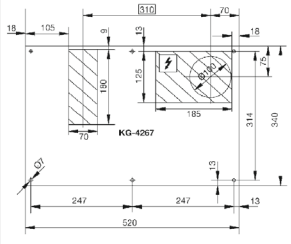
Cooling circuit



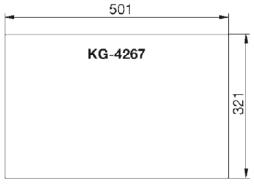
Technical data

Cooling capacity DIN 3168:	
Cooling capacity L35L35	400 W
Cooling capacity L35L50	150 W
Max. air volume flow:	
Ambient air circuit	200 m³/h
Cabinet air circuit	125 m³/h
Electrical data:	
Nominal voltage	230 V AC
Nominal power	300 W
Nominal current	1,4 A
Rated current	3,2 A
Fuse rating	6 A
Connection	Terminals

Dimensions



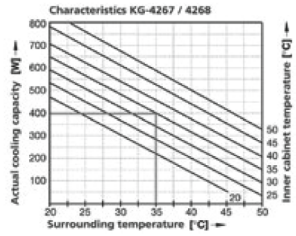
Panel cutout



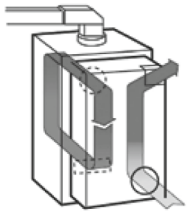
ROSE

Cooling system RKG-4268

Characteristics



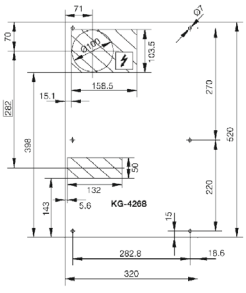
Cooling circuit



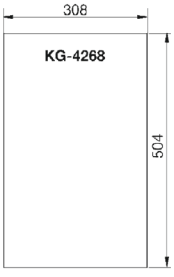
Technical data

Cooling capacity DIN 3168:	
Cooling capacity L35L35	320 W
Cooling capacity L35L50	140 W
Max. air volume flow:	
Ambient air circuit	170 m³/h
Cabinet air circuit	125 m³/h
Electrical data:	
Nominal voltage	230 V AC
Nominal power	280 W
Nominal current	1,4 A
Rated current	3,2 A
Fuse rating	6 A
Connection	Terminals

Dimensions

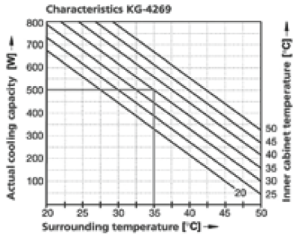


Panel cutout

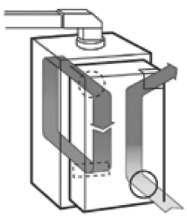


Cooling system RKG-4269

Characteristics



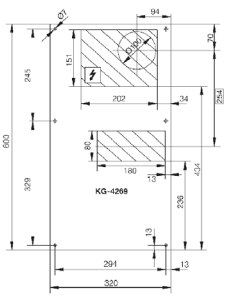
Cooling circuit



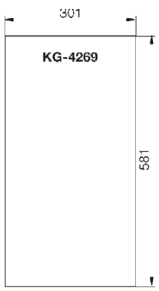
Technical data

Cooling capacity DIN 3168:	
Cooling capacity L35L35	430 W
Cooling capacity L35L50	160 W
Max. air volume flow:	
Ambient air circuit	200 m³/h
Cabinet air circuit	125 m³/h
Electrical data:	
Nominal voltage	230 V AC
Nominal power	280 W
Nominal current	1,4 A
Rated current	3,2 A
Fuse rating	6 A
Connection	Terminals

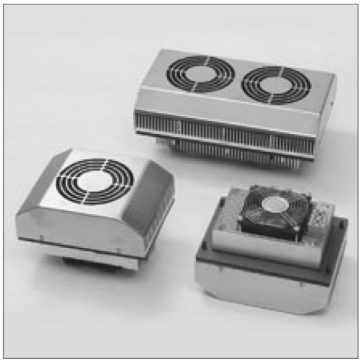
Dimensions



Panel cutout



RISE



Mini cooling systems in Peltier technology

Application and function:
for the active cooling of cabinets, operating and controll enclosures, industrial PC´s, monitor and flat screen monitor.
3 types in 50, 100 and 150 W cooling capacity are available.
For the electrical connection at 24 V DC. The simple assembly takes place by cutout in door, side wall, rear wall or roof of the enclosure.

Advantages of
Peltier cooling units:
- compact design
- assembly in each position, because the units work without refrigerants
- high efficiency

The Peltier effect
The Peltier effect is a thermoelectrical procedure, where a semiconductor material is used which is caused with appropriate doting by current guidance the change of the energy state by charge carriers and thus used to the transport of heat.

Technical data

Operating temperature	-10°C to +60°C
Nominal current	24 V +6%/-10%
Ingress protection inside / outside	IP 54

Product range

Order No.	Type	Cooling capacity	Nominal voltage	Nominal currency	Weight (g)
83.10 03 01	RPK 50	50 W	24 V DC	2,5 A	3900
83.10 03 02	RPK 100	100 W	24 V DC	4,8 A	7200
83.10 03 03	RPK 150	150 W	24 V DC	6,5 A	7300

Computation of the necessary cooling performance:

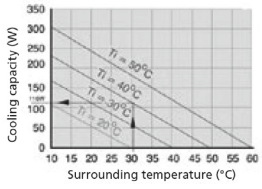
$P_K = P_v - k \times A \times T$

P_K =	Necessary cooling performance (W)
P_v =	Dissipation loss of built in devices (W)
k x A x T =	Inner convection of device
k =	Thermal transmission coefficient (eg: sheet metal = 5.5 W / m² K)
A =	Usable enclosure area (m²)
$\Delta T = T_i - T_a$ =	Temperature difference between inner and surrounding temperature

Heat management

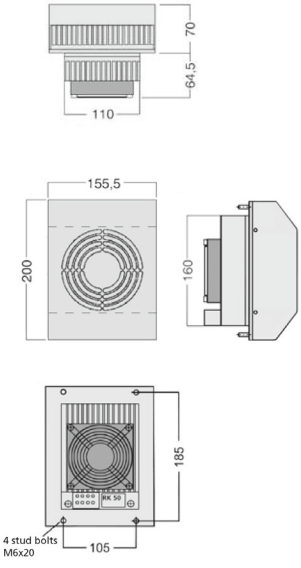
RPK 50

Diagram

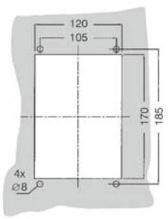


Choise: P_K = 6 W/K x ΔT + 50 W
Example: T_a = 30°C, T_i = 40°C i.e.: P_K = 110 W

Dimensions

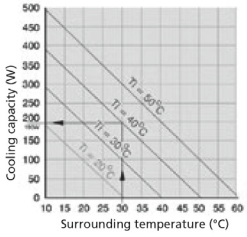


Panel cutout



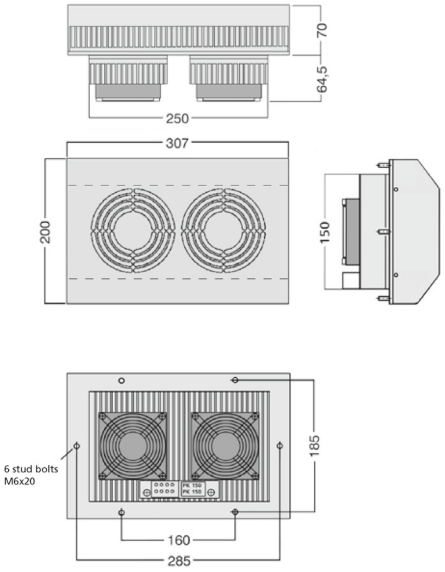
RPK 100

Diagram

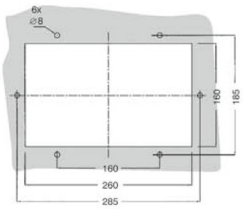


Choise: P_K = 9,5 W/K x ΔT +100 W
Example: T_a = 30°C, T_i = 40°C i.e.: P_K = 195 W

Dimensions

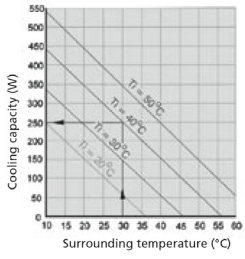


Panel cutout



RPK 150

Diagram



Choise: P_K = 9,5 W/K x ΔT + 150 W
Example: T_a = 30°C, T_i = 40°C i.e.: P_K = 245 W



- Aluminium profile suspension system for light/medium loads up to 30 kg
- Combined with all Commander systems
- Standardly adjustable solution for individual loads

Technical data

Material:
Connecting tube: DIN EN 573 EN AW-AlMgSi
Components: DIN EN 1706 EN AC-AlSi 12 (Fe)

Seal:
CR- and/or PU-foam

Painting:
Powder coating

Colour:
Tube, components: RAL 7035, light grey

Ingress protection:
IP 54 to EN 60529

Free cable passage:
Connecting tube: 53 x 19 mm
System components: 53 x 19 mm

Included delivery:
System individual components incl. cable duct cover and assembly material.

GTS

Product range

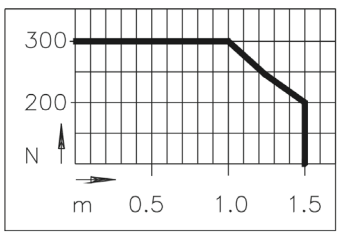
		Order No.
GTS Top mounted joint		**49.44 66 00**
GTS Foot stand		**49.44 72 00**
GTS Wall hinge W		**49.44 70 00**
GTS Angle		**49.44 71 00**
GTS Angle GTN II / GTS		**49.47 71 44**
GTS Coupling		**49.44 73 00**
GTS Flange coupling		**49.44 77 00**
GTS Angle coupling		**49.44 75 00**
GTS Flat panel adapter		**49.44 90 01**
GTS Foot stand turnable		**49.44 72 21**
GTS Inclining adapter		**49.44 80 00**
GTS Coupling Siemens PRO		**49.44 73 02**
GTS Angle coupling Siemens PRO		**49.44 75 02**
GTS Adaption plate Siemens Pro		**49.44 00 01**

Aluminium profile, maximum outreach 1.5 m	
Connecting tube, RAL 7035	Order No.
GTS profile 0.5 m	**49.44 10 01**
GTS profile 1 m	**49.44 10 02**
GTS profile 2 m*	**49.44 10 03**
Variable length (please specify)	**49.44 99 99**

Aluminium profile, maximum outreach 1.5 m	
GTS profile anodized 0.5 m	**49.44 11 01**
GTS profile anodized 1 m	**49.44 11 02**
GTS profile anodized 2 m*	**49.44 11 03**
GTS profile anodized variable length (please specify)	**49.44 99 99**

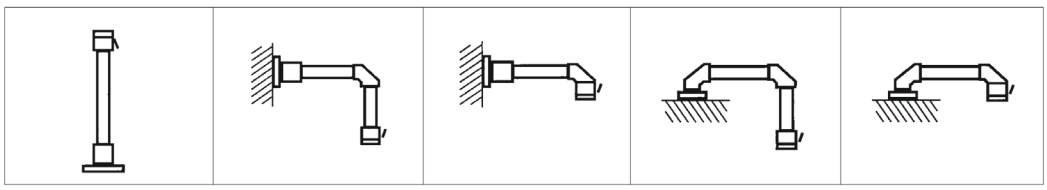
* without threaded hole

Load diagram



Note: the vertical length of the profile is responsible for the load of the complete suspension system (lever arm!).
Further information for this on request. The values in the above load diagram are gulty to an execution hanging or standing.
The declarations of weight are a summary from installation weight, Commander and all components and tubes between Commander and angle.

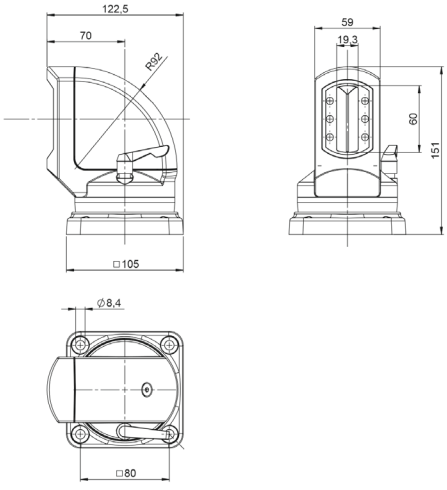
Added system elements





GTS Top-mounted joint
Cast aluminium with flange mounting.
Swivelling range 330°

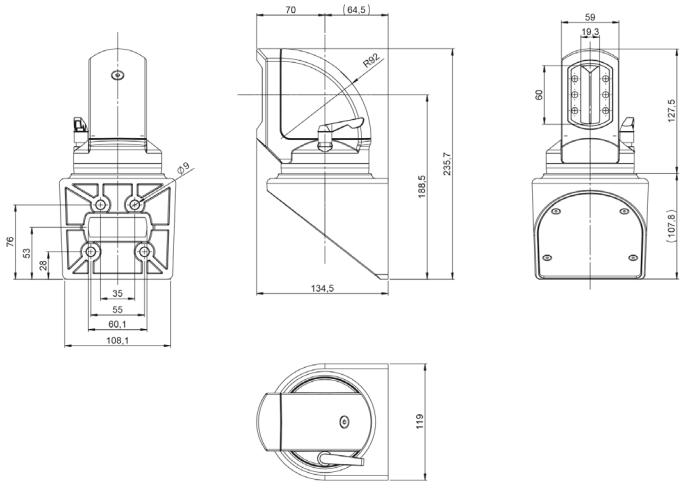
Order No. **49.44 66 00**





GTS Wall hinge
Cast aluminium with plain bearing
Swivelling range 330°

Order No. **49.44 70 00**

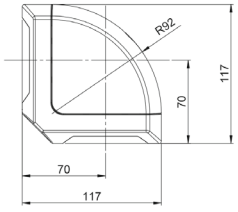


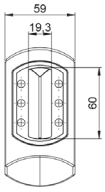
GTS



GTS Angle
Cast aluminium, angle 90°

Order No. **49.44 71 00**

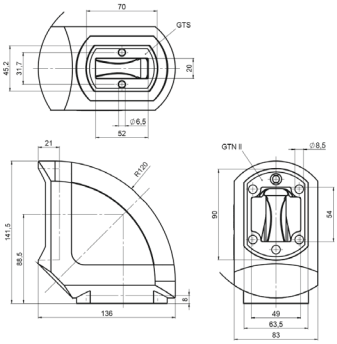


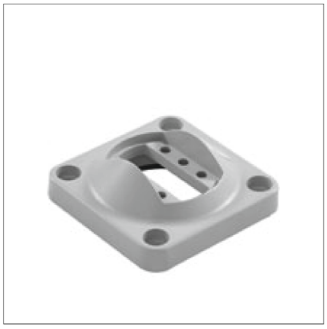




GTS Angel GTN II / GTS
for combination GTN II and GTS

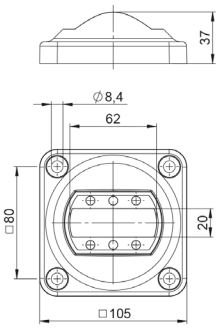
Order No.**49.47 71 44**





GTS Foot stand
Cast aluminium, fixed version, zur Bodenbefestigung oder Wandbefestigung mit starrem Abgang

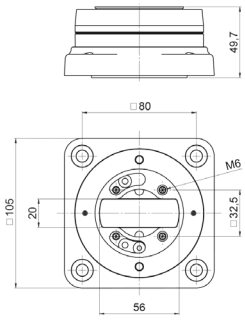
Order No. **49.44 72 00**

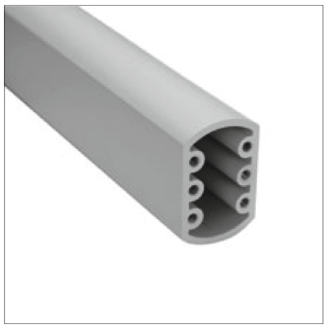




GTS Foot stand pivotable
Diecast aluminium with adjustable stop for direct connection onto machine and command unit

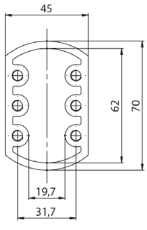
Order No. **49.44 72 21**





GTS Profile, RAL 7035
Aluminium extrusion profile

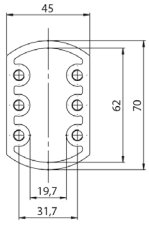
Order No.	Length
49.44 10 01	0.5 m
49.44 10 02	1 m
49.44 10 03	2 m
49.44 10 99	variable length (please specifiy)





GTS Profile anodized
Aluminium extrusion profile
Suggestion: Order components (Coupling, angle, etc.) in RAL 9007

Order No.	Length
49.44 11 01	0.5 m
49.44 11 02	1 m
49.44 11 03	2 m
49.44 99 99	variable length (please specifiy)

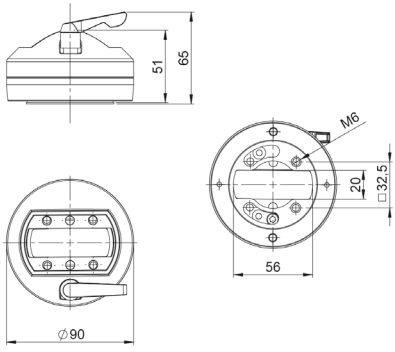


GTS



GTS Coupling
Cast aluminium. Coupling assembled from inside of enclosure, connection not visible from the outside.
Swivelling range until 330° adjustable via clamping lever (swivelling range cannot be adjusted)

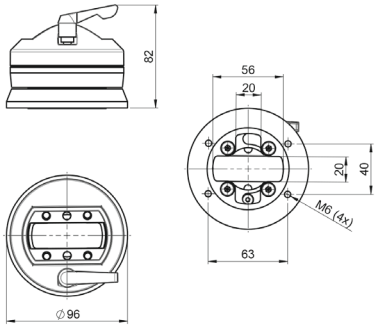
Order No. **49.44 73 00**





GTS Coupling Siemens PRO
For direct connecting of Siemens PRO command units. Diecast aluminium, coupling mounting onto Siemens base adaption, swivel range 330°, infinetly lockable by clamping lever.

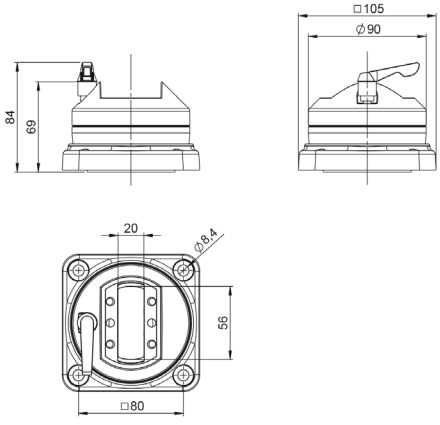
Order No. **49.44 73 02**





GTS Flange coupling
Cast aluminium. Coupling assembled from outside with flange, connection visible from the outside.
Swivelling range until 330° adjustable via clamping lever (swivelling range cannot be adjusted)

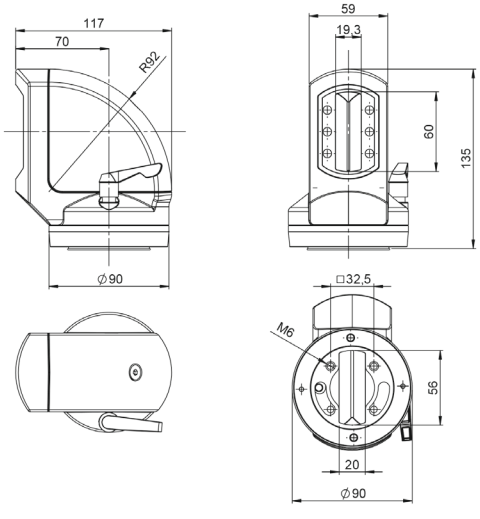
Order No. **49.44 77 00**





GTS Angle coupling
Combination of angle and coupling for horizontal tube exit. Cast aluminium. Coupling assembled from inside of enclosure, connection not visible from the outside.
Swivelling range until 330° adjustable via clamping lever (swivelling range cannot be adjusted)

Order No. **49.44 75 00**



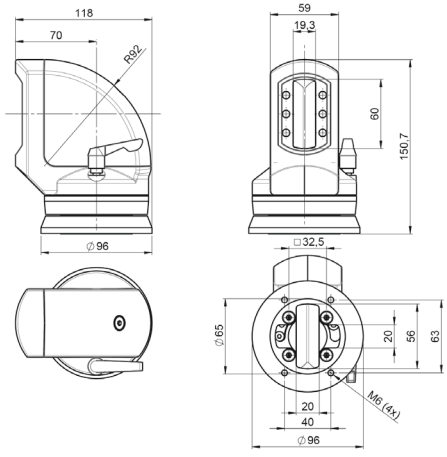
ROSE

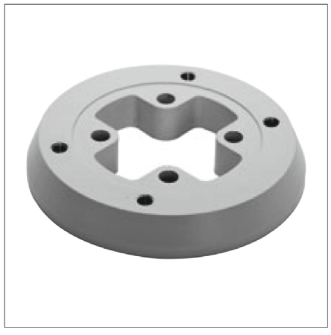
GTS



GTS angle coupling Siemens PRO
For direct connecting of Siemens PRO command units. Diecast aluminium, coupling mounting onto Siemens baseadaption, swivel range 330°, infinetly lockable by clamping lever.

Order No. **49.44 75 02**





GTS adapter plate Siemens PRO
For connecting GTS system components (e.g. inclining adapter) with Siemens PRO command units. With GTS coupling Siemens PRO and GTS angle coupling Siemens Pro not necessary (included in delviery)

Order No. **49.44 00 01**



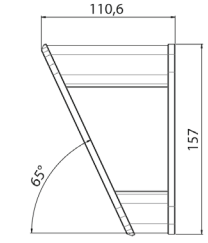
Inclining adapter GTS
Aluminium diecast element with bellows and gasket. Inclining range from 0° to 45° continously adjustable. Fixing with screws between enclosure and coupling.

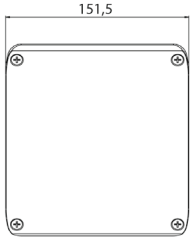
Order No. **49.44 80 00**

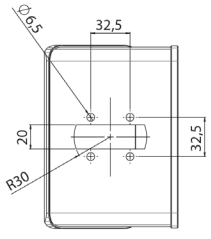


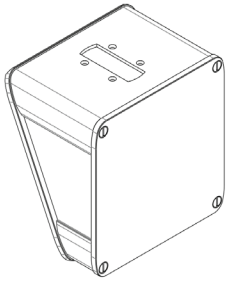
Flat panel adapter
Aluminium profile system for rear connection of GTS to flat panels. RAL 7035, light grey

Order No. **49.44 90 01**









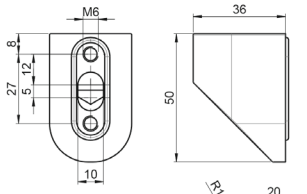
Signal light adaptation



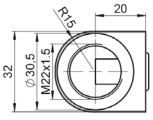
Base connection element for suspension systems, command units and cabinets

Signal light adaptation with thread M20x1.5 mm
Order No. **49.00 01 01**

Signal light adaptation with thread M22x1.5 mm
Order No. **49.00 01 02**



49.00 01 01

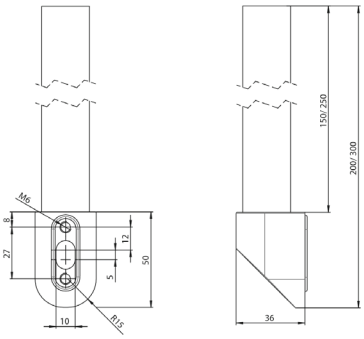


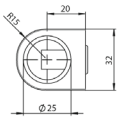
49.00 01 02



Base connection element for suspension systems, command units and cabinets
Signal light adaption with tube Ø 25 mm

Order No. **49.00 01 03** (L = 250 mm)
49.00 01 04 (L = 150 mm)











RÖSE



- Design aluminium suspension system
- Closed profile system / profile with free accessible cable duct
- Can be combined with all control enclosures

Included delivery:
System individual components incl. cable duct cover and assembly material.

Technical data

Material:
Connecting tube: DIN EN 573 EN AW-AlMgSi
Components: DIN EN 1706 EN AC-AlSi 12 (Fe)
Cover profile: plastic TPE

Seal:
CR and/or PU foam

Painting:
Powder coating

Colour:
Tube, components: RAL 7035, light grey
Cover profile: RAL 9005, jet black

Ingress protection:
IP 54 to EN 60529

Free cable passage:
Connecting tube:
open 27 x 32 mm
closed 51 mm diameter
System components: 51 mm diameter

GTN II

Product range

	Order No.	Weight (g)
Top mounted joint	**49.47 66 00**	3900
Top mounted joint light*	**49.47 66 01**	3900
Top mounted joint (ceiling mounting)	**49.47 66 20**	3900
Wall hinge	**49.47 70 00**	4200
Wall hinge light*	**49.47 70 01**	4200
Wall hinge, hanging	**49.47 70 20**	4200
Angle	**49.47 71 00**	900
Angle GTN II / GTK electronic	**49.47 71 45**	900
Angle GTN II / GTS	**49.47 71 44**	900
Coupling	**49.47 73 00**	1500
Coupling GTN II-PRO	**49.47 73 02**	2400
Coupling fixed	**49.47 73 03**	
Angle coupling	**49.47 75 00**	2500
Angle coupling GTN II-PRO	**49.47 75 02**	2900
Intermediate joint "Z"	**49.47 67 00**	3800
Intermediate joint "Z" light*	**49.47 67 01**	3800
Intermediate joint "S"	**49.47 67 02**	6000
Intermediate joint "S" light*	**49.47 67 03**	3800
Foot stand fixed	**49.47 72 00**	1000
Turnable foot stand with adapter plate	**49.47 72 20**	3300
Turnable foot stand	**49.47 72 21**	1700
Turnable foot stand light*	**49.47 72 22**	3400
Console flange 15°	**49.47 76 00**	1100
Column, length max. 2.0 m (please specify individual length)	**49.47 00 04**	individual length
Flat panel adapter	**49.47 90 01**	3000
Spare cover profile 2.5 m	**49.45 69 00**	600
Adjustment set	**49.47 00 06**	100
Inclining adapter	**49.47 80 00**	1800
Adapter plate GTN II-PRO	**49.47 00 01**	400

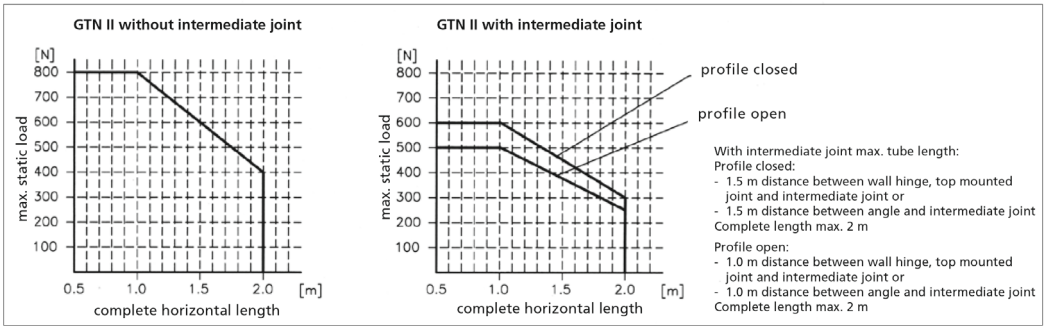
* light: can be used for control units with low load (up to 30 kg/2 m) with lower swivel force.

RISE

Aluminium profile	Profile open	Weight (g)	Profile closed	Weight (g)
Standard length: 0.5 m	**49.47 10 01**	3000	**49.47 20 01**	2850
Standard length: 1 m	**49.47 10 02**	6000	**49.47 20 02**	5700
Standard length: 2 m	**49.47 10 03**	12000	**49.47 20 03**	11400
Variable length (please specify)	**49.47 10 99**		**49.47 20 99**	

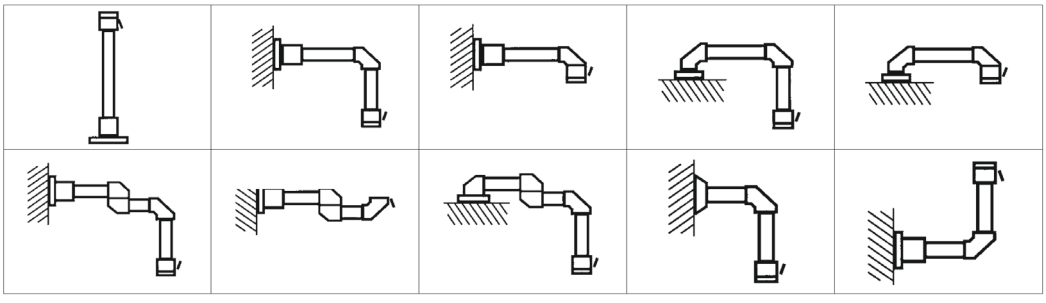
Profile anodized		
Standard length: 0.5 m	**49.47 11 01**	**49.47 21 01**
Standard length: 1 m	**49.47 11 02**	**49.47 21 02**
Standard length: 2 m	**49.47 11 03**	**49.47 21 03**
Variable length (please specify)	**49.47 11 99**	**49.47 21 99**

Load diagram



Note: the vertical length of the profile is responsible for the load of the complete suspension system (lever arm!).
Further information for this on request. The values in the above load diagram are gulty to an execution hanging or standing.
The declarations of weight are a summary from installation weight, Commander and all components and tubes between Commander and angle.

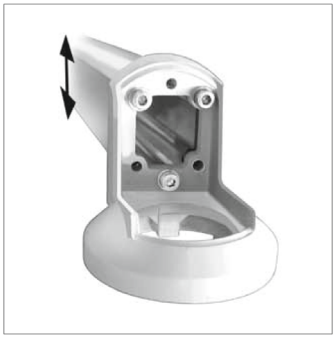
System assembly



Highlights



Fastening bar „Red Bar“



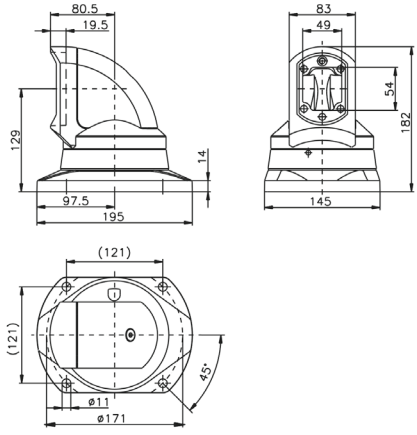
Adjustment possibility with different loads

GTN II



Top mounted joint
Diecast aluminium, swivel range 310°

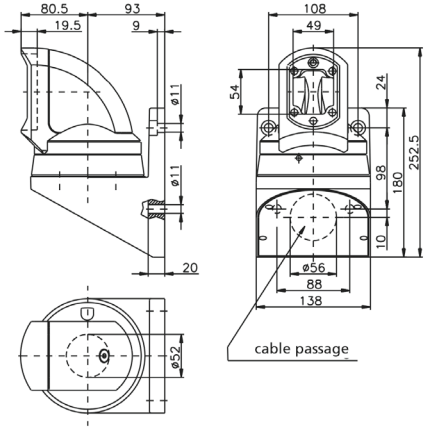
Order No.	
49.47 66 00	GTN II
49.47 66 01	GTN II light





Wall hinge
Swivel range 230°

Order No.	
49.47 70 00	GTN II
49.47 70 01	GTN II light
49.47 70 20	GTN II hinged

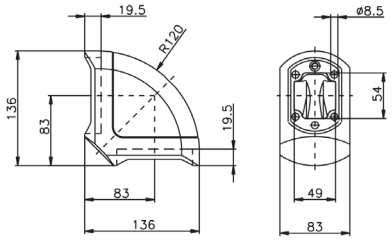


RISE



Angle GTN II
Diecast aluminium, angle 90°, incl. lid

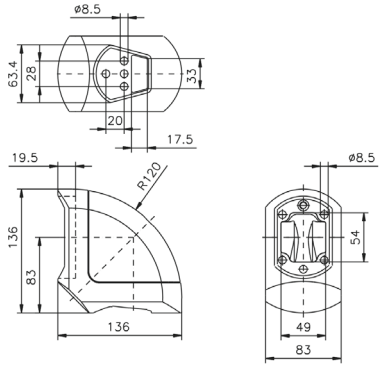
Order No. **49.47 71 00**





Angle GTN II / GTK electronic
To combinate GTN II and GTK electronic

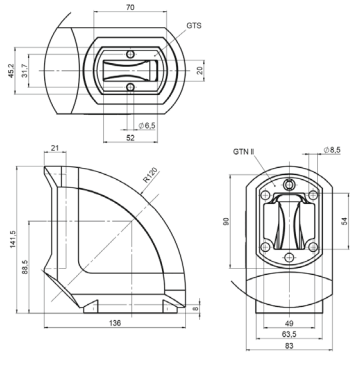
Order No. **49.47 71 45**





GTS Angle GTN II / GTS
To combinate GTN II and GTS

Order No. **49.47 71 44**

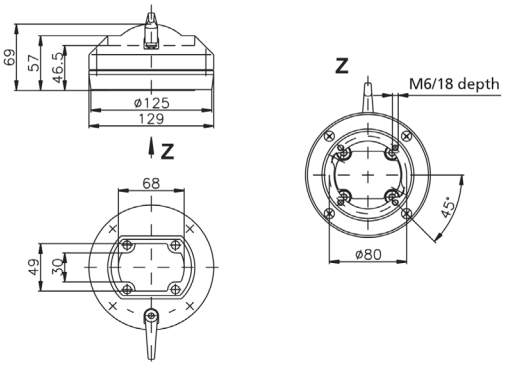


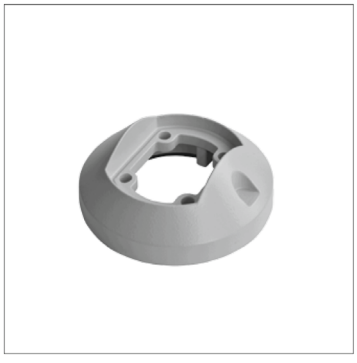
ROSE



Coupling
Diecast aluminium, coupling mounting from inner side of enclosure, screws outside not viewable, swivel range 330°, continuously variable by release handle.

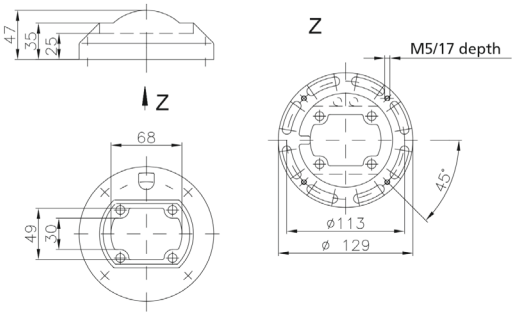
Order No. **49.47 73 00**





Coupling fixed

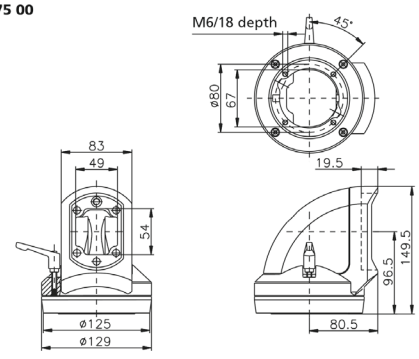
Order No. **49.47 73 03**





Angle coupling
Diecast aluminium, coupling mounting from inner side of enclosure, swivel range 320°, continuously variable by release handle

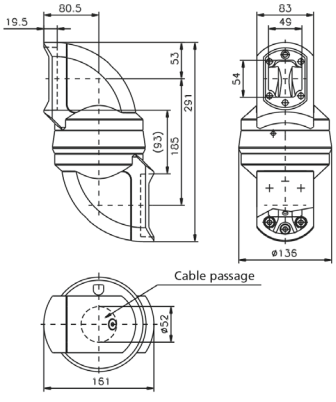
Order No. **49.47 75 00**



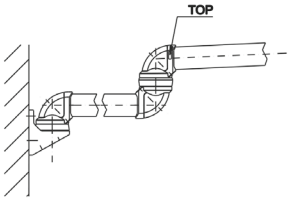


Intermediate joint
Diecast aluminium, swivel range 310°

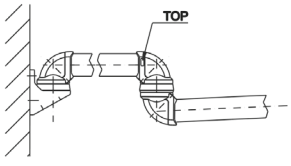
Order No.	
49.47 67 00	GTN II "Z"
49.47 67 01	GTN II "Z" light
49.47 67 02	GTN II "S"
49.47 67 03	GTN II "S" light



Intermediate joint S-Type



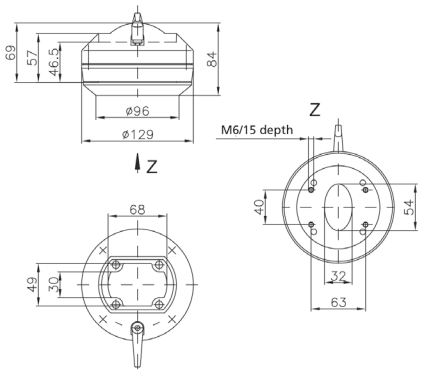
Intermediate joint Z-Type





Coupling GTN II-PRO
for direct connecting of Siemens Pro command units
Diecast aluminium, coupling mounting from inner side of enclosure, screws outside not viewable, swivel range 330°, continuously variable by release handle.

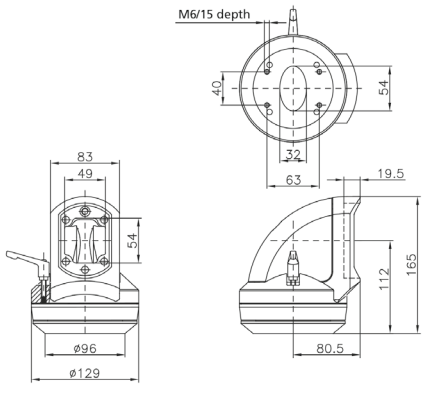
Order No. **49.47 73 02**

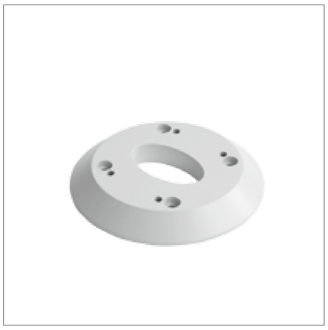




Angle coupling GTN II-PRO
for direct connecting of Siemens Pro command units
Diecast aluminium, coupling mounting from inner side of enclosure, swivel range 320°, continuously variable by release handle

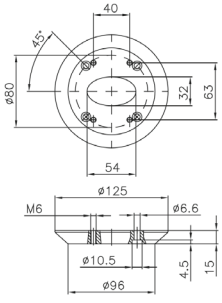
Order No. **49.47 75 02**





Adapter plate GTN II-PRO
for connecting GTN II elements with Siemens Pro command units
(not relevant for coupling GTN II Pro and angle coupling GTN II Pro)

Bestell-Nr. **49.47 00 01**

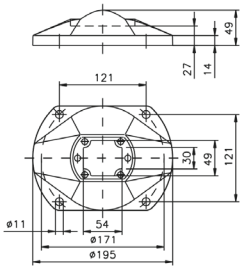


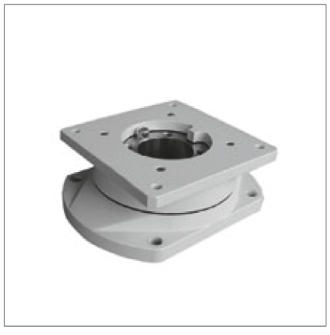
RISE



Foot stand fixed
Diecast aluminium, fix version for ground mounting or wall mounting

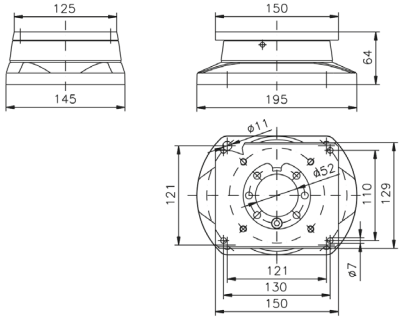
Order No. **49.47 72 00**

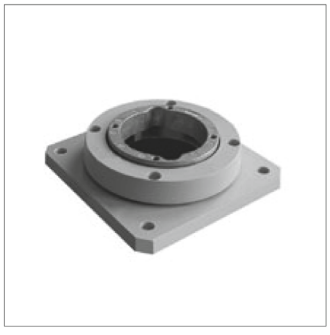




Turnable foot stand with adapter plate
Diecast aluminium with adjustable stop position between machine and control panel

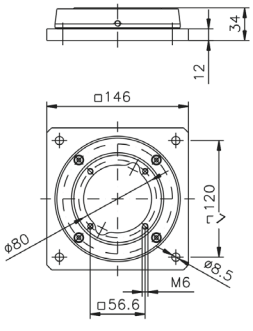
Order No. **49.47 72 20**





Turnable foot stand
Diecast aluminium with adjustable stop position between machine and control panel

Order No. **49.47 72 21**



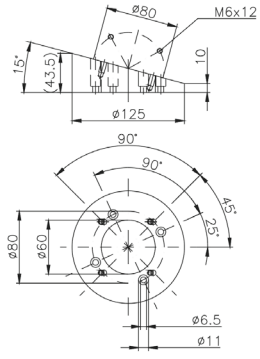
ROSE

GTN II



Console flange 15°
Aluminium

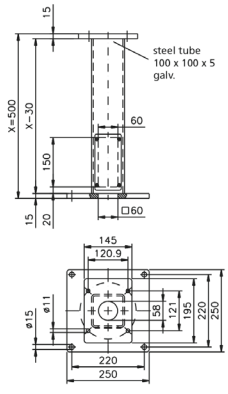
Order No. **49.47 76 00**





Column
Steel, painted, length individually up to 2 m, including adapter plate for GTN II top mounted joint, at bottom side flange outlet

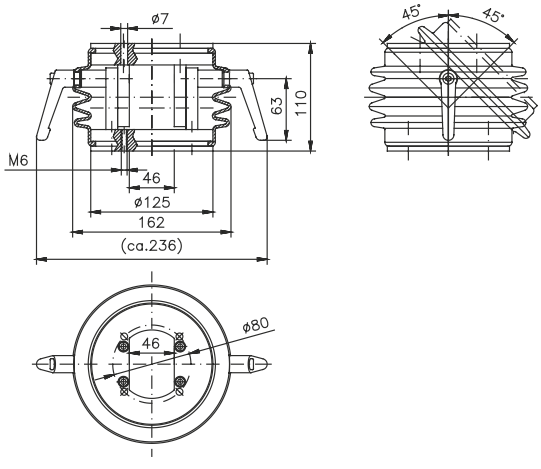
Order No. **49.47 00 04 8** (specify total length)

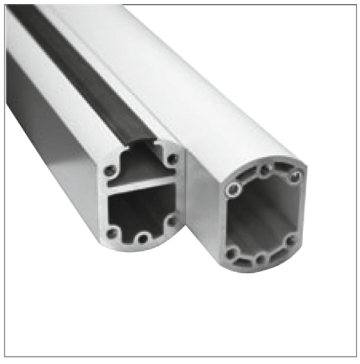




Inclining adapter GTN II

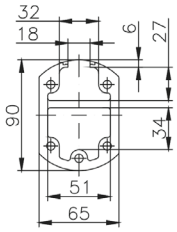
Order No. **49.47 80 00**



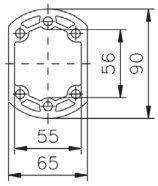


Aluminium profile tube
Extruded aluminium sheath, open version with integrated cable channel with black rubber cover

Order No. and length see page 126



Profile open

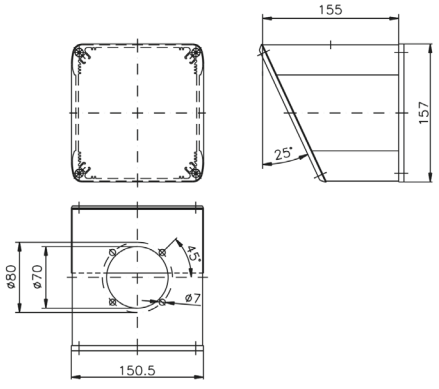


Profile closed



Flat panel adapter
Aluminium profile for rear connection of GTN II to flat panels

Order No. **49.47 90 01**





ROSE

Adapter GTN II – GT48/2



+ Connecting component GTN II onto GT48/2
+ For connecting GTN II qluminium profile suspension system onto round tube suspension system Ø 48 mm
+ Mountable in angle GTN II 49.47 71 00
+ Outgoing round tube is to be fixed into GTN with self cutting ring screws
+ Order No. 49.47 71 49

Standard in delivery
Adapter including fixing and sealing material

RISE

Technical data

Material	DIN EN 1706 EN AC-AlSi 12 (Fe)
Painting	Powder coating
Colour	RAL 7035
Ingress protection	IP 54
Seal	NBR
Free cable passage	Ø 40 mm



- Industrial round tube system for suspension system
- Modular construction for individual components
- Protected internal cable routing

Technical data

Material:

Connecting tube: steel 48 x 4 mm
DIN 2393-St.37

Components: DIN EN 1706 EN AC-AlSi 12 (Fe)

Seal:

CR and/or NBR

Painting:

Powder coating

Colour:

Tube: galvanized

Components: RAL 7043, traffic grey B

Special colour on request

Ingress protection:

IP 54 to EN 60529

Free cable passage:

Connecting tube: Ø 40 mm

System elements: Ø 40 mm

Included in delivery:

Individual system components incl. assembly materials

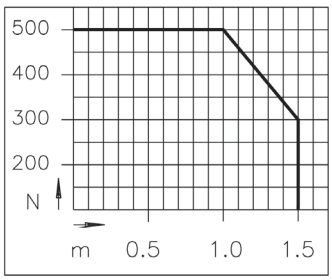
GT 48/2

Product range

	Order No.	Weight (g)
Top-mounted joint	**49.49 66 00**	2000
Foot stand fixed	**49.49 72 00**	1000
Foot stand turnable	**49.49 68 00**	1800
Wall hinge W	**49.49 70 00**	3000
Wall hinge S	**49.49 62 00**	2700
Angle	**49.49 71 00**	1200
Coupling	**49.49 73 00**	1100
Flange coupling	**49.49 77 00**	1100
Flange coupling GT 48/2-PRO	**49.49 77 02**	1300
Angle coupling	**49.49 75 00**	1300
Flange angle coupling	**49.49 78 00**	1300
Flange angle coupling GT 48/2-PRO	**49.49 78 02**	1500
Console flange 30°	**49.49 76 00**	400
Adapter flange	**49.49 79 00**	1500
Inclining adapter	**49.49 80 00**	800
Flat panel adapter	**49.45 90 01**	1400
Adapter plate GT 48/2-PRO	**49.45 00 01**	200

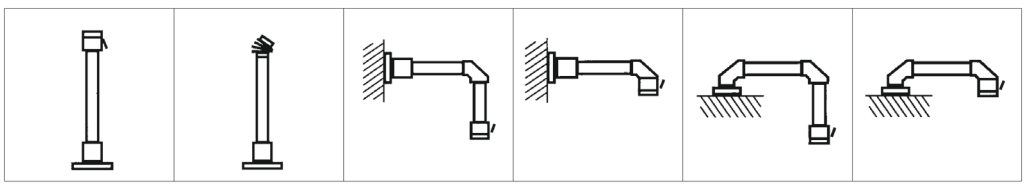
Connecting tube	Order No.	Weight (g)
Standard length: 0.5 m	**10.09 42 16**	2500
Standard length: 1 m	**10.09 42 17**	4500
Standard length: 2 m	**10.09 42 18**	9000
Standard length: 3 m	**10.09 42 19**	12900
Variable length (please specify)	**10.09 41 58**	

Load diagram



Note: the vertical length of the profile is responsible for the load of the complete suspension system (lever arm!).
Further information for this on request. The values in the above load diagram are gulty to an execution hanging or standing.
The declarations of weight are a summary from installation weight, Commander and all components and tubes between Commander and angle.

Added system elements

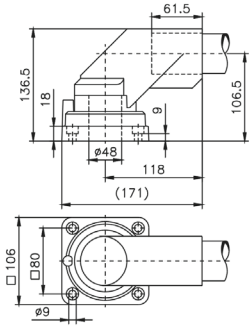


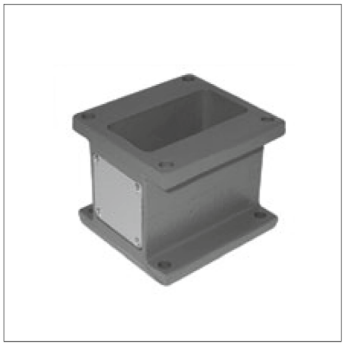
System components



Top-mounted joint
Cast aluminium with steel inner tube and flange mounting.
Swivelling range 250° (cannot be limited or stopped)

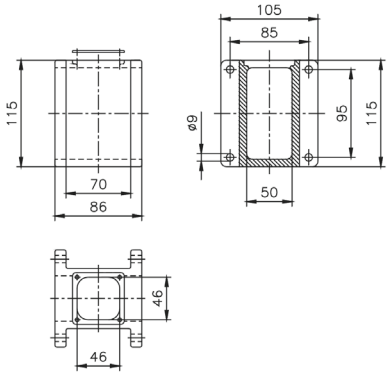
Order No. **49.49 66 00**





Adapter flange
Cast steel part for mounting between wall and wall hinge for free cable routing, cable opening top or bottom as required.

Order No. **49.49 79 00**

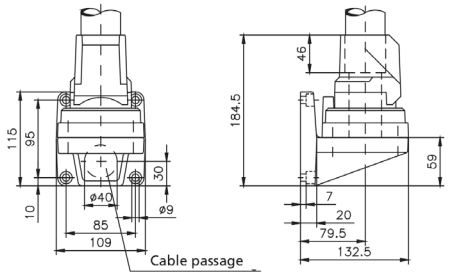


System components



Wall hinge S (vertical)
Cast aluminium with steel inner tube and flange mounting.
Swivelling range 250° (cannot be limited or stopped)

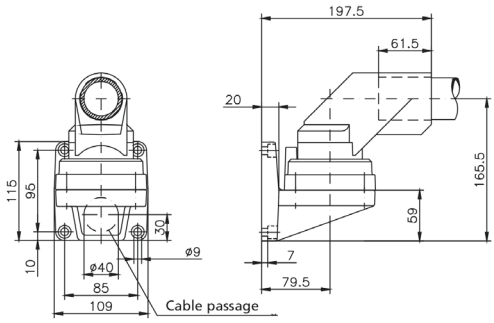
Order No. **49.49 62 00**





Wall hinge W (horizontal)
Cast aluminium with steel inner tube and flange mounting.
Swivelling range 250° (cannot be limited or stopped)

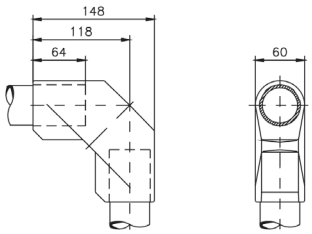
Order No. **49.49 70 00**



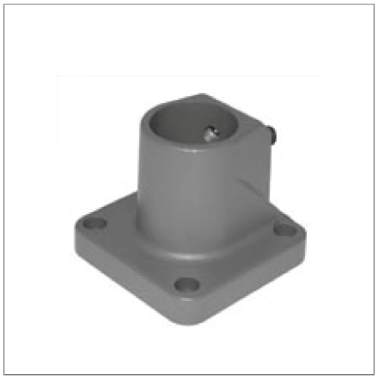


Angle
Cast aluminium, angle 90°.

Order No. **49.49 71 00**

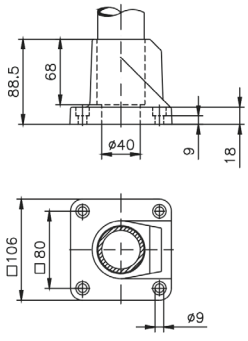


System components



Foot stand, fixed
Cast aluminium, fixed version

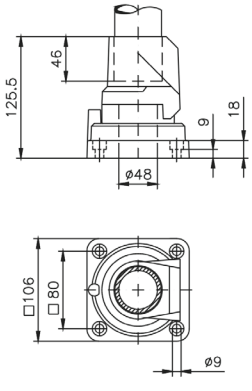
Order No. **49.49 72 00**





Foot stand, turnable
Cast aluminium with steel inner tube and flange mounting.
Swivelling range 250° (cannot be limited or stopped)

Order No. **49.49 68 00**

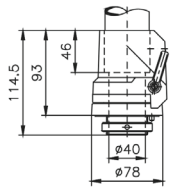


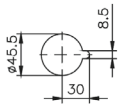
System components



Coupling
Cast aluminium with steel inner tube. Coupling through-fitted. Fastened with locknut on the inside of the enclosure, screw connection not visible from the outside.
Swivelling range 270° can be stopped at any point via clamping lever (swivelling range cannot be limited)

Order No. **49.49 73 00**



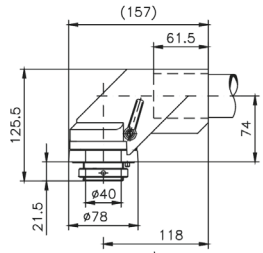


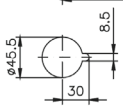
Assembly drill hole



Angle coupling
Combination of angle and coupling for horizontal tube exit. Cast aluminium with steel inner tube. Coupling through-fitted. Fastened with locknut on the inside of the enclosure, screw connection not visible from the outside.
Swivelling range 270° can be stopped at any point via clamping lever (swivelling range cannot be limited)

Order No. **49.49 75 00**





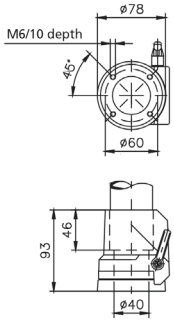
Assembly drill hole

System components



Flange coupling
Cast aluminium with steel inner tube. Coupling mounted from inside.
Swivelling range 270° can be stopped at any point via clamping lever (swivelling range cannot be limited)

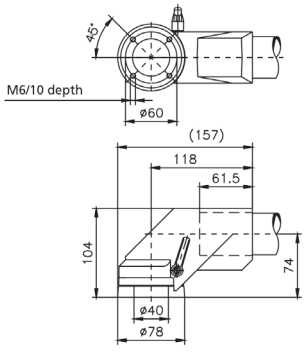
Order No. **49.49 77 00**





Flange angle coupling
Combination of angle and coupling for horizontal tube exit. Cast aluminium with steel inner tube. Coupling mounted from inside.
Swivelling range 270° can be stopped at any point via clamping lever (swivelling range cannot be limited)

Order No. **49.49 78 00**



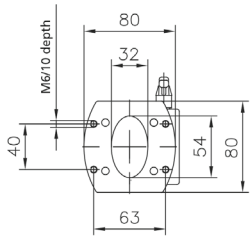
ROSE

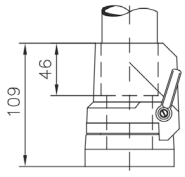
System components

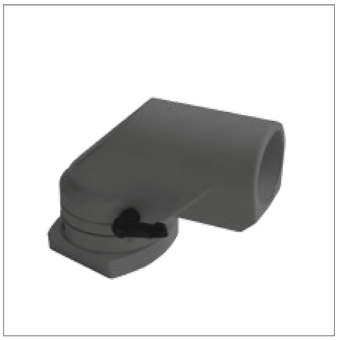


Flange coupling GT 48/2 Pro
for direct mounting of Siemens Pro command units
Cast aluminium with steel inner tube. Coupling mounted from inside.
Swivelling range 270° can be stopped at any point via clamping lever (swivelling range cannot be limited)

Order No. **49.49 77 02**

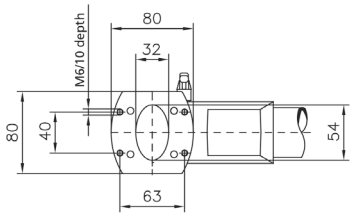


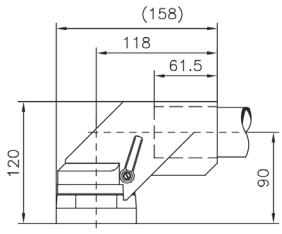




Flange angle coupling GT 48/2 Pro
for direct mounting of Siemens Pro command units
Combination of angle and coupling for horizontal tube exit. Cast aluminium with steel inner tube.
Coupling mounted from inside.
Swivelling range 270° can be stopped at any point via clamping lever (swivelling range cannot be limited)

Order No. **49.49 78 02**



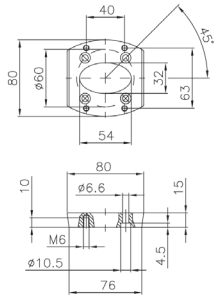


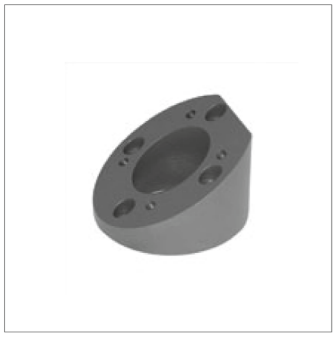
System components



Adapter plate GT 48/2 Pro
for connecting GT 48/2 elements with Siemens Pro command units
(not relevant for flange coupling GT 48/2 Pro and flange angle coupling GT 48/2 Pro)

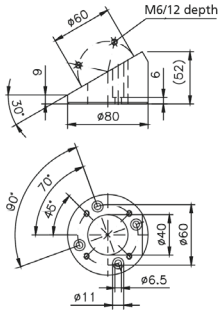
Order No. **49.45 00 01**





Console flange
Aluminium incl. screws and seal, fixed inclination 30°.
Screw-mounted between enclosure and coupling.

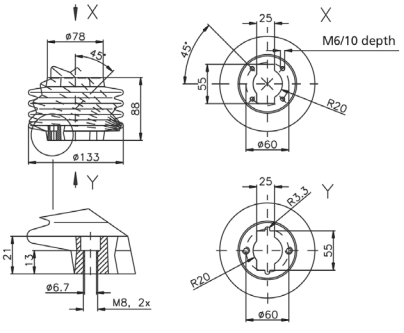
Order No. **49.49 76 00**





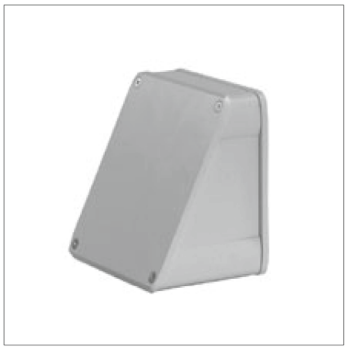
Inclining adapter
Cast aluminium part with bellow and seal, inclination can be adjusted to any angle between 0° and 45°. Screw-mounted between enclosure and coupling.

Order No. **49.49 80 00**



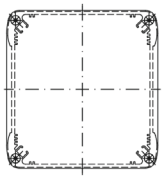
ROSE

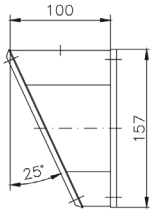
System components



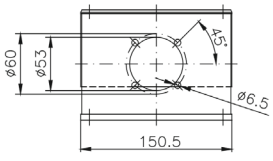
Flat panel adapter
Aluminium profile for rear connection of GT 48/2 / GTK electronic to flat panels. RAL 7035, light grey

Order No. **49.45 90 01**

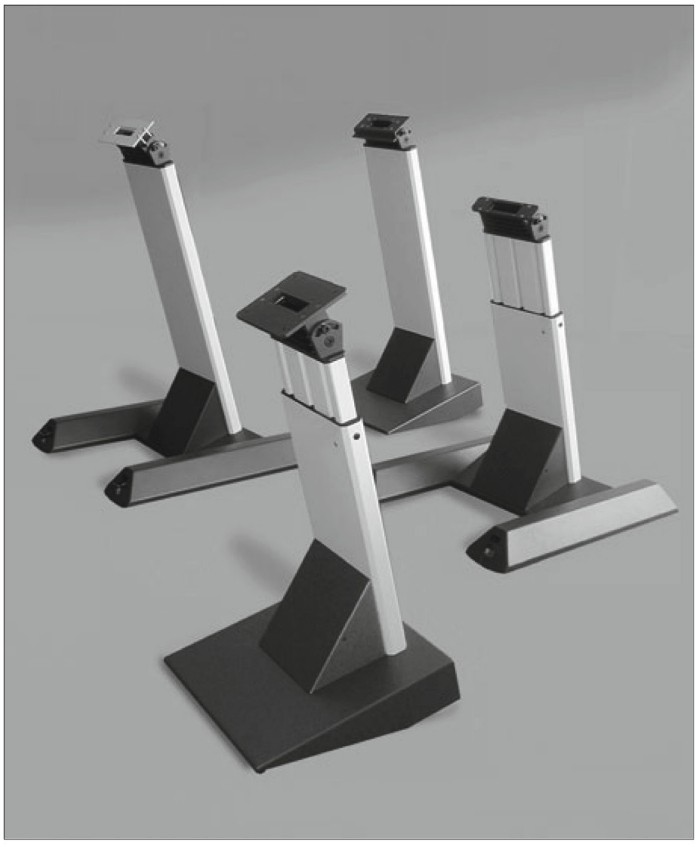








Moterm



- Mobile stand system for control components
- Optional fixed or manual adjustable versions
- Version with 2 or 4 roller system

Technical data

Material:
Foot: sheet steel
Profile: DIN EN 573 EN AW-AlMgSi

Painting:
Powder coating

Colour:
Profile: RAL 7035, light grey
Foot: RAL 7021, black grey

Max. static load:
35 kg (Moterm 1 and 2)
80 kg (Moterm 4 and 5)

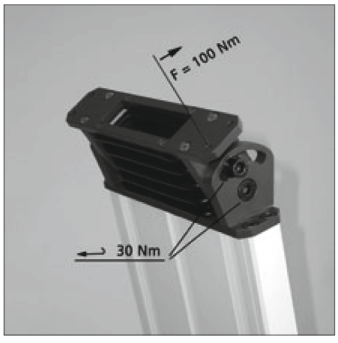
Included in delivery:
Moterm with mounted inclination adjuster and adapter plate for commander systems (please order adapter plate separately)

Moterm

Product range

Order No.	Type	Height	Description	Weight (kg)
50.01 01 01	Moterm 1	1000 mm	fixed version, 2 rollers	23
50.01 01 02	Moterm 2	von 750 mm to 1000 mm	manual adjustment, 2 rollers	23
50.01 01 04	Moterm 4	980 mm	fixed version, 4 rollers	25
50.01 01 05	Moterm 5	von 730 mm to 1000 mm	manual adjustment, 4 rollers	26,5

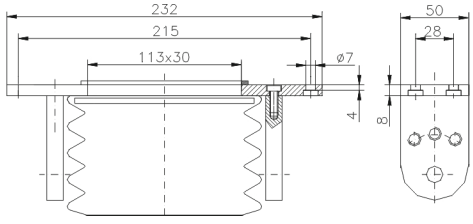
Accessories



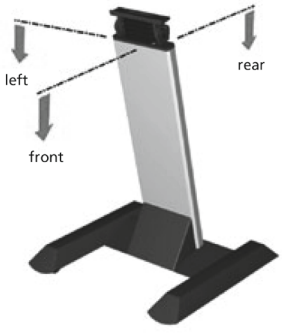
Universal adapter plate on Moterm

Adapter plate
for connection to the control enclosure

Order No.	Type
50.01 02 03	Adapter plate SL 2000 profile 1
50.01 02 04	Adapter plate SL 2000 profile 2
50.01 02 05	Adapter plate SL 2000 profile 3
50.01 02 06	Adapter plate SL 3000 profile 1
50.01 02 07	Adapter plate SL 3000 profile 2 to 4
50.01 02 08	Adapter plate SL 3000 console version
50.01 02 09	Adapter plate universal (see drawing)
50.01 02 10	Adapter plate Beckhoff CP 7032
50.01 02 11	Adapter plate ComTronic
50.01 02 12	Adapter plate SL 3000 profile 4 (direct mounting)
50.01 02 13	Flat panel adapter
50.01 02 14	Adapter plate SL 4000 profile 1 - 3
50.01 02 15	Adapter plate SL 4000 console version



Load specification Moterm 4 and 5



Max. static load capacity: 80 kg

The following table gives details for one-sided or uneven loading of Moterm 4 and 5.
Stability on an even surface is guaranteed if these values are maintained.

Load case

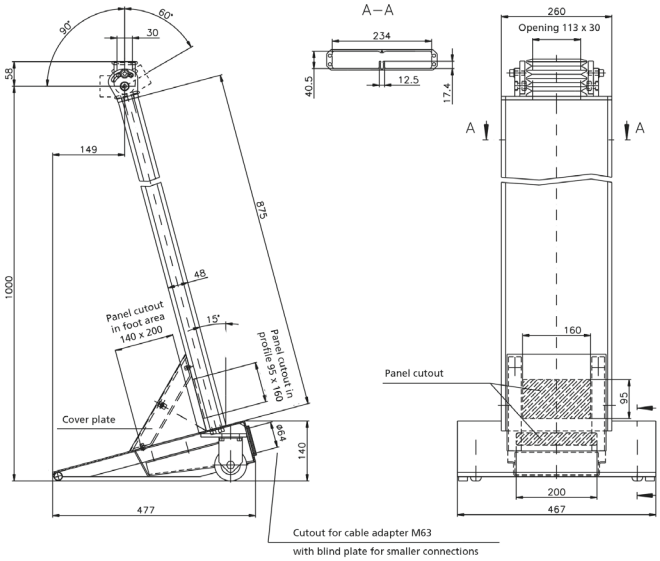
front		rear		left/right	
Load	Working range	Load	Working range	Load	Working range
48 kg	350 mm	80 kg	400 mm	56 kg	430 mm
43 kg	390 mm	61 kg	450 mm	35 kg	530 mm
33 kg	430 mm	45 kg	500 mm	17,8 kg	730 mm
28 kg	450 mm				

The data relates to a structure height of 960 mm and 0° inclination adjustment.



Moterm 1
Fixed version

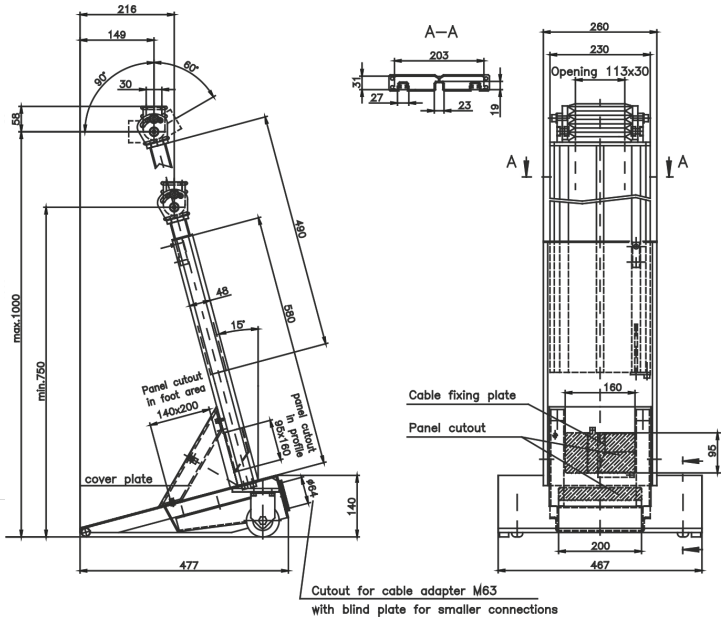
Order No. **50.01 01 01**





Moterm 2
Manually adjustable

Order No. **50.01 01 02**



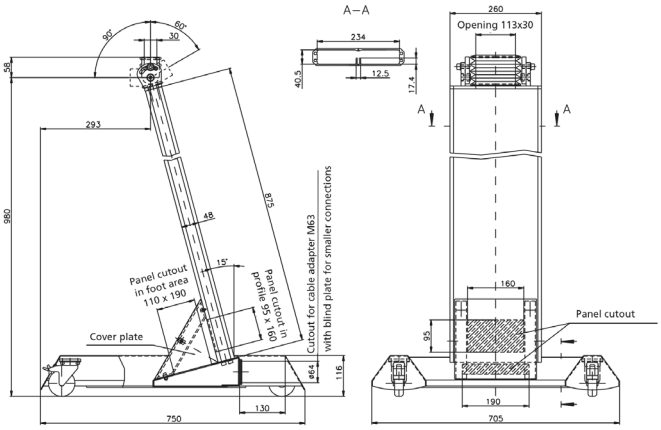
ROSE

Moterm



Moterm 4
Fixed version

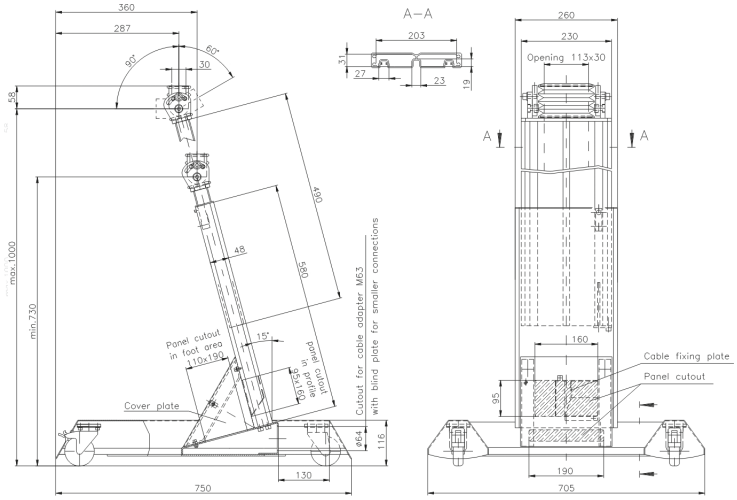
Order No. **50.01 01 04**





Moterm 5
Manually adjustable

Order No. **50.01 01 05**

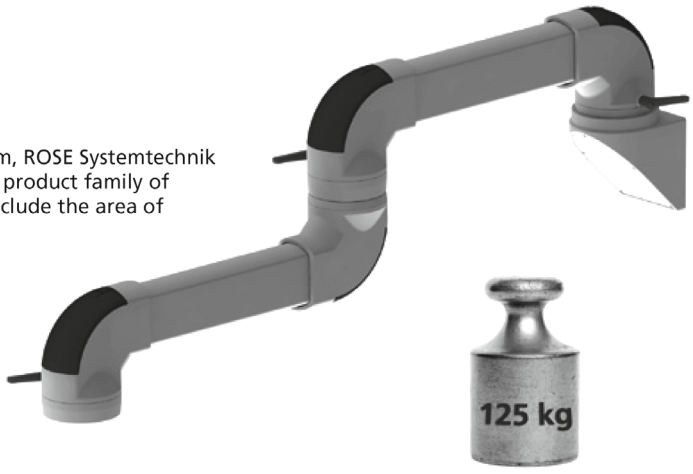


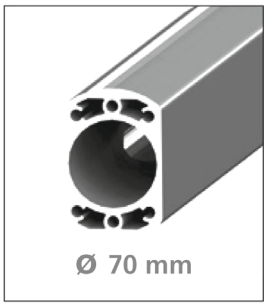
RISE

GTL SUSPENSION SYSTEM

NEW

With the new GTL suspension system, ROSE Systemtechnik has expanded its existing successful product family of aluminium-suspension systems to include the area of heavy loads.

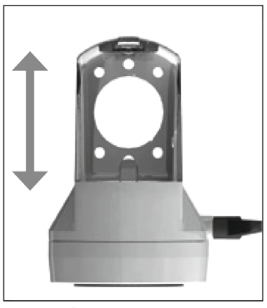




Large cable passage



Fast access to system components without tool



Easy adjustment

Present suspension systems:

+ GTS for small loads up to maximal 30 kg and
+ GTN II for medium loads up to maximal 80 kg offer a secure and proven connection between machine and control enclosures.

NEW **GTL for heavy loads up to maximal 125 kg**

The new aluminium profile, heavy load suspension system completes the existing product family with a maximal static load of 125 kg. GTL shows the well-known technical benefits, offers excellent value for money with also short delivery times.

GTL system has been developed for use in harsh environment of machine tool industry and meets today's and the future's highest demands on suspension systems.

GTL excels with its harmonious and elegant design, which is based on the smaller GTS and GTN II systems and thus expands the product family not only technically but also optically.

The suspension system can be simply installed horizontally, has an ingress protection of IP 54 and, with a maximal horizontal length of 3 m, covers a very wide scope of application.

A large selection of components perfectly rounds off the system and offers our customers almost unlimited freedom and options to meet their engineering design wishes.

GTL suspension system



- Aluminium profile suspension system for heavy loads
- Complete product family GTS – GTN II – GTL product family
- Can be combined with GTN II suspension system / height adjustment system GTL and control enclosures
- Optional adjustment for horizontal alignment
- Maximum static load 125 kg

Included in delivery as standard

System components with fixing material

RISE

Technical data

Material	Connecting tube: DIN EN 573, EN AW –ALMgSi Components: DIN EN 1706, EN AC-AlSi 12 (Fe)
Painting	Powder coating
Colour	Tube and components in RAL 7035, light grey
Ingress protection	IP 54 to EN 60529
Free cable passage	Tube and components Ø 70 mm

GTL suspension system

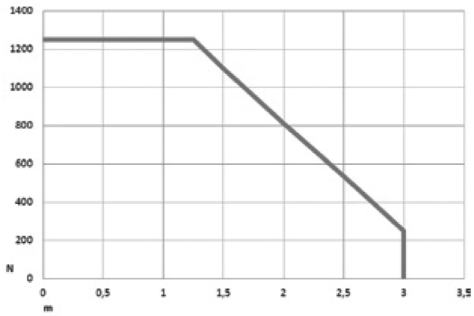
Product overview

Order No.	
49.62 66 00	Top mounted joint
49.62 70 00	Wall hinge
49.62 71 00	Angle
49.62 73 00	Coupling
49.62 75 00	Angle coupling
49.62 67 00	Intermediate joint Z
49.62 67 02	Intermediate joint S
49 62 72 00	Foot stand rigid
49.62 68 00	Adapter GTL / GTN II

Aluminium profile closed RAL 7035	
Order No.	
49.62 20 01	Standard length 0.5 m
49.62 20 02	Standard length 1 m
49.62 20 03	Standard length 2 m
49.62 20 04	Standard length 3 m
49.62 20 99	Variable length (please enter)

Aluminium profile closed eloxal	
Order No.	
49.62 21 01	Standard length 0.5 m
49.62 21 02	Standard length 1 m
49.62 21 03	Standard length 2 m
49.62 21 04	Standard length 3 m
49.62 21 99	Variable length (please enter)

Load diagram

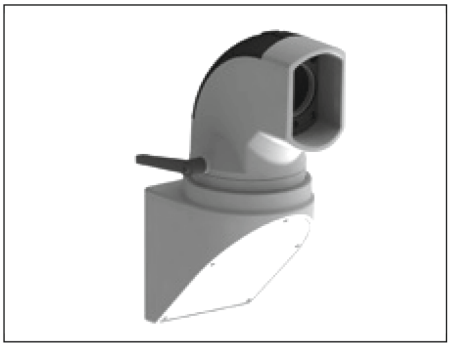


Note: the vertical length of the profile is responsible for the load of the complete suspension system (lever arm!). Further information for this on request. The values in the above load diagram are gulty to an execution hanging or standing. The declarations of weight are a summary from installation weight, Commander and all components and tubes between Commander and angle.

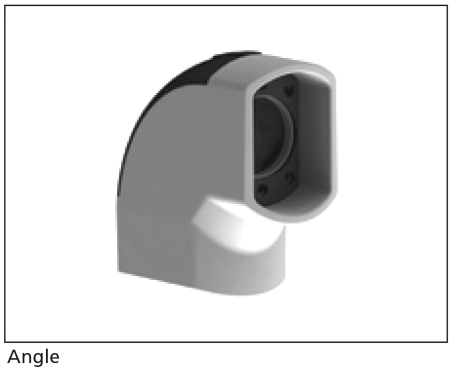
System design



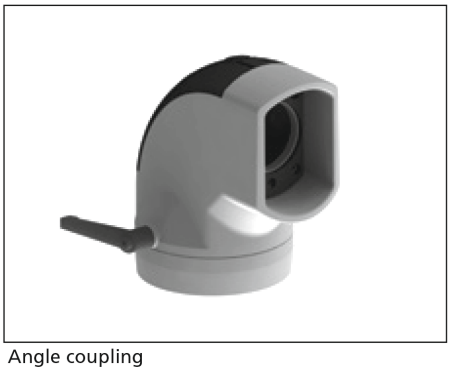
Coupling



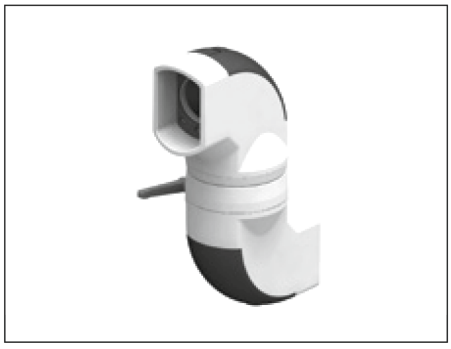
Wall hinge



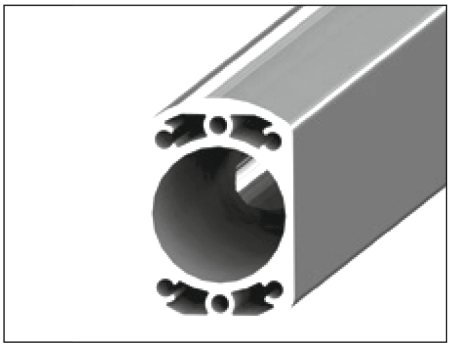
Angle



Angle coupling



Intermediate joint



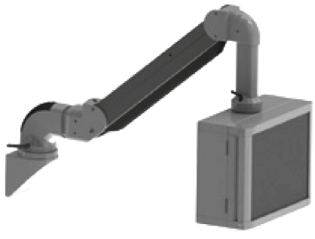
Profile

GTV HEIGHT ADJUSTABLE SYSTEM

NEW

With the completely new developed GTV height adjustment system, ROSE Systemtechnik has expanded its existing successful product family of suspension systems and offers users from mechanical and plant engineering the option of adjusting the workplaces of their machine in an ergonomical way. In the process it is possible to make use of existing standard components to a great extent.





A range of different loads of 20-60 kg offer the users a tailor-made solution for the individual weight of the control enclosure. The operator is able to carry out the vernier adjustment direct at machinery in detail.

Depending on the application, two different types of positioning can be choosen.

+ Free positioning in which the installed enclosure remains autonomously in the desired position after adjustment.

+ Locked positioning in which a push button has to be pressed and held during adjustment. After releasing the push button, the height adjustment system locks into place and then remains autonomously in the desired position.



Whereas the machine-side connection takes place via the new GTL suspension system, the control enclosure is connected via GTN II suspension system.

The use of ROSE standard components helps in keeping procurement costs as low as possible and makes it possible to retrofit to already existing suspension concepts.

A generously dimensioned cable entry hole, which is easily accessible from the outside, rounds off the benefits of the GTV height adjustment system.



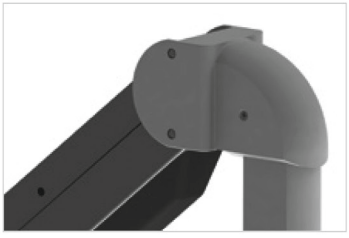
- + Height adjustment system up to max. 60 kg
- + A range of loads from 20 to 60 kg
- + For making workplace ergonomic
- + Load area can be accurately adapted by the user
- + Can be combined with GTL / GTN II suspension system and control enclosures
- + Option of lockable or freely positioned version
- + Integration with standard components

Included in delivery as standard

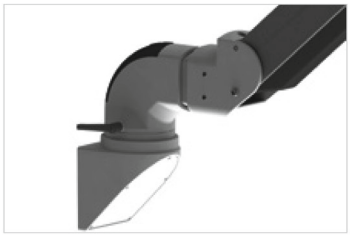
Height adjustment incl. fixing material, Bowden cable and push button included for versions with the locking option.

Technical data

Material	Connecting plates: EN 10088-2, 1.4301 Components: AC 44300, DIN EN 1706 (AlSi12) Cable channel cover sheet: Polysterene
Painting	Powder coating
Colour	Connecting plates: RAL 7035 (glass-bead blasted) Cast parts: RAL 7035 / RAL 9007 Cable channel cover sheet: RAL 9005
Free cable passage	approx. 40 x 30 mm



GTV outlet at bottom



GTV outlet at top

Load range	
Load range 1:	20 – 28 kg
Load range 2:	28 – 36 kg
Load range 3:	36 – 44 kg
Load range 4:	44 – 52 kg
Load range 5:	55 – 60 kg

Product overview

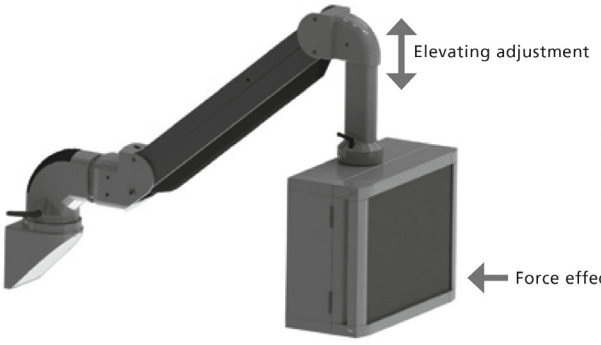
Order No.	Version without locking option:
49.85 40 01	Load range 1 / outlet bottom
49.85 40 02	Load range 2 / outlet bottom
49.85 40 03	Load range 3 / outlet bottom
49.85 40 04	Load range 4 / outlet bottom
49.85 40 05	Load range 5 / outlet bottom
49.85 41 01	Load range 1 / outlet top
49.85 41 02	Load range 2 / outlet top
49.85 41 03	Load range 3 / outlet top
49.85 41 04	Load range 4 / outlet top
49.85 41 05	Load range 5 / outlet top

Order No.	Version with locking option:
49.85 40 11	Load range 1 / outlet bottom
49.85 40 12	Load range 2 / outlet bottom
49.85 40 13	Load range 3 / outlet bottom
49.85 40 14	Load range 4 / outlet bottom
49.85 40 15	Load range 5 / outlet bottom
49.85 41 11	Load range 1 / outlet top
49.85 41 12	Load range 2 / outlet top
49.85 41 13	Load range 3 / outlet top
49.85 41 14	Load range 4 / outlet top
49.85 41 15	Load range 5 / outlet top

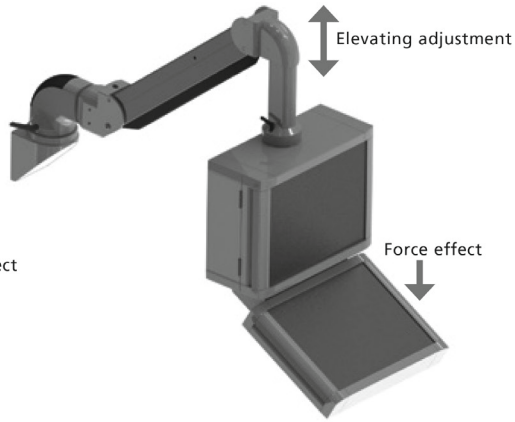
GTV height adjustment system

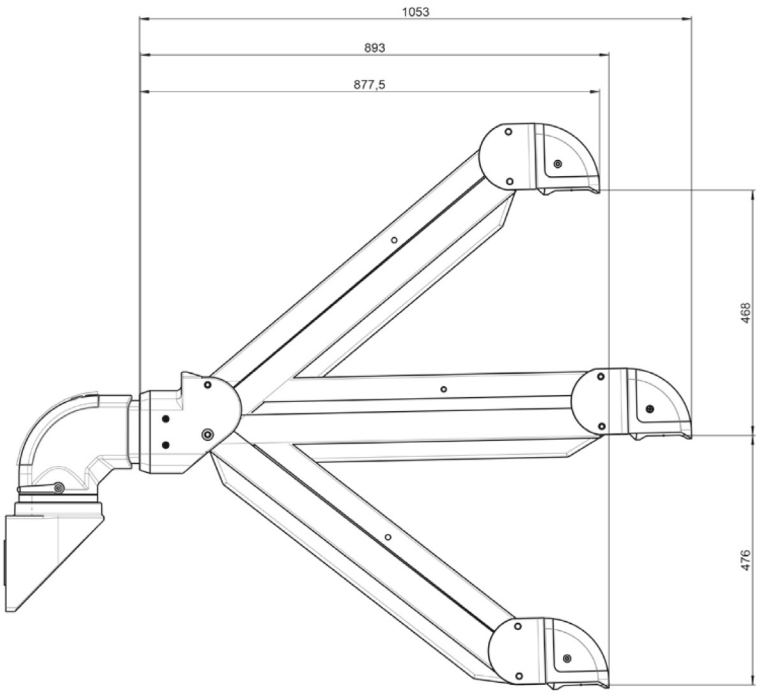
System design and drawing

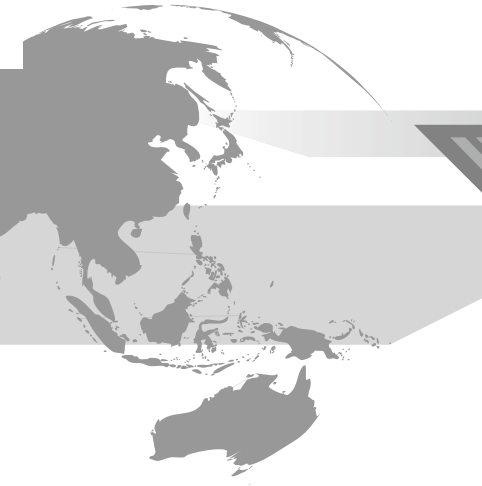
Typical application for height adjustment system without locking system.



Typical application for height adjustment system with locking system.







Industrial Enclosure Systems

TEKNOKOL®





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TK120 Combination List

	MODEL NO	COMPONENT	ROTATABLE	FIX	LENGTH (mm)	WEIGHT (kg)	COLOR NO. RAL NO	PACKAGE
	TK120.025	120 Support Profile - 250 mm			250	1.950 gr	7035	1
	TK120.050	120 Support Profile - 500 mm			500	3.900 gr	7035	1
	TK120.075	120 Support Profile - 750 mm			750	5.850 gr	7035	1
	TK120.100	120 Support Profile - 1000 mm			1000	7.800 gr	7035	1
	TK120.125	120 Support Profile - 1250 mm			1250	9.750 gr	7035	1
	TK120.150	120 Support Profile- 1500 mm			1500	11.700 gr	7035	1
	TK120.175	120 Support Profile- 1750 mm			1750	13.650 gr	7035	1
	TK120.200	120 Support Profile -2000 mm			2000	15.600 gr	7035	1
	TK120.320	Ø 130 mm 310 ° Rotatable Panel Coupling	X			1.315 gr	7035	1
	TK120.330	Ø 130 mm 310 ° Rotatable Panel Coupling for TKP2000 Series	X			1.550 gr	7035	1
	TK120.400	Ø 130 mm 310 ° Rotatable 90° Panel Angle Coupling	X			2.365	7035 / 7016	1
	TK120.410	Ø 130 Mm 310 ° Rotatable 90° Panel Angle Coupling For TKP2000 Series	X			2.575	7035 / 7016	1
	TK120.420	90° Angle Piece		X		1.650	7035 / 7016	1
	TK120.500	315 °(± 150 °) Rotatable Intermediate Hinge	X			5.600	7035 / 7016	1
	TK120.600	315 ° (± 150 °) Rotatable Top Mounted 90° Angle Joint	X			5.710	7035 / 7016	1
	TK120.610	315 ° (± 150 °) Rotatable Top Mounted Vertical Outlet	X			4.820	7035 / 7016	1
	TK120.700	315 ° (± 150 °) Rotatable Wall-Mounted Hinge. Horizontal Outlet	X			6.605	7035 / 7016	1
	TK120.710	315 ° (± 150 °) Rotatable Wall-Mounted Hinge. Vertical Outlet.	X			5.765	7035 / 7016	1
	TK120.800	Wall/Socket Mounting Bracket		X		826	7035 / 7016	1
	TK120.810	Warning Lamp Cover		X		226	7016	1
	TK120.820	120/060 Support Arm Adaptor		X		560	7035	1
	TK120.843	310 ° Rotatable ± 40 ° Tilting Panel Coupling With Tilting Adaptor	X			3.500	7035 / 7016	1
	TK120.844	310 ° Rotatable ± 40 ° Tilting Panel Coupling With Tilting Adaptor For TKP2000	X			3.300	7035 / 7016	1

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TK060 Combination List



	MODEL NO	COMPONENT	ROTATABLE	FIX	LENGTH (mm)	WEIGHT (kg)	COLOR NO. RAL NO	PACKAGE
	TK060.025	060 Support Profile - 250 mm			250	950 gr	7035	1
	TK060.050	060 Support Profile - 500 mm			500	1.900 gr	7035	1
	TK060.075	060 Support Profile - 750 mm			750	2.820 gr	7035	1
	TK060.100	060 Support Profile - 1000 mm			1000	3.770 gr	7035	1
	TK060.125	060 Support Profile - 1250 mm			1250	4.720 gr	7035	1
	TK060.150	060 Support Profile- 1500 mm			1500	5.670 gr	7035	1
	TK060.175	060 Support Profile- 1750 mm			1750	6.620 gr	7035	1
	TK060.200	060 Support Profile -2000 mm			2000	7.570 gr	7035	1
	TK060.320	Ø 130 Mm 310 ° Rotatable Panel Coupling	X			1.260 gr	7035	1
	TK060.330	Ø 130 Mm 310 ° Rotatable Panel Coupling For Tkp2000 Series	X			1.480 gr	7035	1
	TK060.400	Ø 130 Mm 310 ° Rotatable 90° Panel Angle Coupling	X			1.700 gr	7035 / 7016	1
	TK060.410	Ø 130 Mm 310 ° Rotatable 90° Panel Angle Coupling For TKP2000 Series	X			1.920 gr	7035 / 7016	1
	TK060.420	90° Angle Piece		X		660 gr	7035 / 7016	1
	TK060.500	315 °(± 150 °) Rotatable Intermediate Hinge	X			2.075 gr	7035 / 7016	1
	TK060.600	315 ° (± 150 °) Rotatable Top Mounted 90° Angle Joint	X			2.110 gr	7035 / 7016	1
	TK060.610	315 ° (± 150 °) Rotatable Top Mounted Vertical Outlet	X			1.770 gr	7035 / 7016	1
	TK060.700	315 ° (± 150 °) Rotatable Wall-Mounted Hinge. Horizontal Outlet	X			2.460 gr	7035 / 7016	1
	TK060.710	315 ° (± 150 °) Rotatable Wall-Mounted Hinge. Vertical Outlet.	X			2.220 gr	7035 / 7016	1
	TK060.800	Wall/Socket Mounting Bracket		X		320 gr	7035 / 7016	1
	TK060.810	Warning Lamp Cover		X		150 gr	7016	1
	TK060.830	350° Moveable Panel Adaptor ▭ 118 x 65.5 mm	X			735 gr	7035	1
	TK060.835	+ 30 ° / - 40 ° Tilting Panel Tilting Adaptor ▭ 125 x 70 mm		X		460 gr	7035 / 7016	1
	TK060.843	310 ° Rotatable ± 40 ° Tilting Panel Coupling With Tilting Adaptor	X			3.500	7035 / 7016	1
	TK060.844	310 ° Rotatable ± 40 ° Tilting Panel Coupling With Tilting Adaptor For TKP2000	X			3.300	7035 / 7016	1



	MODEL NO	COMPONENT	ROTATABLE	FIX	LENGTH (mm)	WEIGHT (kg)	COLOR NO. RAL NO	PACKAGE
	TK040.025	40 Support Profile - 250 mm			250	520 gr	7035	1
	TK040.050	40 Support Profile - 500 mm			500	1.040 gr	7035	1
	TK040.075	40 Support Profile - 750 mm			750	1.560 gr	7035	1
	TK040.100	40 Support Profile - 1000 mm			1000	2.080 gr	7035	1
	TK040.125	40 Support Profile - 1250 mm			1250	2.600 gr	7035	1
	TK040.150	40 Support Profile- 1500 mm			1500	3.120 gr	7035	1
	TK040.175	40 Support Profile- 1750 mm			1750	3.640 gr	7035	1
	TK040.200	40 Support Profile -2000 mm			2000	4.160 gr	7035	1
	TK040.320	Ø 136 Mm 340 ° Rotatable Panel Coupling	X			1.925	7035	1
	TK040.330	Ø 136 Mm 340 ° Rotatable Panel Coupling For Tkp2000 Series	X			1.772	7035	1
	TK040.400	Ø 136 Mm 340 ° Rotatable 90° Panel Angle Coupling	X			2.440	7035 / 7016	1
	TK040.410	Ø 136 Mm 340 ° Rotatable 90° Panel Angle Coupling For TKP2000 Series	X			2.400	7035 / 7016	1
	TK040.420	90° Angle Piece		X		518	7035 / 7016	1
	TK040.430	90° Horizontal Angle Piece		X		400	7035 / 7016	1
	TK040.500	340 ° (± 170 °) Rotatable Intermediate Hinge	X			3.100	7035 / 7016	1
	TK040.600	340 ° (± 170°) Rotatable Top Mounted 90° Angle Joint.	X			3.290	7035 / 7016	1
	TK040.610	340 ° (± 170°) Rotatable Top Mounted Vertical Outlet	X			2.563	7035	1
	TK040.700	340 ° (± 170°) Rotatable Wall-Mounted Hinge. Horizontal Outlet.	X			3.380	7035 / 7016	1
	TK040.710	340 ° (± 170°) Rotatable Wall-Mounted Hinge. Vertical Outlet.	X			1.920	7035	1
	TK040.800	Wall/Socket Mounting Bracket		X		533	7035 / 7016	1
	TK040.820	90 ° Wall Mounted Joint.		X		800	7035 / 7016	1
	TK040.830	340 ° (± 170°) Rotatable Wall/Base-Panel Mounting Joint	X			2.463	7035	1

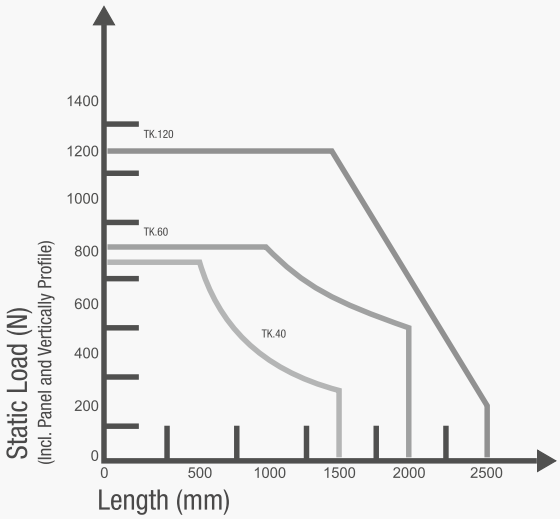
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TK040 Combination List



	MODEL NO	COMPONENT	ROTATABLE	FIX	LENGTH (mm)	WEIGHT (kg)	COLOR NO. RAL NO	PACKAGE
	TK040.840	340 ° (± 170°) Rotatable Wall/Base-Panel Mounting Joint For TKP2000 series	X			2.304	7035	1
	TK040.841	± 40 ° Tilting Panel Coupling With Tilting Adaptor		X		2.378	7035 / 7016	1
	TK040.842	± 40 ° Tilting Panel Coupling With Tilting Adaptor For TKP2000 Series		X		2.245	7035 / 7016	1
	TK040.843	340 ° Rotatable ± 40 ° Tilting Panel Coupling With Tilting Adaptor	X			3.500	7035 / 7016	1
	TK040.844	340 ° Rotatable ± 40 ° Tilting Panel Coupling With Tilting Adaptor For TKP2000 Series	X			3.300	7035 / 7016	1
	TK040.845	340 ° Rotatable ± 40 ° Tilting Top Mounted Panel Coupling With Tilting Adaptor	X			3.970	7035 / 7016	1
	TK040.846	340 ° Rotatable ± 40 ° Tilting Machine Top Mounted Panel Coupling With Tilting Adaptor For TKP2000 Series	X			3.830	7035 / 7016	1

Load Diagram For Various Teknokol Profile Systems



TEKNOKOL®

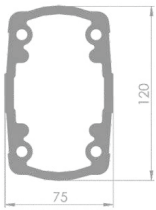
TK120 Combination List

TK120.025 Support Arm Profile



Lenght (mm)	250
Weight (gr)	1.950
Colour No.	7035
Package	1
Package Size (mm)	80 x 130 x 260

Support Arm Profile Lenght (mm)
250 - 500 - 750 -1000 - 1250 -1500 - 1750 - 2000



TK120.320 Rotatable Panel Coupling



Weight (gr)	1.315
Colour No.	7035
Package	1
Package Size (mm)	150 x 65 x135
Diameter (mm)	Ø 130
Rotate	310 °



TK120.330 Rotatable Panel Coupling For TKP2000



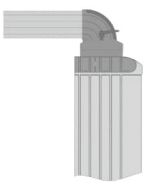
Weight (gr)	1.550
Colour No.	7035
Package	1
Package Size (mm)	150 x 85 x 140
Diameter (mm)	Ø 130
Rotate	310 °



TK120.400 Rotatable 90° Panel Angle Coupling



Weight (gr)	2.365
Colour No.	7035 / 7016
Package	1
Package Size (mm)	215 x 145 x 170
Diameter (mm)	Ø 130
Rotate	310 °

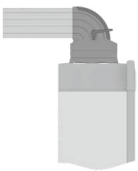


TK120 Combination List

TK120.410 Rotatable 90° Panel Angle Coupling For TKP2000



Weight (gr)	2.575
Colour No.	7035 / 7016
Package	1
Package Size (mm)	215 x 140 x 170
Diameter (mm)	Ø 130
Rotate	310 °



TK120.420 90° Angle Piece



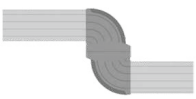
Weight (gr)	1.650
Colour No.	7035 / 7016
Package	1
Package Size (mm)	165 x 100 x 160
Rotate	Fixed



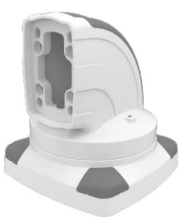
TK120.500 Rotatable Intermediate Hinge



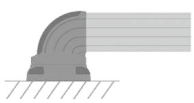
Weight (gr)	5.600
Colour No.	7035 / 7016
Package	1
Package Size (mm)	355 x 175 x 175
Rotate	315 °



TK120.600 Rotatable Top Mounted 90° Angle Joint



Weight (gr)	5.710
Colour No.	7035 / 7016
Package	1
Package Size (mm)	210 x 240 x 205
Rotate	315 °



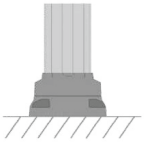
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TK120 Combination List

TK120.610 Rotatable Top Mounted Vertical Outlet



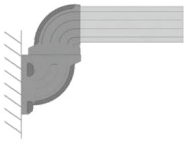
Weight (gr)	4.820
Colour No.	7035 / 7016
Package	1
Package Size (mm)	220 x 120 x 210
Rotate	315 °



TK120.700 Rotatable Wall-Mounted Hinge. Horizontal Outlet



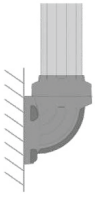
Weight (gr)	6.605
Colour No.	7035 / 7016
Package	1
Package Size (mm)	380 x 200 x 210
Rotate	315 °



TK120.710 Rotatable Wall-Mounted Hinge. Vertical Outlet



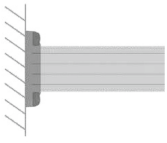
Weight (gr)	5.765
Colour No.	7035 / 7016
Package	1
Package Size (mm)	280 x 200 x 205
Rotate	315 °



TK120.800 Wall/Socket Mounting Bracket



Weight (gr)	826
Colour No.	7035 / 7016
Package	1
Package Size (mm)	220 x 50 x 105
Rotate	Fixed



TK120 Combination List

TK120.810 Warning Lamp Cover



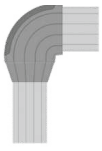
Weight (gr)	230
Colour No.	7016
Package	1
Package Size (mm)	205 x 50 x 95
Rotate	Fixed



TK120.820 120/060 Support Arm Adaptor



Weight (gr)	560
Colour No.	7035
Package	1
Package Size (mm)	135 x 70 x 90
Rotate	Fixed



TK120.843 Panel Coupling With Tilting Adaptor



Weight (gr)	3.500
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 130
Rotate	310°



TK120.844 Panel Coupling With Tilting Adaptor For TKP2000



Weight (gr)	3.300
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 130
Rotate	310°



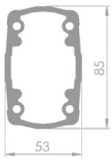
TEKNOKOL®

TK060 Combination List

TK060.025 Support Arm Profile



Lenght (mm)	250
Weight (gr)	1.260
Colour No.	7035
Package	1
Package Size (mm)	90 x 55 x 255



Support Arm Profile Lenght (mm)
250 - 500 - 750 -1000 - 1250 -1500 - 1750 - 2000

TK060.320 Rotatable Panel Coupling



Weight (gr)	1.260
Colour No.	7035
Package	1
Package Size (mm)	150 x 60 x140
Diameter (mm)	Ø 130
Rotate	310 °



TK060.330 Rotatable Panel Coupling For TKP2000



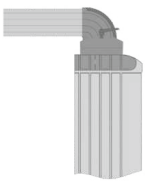
Weight (gr)	1.500
Colour No.	7035
Package	1
Package Size (mm)	150 x 80 x 140
Diameter (mm)	Ø 130
Rotate	310 °



TK060.400 Rotatable 90° Panel Angle Coupling



Weight (gr)	1.777
Colour No.	7035 / 7016
Package	1
Package Size (mm)	145 x 150 x 140
Diameter (mm)	Ø 130
Rotate	310 °



TK060 Combination List

TK060.410 Rotatable 90° Panel Angle Coupling For TKP2000 Series



Weight (gr)	1.920
Colour No.	7035 / 7016
Package	1
Package Size (mm)	150 x 170 x 140
Diameter (mm)	Ø 130
Rotate	310 °



TK060.420 90° Angle Piece



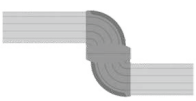
Weight (gr)	654
Colour No.	7035 / 7016
Package	1
Package Size (mm)	120 x 75 x 115
Rotate	Fixed



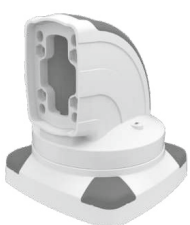
TK060.500 Rotatable Intermediate Hinge



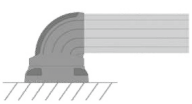
Weight (gr)	2.060
Colour No.	7035 / 7016
Package	1
Package Size (mm)	245 x 130 x 125
Rotate	315 °



TK060.600 Rotatable Top Mounted 90° Angle Joint



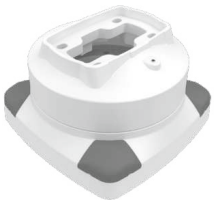
Weight (gr)	2.108
Colour No.	7035 / 7016
Package	1
Package Size (mm)	155 x 160 x 145
Rotate	315 °



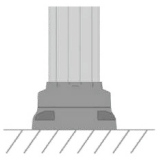
TEKNOKOL®

TK060 Combination List

TK060.610 Rotatable Top Mounted 90° Angle Joint



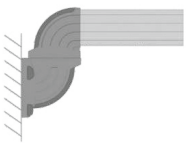
Weight (gr)	1.763
Colour No.	7035 / 7016
Package	1
Package Size (mm)	155 x 85 x 140
Rotate	315 °



TK060.700 Rotatable Wall-Mounted Hinge. Horizontal Outlet



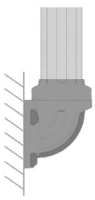
Weight (gr)	2.440
Colour No.	7035 / 7016
Package	1
Package Size (mm)	275 x 140 x 145
Rotate	315 °



TK060.710 Rotatable Wall-Mounted Hinge. Vertical Outlet



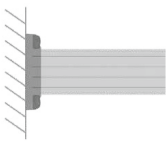
Weight (gr)	2.130
Colour No.	7035 / 7016
Package	1
Package Size (mm)	200 x 140 x 145
Rotate	315 °



TK060.800 Wall/Socket Mounting Bracket



Weight (gr)	312
Colour No.	7035 / 7016
Package	1
Package Size (mm)	160 x 35 x 80
Rotate	Fixed



TK060 Combination List

TK060.810 Warning Lamp Cover



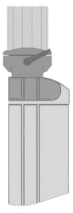
Weight (gr)	150
Colour No.	7016
Package	1
Package Size (mm)	130 x 65 x 110
Rotate	Fixed



TK060.830 Moveable Panel Adaptor



Weight (gr)	735
Colour No.	7035
Package	1
Package Size (mm)	130 x 65 x 110
Rotate	350°



TK060.835 Panel Tilting Adaptor



Weight (gr)	460
Colour No.	7035 / 7016
Package	1
Package Size (mm)	155 x 85 x110
Rotate	+30° / -40°



TK060.843 Panel Coupling With Tilting Adaptor



Weight (gr)	3.500
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 130
Rotate	310°



TK060.844 Panel Coupling With Tilting Adaptor For TKP2000



Weight (gr)	3.300
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 130
Rotate	310°



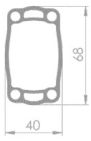
TEKNOKOL®

TK040 Combination List

TK040.025 Support Arm Profile



Lenght (mm)	250
Weight (gr)	550
Colour No.	7035
Package	1
Package Size (mm)	45 x 75 x 255



Support Arm Profile Lenght (mm)
250 - 500 - 750 -1000 - 1250 -1500 - 1750 - 2000

TK040.320 Rotatable Panel Coupling



Weight (gr)	1.925
Colour No.	7035
Package	1
Package Size (mm)	150 x 95 x140
Diameter (mm)	Ø 136
Rotate	340 °



TK040.330 Rotatable Panel Coupling For Tkp2000 Series



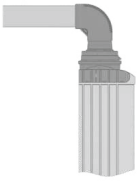
Weight (gr)	1.772
Colour No.	7035
Package	1
Package Size (mm)	150 x 95 x 140
Diameter (mm)	Ø 130
Rotate	340 °



TK040.400 Rotatable 90° Panel Angle Coupling



Weight (gr)	2.440
Colour No.	7035 / 7016
Package	1
Package Size (mm)	150 x 220 x 150
Diameter (mm)	Ø 130
Rotate	340 °



TK040 Combination List

TK040.410 Rotatable 90° Panel Angle Coupling For TKP2000 Series



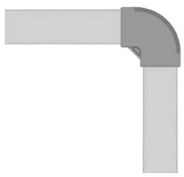
Weight (gr)	2.400
Colour No.	7035 / 7016
Package	1
Package Size (mm)	150 x 220 x 150
Diameter (mm)	Ø 130
Rotate	340 °



TK040.420 90° Angle Piece



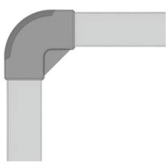
Weight (gr)	518
Colour No.	7035 / 7016
Package	1
Package Size (mm)	180 x 55 x 110
Rotate	Fixed



TK040.430 90° Horizontal Angle Piece



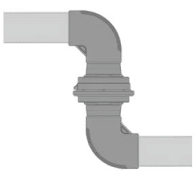
Weight (gr)	400
Colour No.	7035 / 7016
Package	1
Package Size (mm)	135 x 80 x 85
Rotate	Fixed



TK040.500 Rotatable Intermediate Hinge



Weight (gr)	3.100
Colour No.	7035 / 7016
Package	1
Package Size (mm)	365 x 150 x 140
Rotate	340 °



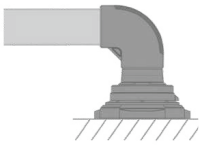
TEKNOKOL®

TK040 Combination List

TK040.600 Rotatable Top Mounted 90° Angle Joint.



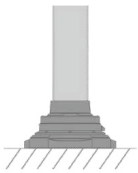
Weight (gr)	3.290
Colour No.	7035 / 7016
Package	1
Package Size (mm)	190 x 235 x 195
Rotate	340 °



TK040.610 Rotatable Top Mounted Vertical Outlet



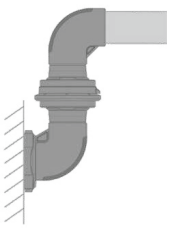
Weight (gr)	2.563
Colour No.	7035 / 7016
Package	1
Package Size (mm)	195 x 95 x 185
Rotate	340 °



TK040.700 Rotatable Wall-Mounted Hinge. Horizontal Outlet.



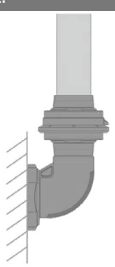
Weight (gr)	3.380
Colour No.	7035 / 7016
Package	1
Package Size (mm)	390 x 160 x 140
Rotate	340 °



TK040.710 Rotatable Wall-Mounted Hinge. Vertical Outlet.



Weight (gr)	1.920
Colour No.	7035 / 7016
Package	1
Package Size (mm)	285 x 135 x 165
Rotate	340 °

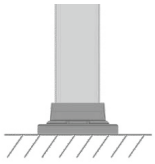


TK040 Combination List

TK040.800 Wall/Socket Mounting Bracket



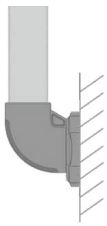
Weight (gr)	533
Colour No.	7016
Package	1
Package Size (mm)	120 x 50 x 135
Rotate	Fixed



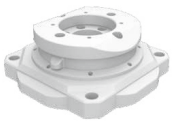
TK040.820 90 ° Wall Mounted Joint.



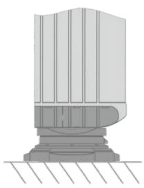
Weight (gr)	800
Colour No.	7035 / 7016
Package	1
Package Size (mm)	180 x 55 x 110
Rotate	Fixed



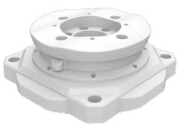
TK040.830 Rotatable Wall/Base-Panel Mounting Joint



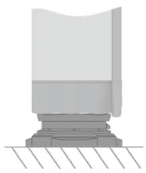
Weight (gr)	2.463
Colour No.	7035
Package	1
Package Size (mm)	195 x 65 x 185
Diameter (mm)	Ø 136
Rotate	340 °



TK040.840 Rotatable Wall/Base-Panel Mounting Joint For TKP2000 Series



Weight (gr)	2.304
Colour No.	7035
Package	1
Package Size (mm)	195 x 65 x 185
Diameter (mm)	Ø 136
Rotate	340 °



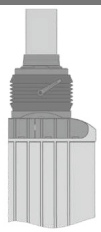
TEKNOKOL®

TK040 Combination List

TK040.841 Panel Coupling With Tilting Adaptor



Weight (gr)	2.378
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 136
Rotate	



TK040.842 Panel Coupling With Tilting Adaptor For TKP2000 Series



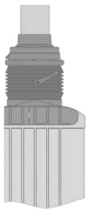
Weight (gr)	2.245
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 136
Rotate	



TK040.843 Panel Coupling With Tilting



Weight (gr)	3.500
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 136
Rotate	



TK040.844 Panel Coupling With Tilting



Weight (gr)	3.300
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 136
Rotate	

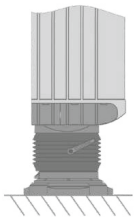


TK040 Combination List

TK040.845 Machine Top Mounted Panel Coupling With Tilting Adaptor



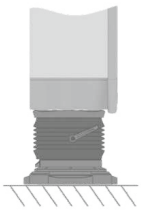
Weight (gr)	3.970
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 136
Rotate	



TK040.846 Machine Top Mounted Panel Coupling With Tilting Adaptor For TKP2000 Series



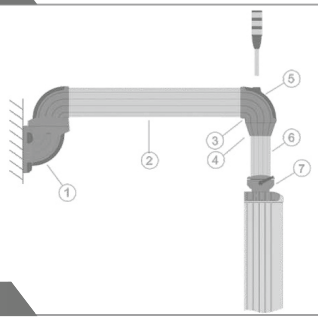
Weight (gr)	3.830
Colour No.	7035 / 7016
Package	1
Package Size (mm)	140x140x160
Diameter (mm)	Ø 136
Rotate	



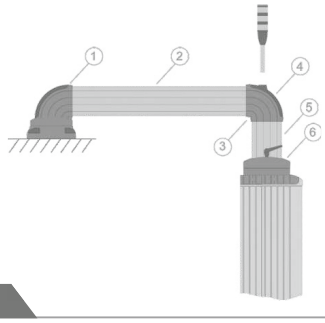


TEKNOKOL®

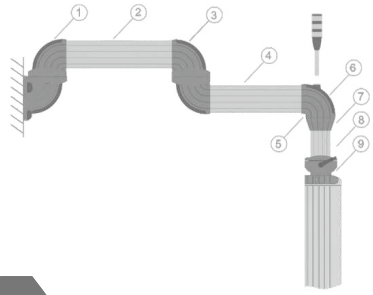
Support Arm Applications



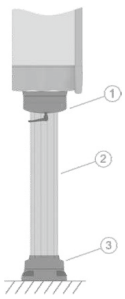
1	Rotatable Wall-Mounted Hinge. Horizontal Outlet	TK120.700
2	Support Arm Profile-750Mm	TK120.075
3	90° Angle Piece	TK120.420
4	120/060 Support Arm Adaptor	TK120.820
5	Warning Lamp Cover	TK120.810
6	Support Arm Profile-250Mm	TK060.025
7	Moveable Panel Adaptor	TK060.830



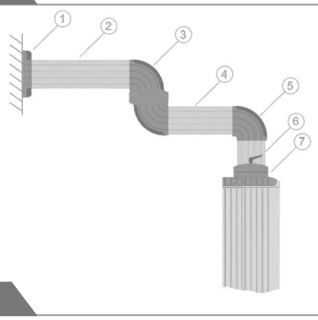
1	Rotatable Top Mounted 90° Angle Joint	TK120.600
2	Support Arm Profile-750Mm	TK120.075
3	90° Angle Piece	TK120.420
4	Warning Lamp Cover	TK120.810
5	Support Arm Profile-250Mm	TK120.025
6	Rotatable Panel Coupling	TK120.320



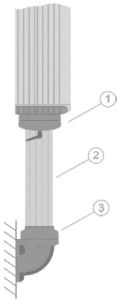
1	Rotatable Wall-Mounted Hinge. Horizontal Outlet	TK120.700
2	Support Arm Profile-500Mm	TK120.050
3	Rotatable Intermediate Hinge	TK120.500
4	Support Arm Profile-500Mm	TK120.050
5	90° Angle Piece	TK120.420
6	Warning Lamp Cover	TK120.810
7	120/060 Support Arm Adaptor	TK120.820
8	Support Arm Profile-250Mm	TK060.025
9	Moveable Panel Adaptor	TK060.830



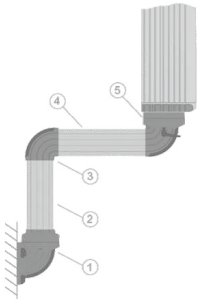
1	Rotatable Panel Coupling	TK120.320
2	Support Arm Profile-750Mm	TK120.075
3	Rotatable Top Mounted Vertical Outlet	TK120.610



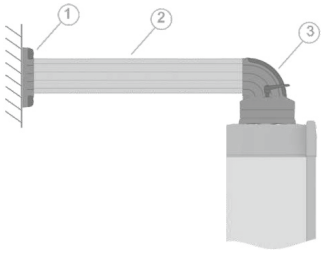
1	Wall/Socket Mounting Bracket	TK120.800
2	Support Arm Profile-500Mm	TK120.050
3	Rotatable Intermediate Hinge	TK120.500
4	Support Arm Profile-500Mm	TK120.050
5	90° Angle Piece	TK120.420
6	Support Arm Profile-250Mm	TK120.025
7	Rotatable Panel Coupling	TK120.320



1	Rotatable Panel Coupling	TK120.320
2	Support Arm Profile-750Mm	TK120.075
3	Rotatable Wall-Mounted Hinge. Vertical Outlet	TK120.710



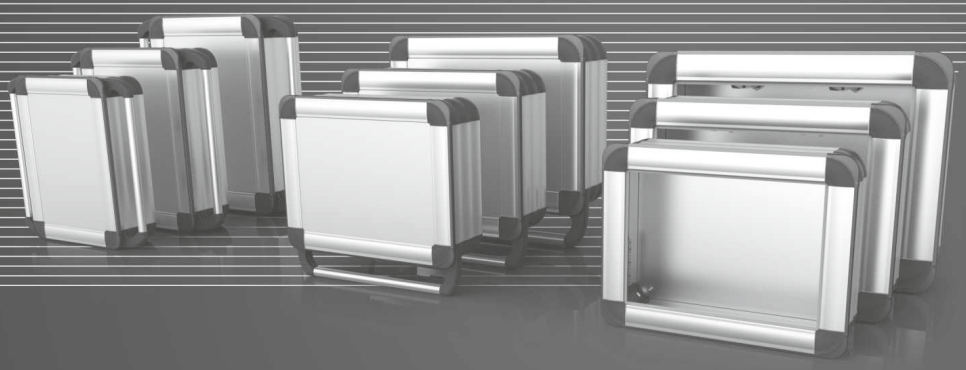
1	Rotatable Wall-Mounted Hinge. Vertical Outlet	TK120.710
2	Support Arm Profile-500Mm	TK120.050
3	90° Angle Piece	TK120.420
4	Support Arm Profile-500Mm	TK120.050
5	Rotatable 90° Panel Angle Coupling	TK120.400



1	Wall/Socket Mounting Bracket	TK120.800
2	Support Arm Profile-750Mm	TK120.075
3	90° Angle Piece	TK120.420

TEKNOKOL®

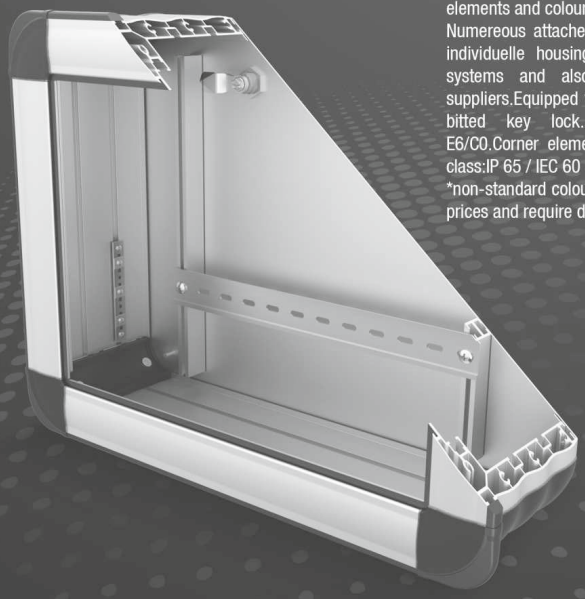
SUPPORT ARM AND CONTROL PANEL SYSTEMS



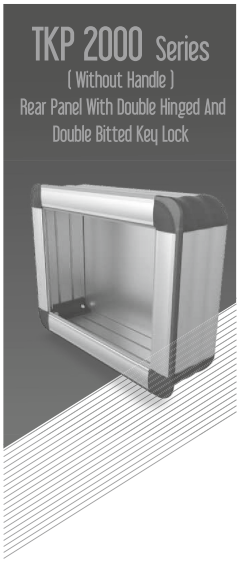
TKP 2000 LINE
TK040/TK060/TK120

Elegant, high grade look, attractive design.

LM construction with surrounding silicone lip seal;anodised extruded aluminium profiles and aluminium die-cast corner compenents for fast and efficient controller heat transfer.
*Castomizable by coloured eloxal basic profiles,coloured corner elements and coloured front plates.
Numereous attachement parts,like aluminium handles,allows individuelle housing designs.Suitable for all Teknokol arm systems and also via adapter for systems of other suppliers.Equipped with standart hinged rear door and double bitted key lock. Enclosure colour:Naturally anodized E6/C0.Corner elements: RAL 7016 anthracite-grey.Protection class:IP 65 / IEC 60 529
*non-standard colours or non-standard sizes do have different prices and require different minimum order quantities.

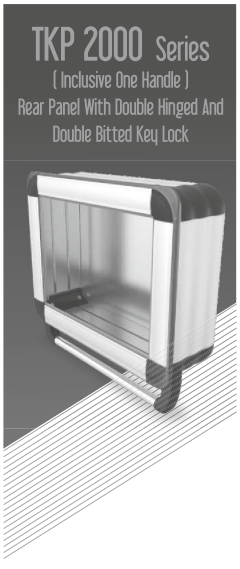


TEKNOKOL®
TKP 2000 Series



Installation Area			Back Sheet Cover	Installation Depth		Support arm no.TK	Order No TKP
Width mm	Height mm	Depth mm	Hinge	H profile installation platform	Installation depth mm	130 mm ∅	
300	300	152	Yes	Yes	129	Yes	3030.0000
300	400	152	Yes	Yes	129	Yes	3040.0000
400	400	152	Yes	Yes	129	Yes	4040.0000
400	500	152	Yes	Yes	129	Yes	4050.0000
500	500	152	Yes	Yes	129	Yes	5050.0000
500	600	152	Yes	Yes	129	Yes	5060.0000
600	600	152	Yes	Yes	129	Yes	6060.0000

**Please contact us for non-standart panel sizes.



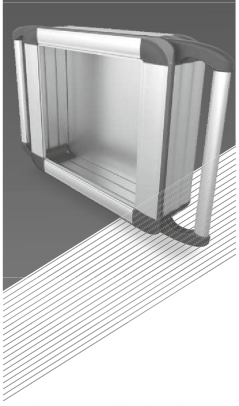
Installation Area			Back Sheet Cover	Installation Depth		Support arm no.TK	Order No TKP
Width mm	Height mm	Depth mm	Hinge	H profile installation platform	Installation depth mm	130 mm ∅	
300	300	152	Yes	Yes	129	Yes	3030.0000
300	400	152	Yes	Yes	129	Yes	3040.0000
400	400	152	Yes	Yes	129	Yes	4040.0000
400	500	152	Yes	Yes	129	Yes	4050.0000
500	500	152	Yes	Yes	129	Yes	5050.0000
500	600	152	Yes	Yes	129	Yes	5060.0000
600	600	152	Yes	Yes	129	Yes	6060.0000

**Please contact us for non-standart panel sizes.

TEKNOKOL®

TKP 2000 Serisi

TKP 2000 Series
(Inclusive Two Handle)
Rear Panel With Double Hinged And Double Bitted Key Lock



Installation Area			Back Sheet Cover	Installation Depth		Support arm no.TK	Order No TKP
Width mm	Height mm	Depth mm	Hinge	H profile installation platform	Installation depth mm	130 mm Ø	
300	300	152	Yes	Yes	129	Yes	3030.0000
300	400	152	Yes	Yes	129	Yes	3040.0000
400	400	152	Yes	Yes	129	Yes	4040.0000
400	500	152	Yes	Yes	129	Yes	4050.0000
500	500	152	Yes	Yes	129	Yes	5050.0000
500	600	152	Yes	Yes	129	Yes	5060.0000
600	600	152	Yes	Yes	129	Yes	6060.0000

**Please contact us for non-standart panel sizes.



NOTES:

NOTES:

Linear Systems

NB










NB
Linear Systems
www.nbcorporation.com

The Acceleration Behind Your Best Ideas

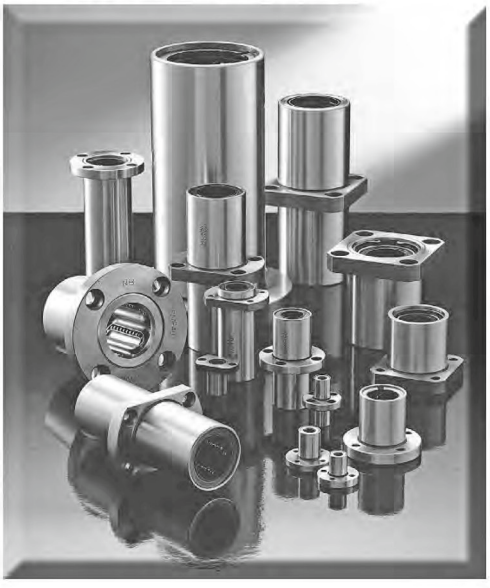
Slide Bush



Seamless Ball Retainers. Widest Variety.

The NB Slide Bush family features solid steel outer ring construction and is available with optional integral wiper seals in both high quality and precision grades. Seamless ball retainers provide smoother motion and higher rigidity. Product variety includes Lightweight, Standard, Clearance Adjustable, Open and Double-Wides. The innovative Double-Wide type offers added stability when additional moment loads are required. Slide Bush types are available in Inch and both Asian and European metric dimensions.

Flange Type - Slide Bush



Unique Design. No Bulky Housings.

NB Flange type offers the best of both worlds; the benefits of a Slide Bush with the mounting ease of a flange. When your application calls for ease of assembly, you can select a completely integrated system. You may choose from single, double-wide, or center mount configurations. Flange types are available in Inch, Asian or European metric dimensions.

Slide Units and Accessories

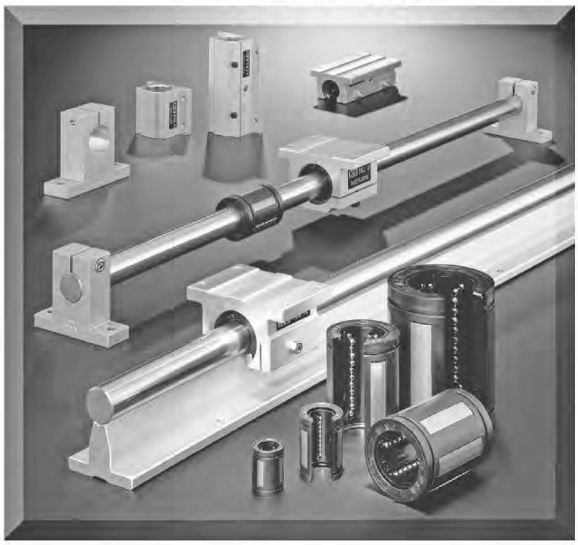
Highly Precise. Assembly/Maintenance Friendly.

The NB prefabricated housing blocks are more than fully interchangeable with other major manufacturers. NB's extremely tight Slide Unit tolerance levels set standards that exceed other manufacturers "precision" grade products. The Slide Unit surface finish (as well as Shaft Support Accessories) are "clear anodized" to maintain a clean appearance. Service friendly features for bushing retention easily makes NB the preferred choice.

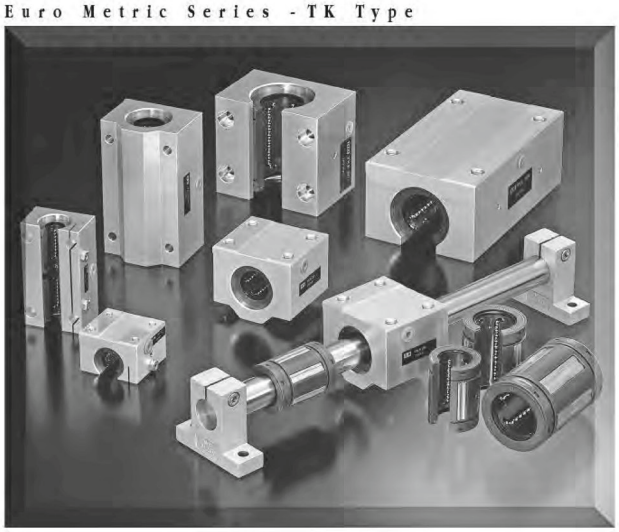
High Load Self-Aligning

TOPBALL is NB's premier Slide Bush, offering up to 27 times the normal travel life of a conventional slide bush. Our uniquely produced load plates incorporate ground raceway surfaces. These surfaces provide a circular arch contact for the ball resulting in greater dispersion of loads for three times the normal load capacities.

TOPBALL Slide Bush is available in 3/16 to 2 inch sizes and is fully interchangeable with conventional linear bushings. All feature self-alignment capabilities and NB's unique optional floating *wiper seal*. A full line of prefabricated units is also offered. Corrosion resistant types are also available upon request.



Euro Metric Series - TK Type



Fully Interchangeable High Performance

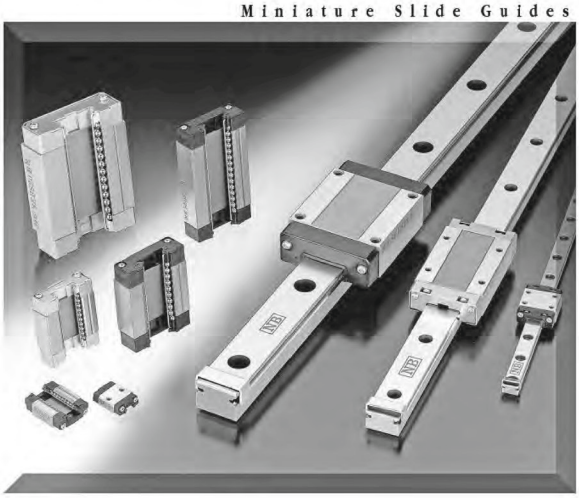
TOPBALL Euro Metric slide bush offers a range from 10mm to 40mm. All feature self-alignment capability and unique optional floating *wiper seal* which maintains equal and constant contact with the shaft and does not add to the overall length of the bushing. Smooth running, low friction and long life make TOPBALL the *popular choice*. A full line of prefabricated units is also available.

The Acceleration Behind Your Best Ideas

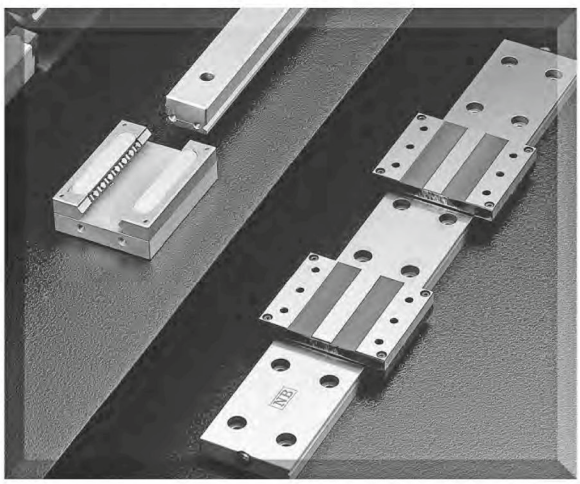
Miniature Slide Guides

Less Space Required
More Load Achieved

The compact design offered by NB's Miniature Slide Guide allows designers to reduce machinery size and weight. NB technology stabilizes uneven multidirectional load factors for the ultimate in smooth continuous movement. Precise high-speed operation is assured. Precision-machined steel balls, as rolling elements, promote exceptionally low resistance. This provides smooth, stable operation at low cost. The Retained Ball (SEBS-B type) allows the block to be removed from the rail, simplifying installation and reducing assembly cost. Types available include Standard, Long and the high moment Wide types.



SER Crossed Roller Type



High Load Capacity
Long Life

The use of precision roller elements combined with a larger contact surface allows higher load capacities and longer life. Only two raceway grooves are used which result in a very compact package. The all stainless steel design provides excellent corrosion resistance and thermal characteristics, making the SERS type ideal for clean room or vacuum applications. Types available would include Standard or high-moment Wide types. Optional tapped rail mounting holes are available to simplify installation upon request.

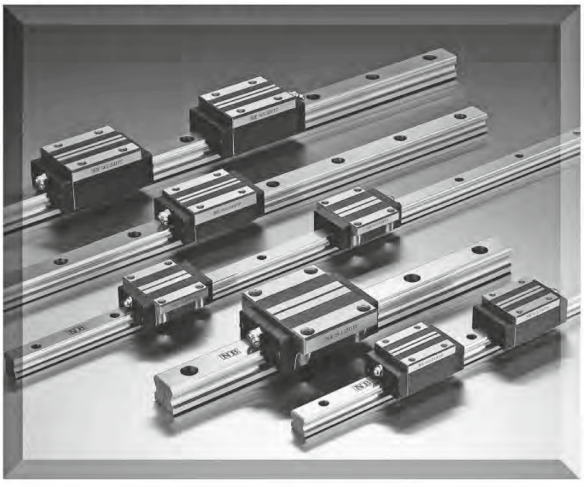
Ball Spline



Eliminates Backlash
Reduces Friction

NB's Ball Spline family is designed for mechanical applications, which may require both linear motion, combined with superior torque transmission. Recirculating steel balls on the side of the outer race allow for economy of space and high-speed rotation. Backlash is eliminated. NB provides unmatched precision with a full range of sizes and configurations, including custom, machined orders in a timely fashion.

SGL and SGW Types



Heavy Duty
High Load Stability
Easy Installation

The Slide Guide series is designed to maintain stability under extremely high load conditions. The use of 4 ball circuits and arch ball groove design (ball elements positioned at a 45 degree contact angle) stabilize uneven multidirectional load factors and assure smooth continuous movement throughout the work cycle.

The Slide Guide block incorporates a ball retainer for easy removal from the rail. This reduces assembly and maintenance time. Side seals are a standard feature, and optional features include under seals, scrapers, double wiper seals, and special rail mounting caps. For corrosive applications another optional feature for the block and rail is Raydent coating.

Slide Shaft



Highly Precise

NB offers highly precise machined shaft for use with a slide bush or as a custom component in other applications. These applications may require pipe shaft, which reduces weight (without reducing rigidity and allows for channeling). The fine shaft is mass-produced to offer lower cost and shorter lead times; and also available in inch or metric dimensions.

Custom Shaft



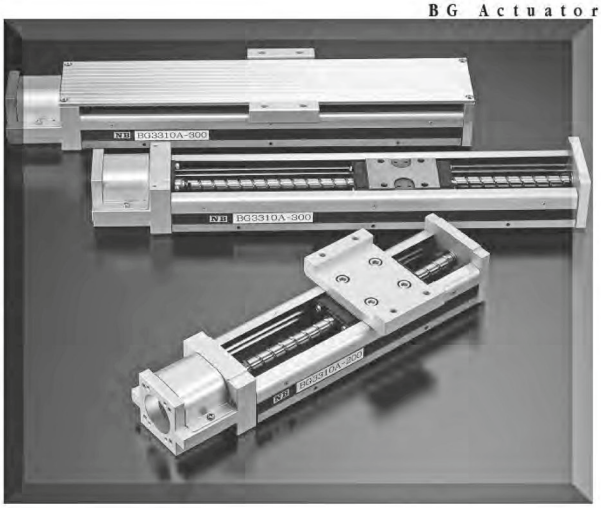
Unmatched Quality

NB Slide Shaft is case-hardened heat-treated high-carbon chromium bearing steel or corrosive-resistant Martensite stainless steel for maximum performance quality. Our precision machining capabilities and quality controls are unmatched, guaranteeing highly consistent results on specially engineered custom shafts, such as spindle and roll shafts.

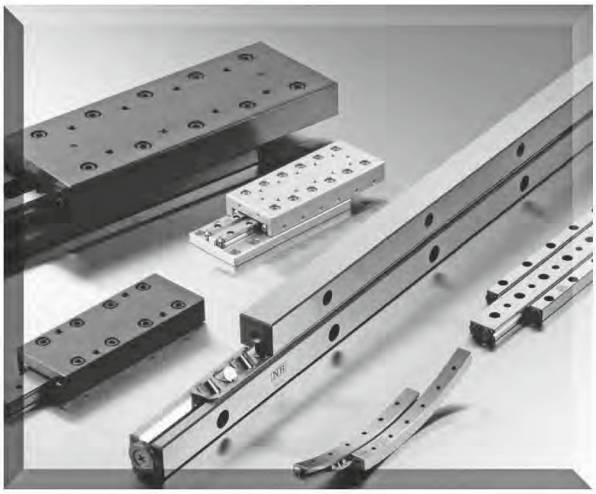
Adjustment Free
High Rigidity
Ultra Space Saving

NB's BG type is a compact single axis actuator, which integrates a slide guide and precision ball screw. This eliminates complex precision adjustment and reduces installation time dramatically. The "U" shaped guide rail provides very high rigidity and can be used for one-end supported applications. High positioning accuracy is achieved by the combination of the precision ground guide rail; slide block and precision ball screw arrangements. In comparison to conventional positioning tables, the NB BG type allows for more compact designs and dramatic space saving.

B G A c t u a t o r



S l i d e W a y s a n d T a b l e s - S V T y p e



High Precision Low Friction

The NB slide table is a precision table equipped with a slide way. Its high-precision and low friction makes it well suited for use in electronics, automatic assembly machines and optical measurement devices. The mounting surfaces of the table and bed are precision finished for high performance. Low friction is achieved by the non-recirculating mechanism, which provides stable motion from high to low speeds.

G o n i o W a y - R V T y p e

Hi Precision Curved Rail

The hardened curved V-grooves, which are finished with a precise grinding process provide an accurate center of rotation.

S T U D R O L L E R ™ - N V T y p e

Anti-Creep Cage Technology Greater Capacity

Popular sizes expand your possibilities, while the number of rollers is increased by 20 to 55 percent. ***STUDROLLER*** lets you down size, lower component costs and develop more compact designs.

NB

BALL SPLINE

The NB ball spline is a linear motion mechanism utilizing the rotational motion of ball elements that can sustain loads and at the same time can transfer torque. It can be used in a wide variety of applications including robotics and transport type equipment.

STRUCTURE AND ADVANTAGES

The NB ball spline consists of a spline shaft with raceway grooves and a spline nut. The spline nut consists of an outer cylinder (main body), retainer, side rings, and ball elements that is designed and manufactured to achieve a reliably smooth motion.

High Load Capacity and Long Travel Life

The raceway grooves are machined to a radius close to that of the ball elements. The large ball contact area results in high load capacity and long travel life.

Wide Variety of Configurations

Spline shaft sizes with diameters from 4mm to 100mm are available. Several types of spline nut are available: cylindrical types (SSP/SSPM), flange types (SSPF/SSPT), and block type (SSPB). Material option of Stainless steel (SUS440C or equivalent) is also available. They can be specified to suit various applications.

High Accuracy Torque Transmission

Due to the effective contact angle between the raceway grooves and the balls, the NB ball spline can transfer large torque. By adjusting preload it is possible to give a higher rigidity and a higher positioning accuracy.

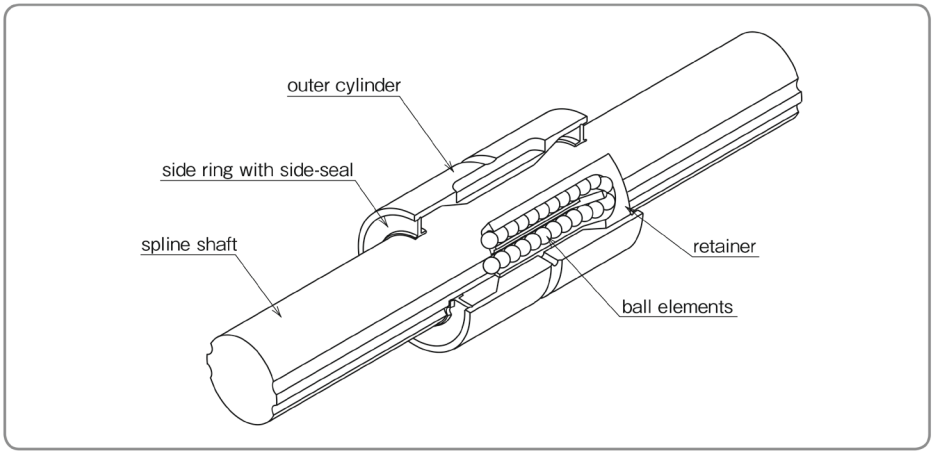
Ease of Additional Custom Machining

Since a round shaft with raceway grooves is used, NB ball spline shafts can be machined easily to customized specifications.

High-Speed Motion and High-Speed Rotation

The outer cylinder is compact and well balanced, resulting in good performance at high speed.

Figure B-1 Basic Structure of NB Ball Spline



TYPES OF SPLINE SHAFT

Depending on the application requirements, either a ground spline shaft or a non-ground (commercial grade) spline shaft is available.

Table B-2

type of spline shaft	shape and advantage	
ground spline shaft		• precision ground and precision machined surface finish • high precision • possible to machine ends of spline shaft and surface treatment • nominal diameter: 4-100
standard spline shaft		• standard dimension and shape • accuracy grade: high grade • short lead time • nominal diameter: 4-60 (refer to page B-24)
commercial shaft (non-ground)		• for general industrial use • cost effective • possible to machine ends of spline shaft and surface treatment • nominal diameter: 20-50 • maximum length: 5000mm (refer to page B-25)

SSP TYPE

— Cylindrical Spline Nut —

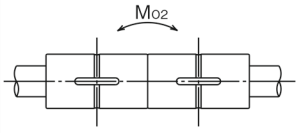


part number structure

example **SSP 80 L - 2 - T1 - 600 - P / CU**

- specification — **SSP**: standard; **SSPS**: anti-corrosion
- nominal diameter
- nut length — **blank**: standard; **L**: long
- number of nuts attached to one shaft
- preload symbol — **blank**: standard; **T1**: light; **T2**: medium
- spline shaft total length
- accuracy grade — **blank**: high; **P**: precision
- with special specification

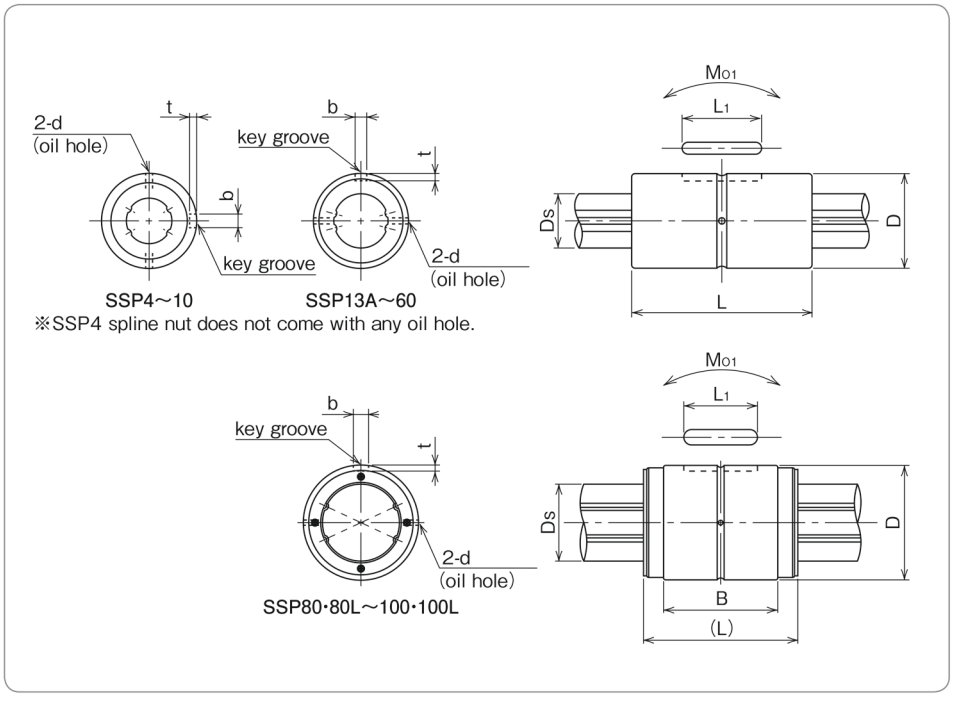
Note: retainer material is resin.



When two spline nuts are used in close contact.

part number		major dimensions												
		D		L		B	b		t	L_1	d	Ds		
standard	anti-corrosion	mm	tolerance μm	mm	tolerance mm	mm	mm	tolerance μm	+0.05 0 mm	mm	mm	mm	tolerance μm
SSP 4	SSPS 4	10	0/−9	16	0 −0.2	—	2	+14 0	1.2	6	—	4	0 −12
SSP 6	SSPS 6	14	0 −11	25			2.5		1.2	10.5	1	6	
SSP 8	SSPS 8	16		25			2.5		1.2	10.5	1.5	8	0 −15
SSP 10	SSPS10	21	0 −13	33			3		1.5	13	1.5	10	
SSP 13A	SSPS13A	24		36			3		1.5	15	1.5	13	0 −18
SSP 16A	SSPS16A	31	0 −16	50			3.5	+18 0	2	17.5	2	16	
SSP 20A	SSPS20A	35		63			4		2.5	29	2	20	0 −21
SSP 25A	SSPS25A	42		71	0 −0.3		4		2.5	36	3	25	
SSP 30A	—	47		80			4		2.5	42	3	30	
SSP 40A	—	64	0 −19	100			6		3.5	52	4	40	0 −25
SSP 50A	—	80		125			8	+22/0	4	58	4	50	
SSP 60A	—	90	0 −22	140			12	+27 0	5	67	4	60	0 −30
SSP 80	—	120		160	—	118.2	16		6	76	5	80	
SSP 80L	—	120		217		175.2				110			
SSP100	—	150	0 −25	185		132.6	20	+33 0	7	110	5	100	0 −35
SSP100L	—	150		248		195.6				160			
SSP 20	SSPS20	32	0 −16	60	0/−0.2	—	4	+18	2.5	26	2	18.2	0 −21
SSP 25	SSPS25	37		70	0 −0.3		5	0	3	33	3	23	
SSP 30	—	45		80			7	+22	4	41	3	28	
SSP 40	—	60	0 −19	100			10	0	4.5	55	4	37.4	0 −25
SSP 50	—	75		112			15	+27	5	60	4	47	
SSP 60	—	90	0/−22	127			18	0	6	68	4	56.5	0/−30

NB



basic torque rating		basic load rating		allowable static moment		second	cross-	mass		size
dynamic	static	dynamic	static			cross-sectional moment of inertia	sectional coefficient	nut	shaft	
C_T	C_{OT}	C	Co	M_{O1}	M_{O2}					
N・m	N・m	kN	kN	N・m	N・m	mm^4	mm^3	kg	kg/m	
0.74	1.05	0.86	1.22	1.97	10.3	1.18×10	5.90	0.0065	0.10	**4**
1.5	2.4	1.22	2.28	5.1	40	5.9 ×10	1.97×10	0.019	0.21	**6**
2.1	3.7	1.45	2.87	7.4	50	1.9 ×10^2	4.76×10	0.023	0.38	**8**
4.4	8.2	2.73	5.07	18.0	116	4.61×10^2	9.22×10	0.054	0.60	**10**
21	39.2	2.67	4.89	13.7	109	1.38×10^3	2.13×10^2	0.07	1.0	**13A**
60	110	6.12	11.2	46	299	2.98×10^3	3.73×10^2	0.15	1.5	**16A**
105	194	8.9	16.3	110	560	7.35×10^3	7.34×10^2	0.22	2.4	**20A**
189	346	12.8	23.4	171	1,029	1.79×10^4	1.43×10^3	0.33	3.7	**25A**
307	439	18.6	23.2	181	1,470	3.66×10^4	2.44×10^3	0.36	5.38	**30A**
674	934	30.8	37.5	358	2,940	1.15×10^5	5.75×10^3	0.95	9.55	**40A**
1,291	2,955	40.3	64.9	690	4,084	2.83×10^5	1.13×10^4	1.9	15.0	**50A**
1,577	2,629	47.7	79.5	881	5,473	5.91×10^5	1.97×10^4	2.3	21.6	**60A**
3,860	6,230	83.1	134	2,000	11,100	1.93×10^6	4.83×10^4	5.1	39	**80**
5,120	9,340	110	201	4,410	21,100			7.6		**80L**
6,750	11,570	135	199	3,360	19,300	4.69×10^6	9.38×10^4	9.7	61	**100**
8,960	17,300	179	298	7,340	37,700			13.9		**100L**
83	133	7.84	11.3	63	500	5.05×10^3	5.54×10^2	0.2	2.0	**20**
162	239	12.3	16.1	104	830	1.27×10^4	1.11×10^3	0.22	3.1	**25**
289	412	18.6	23.2	181	1,470	2.75×10^4	1.96×10^3	0.35	4.8	**30**
637	882	30.8	37.5	358	2,940	8.73×10^4	4.67×10^3	0.81	8.6	**40**
1,390	3,180	46.1	74.2	696	4,400	2.16×10^5	9.21×10^3	1.5	13.1	**50**
2,100	4,800	58.0	127	1,300	8,800	4.51×10^5	1.60×10^4	2.5	19	**60**

1kN≒102kgf　1N・m≒0.102kgf・m

SSPF TYPE
— Flange Type Nut —

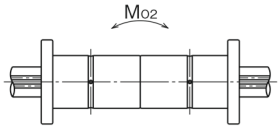


part number structure

example **SSPF 25 - 2 - T1 - 436 - P / CU**

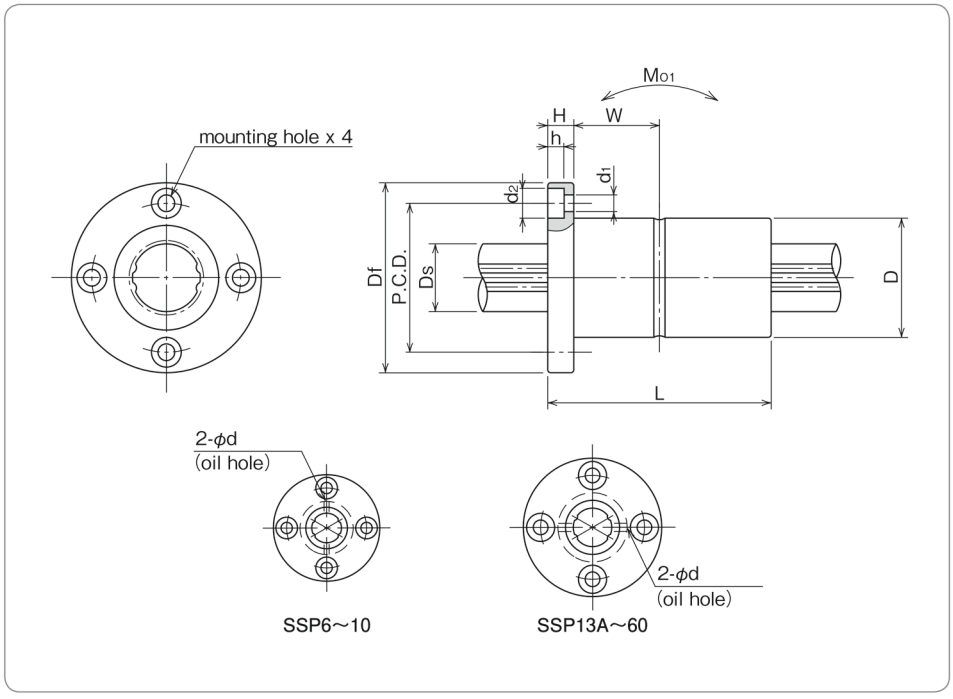
- **SSPF 25**: specification — **SSPF**: standard, **SSPFS**: anti-corrosion
- **25**: nominal diameter
- **2**: number of nuts attached to one shaft
- **T1**: preload symbol — **blank**: standard, **T1**: light, **T2**: medium
- **436**: spline shaft total length
- **P**: accuracy grade — **blank**: high, **P**: precision
- **CU**: with special specification

Note: retainer material is resin.



When two spline nuts are used in close contact.

part number		major dimensions										
		D		L		Df	H	P.C.D.	$d_1 \times d_2 \times h$	W	d
standard	anti-corrosion	mm	tolerance μm	mm	tolerance mm	mm	mm	mm	mm	mm	mm
SSPF 6	**SSPFS 6**	14	0 −11	25	0 −0.2	30	5	22	3.4×6.5×3.3	7.5	1
SSPF 8	**SSPFS 8**	16		25		32	5	24	3.4×6.5×3.3	7.5	1.5
SSPF10	**SSPFS10**	21		33		42	6	32	4.5×8×4.4	10.5	1.5
SSPF13A	**SSPFS13A**	24		36		43	7	33	4.5×8×4.4	11	1.5
SSPF16A	**SSPFS16A**	31	0 −16	50		50	7	40	4.5×8×4.4	18	2
SSPF20A	**SSPFS20A**	35		63		58	9	45	5.5×9.5×5.4	22.5	2
SSPF25A	**SSPFS25A**	42		71	0 −0.3	65	9	52	5.5×9.5×5.4	26.5	3
SSPF30A	—	47		80		75	10	60	6.6×11×6.5	30	3
SSPF40A	—	64	0 −19	100		100	14	82	9×14×8.6	36	4
SSPF50A	—	80		125		124	16	102	11×17.5×11	46.5	4
SSPF60A	—	90	0/−22	140		129	18	107	11×17.5×11	52	4
SSPF20	**SSPFS20**	32	0 −16	60	0/−0.2	51	7	40	4.5×8×4.4	23	2
SSPF25	**SSPFS25**	37		70	0 −0.3	60	9	47	5.5×9.5×5.4	26	3
SSPF30	—	45		80		70	10	54	6.6×11×6.5	30	3
SSPF40	—	60	0 −19	100		90	14	72	9×14×8.6	36	4
SSPF50	—	75		112		113	16	91	11×17.5×11	40	4
SSPF60	—	90	0/−22	127		129	18	107	11×17.5×11	45.5	4



Ds mm	Ds tolerance μm	basic torque rating dynamic CT N・m	basic torque rating static COT N・m	basic load rating dynamic C kN	basic load rating static Co kN	allowable static moment MO1 N・m	allowable static moment MO2 N・m	second cross-sectional moment of inertia mm4	cross-sectional coefficient mm3	mass nut kg	mass shaft kg/m	size
6	0/−12	1.5	2.4	1.22	2.28	5.1	40	5.9 ×10	1.97×10	0.037	0.21	6
8	0	2.1	3.7	1.45	2.87	7.4	50	1.9 ×10^2	4.76×10	0.042	0.38	8
10	−15	4.4	8.2	2.73	5.07	18.0	116	4.61×10^2	9.22×10	0.094	0.6	10
13	0	21	39.2	2.67	4.89	13.7	109	1.38×10^3	2.13×10^2	0.1	1	13A
16	−18	60	110	6.12	11.2	46	299	2.98×10^3	3.73×10^2	0.2	1.5	16A
20	0	105	194	8.9	16.3	110	560	7.35×10^3	7.34×10^2	0.33	2.4	20A
25	−21	189	346	12.8	23.4	171	1,029	1.79×10^4	1.43×10^3	0.45	3.7	25A
30		307	439	18.6	23.2	181	1,470	3.66×10^4	2.44×10^3	0.55	5.38	30A
40	0	647	934	30.8	37.5	358	2,940	1.15×10^5	5.75×10^3	1.41	9.55	40A
50	−25	1,291	2,955	40.3	64.9	690	4,084	2.83×10^5	1.13×10^4	2.73	15.0	50A
60	0/−30	1,577	2,629	47.7	79.5	881	5,473	5.91×10^5	1.97×10^4	3.2	21.6	60A
18.2	0	83	133	7.84	11.3	63	500	5.05×10^3	5.54×10^2	0.22	2	20
23	−21	162	239	12.3	16.1	104	830	1.27×10^4	1.11×10^3	0.32	3.1	25
28		289	412	18.6	23.2	181	1,470	2.75×10^4	1.96×10^3	0.51	4.8	30
37.4	0	637	882	30.8	37.5	358	2,940	8.73×10^4	4.67×10^3	1.15	8.6	40
47	−25	1,390	3,180	46.1	74.2	696	4,400	2.16×10^5	9.21×10^3	2.1	13.1	50
56.5	0/−30	2,100	4,800	58.0	127	1,300	8,800	4.51×10^5	1.60×10^4	3.3	19	60

1kN≒102kgf　1N・m≒0.102kgf・m

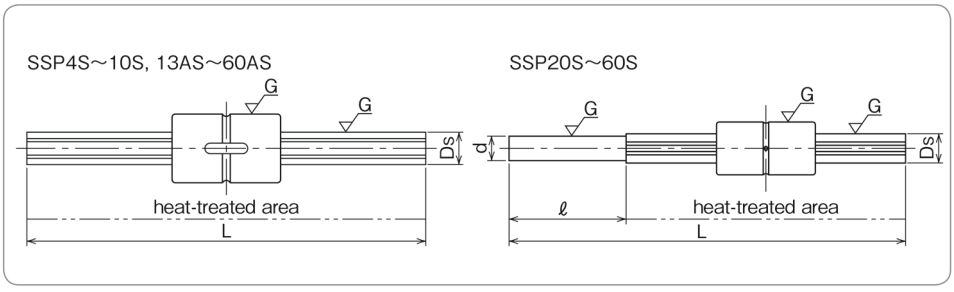
STANDARD BALL SPLINE



part number structure

example **SSP 10 S - 2 - T1 - 400**

- nut shape
  - **SSP**: cylindrical type
  - **SSPM**: keyless type
  - **SSPF**: flange type
  - **SSPT**: two side cut flange type
  - **SSPB**: block type
- nominal diameter
- standard spline shaft
- number of nuts attached to one shaft
- preload symbol
  - **blank**: standard
  - **T1**: light
  - **T2**: medium
- standard lengthL



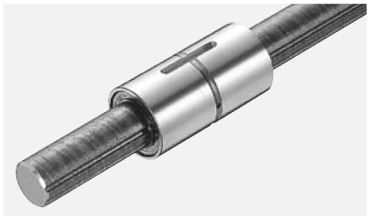
nominal diameter	major dimensions										applicable nut				
	Ds		d		ℓ	standard length L					SSP	SSPM	SSPF	SSPT	SSPB
	mm	tolerance μm	mm	tolerance μm	mm	mm									
4	4	0 −12	—	—	—	100	150	200	300	—	○	—	—	—	—
6	6		—	—	—	150	200	300	400	—	○	○	○	○	—
8	8		—	—	—	150	200	300	400	500	○	○	○	○	—
10	10		—	—	—	200	300	400	500	600	○	○	○	○	—
13A	13		—	—	—	200	300	400	500	600	○	—	○	—	—
16A	16		—	—	—	200	300	400	500	600	○	—	○	—	—
20A	20	0 −21	—	—	—	300	400	500	800	1,000	○	—	○	—	—
25A	25		—	—	—	300	400	500	800	1,000	○	—	○	—	—
30A	30		—	—	—	—	500	1,000	1,500	2,000	○	—	○	—	—
40A	40	0 −25	—	—	—	—	500	1,000	1,500	2,000	○	—	○	—	—
50A	50		—	—	—	—	500	1,000	1,500	2,000	○	—	○	—	—
60A	60	0/−30	—	—	—	—	500	1,000	1,500	2,000	○	—	○	—	—
20	18.2	0 −21	15	0/−18	150	350	450	550	650	—	○	—	○	—	○
25	23		20	0 −21	150	350	450	550	650	850	○	—	○	—	○
30	28		25		150	450	550	650	750	1,150	○	—	○	—	○
40	37.4	0 −25	30		150	550	750	950	1,150	—	○	—	○	—	○
50	47		40	0 −25	150	650	850	1,150	1,350	—	○	—	○	—	—
60	56.5	0/−30	45		150	650	850	1,150	1,350	—	○	—	○	—	—

- Tolerance of length L for nominal diameter sizes 4 to 10, 13A to 60A: JIS B0405 coarse grade.
- Please refer to dimension tables for nut shape and dimensions.

○ yes — none

NB

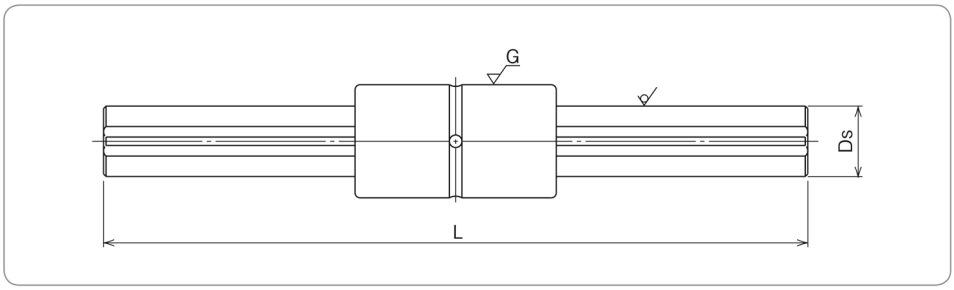
COMMERCIAL BALL SPLINE



part number structure

example **SSPF 25 C - 2 - 436 / CU**

- **SSPF** → nut shape — **SSP**: cylindrical type; **SSPF**: flange type; **SSPB**: block type
- **25** → nominal diameter
- **C** → commercial spline shaft
- **2** → number of nuts attached to one shaft
- **436** → spline shaft total length
- **CU** → with special specification



nominal diameter	Ds mm	major dimensions standard length L mm						applicable nut		
								SSP	SSPF	SSPB
20	18.2	500	1,000	2,000	3,000	4,000	5,000	○	○	○
25	23	500	1,000	2,000	3,000	4,000	5,000	○	○	○
30	28	500	1,000	2,000	3,000	4,000	5,000	○	○	○
40	37.4	500	1,000	2,000	3,000	4,000	5,000	○	○	○
50	47	500	1,000	2,000	3,000	4,000	5,000	○	○	—

○ yes — none

- Tolerance of total length and length of splined portion
  total length up to 4,000: JIS B0405 coarse grade
  total length greater than 4,000: ±5.0mm
  Please specify tolerances when required.
- Please refer to dimension tables for nut shape and dimensions.
- When a commercial shaft is used, the load rating of the nut is approximately 70% of indicated rating in the dimension tables.

ROTARY BALL SPLINE

The NB rotary ball spline can be used for both rotational motion and linear motion. The applications include SCARA robots, the vertical shaft of assembly equipment, tool changers, and loaders, etc.

STRUCTURE AND ADVANTAGES

The NB rotary ball spline nut consists of a spline nut and a rotating portion using cross rollers.

Reduced Number of Parts

Because of the single-body construction consisting of the rotating element and the spline element, the number of parts is reduced so that the accumulated errors are also reduced.

Compact and Light

The cross rollers are directly attached to the ball spline's outer cylinder, resulting in a compact and light design.

Substantial Reduction in Installation Cost

The use of cross rollers keeps the housing thickness to a minimum, making the ball spline light and easy to install.

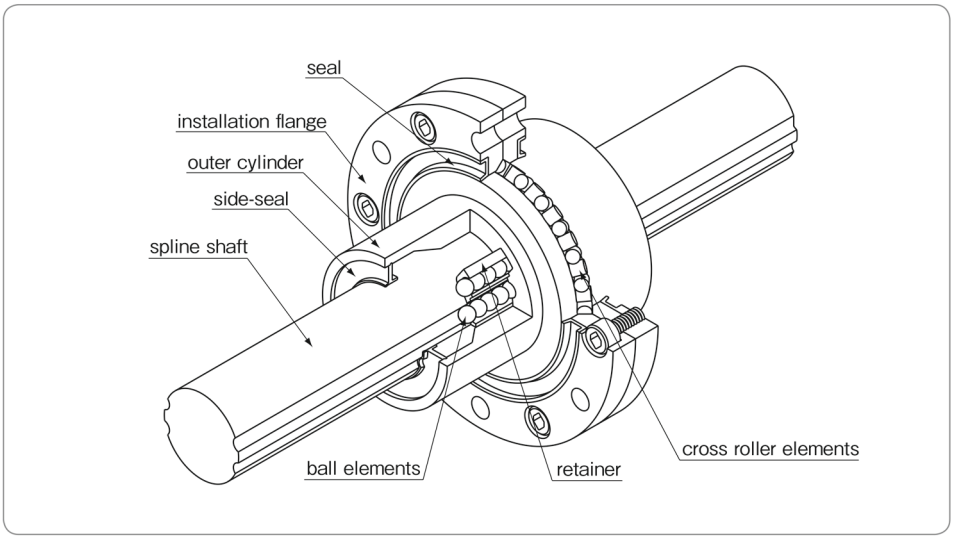
High Rigidity

The use of cross rollers and 4-row ball circuits structure provide high rigidity in spite of the compact design.

High Accuracy

The cross rollers ensure accurate positioning in the rotational direction.

Figure B-20 Structure of NB Rotary Ball Spline



OPERATING CONDITIONS

The performance of the rotary ball spline is affected by the operating conditions of the application. The operating conditions should therefore be carefully taken into consideration.

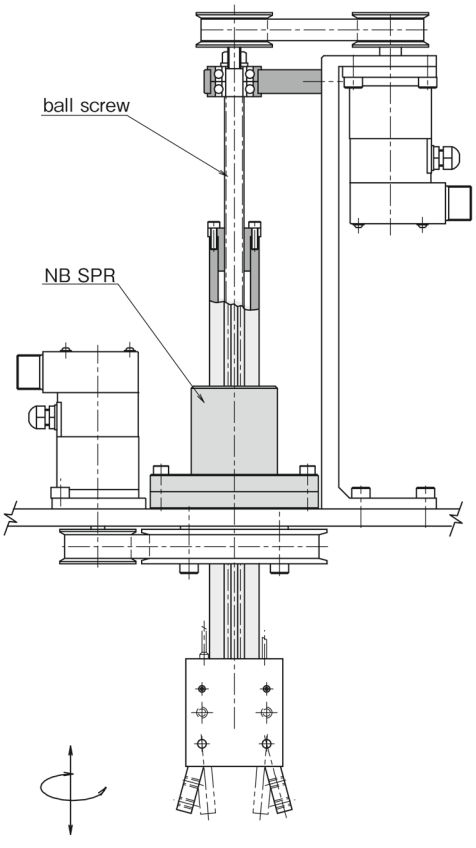
Operating Temperature

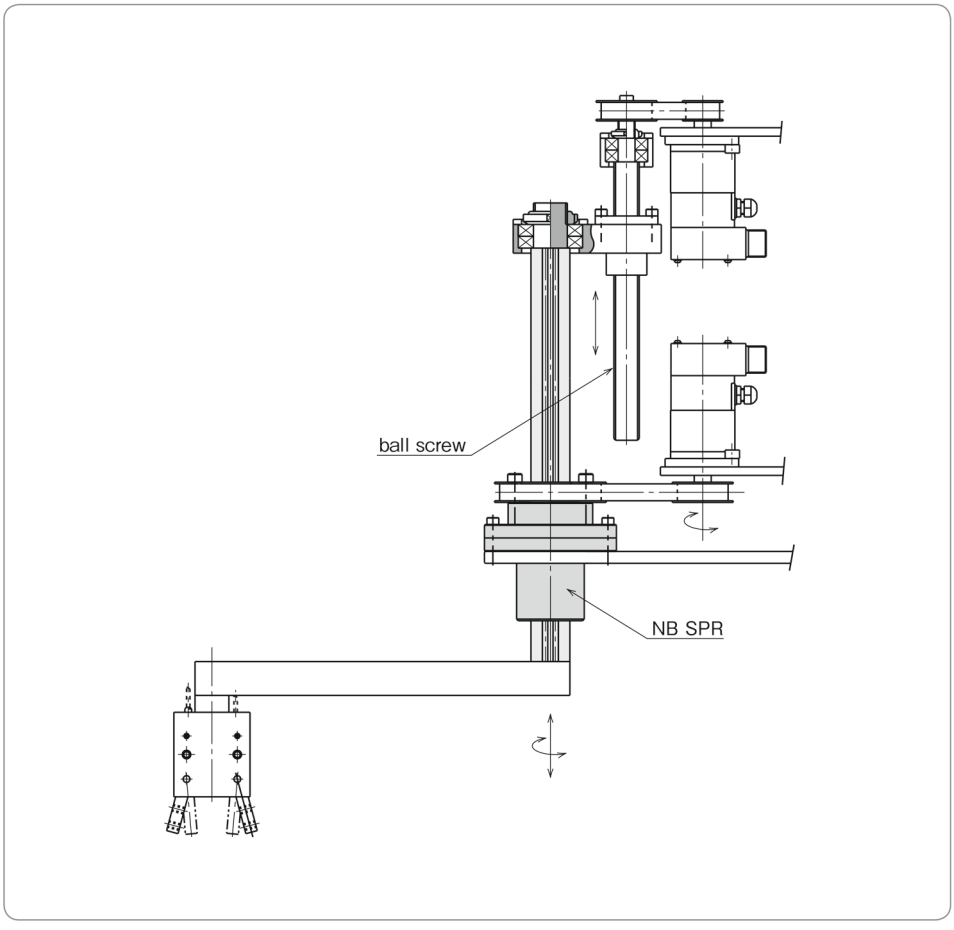
Resin retainers are used in the rotary ball spline, so the operating temperature should never exceed 80℃.

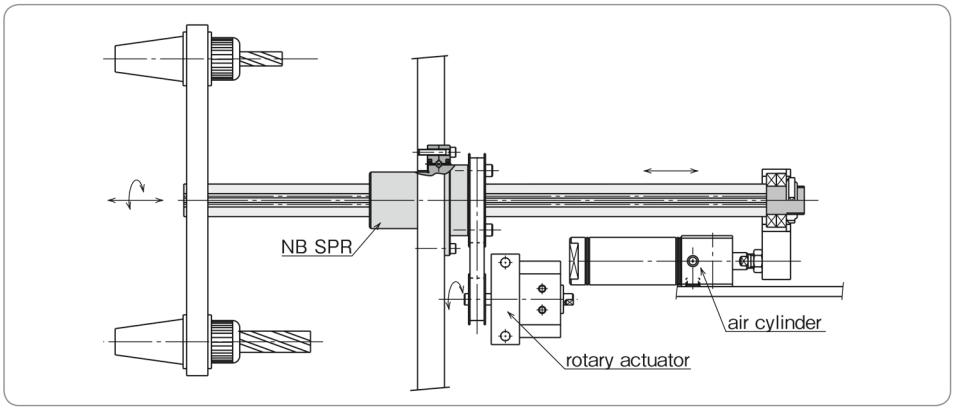
Dust Prevention

Foreign particles or dust in the rotary ball spline nut affects the motion accuracy and shortens the life time. Standard seals will perform well for dust prevention under normal operating conditions, however, in a harsh environment it is necessary to attach bellows or protective covers.

APPLICATION EXAMPLES




ball screw
NB SPR


NB SPR
air cylinder
rotary actuator

SPR TYPE





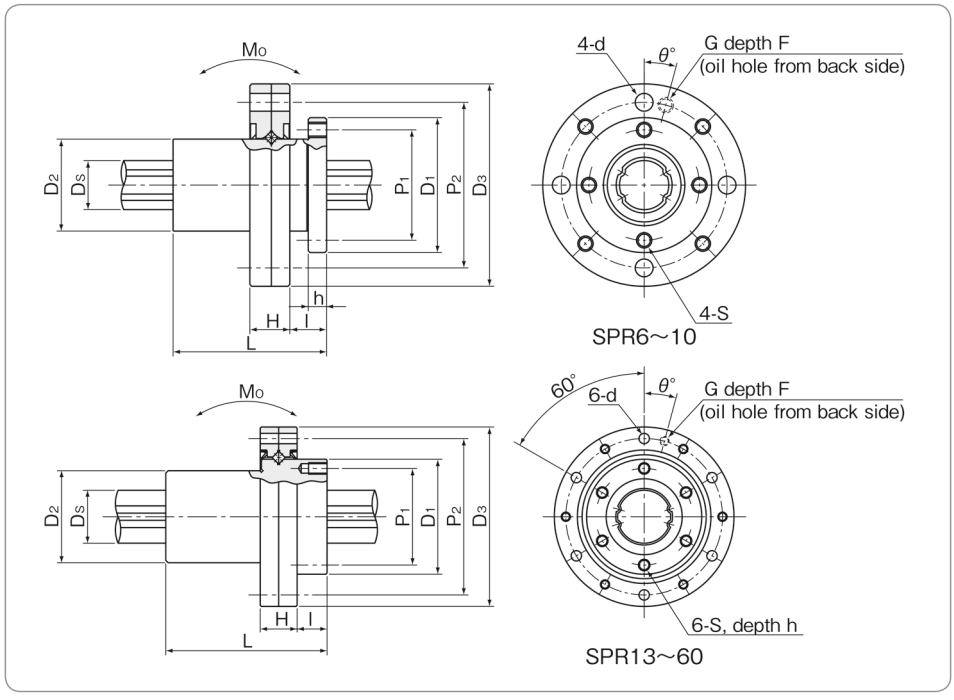
part number structure

example **SPR 25 - 2 - T1 - 436 / CU**

- SPR type
- nominal diameter
- number of nuts attached to one shaft
- preload symbol
  blank: standard
  T1: light
  T2: medium
- spline shaft total length
- with special specification

part number	major dimensions								major dimensions of cross roller bearing								
	D_1	tolerance	D_2	L	tolerance	P_1 P.C.D.	S	h	l	H	D_3	tolerance	P_2 P.C.D.	d	G	F	θ
	mm	μm	mm	mm	mm	mm		mm	mm	mm	mm	μm	mm	mm		mm	
SPR 6	20	0 −21	13	25	0 −0.2	16	M2	2.5	5	6.5	30	0/−21	24	2.4	M3	2.6	20°
SPR 8	22		15	25		18	M2.5	3	6	6.5	33	0 −25	27	2.9	M3	2.6	20°
SPR10	27		19	33		22	M3	4	8	7	40		33	3.4	M3	2.8	20°
SPR13	29		24	36		24	M3	5	8	9	50		42	3.4	M3	3.6	15°
SPR16	36	0 −25	31	50		30	M4	6	10	11	60	0 −30	50	4.5	M3	4.4	15°
SPR20A	44		35	63		38	M4	7	12	13	72		62	4.5	M6×0.75	5.2	15°
SPR25A	55		42	71	0 −0.3	47	M5	8	13	16	82		72	4.5	M6×0.75	6.4	15°
SPR30A	61	0 −30	47	80		52	M6	10	17	17	100	0 −35	86	6.6	M6×0.75	6.8	15°
SPR40A	76		64	100		66	M6	10	23	20	120		104	9	M6×0.75	8	15°
SPR50A	92	0 −35	80	125		80	M8	13	24	22	134	0 −40	118	9	M6×0.75	8.8	15°
SPR60A	107		90	140		95	M8	13	25	25	155		137	9	M6×0.75	10	15°
SPR20	40	0 −25	34	60	0/−0.2	34	M4	7	12	13	66	0 −30	56	4.5	M6×0.75	5.2	15°
SPR25	50		40	70	0 −0.3	42	M5	8	13	16	78		68	4.5	M6×0.75	6.4	15°
SPR30	61	0 −30	47	80		52	M6	10	17	17	100	0 −35	86	6.6	M6×0.75	6.8	15°
SPR40	76		62	100		64	M6	10	23	20	120		104	9	M6×0.75	8	15°
SPR50	88	0 −35	75	112		77	M8	13	24	22	130	0 −40	114	9	M6×0.75	8.8	15°
SPR60	102		90	127		90	M8	13	25	25	150		132	9	M6×0.75	10	15°

※Please contact NB for the grease fitting and relubrication method.



spline shaft Ds		rotary ball spline				cross roller bearing		allowable	second	cross-	mass		※maximum	
		basic torque rating		basic load rating		basic load rating		static	cross-sectional	sectional	nut	shaft	revolutions	size
	tolerance	dynamic	static	dynamic	static	dynamic	static	moment	moment of inertia	coefficient				
mm	μm	CT N・m	COT N・m	C kN	Co kN	CR kN	COR kN	Mo N・m	mm4	mm3	kg	kg/m	rpm	
6	0/−12	1.5	2.4	1.22	2.28	0.6	0.5	5.1	5.9×10	1.97×10	0.04	0.21	2,940	6
8	0	2.1	3.7	1.45	2.87	1.2	1.10	7.4	1.9×10^{2}	4.76×10	0.05	0.38	2,580	8
10	−15	4.4	8.2	2.73	5.07	2.4	2.45	18.0	4.61×10^{2}	9.22×10	0.09	0.60	2,060	10
13	0	21	39.2	2.67	4.89	2.9	3.70	13.7	1.38×10^{3}	2.13×10^{2}	0.17	1.0	1,350	13
16	−18	60	110	6.12	11.2	5.6	6.70	46	2.98×10^{3}	3.73×10^{2}	0.33	1.5	1,080	16
20	0	105	194	8.9	16.3	6.55	8.79	63	7.35×10^{3}	7.34×10^{2}	0.57	2.4	890	20A
25	−21	189	346	12.8	23.4	9.63	12.7	171	1.79×10^{4}	1.43×10^{3}	0.81	3.7	700	25A
30		307	439	18.6	23.2	11.8	17.1	181	3.66×10^{4}	2.44×10^{3}	1.19	5.38	640	30A
40	0	674	934	30.8	37.5	23.0	32.3	358	1.15×10^{5}	5.75×10^{3}	2.25	9.55	510	40A
50	−25	1,291	2,955	40.3	64.9	27.8	44.0	690	2.83×10^{5}	1.13×10^{4}	3.57	15.0	430	50A
60	0/−30	1,577	2,629	47.7	79.5	29.0	48.8	881	5.91×10^{5}	1.97×10^{4}	5.03	21.6	370	60A
18.2	0	83	133	7.84	11.3	5.90	7.35	63	5.05×10^{3}	5.54×10^{2}	0.45	2.0	980	20
23	−21	162	239	12.3	16.1	9.11	11.5	104	1.27×10^{4}	1.11×10^{3}	0.75	3.1	770	25
28		289	412	18.6	23.2	11.8	17.1	181	2.75×10^{4}	1.96×10^{3}	1.25	4.8	640	30
37.4	0	637	882	30.8	37.5	22.8	32.3	358	8.73×10^{4}	4.67×10^{3}	2.30	8.6	510	40
47	−25	1,390	3,180	46.1	74.2	27.2	42.1	696	2.16×10^{5}	9.21×10^{3}	3.10	13.1	450	50
56.5	0/−30	2,100	4,800	58.0	127.4	26.5	42.6	1,300	4.51×10^{5}	1.60×10^{4}	4.70	19	400	60

※Maximum revolutions for grease lubrication.
Contact NB for further information in case oil lubrication is required.

1kN≒102kgf　1N・m≒0.102kgf・m

NB

SM TYPE

– Standard Type –

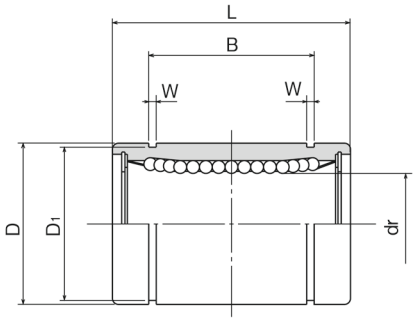


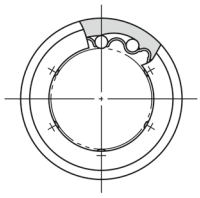
part number structure

example SMS 25 G UU - P

- specification
  SM: standard
  SMS: anti-corrosion
- inner contact diameter (dr)
- retainer material
  blank: standard/steel
  anti-corrosion/stainless steel
  G: resin
- seal
  blank: without seal
  U: seal on one side
  UU: seals on both sides
- accuracy grade
  blank: high
  P: precision

part number				number of ball circuits	dr			major dimensions D	
standard		anti-corrosion				tolerance μm			
steel retainer	resin retainer	stainless retainer	resin retainer		mm	precision	high	mm	tolerance μm
SM 3	SM 3G	SMS 3	SMS 3G	4	3	0 / – 5	0 / – 8	7	0 / – 9
SM 4	SM 4G	SMS 4	SMS 4G	4	4			8	
SM 5	SM 5G	SMS 5	SMS 5G	4	5			10	
SM 6	SM 6G	SMS 6	SMS 6G	4	6	0 / – 6	0 / – 9	12	0 / –11
SM 8s	SM 8sG	SMS 8s	SMS 8sG	4	8			15	
SM 8	SM 8G	SMS 8	SMS 8G	4	8			15	
SM 10	SM10G	SMS10	SMS10G	4	10			19	0 / –13
SM 12	SM12G	SMS12	SMS12G	4	12			21	
SM 13	SM13G	SMS13	SMS13G	4	13			23	
SM 16	SM16G	SMS16	SMS16G	4	16			28	
SM 20	SM20G	SMS20	SMS20G	5	20	0 / – 7	0 / –10	32	0 / –16
SM 25	SM25G	SMS25	SMS25G	6	25			40	
SM 30	SM30G	SMS30	SMS30G	6	30			45	
SM 35	SM35G	SMS35	SMS35G	6	35	0 / – 8	0 / –12	52	0 / –19
SM 40	SM40G	SMS40	SMS40G	6	40			60	
SM 50	SM50G	SMS50	SMS50G	6	50			80	
SM 60	SM60G	SMS60	SMS60G	6	60	0 / – 9	0 / –15	90	0 / –22
SM 80	SM80G	SMS80	SMS80G	6	80			120	
SM100	–	–	–	6	100	0 / –10	0 / –20	150	0 / –25
SM120	–	–	–	8	120			180	
SM150	–	–	–	8	150	0/–13	0/–25	210	0/–29





L mm	L tolerance mm	B mm	B tolerance mm	W mm	D_1 mm	eccentricity precision μm	eccentricity high μm	radial clearance (maximum) μm	basic load rating dynamic C N	basic load rating static Co N	mass g	shaft diameter mm
10	0 −0.12	—	—	—	—	4	8	— 3	69	105	1.4	3
12		—	—	—	—				88	127	2.0	4
15		10.2	0 −0.2	1.1	9.6				167	206	4.0	5
19	0 −0.2	13.5		1.1	11.5	8	12		206	265	8.5	6
17		11.5		1.1	14.3				176	216	11	8
24		17.5		1.1	14.3				274	392	17	8
29		22		1.3	18			— 4	372	549	36	10
30		23		1.3	20				510	784	42	12
32		23		1.3	22				510	784	49	13
37		26.5		1.6	27			— 6	774	1,180	76	16
42		30.5		1.6	30.5	10	15		882	1,370	100	20
59	0 −0.3	41	0 −0.3	1.85	38				980	1,570	240	25
64		44.5		1.85	43			— 8	1,570	2,740	270	30
70		49.5		2.1	49	12	20		1,670	3,140	425	35
80		60.5		2.1	57			−10	2,160	4,020	654	40
100		74		2.6	76.5			−13	3,820	7,940	1,700	50
110		85		3.15	86.5	17	25		4,700	10,000	2,000	60
140	0 −0.4	105.5	0 −0.4	4.15	116			−20	7,350	16,000	4,520	80
175		125.5		4.15	145	20	30		14,100	34,800	8,600	100
200		158.6		4.15	175			−25	16,400	40,000	15,000	120
240		170.6		5.15	204	25	40		21,100	54,300	20,250	150

1N≒0.102kgf

NB

KB TYPE (Euro Standard)

— Standard Type —



part number structure

example KBS 25 G UU

specification
KB: standard
KBS: anti-corrosion

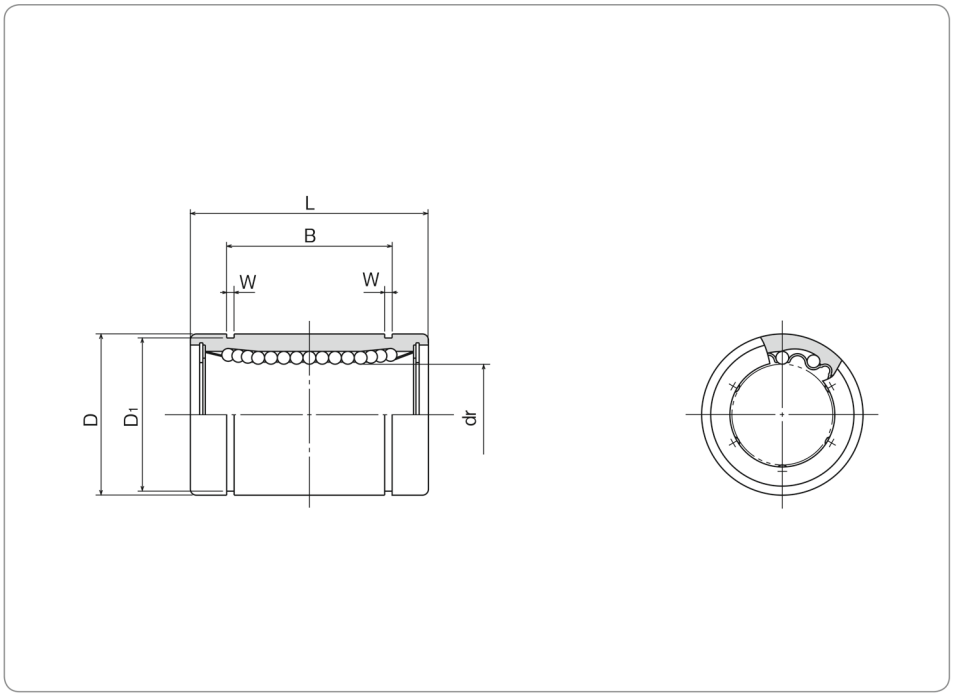
inner contact diameter (dr)

retainer material
blank: standard/steel
anti-corrosion/stainless steel
G: resin

seal
blank: without seal
U: seal on one side
UU: seals on both sides

part number				number of ball circuits	dr		major dimensions D	
standard		anti-corrosion						
steel retainer	resin retainer	stainless retainer	resin retainer		mm	tolerance μm	mm	tolerance μm
KB 3	KB 3G	KBS 3	KBS 3G	4	3	+ 8 0	7	0 − 8
KB 4	KB 4G	KBS 4	KBS 4G	4	4		8	
KB 5	KB 5G	KBS 5	KBS 5G	4	5		12	
KB 8	KB 8G	KBS 8	KBS 8G	4	8		16	
KB10	KB10G	KBS10	KBS10G	4	10		19	0 − 9
KB12	KB12G	KBS12	KBS12G	4	12		22	
KB16	KB16G	KBS16	KBS16G	4	16	+ 9 − 1	26	
KB20	KB20G	KBS20	KBS20G	5	20		32	0 −11
KB25	KB25G	KBS25	KBS25G	6	25	+11 − 1	40	
KB30	KB30G	KBS30	KBS30G	6	30		47	
KB40	KB40G	KBS40	KBS40G	6	40	+13 − 2	62	0 −13
KB50	KB50G	KBS50	KBS50G	6	50		75	
KB60	KB60G	KBS60	KBS60G	6	60		90	0 −15
KB80	—	—	—	6	80	+16/−4	120	

NB



L mm	L tolerance mm	B mm	B tolerance mm	W mm	D1 mm	eccentricity μm	radial clearance (maximum) μm	basic load rating dynamic C N	basic load rating static Co N	mass g	shaft diameter mm
10	0	—	—	—	—	10	— 3	69	105	1.4	3
12	−0.12	—	—	—	—			88	127	2	4
22		14.5		1.1	11.5			206	265	11	5
25		16.5		1.1	15.2			265	402	22	8
29	0	22	0	1.3	18	12		372	549	36	10
32	−0.2	22.9	−0.2	1.3	21		— 4	510	784	45	12
36		24.9		1.3	24.9			578	892	60	16
45		31.5		1.6	30.3	15	— 6	862	1,370	102	20
58		44.1		1.85	37.5			980	1,570	235	25
68	0	52.1	0	1.85	44.5		— 8	1,570	2,740	360	30
80	−0.3	60.6	−0.3	2.15	59	17		2,160	4,020	770	40
100		77.6		2.65	72		−13	3,820	7,940	1,250	50
125	0	101.7	0	3.15	86.5	20		4,700	9,800	2,220	60
165	−0.4	133.7	−0.4	4.15	116		−20	7,350	16,000	5,140	80

1N≒0.102kgf

KB-AJ TYPE (Euro Standard)

– Clearance Adjustable Type –



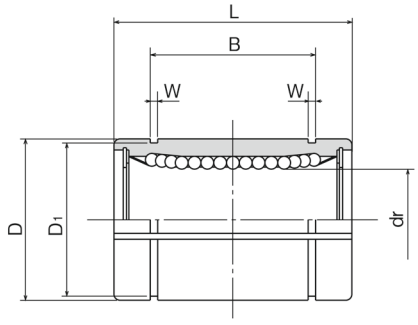
part number structure

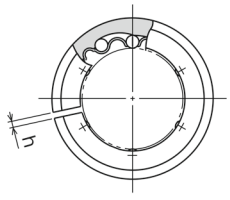
example **KBS 25 G UU - AJ**

- **KBS**: specification — **KB**: standard; **KBS**: anti-corrosion
- **25**: inner contact diameter (dr)
- **G**: retainer material — **blank**: standard/steel; anti-corrosion/stainless steel; **G**: resin
- **UU**: seal — **blank**: without seal; **U**: seal on one side; **UU**: seals on both sides
- **AJ**: clearance-adjustable

part number				number of ball circuits	major dimensions dr		major dimensions D	
standard		anti-corrosion						
steel retainer	resin retainer	stainless retainer	resin retainer		mm	tolerance* μm	mm	tolerance* μm
–	KB 5G-AJ	–	KBS 5G-AJ	4	5	+ 8 0	12	0 – 8
–	KB 8G-AJ	–	KBS 8G-AJ	4	8		16	
–	KB10G-AJ	–	KBS10G-AJ	4	10		19	0 – 9
KB12-AJ	KB12G-AJ	KBS12-AJ	KBS12G-AJ	4	12		22	
KB16-AJ	KB16G-AJ	KBS16-AJ	KBS16G-AJ	4	16	+ 9 – 1	26	
KB20-AJ	KB20G-AJ	KBS20-AJ	KBS20G-AJ	5	20		32	0 –11
KB25-AJ	KB25G-AJ	KBS25-AJ	KBS25G-AJ	6	25	+11 – 1	40	
KB30-AJ	KB30G-AJ	KBS30-AJ	KBS30G-AJ	6	30		47	
KB40-AJ	KB40G-AJ	KBS40-AJ	KBS40G-AJ	6	40	+13 – 2	62	0 –13
KB50-AJ	KB50G-AJ	KBS50-AJ	KBS50G-AJ	6	50		75	
KB60-AJ	KB60G-AJ	KBS60-AJ	KBS60G-AJ	6	60		90	0 –15
KB80-AJ	–	–	–	6	80	+16/–4	120	

* Accuracy is measured prior to machining clearance slit.



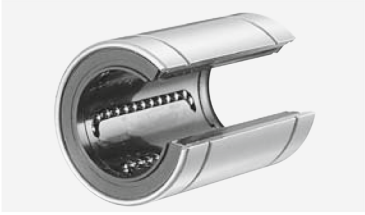


L		B		W	D_1	h	eccentricity*	basic load rating dynamic	basic load rating static	mass	shaft diameter
	tolerance		tolerance					C	Co		
mm	mm	mm	mm	mm	mm	mm	μm	N	N	g	mm
22		14.5		1.1	11.5	1		206	265	10	5
25		16.5		1.1	15.2	1		265	402	19.5	8
29	0	22	0	1.3	18	1	12	372	549	29	10
32	−0.2	22.9	−0.2	1.3	21	1.5		510	784	44	12
36		24.9		1.3	24.9	1.5		578	892	59	16
45		31.5		1.6	30.3	2		862	1,370	100	20
58		44.1		1.85	37.5	2	15	980	1,570	230	25
68	0	52.1	0	1.85	44.5	2		1,570	2,740	355	30
80	−0.3	60.6	−0.3	2.15	59	3	17	2,160	4,020	758	40
100		77.6		2.65	72	3		3,820	7,940	1,230	50
125	0	101.7	0	3.15	86.5	3	20	4,700	9,800	2,170	60
165	−0.4	133.7	−0.4	4.15	116	3		7,350	16,000	5,000	80

1N≒0.102kgf

KB-OP TYPE (Euro Standard)

– Open Type –



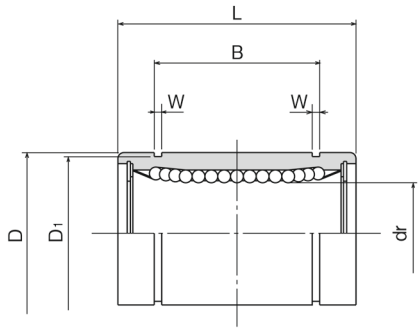
part number structure

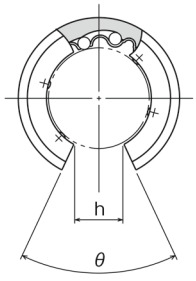
example **KBS 25 G UU -OP**

- specification
  KB: standard
  KBS: anti-corrosion
- inner contact diameter (dr)
- retainer material
  blank: standard/steel
  anti-corrosion/stainless steel
  G: resin
- seal
  blank: without seal
  U: seal on one side
  UU: seals on both sides
- open type

part number				number of ball circuits	major dimensions			
standard		anti-corrosion			dr		D	
steel retainer	resin retainer	stainless retainer	resin retainer		mm	tolerance* μm	mm	tolerance* μm
–	KB10G-OP	–	KBS10G-OP	3	10	+ 8	19	0
KB12-OP	KB12G-OP	KBS12-OP	KBS12G-OP	3	12	0	22	– 9
KB16-OP	KB16G-OP	KBS16-OP	KBS16G-OP	3	16	+ 9	26	
KB20-OP	KB20G-OP	KBS20-OP	KBS20G-OP	4	20	– 1	32	0
KB25-OP	KB25G-OP	KBS25-OP	KBS25G-OP	5	25	+11	40	–11
KB30-OP	KB30G-OP	KBS30-OP	KBS30G-OP	5	30	– 1	47	
KB40-OP	KB40G-OP	KBS40-OP	KBS40G-OP	5	40	+13	62	0
KB50-OP	KB50G-OP	KBS50-OP	KBS50G-OP	5	50	– 2	75	–13
KB60-OP	KB60G-OP	KBS60-OP	KBS60G-OP	5	60		90	0
KB80-OP	–	–	–	5	80	+16/–4	120	–15

* Accuracy is measured prior to machining open slit.





L		B		W	D1	h	θ	eccentricity*	basic load rating dynamic C	basic load rating static Co	mass	shaft diameter
mm	tolerance mm	mm	tolerance mm	mm	mm	mm		μm	N	N	g	mm
29		22		1.3	18	6.8	80°		372	549	23	10
32	0	22.9	0	1.3	21	7.5	78°	12	510	784	35	12
36	−0.2	24.9	−0.2	1.3	24.9	10	78°		578	892	48	16
45		31.5		1.6	30.3	10	60°		862	1,370	84	20
58		44.1		1.85	37.5	12.5	60°	15	980	1,570	195	25
68	0	52.1	0	1.85	44.5	12.5	50°		1,570	2,740	309	30
80	−0.3	60.6	−0.3	2.15	59	16.8	50°	17	2,160	4,020	665	40
100		77.6		2.65	72	21	50°		3,820	7,940	1,080	50
125	0	101.7	0	3.15	86.5	27.2	54°	20	4,700	9,800	1,900	60
165	−0.4	133.7	−0.4	4.15	116	36.3	54°		7,350	16,000	4,380	80

1N≒0.102kgf

KBF TYPE (Euro Standard)

— Round Flange Type —

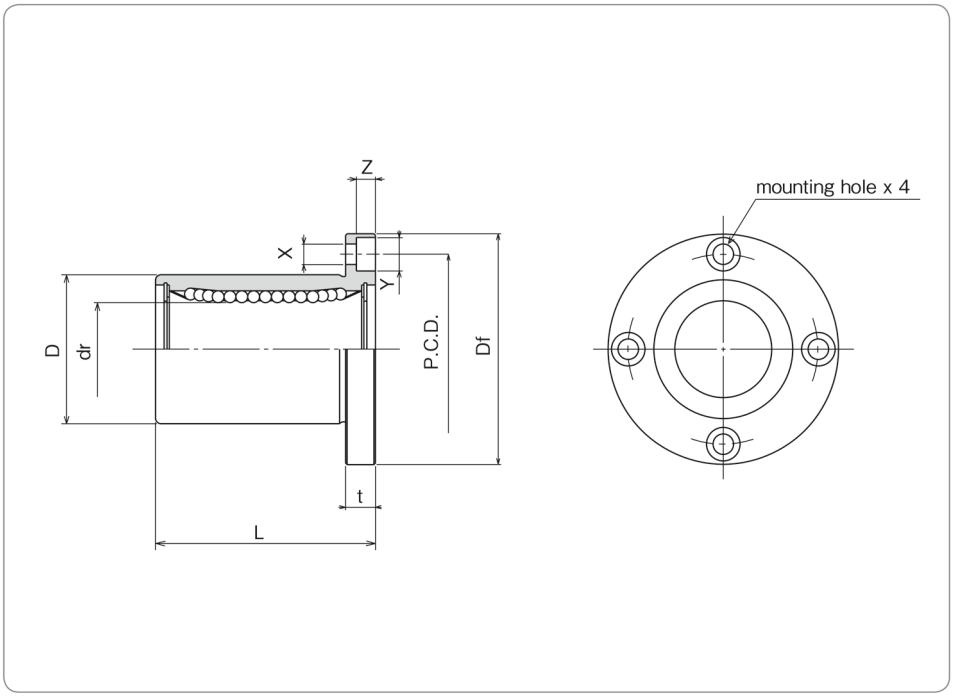


part number structure

example **KBSF 25 G UU-SK**

- **KBSF**: specification
  - **KBF**: standard
  - **KBSF**: anti-corrosion
- **25**: inner contact diameter (dr)
- **G**: retainer material
  - **blank**: standard/steel
  - anti-corrosion/stainless steel
  - **G**: resin
- **UU**: seal
  - **blank**: without seal
  - **UU**: seals on both sides
- **SK**: outer cylinder surface treatment
  - **blank**: no surface treatment
  - **SK**: electroless nickel plating
  - **LF**: low temperature black chrome treatment with fluoride coating
  - **SB**: black oxide (not available on anti-corrosion type)
  - **SC**: industrial chrome plating

part number				number of ball circuits	major dimensions				
standard		anti-corrosion			dr		D		L
steel retainer	resin retainer	stainless retainer	resin retainer		mm	tolerance μm	mm	tolerance μm	±0.3 mm
—	KBF 5G	—	KBSF 5G	4	5	+ 8 0	12	0 −13	22
KBF 8	KBF 8G	KBSF 8	KBSF 8G	4	8		16		25
KBF12	KBF12G	KBSF12	KBSF12G	4	12		22	0 −16	32
KBF16	KBF16G	KBSF16	KBSF16G	4	16	+ 9 − 1	26		36
KBF20	KBF20G	KBSF20	KBSF20G	5	20		32	0 −19	45
KBF25	KBF25G	KBSF25	KBSF25G	6	25	+11 − 1	40		58
KBF30	KBF30G	KBSF30	KBSF30G	6	30		47		68
KBF40	KBF40G	KBSF40	KBSF40G	6	40	+13 − 2	62	0 −22	80
KBF50	KBF50G	KBSF50	KBSF50G	6	50		75		100
KBF60	KBF60G	KBSF60	KBSF60G	6	60		90	0 −25	125
KBF80	—	—	—	6	80	+16/−4	120		165



flange				eccentricity	perpendicularity	basic load rating		mass	shaft diameter
Df	t	P.C.D.	X×Y×Z			dynamic C	static Co		
mm	mm	mm	mm	μm	μm	N	N	g	mm
28	5	20	3.5×6×3.1	12	12	206	265	26	5
32	5	24	3.5×6×3.1			265	402	41	8
42	6	32	4.5×7.5×4.1			510	784	80	12
46	6	36	4.5×7.5×4.1			578	892	103	16
54	8	43	5.5×9×5.1	15	15	862	1,370	182	20
62	8	51	5.5×9×5.1			980	1,570	335	25
76	10	62	6.6×11×6.1			1,570	2,740	560	30
98	13	80	9×14×8.1	17	17	2,160	4,020	1,175	40
112	13	94	9×14×8.1			3,820	7,940	1,745	50
134	18	112	11×17×11.1	20	20	4,700	9,800	3,220	60
164	18	142	11×17×11.1			7,350	16,000	6,420	80

1N≒0.102kgf

KBK TYPE (Euro Standard)

— Square Flange Type —

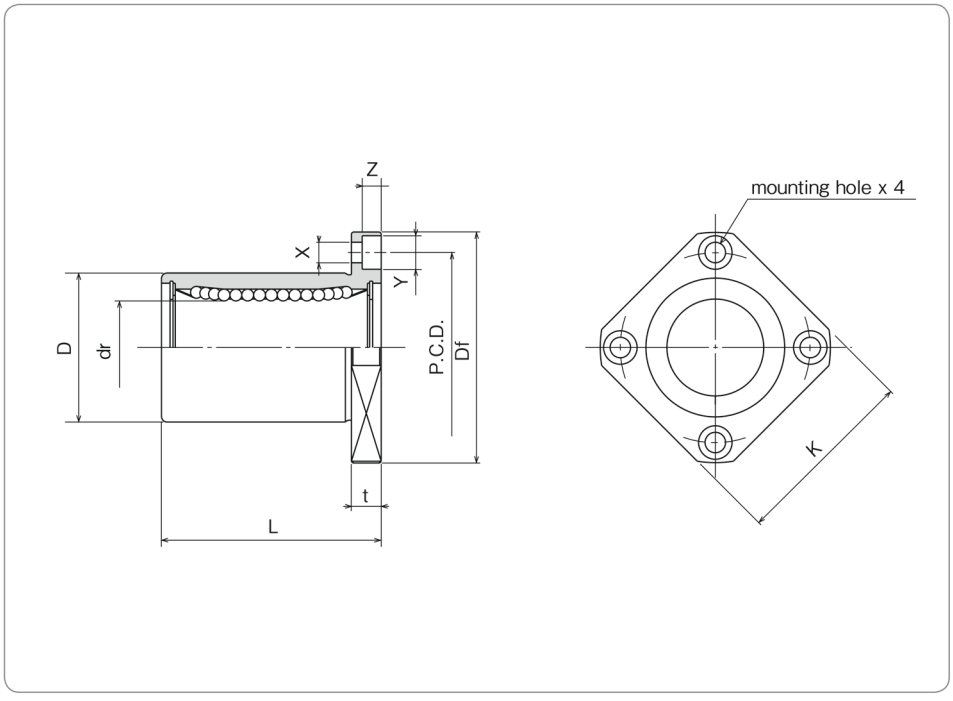


part number structure

example **KBSK 25 G UU -SK**

- **KBSK** — specification
  - **KBK**: standard
  - **KBSK**: anti-corrosion
- **25** — inner contact diameter (dr)
- **G** — retainer material
  - **blank**: standard/steel
  - anti-corrosion/stainless steel
  - **G**: resin
- **UU** — seal
  - **blank**: without seal
  - **UU**: seals on both sides
- **SK** — outer cylinder surface treatment
  - **blank**: no surface treatment
  - **SK**: electroless nickel plating
  - **LF**: low temperature black chrome treatment with fluoride coating
  - **SB**: black oxide (not available on anti-corrosion type)
  - **SC**: industrial chrome plating

part number				number of ball circuits	major dimensions				
standard		anti-corrosion			dr		D		L
steel retainer	resin retainer	stainless retainer	resin retainer		mm	tolerance μm	mm	tolerance μm	±0.3 mm
—	KBK 5G	—	KBSK 5G	4	5	+ 8 0	12	0 −13	22
KBK 8	KBK 8G	KBSK 8	KBSK 8G	4	8		16		25
KBK12	KBK12G	KBSK12	KBSK12G	4	12		22	0 −16	32
KBK16	KBK16G	KBSK16	KBSK16G	4	16	+ 9 − 1	26		36
KBK20	KBK20G	KBSK20	KBSK20G	5	20		32	0 −19	45
KBK25	KBK25G	KBSK25	KBSK25G	6	25	+11 − 1	40		58
KBK30	KBK30G	KBSK30	KBSK30G	6	30		47		68
KBK40	KBK40G	KBSK40	KBSK40G	6	40	+13 − 2	62	0 −22	80
KBK50	KBK50G	KBSK50	KBSK50G	6	50		75		100
KBK60	KBK60G	KBSK60	KBSK60G	6	60		90	0 −25	125
KBK80	—	—	—	6	80	+16/−4	120		165



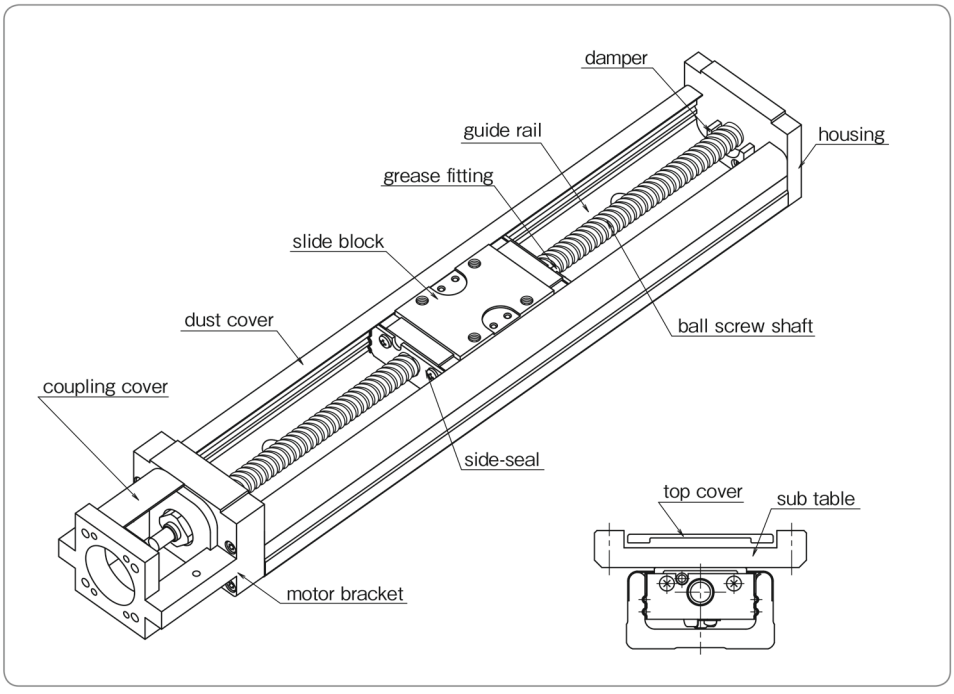
flange					eccentricity	perpendicularity	basic load rating		mass	shaft diameter
							dynamic	static		
Df	K	t	P.C.D.	X×Y×Z			C	Co		
mm	mm	mm	mm	mm	μm	μm	N	N	g	mm
28	22	5	20	3.5×6×3.1	12	12	206	265	20	5
32	25	5	24	3.5×6×3.1			265	402	33	8
42	32	6	32	4.5×7.5×4.1			510	784	64	12
46	35	6	36	4.5×7.5×4.1			578	892	90	16
54	42	8	43	5.5×9×5.1	15	15	862	1,370	147	20
62	50	8	51	5.5×9×5.1			980	1,570	295	25
76	60	10	62	6.6×11×6.1			1,570	2,740	465	30
98	75	13	80	9×14×8.1	17	17	2,160	4,020	975	40
112	88	13	94	9×14×8.1			3,820	7,940	1,545	50
134	106	18	112	11×17×11.1	20	20	4,700	9,800	2,780	60
164	136	18	142	11×17×11.1			7,350	16,000	5,920	80

1N≒0.102kgf

ACTUATOR

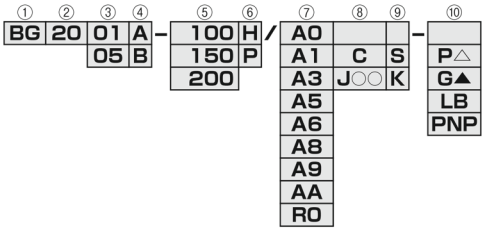
NB's BG type is a compact single axis actuator which integrates a slide guide and precision ball screw. BG type offers compact dimensions and outperforms conventional positioning tables.
This is made possible by a unique "U" shaped guide rail and slide block which provides multiple functions of a guide block and a ball screw nut combined into a single unit. The "U" shaped guide rail offers high rigidity against bending moment. This structural feature allows for integrated framework of machinery or equipment and can be cantilevered. Additionally, the slide block contains 4 ball circuits which delivers high load capacity, high accuracy and high rigidity.

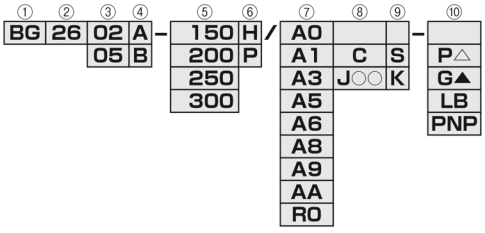
Figure H-1 Structure of BG type

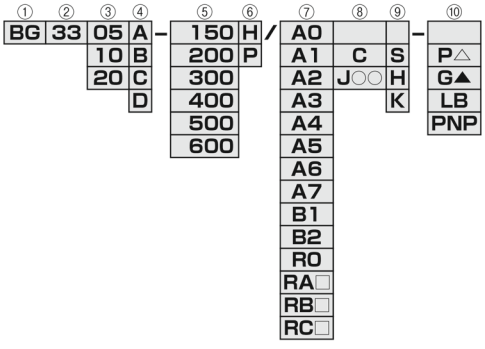


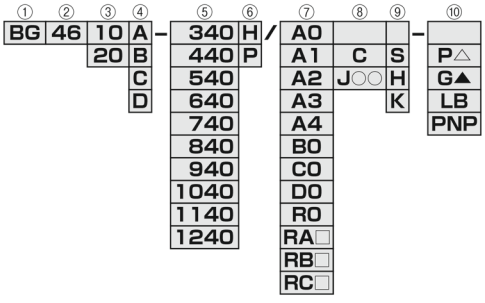
PART NUMBER STRUCTURE

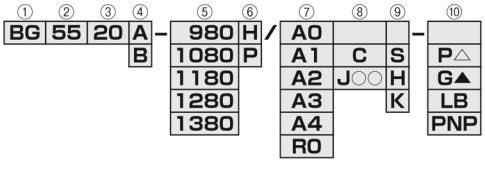
Part number for BG type is described as follows.











① BG type

② size

③ ball screw lead

④ type of block

A	1 long block
B	2 long blocks
C	1 short block
D	2 short blocks

※Drive block is located closest to motor bracket side.

⑤ guide rail length

⑥ precision grade

H	high grade
P	precision grade

⑦ motor bracket (refer to page H-17～)
The number in the square , □ ,after suffix RA , RB or RC indicates the mounting direction code.
(refer to page H-30, H-31)

⑧ cover and bellows

none	without top cover
C	with top cover + sub table
J○○	with bellows

○○ sensor cable outlet position
(refer to page H-45)

⑨ sensor

none	without sensor
S	with slim-type / compact photomicro sensor
H	with close contact capable photomicro sensor
K	with proximity sensor

⑩ option

none	without option
P△	with positioning pin hole (※1)
G▲	with grease option (※2)
LB	with low temperature black chrome treatment (※3)
PNP	with PNP sensor

In case of multiple options, add + between each option.
Example: (PS+LB+PNP)
※1: △ is S or W (refer to page H-53)
※2: ▲ is K, U, L or F (refer to page H-16)
Grease is applied to slide guide, ball screw, and angular bearings.
※3: LB is applied to steel parts except for aluminum parts and radial bearings.

SPECIFICATIONS

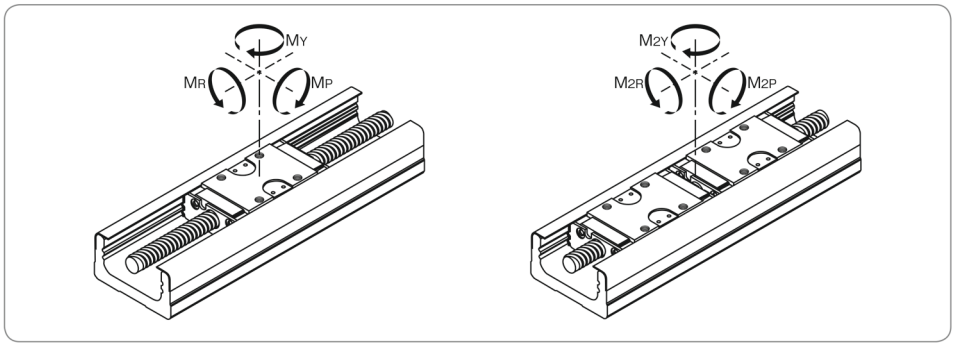
BG Type is categorized as either high grade (H) or precision grade (P).

Table H-1 Specifications

part number				BG2001		BG2005		BG2602		BG2605		BG3305		BG3310		BG3320		BG4610		BG4620		BG5520	
precision grade				high	※precision	high	※precision	high	※precision	high	※precision	high	precision	high	precision	high	precision	high	precision	high	precision	high	precision
guide	radial clearance		μm	−3~0	−6~−3	−3~0	−6~−3	−4~0	−8~−4	−4~0	−8~−4	−3~0	−7~−3	−3~0	−7~−3	−3~0	−7~−3	−5~0	−11~−5	−5~0	−11~−5	−6~0	−18~−6
	long block	basic dynamic load	C	kN	4.27		7.87				12.6						29.8				43.2	
		basic static load	Co	kN	7.89		14.98				22.7						51.2				74.0	
		allowable static moment	MP	N•m	35		99				181						610				1,088	
			M2P	N•m	199		550				1,035						3,285				5,465	
			MY	N•m	42		118				215						727				1,297	
			M2Y	N•m	237		656				1,233						3,914				6,513	
			MR	N•m	101		255				500						1,612				2,701	
			M2R	N•m	201		509				1,000						3,224				5,402	
	short block	basic dynamic load	C	kN	—		—				7.8				—		19.9				—	
		basic static load	Co	kN	—		—				11.4				—		28.8				—	
		allowable static moment	MP	N•m	—		—				49				—		207				—	
			M2P	N•m	—		—				368				—		1,336				—	
			MY	N•m	—		—				59				—		246				—	
			M2Y	N•m	—		—				439				—		1,593				—	
			MR	N•m	—		—				250				—		907				—	
			M2R	N•m	—		—				500				—		1,814				—	
ball screw	shaft diameter		mm	6		8				10				12		15				20			
	lead		mm	1	5	2	5			5		10		20		10		20		20			
	spacer-ball ratio		—	—		—				—	1:1	—	1:1	—	1:1	—	1:1	—	2:1	—	2:1		
	basic dynamic load	Ca	kN	0.63	0.65	2.60	2.35			3.35	2.11	2.20	1.39	2.32	1.46	4.40	2.77	4.40	3.36	5.40	4.12		
	basic static load	Coa	kN	1.34	0.92	3.64	3.30			5.90	2.95	3.50	1.75	4.05	2.02	7.90	3.95	7.90	5.27	10.5	7.00		
bearing support	part number		—	AC5-14DF		AC6-16DF				70M8DF/GMP5						7001T2DF/GMP5				7002T2DF/GMP5			
	basic dynamic load	Cb	kN	1.31		1.79				4.40						6.77				7.74			
	basic static load	Cob	kN	1.25		1.76				4.36						7.45				9.50			

M_{2P} ,M_{2Y} and M_{2R} are the allowable static moments when 2 blocks are used in close contact.
※ Please contact NB when using BG20-P & BG26-P grade series with short and frequent stroke. (short stroke, BG2001: 7 mm or less, BG2005: 25 mm or less, BG2602: 14 mm or less and BG2605: 25 mm or less)
Short blocks are not available for BG3320.

Figure H-4 Direction of Moment



SLIDE SCREW

The NB slide screw converts rotational motion into linear motion by utilizing the friction between radial ball bearings and a shaft. This simple mechanism eases maintenance and installation work. The slide screw is most commonly used as transport devices in many types of machines, and is not intended for accurate positioning requirements.

STRUCTURE AND ADVANTAGES

The NB slide screw consists of two aluminum blocks, each with three radial bearings with a fixed angle between them. A round shaft is inserted between the two blocks, and its rotation produces linear motion determined by the contact angle between the shaft and the bearings. For variable loads, the thrust is adjusted by turning the spring loaded thrust adjustment bolts.

Linear Motion on Round-shaft

The NB slide screw is suitable for long-stroke applications using a standard linear shaft.

High Machine Efficiency

The slide screw utilizes the rotational motion of the bearings and shaft to achieve machine efficiency as high as 90%.

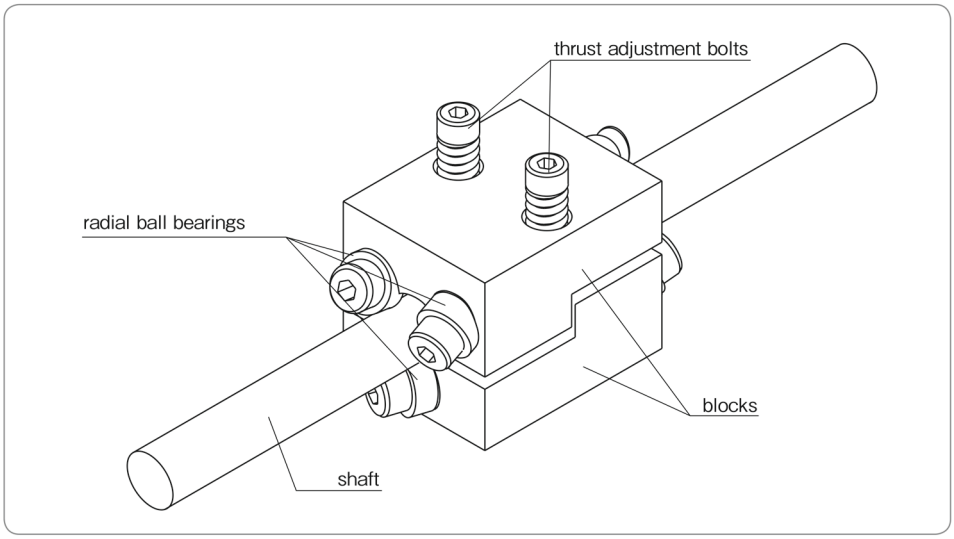
No Lubrication Required

The bearings are pre-lubricated with grease prior to shipment, so there is no need to apply lubrication other than to the drive shaft to prevent corrosion.

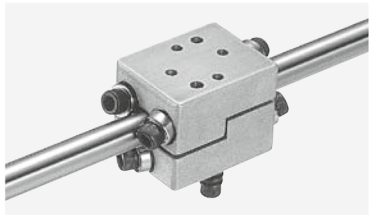
Excessive Load Prevention Mechanism

When an excessive load is applied, the screw will stop due to slippage, thereby preventing accidents.

Figure I-1 Structure of NB Slide Screw



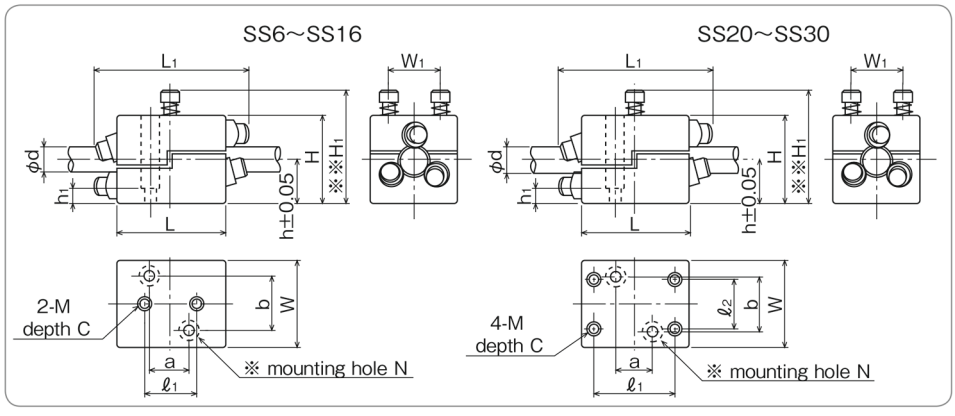
SS TYPE



part number structure

example **SS** **16** - **16** - **N**

- SS: slide screw
- 16: shaft diameter
- 16: lead
- N: additional mounting holes



part number	shaft diameter d	major dimensions H	W	L	h	H1	L1	W1	ℓ1	ℓ2	a	b	M	C	N	h1	standard lead	maximum thrust	maximum tightening torque	mass
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm		mm	mm	N	N·m	kg
SS 6	6	20.5	20	25	10	28	36	12	10	–	–	–	M3	6.5	–	–	6, 9	24.5	0.03	0.03
SS 8	8	28.5	28	40	14	40	56	18	18	–	–	–	M4	9	–	–	8,12	73.5	0.14	0.09
SS10	10	36.5	36	46	18	51	62	24	20	–	20	24	M4	12	M4	8	10,15	118	0.25	0.17
SS12	12	40.5	40	50	20	54	72	25	25	–	20	25	M5	12.5	M4	10	12,18	147	0.31	0.22
SS13	13	40.5	40	50	20	54	72	25	25	–	20	25	M5	12.5	M4	10	13,15	147	0.31	0.22
SS16	16	50.5	50	60	25	62	86	32	30	–	25	32	M5	16	M5	10	16,24	196	0.41	0.39
SS20	20	60.5	60	70	30	71	97	40	50	40	30	40	M6	12	M6	10	20,30	265	0.56	0.57
SS25	25	76.5	76	80	38	82	110	50	60	50	32	50	M8	12	M8	15	25	392	1.1	1.05
SS30	30	89	90	88	44	92	127	60	60	70	36	60	M8	15	M8	15	30,45	539	1.4	1.65

※ The mounting holes are machined on request.

※※ H1 is the minimum height when the maximum thrust is applied.

1N≒0.102kgf 1N·m≒0.102kgf·m

Ball Bearing Slides & Guidance Rails

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NOTES:

Français **Tableau de Sélection**

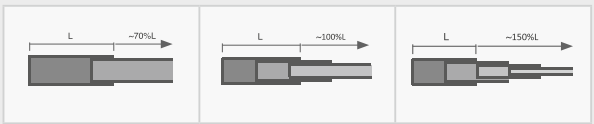
English **Selection Table**

Deutsch **Auswahltabelle**

Nederlands **Selectie Tabel**



1



2

	Acier zingué	Zinc plated steel	Stahl silbern verzinkt	Verzinkt staal
	Aluminium Anodisé	Anodised Aluminium	Aluminium farblos eloxiert	Geanodiseerd aluminium
	Inox	Stainless steel	Edelstahl	Roestvrij staal

3

	L = (mm)	150	200	250	300	350
8	D402	7	15	25	50	45
13	D53		40	40	40	40
10	R20		40	40	40	45
11	R26		~~30~~	~~30~~	60	65
14	R71		140	140	140	140
11	ST26		60	65	70	65
18	ST38		135	135	135	135

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	L=(mm)			V	F	VF	S	DD	DB	150	200	250	300	350	400	450	500	550	600	650
12	D402	×	✓	/	/	/	×	/	D46	7	15	25	50	45	40	32	25	18	15	10
14	D53	✓	/	/	/	/	×	/	×		40	40	40	40	40	47	53	57	60	59
10	R20	✓	/	×	×	×	×	/	×		40	40	40	45	50	55	60	58	56	55
11	R26	✓	/	×	×	×	×	/	×		60	60	60	65	70	75	80	78	75	73
13	R28	✓	✓	×	×	×	×	/	×			65	65	70	75	80	85	83	80	78
14	R53	✓	/	/	/	/	×	/	×		135	135	135	135	135	150	154	158	160	160
15	R71	✓	/	/	/	/	×	/	×		140	140	140	140	140	175	210	245	280	278
16	R91	✓	/	×	×	×	×	/	×								450	460	480	520
17	R82	/	/	×	/	×	×	/	×								430	450	470	480
18	R102	/	/	×	×	×	×	/	×								450	515	570	615
11	ST26	✓	/	×	×	×	×	/	×		60	60	60	65	70	75	80	78	75	73
13	ST38	✓	✓	×	×	×	×	/	×			65	65	70	75	80	85	83	80	78
14	ST58	✓	/	/	/	/	×	/	×		135	135	135	135	135	150	154	158	160	160
15	ST78	✓	/	/	/	/	×	/	×		140	140	140	140	140	175	210	245	280	278

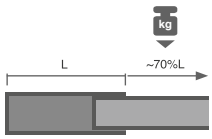
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20	D1422	×	✓	×	×	×	×	×	×	38	40	43	40	38	35	33	30	28	25	20
21	D444	×	✓	/	/	/	×	×	D446	62	60	57	55	53	50	48	45	43	40	38
24	D5	✓	/	/	/	/	/	/	×			41	49	55	60	64	68	70	71	70
22	RA31	✓	/	×	×	×	×	×	×	40	45	60	70	67	63	60	56	53	50	46
23	RA41	✓	/	×	×	×	×	×	×		55	70	80	78	76	75	74	72	70	66
21	RA44	×	✓	/	/	/	×	×	×		80	83	80	78	75	73	70	65	60	55
24	RA5R	✓	/	/	/	/	/	/	×			140	150	159	166	170	174	176	175	174
25	RA7R	✓	/	/	/	/	/	/	×			140	180	228	276	320	350	355	350	340
26	RA9	✓	/	/	×	×	×	×	×			230	300	355	395	430	440	435	430	425
20	E1400	×	✓	/	×	×	×	×	×		120	135	130	125	120	115	110	105	100	95
27	E1700	/	/	×	×	×	✓	/	×								470	485	497	510
28	E1902	/	/	×	×	×	✓	/	×								570	605	640	670
29	E1012	/	/	×	×	×	✓	/	×								600	640	685	720
www.	E1020	/	/	×	×	×	✓	×	×								950	1000	1050	1100
23	ST41	✓	/	×	×	×	×	×	×		55	70	80	78	76	75	74	72	70	66
21	ST438	×	✓	×	×	×	×	×	×			83	80	78	75	73	70	65	60	55
24	ST508	✓	/	/	/	/	/	/	×			140	150	159	166	170	174	176	175	174
25	ST708	✓	/	/	/	/	/	/	×			140	180	228	276	320	350	355	350	340
27	E1708	/	/	×	×	×	×	/	×								470	485	497	510
28	E1908	/	/	×	×	×	×	/	×								570	605	640	670
29	E1018	/	/	×	×	×	×	/	×								600	640	685	720

	L=(mm)			V	F	VF	S	DD	DB	150	200	250	300	350	400	450	500	550	600	650
31	RA414	✓	×	×	×	×	×	×	×			50	55	55	54	53	52	51	50	47
32	RA554	✓	/	/	/	/	×	×	×				75	92	106	112	116	114	111	105
33	RA774	✓	/	×	×	×	×	×	×				190	207	220	226	228	224	220	212
34	E1904	/	/	×	×	×	×	×	×								220	210	200	195
35	E1014	/	/	×	×	×	/	×	×								350	375	400	425
www.	ST638	×	✓	×	×	×	×	×	×			47	45	42	40	37	35	32	30	27
32	ST558	✓	/	/	/	/	×	×	×				75	92	106	112	116	114	111	105

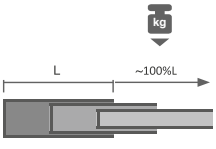
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45	D48	✓	✓	×	×	×	×	×	×	AL60	50									
46	D52	✓	✓	×	×	×	×	×	✓	BP53	75									
46	E28	✓	✓	×	×	×	×	×	×	G41	40	G40	50							
46	E53	✓	✓	×	×	×	×	×	×	G57	110	G53	170	BP53	75	BS53	100			
48	E50	✓	✓	×	×	×	×	×	×	G52	180	G54	240							
48	E46	✓	✓	×	×	×	×	×	×	G52	250	G54	310							
49	E72	✓	✓	×	×	×	×	×	×	G72	250	G70	300							
49	E48	✓	✓	×	×	×	×	×	×	G67	170	G60	240							
50	E98	✓	✓	×	×	×	×	×	×	G12	600									
46	ST53	✓	✓	×	×	×	×	×	×	GS57	110	GS53	170	BP53	75	BS53	100			
48	ST50	✓	✓	×	×	×	×	×	×	GS52	180	GS54	240							

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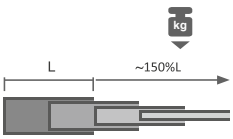
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	57	56	55	53	52	50										
	53	51	50													
	70	68	65	63	60											
	75	73	71	68	65											
	158	156	150	144	136	120	100	80	60	40						
	270	260	250	238	224	200	180	160	140	120	98	74	50			
	570	612	640	650	640	610	580	550	525	500	475	450	425	400	377	360
	490	495	500	500	500	495	484	470	455	440	425	410	395	380	365	350
	650	680	700	715	725	730	720	700	675	645	615	585	555	530	500	470
	70	68	65	63	60											
	75	73	71	68	65											
	158	156	150	144	136	120	100	80	60	40						
	270	260	250	238	224	200	180	160	140	120	98	74	50			



	700	750	800	850	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
	35	30	25													
	69	67	64	60	55	43	31	20								
	43	40	37	34	31	25	19									
	63	60	57	53	49	40	30									
	50	45	40	35	30	20										
	172	168	164	158	151	136	118	98	78	58	38	20				
	330	319	305	292	277	250	225	202	177	152	130	110	90	70	50	30
	410	400	385	375	360	340	300	275	245	220	175	155	135	110	85	60
	90	85	80	75	70	50										
	525	537	545	550	550	530	490	443	395	350	307	265	225	185	148	110
	695	720	740	755	770	785	782	770	745	705	660	600	530	455	380	300
	755	785	810	835	860	885	900	895	875	845	800	740	665	585	500	400
	1150	1200	1250	1200	1150	1100	1050	1000	950	900	850	800	750	700	650	600
	63	60	57	53	49	40	30									
	50	45	40	35	30	20										
	172	168	164	158	151	136	118	98	78	58	38	20				
	330	319	305	292	277	250	225	202	177	152	130	110	90	70	50	30
	525	537	545	550	550	530	490	443	395	350	307	265	225	185	148	110
	695	720	740	755	770	785	782	770	745	705	660	600	530	455	380	300
	755	785	810	835	860	885	900	895	875	845	800	740	665	585	500	400

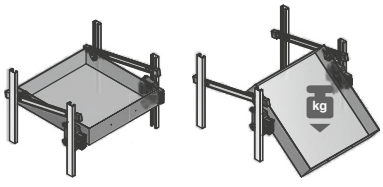


	700	750	800	850	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
	45	43	40													
	98	90	82	73	64	50	36	25								
	202	192	182	170	160	140	121	105	90	76	60					
	190	180	170	165	160	150	135	120	105	90	80	70	60	50	40	30
	450	475	500	475	450	400	375	350	325	300	275	250	225	200	175	150
	25	22	20													
	98	90	82	73	64	50	36	25								





	L = (mm)	550	650	1050
5	E53GP	100	100	100



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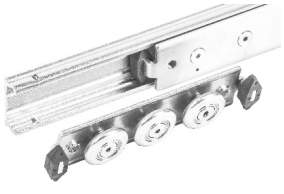


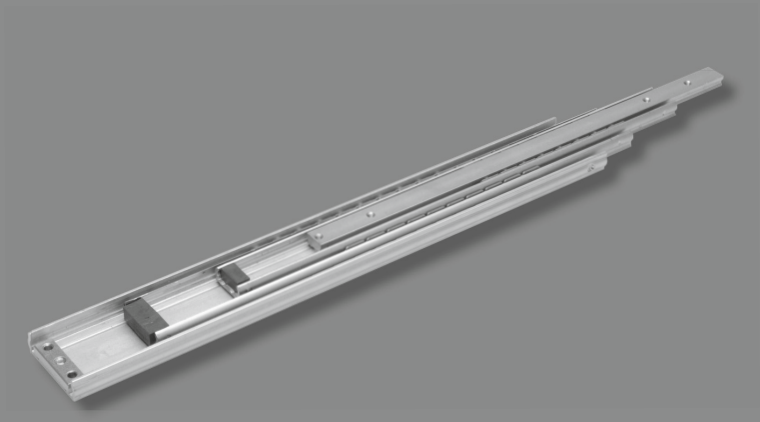












Français Glissières Télescopiques

English Telescopic Slides

Deutsch Teleskopschienen

Nederlands Telescopische geleiders

		Français	English	Deutsch	Nederlands
V	38	Verrou ouvert	Lock out / Positive lock	Verriegelung offen	Vergrendeling open
F	38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten
VF	38	Verrou ouvert et fermé	Lock out & in	Ver. offen & geschlossen	Vergrendeling open & gesloten
S	37	Ouverture Synchronisée	Synchronization	Synchronisation	Synchronisatie
DD	38	Double développement	Double extension	Doppelauszug	2-Zijdig Uittrekbaar
DB	38	Débrochable	Lock out & disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar
	41	Montage à plat	Mounting on minoraxis	Flachmontage	Bodemmontage
	41	Montage vertical	Vertical mounting	Verfahrweg vertikal	Verticale montage

		Français	English	Deutsch	Nederlands
kg	36	Charges en kg par paire de glissières sur chant	Load in kg per pair of slides on major axis	Tragfähigkeit in kg pro Schienenpaar	Draagvermogen per paar rechtstandig
kg	51	Charge en kilo par patin	Load on major axis	Tragfähigkeit pro Schlitten	Draagvermogen in kg per loopwagen
✓		Standard	Standard	Standard	Standaard
×		Non	No	nein	Niet
/		Sur demande	On request	auf Anfrage	Op aanvraag

	Français	English	Deutsch	Nederlands
	Acier zingué	Zinc plated steel	Stahl silbern verzinkt	Verzinkt staal
	Aluminium Anodisé	Anodised Aluminium	Aluminium farblos eloxiert	Geanodiseerd aluminium
	Inox	Stainless steel	Edelstahl	Roestvrij staal





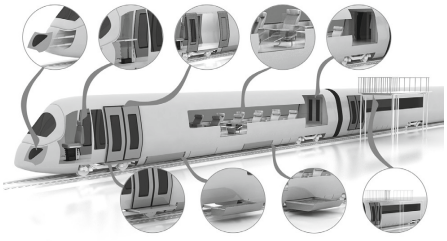




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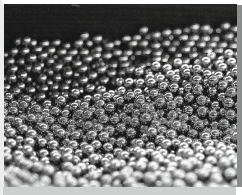
www.chambrelan.com





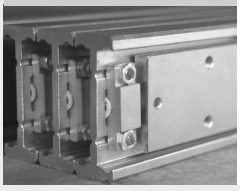


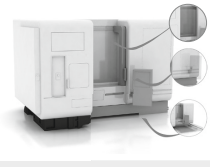


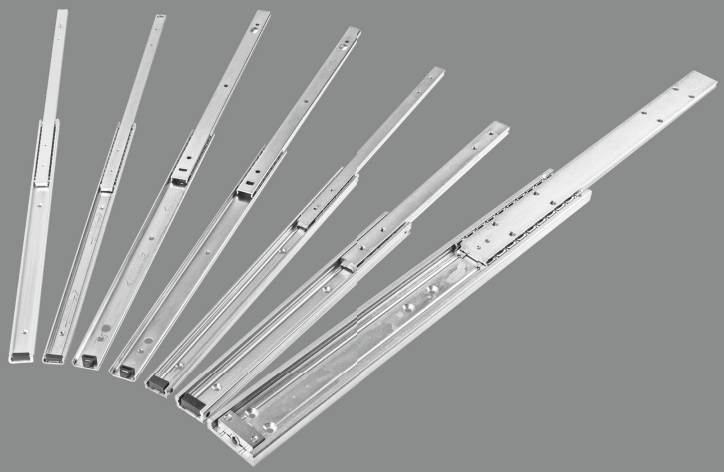










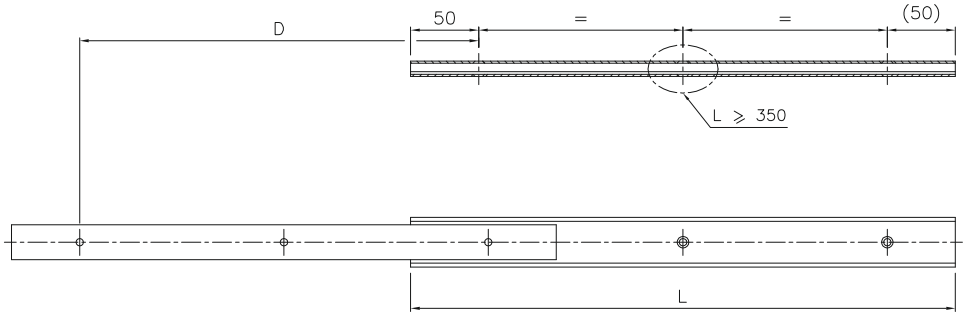


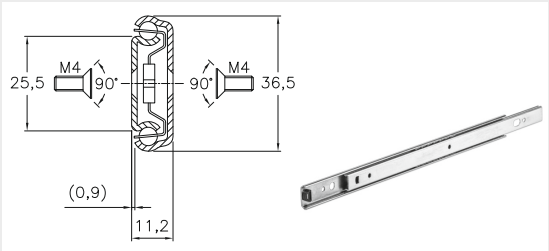
Français **Extension Partielle**

English **Partial Extension**

Deutsch **Teilauszüge**

Nederlands **Gedeeltelijk Uittrekbaar**





Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	>1mm
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✗
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✗
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✗
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✗
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✗

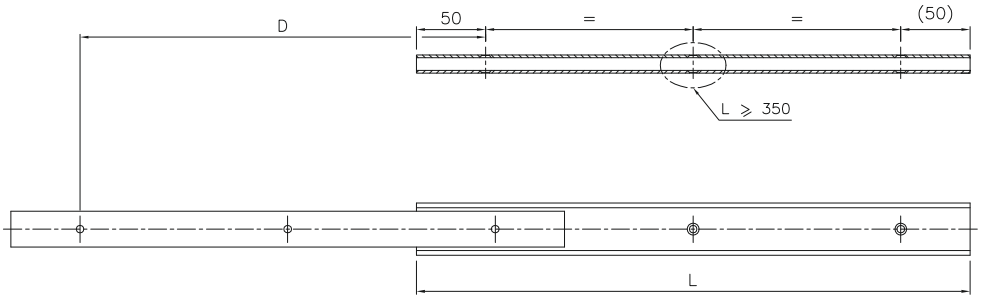
RoHS COMPLIANT · REACH

oui / yes / ja / ja ✓
non / no / nein / nee ✗
sur demande / on request / auf Anfrage / op aanvraag ✎

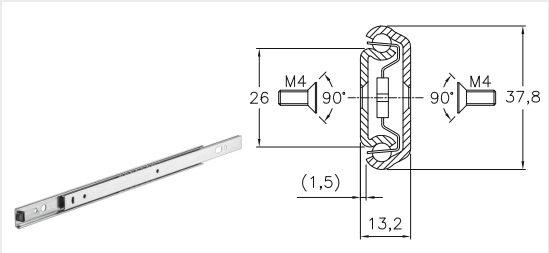
Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.

38 L	38 D	R20		
mm	mm	kg		
150				
200	125	40		
250	175	40		
300	225	40		
350	260	45		
400	295	50		
450	330	55		
500	380	60		
550	415	58		
600	450	56		
650	485	55		
700	520	53		
750	540	51		
800	560	50		
850				
900				
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

kg 36 Charge par paire sur chant
Load per pair on major axis
Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd



Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal



L	D	R26		ST26
mm	mm	kg		kg
150				
200	125	60		60
250	175	60		60
300	225	60		60
350	260	65		65
400	295	70		70
450	330	75		75
500	380	80		80
550	415	78		78
600	450	75		75
650	485	73		73
700	520	70		70
750	540	68		68
800	560	65		65
850	580	63		63
900	615	60		60
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

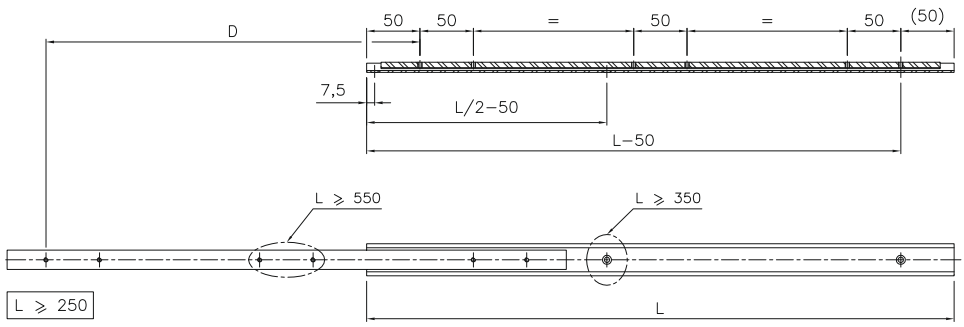
kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

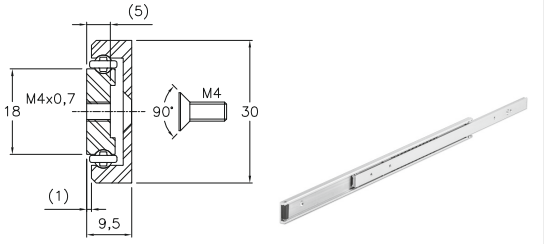
	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✗
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ ⚠
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✗
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✗
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✗
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✗
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✗

RoHS COMPLIANT · REACH

oui / yes / ja / ja ✓
non / no / nein / nee ✗
sur demande / on request / auf Anfrage / op aanvraag ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.





	Extension partielle	Partial extension	Teilauszug	Gedeeltelijk uittrekbaar
Acier zingué	Zinc plated steel	Stahl silbern verzinkt	Verzinkt staal
Aluminium Anodisé	Anodised Aluminium	Aluminium farblos eloxiert	Geanodiseerd aluminium
Inox	Stainless steel	Edelstahl	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✕
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✓
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	D46

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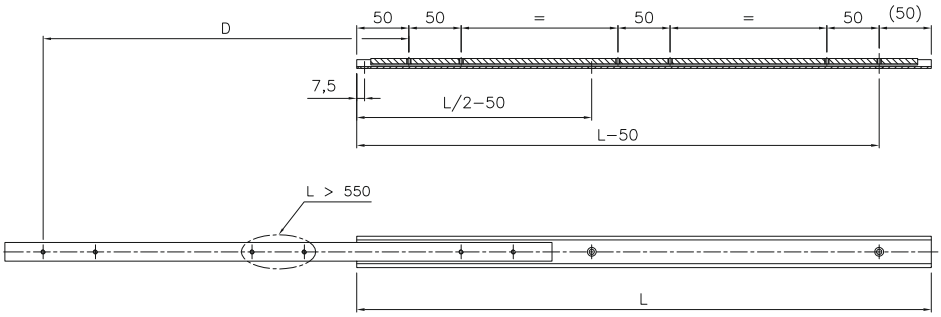
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

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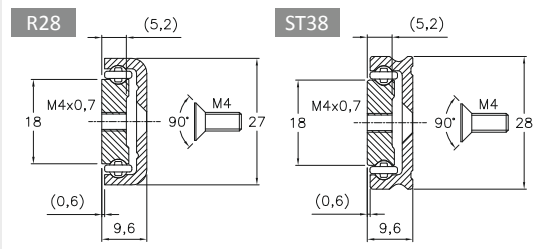
38 L	38 D		D402	
mm	mm		kg	
150	70		7	
200	120		15	
250	160		25	
300	180		50	
350	230		45	
400	280		40	
450	300		32	
500	330		25	
550	350		18	
600	400		15	
650	450		10	
700				
750				
800				
850				
900				
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

kg — Charge par paire sur chant
Load per pair on major axis
36 — Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

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Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal



L	D	R28		ST38
mm	mm	kg		kg
150				
200				
250	165	65		65
300	200	65		65
350	230	70		70
400	265	75		75
450	300	80		80
500	330	85		85
550	365	83		85
600	400	80		80
650	430	78		78
700	465	75		75
750	500	73		73
800	530	71		71
850	565	68		68
900	600	65		65
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

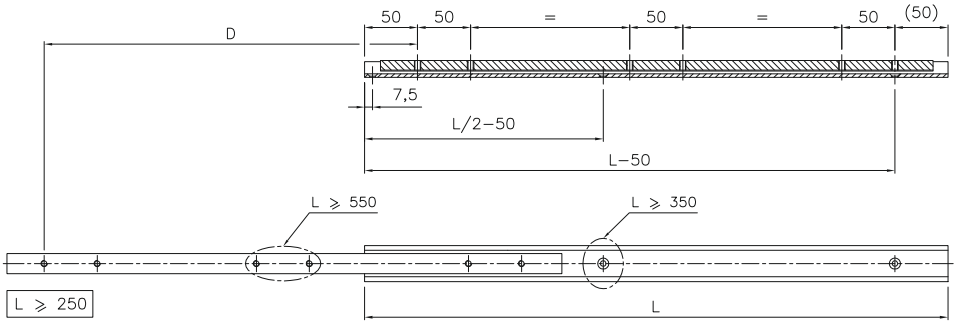
	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ ⚠ ➡ 36
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✓
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

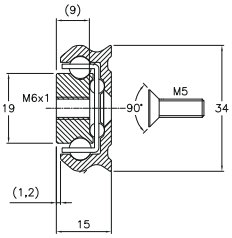
RoHS COMPLIANT REACH

oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
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Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	>1,5mm
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

RoHS COMPLIANT · REACH

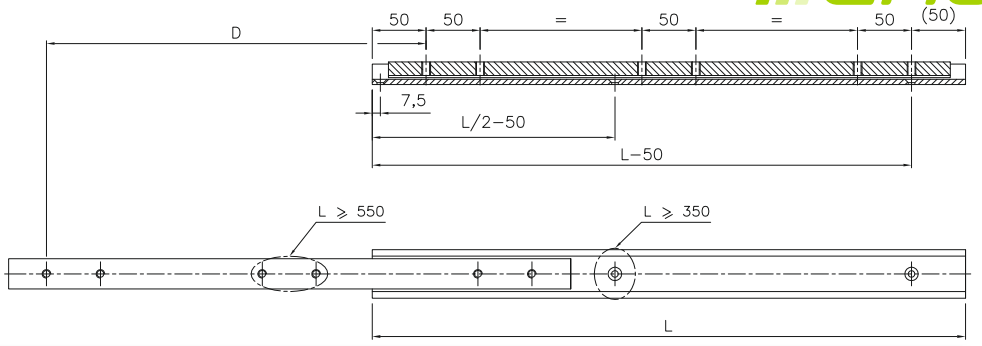
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
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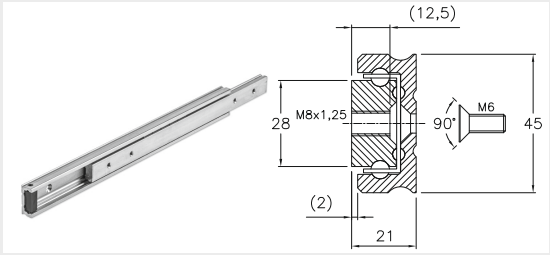
38 L	38 D	R53	D53	ST58
mm	mm	kg	kg	kg
150				
200	80	135	40	135
250	130	135	40	135
300	180	135	40	135
350	230	135	40	135
400	280	135	40	135
450	310	150	47	150
500	340	154	53	154
550	370	158	57	158
600	400	160	60	160
650	430	160	59	160
700	480	158	57	158
750	510	156	56	156
800	540	150	55	150
850	570	144	53	144
900	600	136	52	136
1000	680	120	50	120
1100	740	100		100
1200	800	80		80
1300	880	60		60
1400	940	40		40
1500				
1600				
1700				
1800				
1900				
2000				

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN



Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal



L	D	R71		ST78
mm	mm	kg		kg
150				
200	80	140		140
250	130	140		140
300	180	140		140
350	230	140		140
400	280	140		140
450	310	175		175
500	340	210		210
550	370	245		245
600	400	280		280
650	430	278		278
700	480	270		270
750	510	260		260
800	540	250		250
850	570	238		238
900	600	224		224
1000	680	200		200
1100	740	180		180
1200	800	160		160
1300	880	140		140
1400	940	120		120
1500	1020	98		98
1600	1080	74		74
1700	1140	50		50
1800				
1900				
2000				

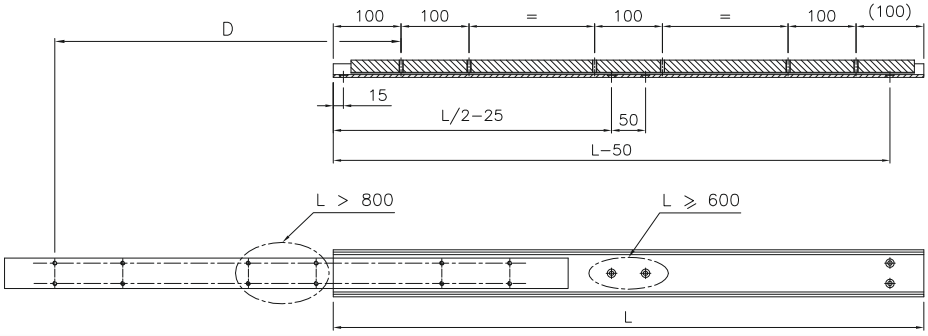
	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ ⚠
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

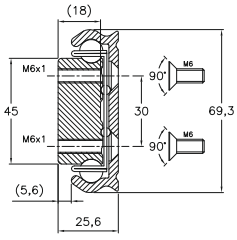
RoHS COMPLIANT · REACH

oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
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NEW

Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

RoHS COMPLIANT · REACH

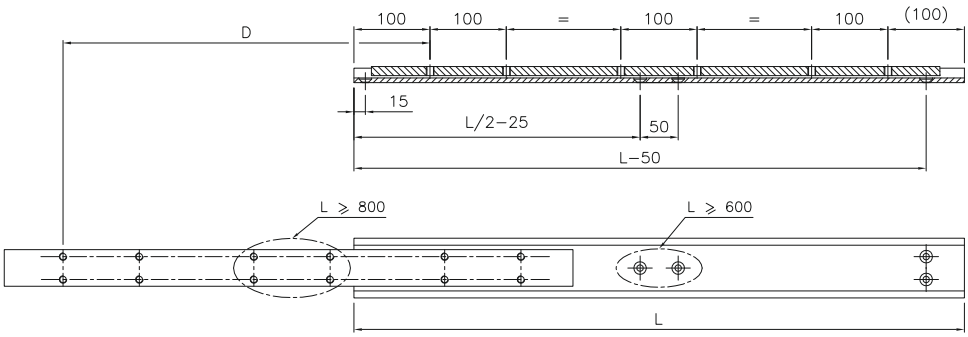
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

L	D	R91		
mm	mm	kg		
150				
200				
250				
300				
350				
400				
450				
500	230	450		
550	280	460		
600	330	480		
650	380	520		
700	430	570		
750	460	612		
800	490	640		
850	520	650		
900	550	640		
1000	610	610		
1100	670	580		
1200	730	550		
1300	790	525		
1400	850	500		
1500	910	475		
1600	970	450		
1700	1030	425		
1800	1090	400		
1900	1150	377		
2000	1210	360		

kg — Charge par paire sur chant
Load per pair on major axis
36 — Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

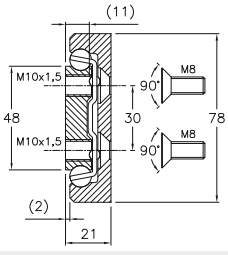
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CHAMBRELAN



Extension partielle	Acier zingué	Aluminium Anodisé	Inox
Partial extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Teilauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Gedeeltelijk uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal





L	D	R82		
mm	mm	kg		
150				
200				
250				
300				
350				
400				
450				
500	230	430		
550	280	450		
600	330	470		
650	380	480		
700	430	490		
750	456	495		
800	482	500		
850	508	500		
900	534	500		
1000	610	495		
1100	662	484		
1200	738	470		
1300	790	455		
1400	842	440		
1500	918	425		
1600	946	410		
1700	1022	395		
1800	1074	380		
1900	1126	365		
2000	1202	350		

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar

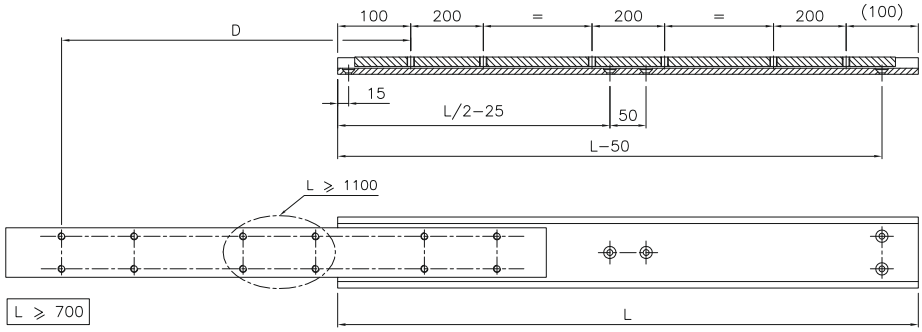
RoHS COMPLIANT REACH

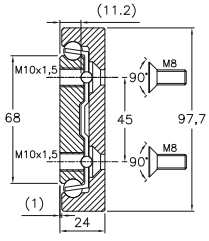
oui / yes / ja / ja
non / no / nein / nee
sur demande / on request / auf Anfrage / op aanvraag

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kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN







Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✎
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

RoHS COMPLIANT · REACH

oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

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38 L	38 D	R102		
mm	mm	kg		
150				
200				
250				
300				
350				
400				
450				
500	230	450		
550	280	515		
600	330	570		
650	380	615		
700	430	650		
750	456	680		
800	482	700		
850	508	715		
900	534	725		
1000	610	730		
1100	662	720		
1200	738	700		
1300	790	675		
1400	842	645		
1500	918	615		
1600	946	585		
1700	1022	555		
1800	1074	530		
1900	1126	500		
2000	1202	470		

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN



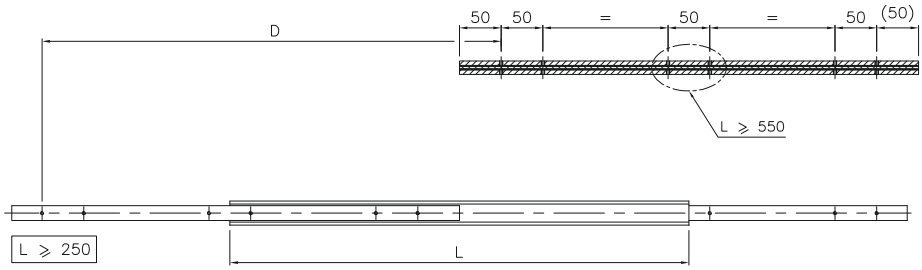
Français **Extension Totale**

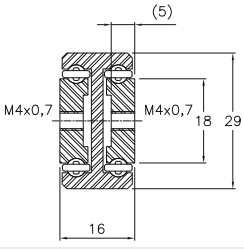
English **Total Extension**

Deutsch **Vollauszüge**

Nederlands **Volledig uittrekbaar**

CHAMBRELAN







	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✗
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✗
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✓
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	E1400V
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✗
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✗
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✗
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✗
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✗

RoHS COMPLIANT · REACH

oui / yes / ja / ja ✓
non / no / nein / nee ✗
sur demande / on request / auf Anfrage / op aanvraag ✎

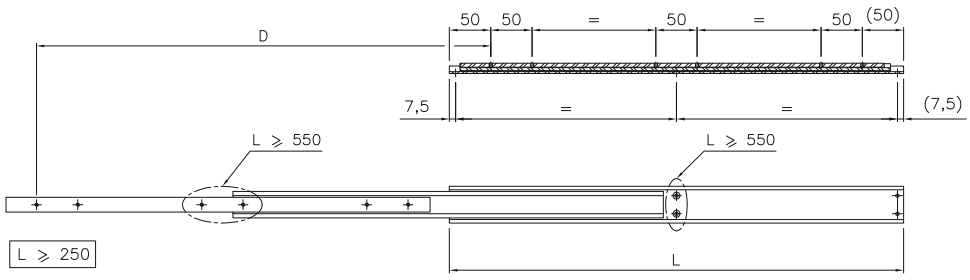
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	Acier zingué	Aluminium Anodisé	Inox
Extension totale			
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

38 L	38 D	E1400	D1422	
mm	mm	kg	kg	
150	150		38	
200	200	120	40	
250	250	135	43	
300	300	130	40	
350	350	125	38	
400	400	120	35	
450	450	115	33	
500	500	110	30	
550	550	105	28	
600	600	100	25	
650	650	95	20	
700	700	90		
750	750	85		
800	800	80		
850	850	75		
900	900	70		
1000	1000	50		
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

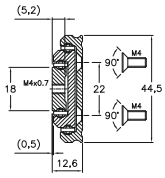
kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN

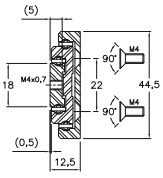


Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

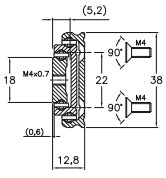
RA44



D444



ST438



L	D	RA44	D444	ST438
mm	mm	kg	kg	kg
150	163		62	
200	213	80	60	80
250	263	83	57	83
300	313	80	55	80
350	363	78	53	78
400	413	75	50	75
450	463	73	48	73
500	513	70	45	70
550	563	65	43	65
600	613	60	40	60
650	663	55	38	55
700	713	50	35	50
750	763	45	30	45
800	813	40	25	40
850	863	35		35
900	913	30		30
1000	1013	20		20
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

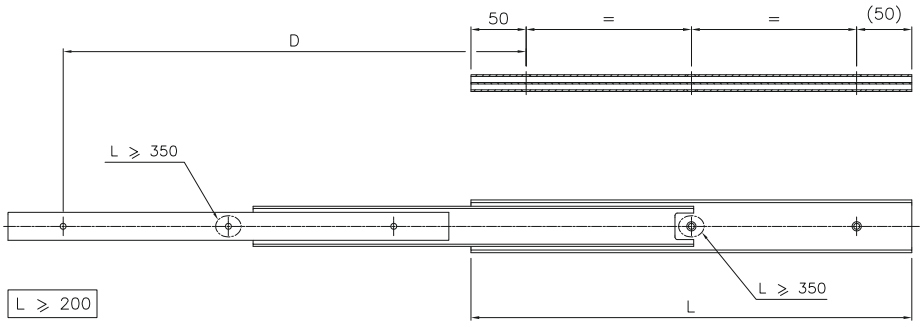
	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✕
	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✓
	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	D446

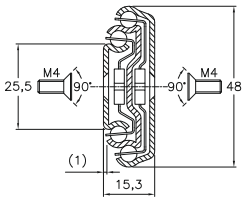
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN







Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	>1mm
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✗
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✗
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✗
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✗
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✗
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✗

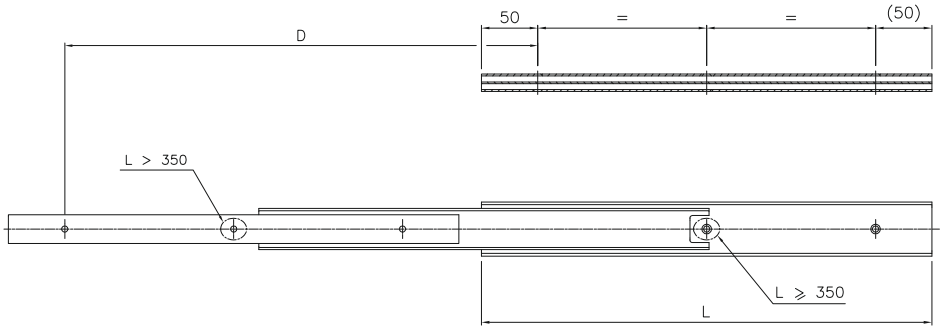
RoHS COMPLIANT · REACH · Cd

oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✗
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

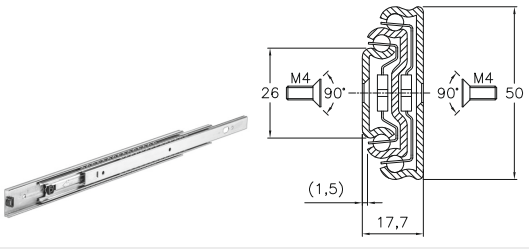
Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.

38 L	38 D	RA31		
mm	mm	kg		
150	155	40		
200	215	45		
250	270	60		
300	310	70		
350	365	67		
400	420	63		
450	460	60		
500	515	56		
550	570	53		
600	610	50		
650	665	46		
700	720	43		
750	760	40		
800	815	37		
850	870	34		
900	910	31		
1000	1020	25		
1100	1115	19		
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd



Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal



L	D	RA41		ST41
mm	mm	kg		kg
150				
200	215	55		55
250	270	70		70
300	310	80		80
350	365	78		78
400	420	76		76
450	460	75		75
500	515	74		74
550	570	72		72
600	610	70		70
650	665	66		66
700	720	63		63
750	760	60		60
800	815	57		57
850	870	53		53
900	910	49		49
1000	1020	40		40
1100	1115	30		30
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ ⚠ 36
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double déve-loppement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

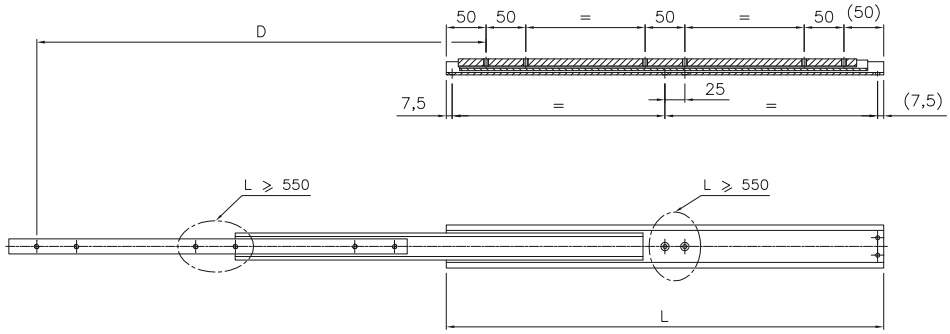
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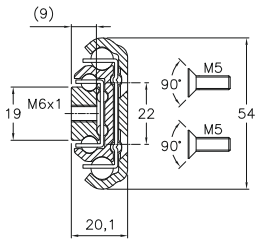
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
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kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN







Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✎
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

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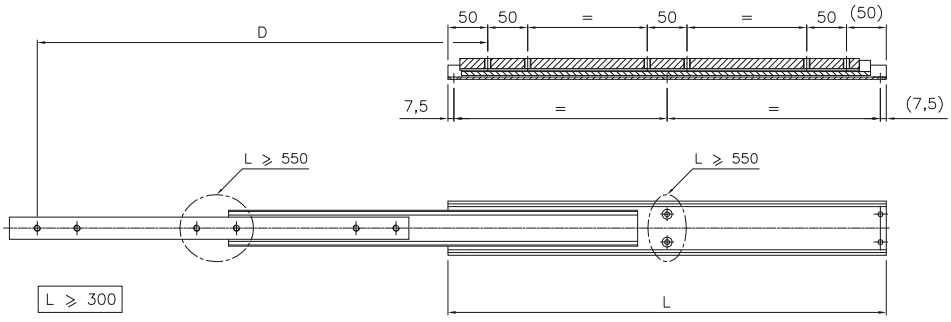
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non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

L	D	RA5R	D5	ST508
mm	mm	kg	kg	kg
150				
200				
250	275	140	41	140
300	315	150	49	150
350	375	159	55	159
400	415	166	60	166
450	475	170	64	170
500	515	174	68	174
550	575	176	70	176
600	615	175	71	175
650	675	174	70	174
700	715	172	69	172
750	775	168	67	168
800	815	164	64	164
850	875	158	60	158
900	915	151	55	151
1000	1015	139	43	136
1100	1115	118	31	118
1200	1215	96	20	98
1300	1315	78		78
1400	1415	58		58
1500	1515	38		38
1600	1615	20		20
1700				
1800				
1900				
2000				

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

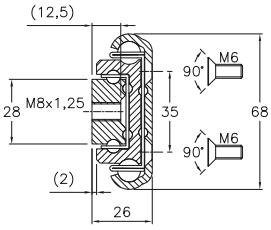
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CHAMBRELAN



Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal





38 L	38 D	RA7R		ST708
mm	mm	kg		kg
150				
200				
250	275	140		140
300	315	180		180
350	375	228		228
400	415	276		276
450	475	320		320
500	515	350		350
550	575	355		355
600	615	350		350
650	675	340		340
700	715	330		330
750	775	319		319
800	815	305		305
850	875	292		292
900	915	277		277
1000	1015	250		250
1100	1115	225		225
1200	1215	202		202
1300	1315	177		177
1400	1415	152		152
1500	1515	130		130
1600	1615	110		110
1700	1715	90		90
1800	1815	70		70
1900	1915	50		50
2000	2015	30		30

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✗
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✎
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✗

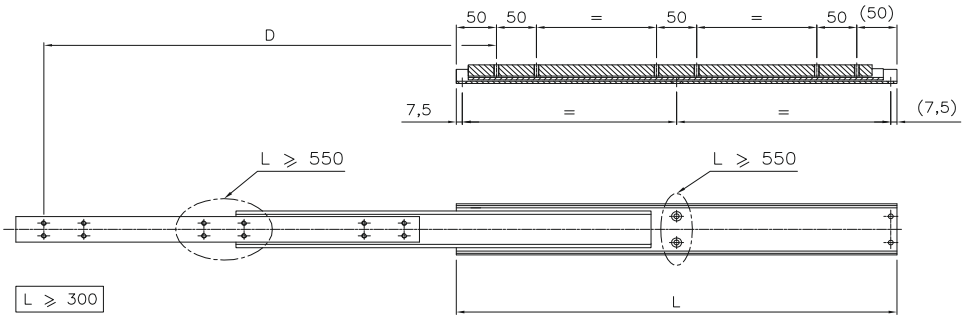
RoHS COMPLIANT · REACH

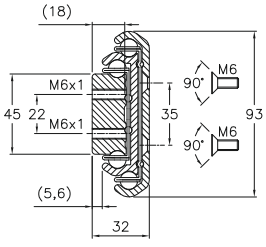
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✗
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kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN







Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
35	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ 35
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

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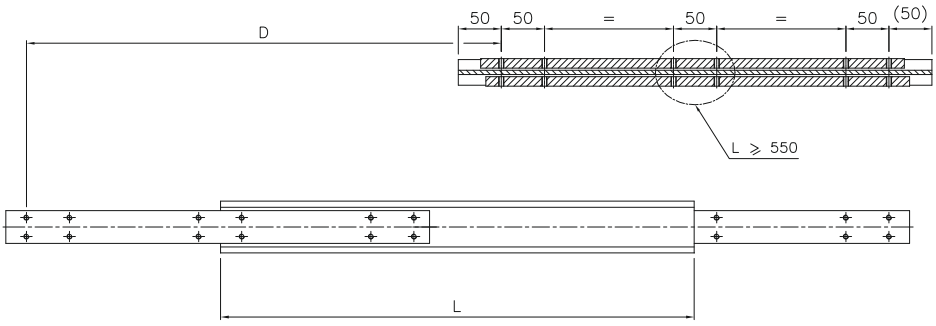
oui / yes / ja / ja ✓
non / no / nein / nee ✕
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38 L	38 D	RA9		
mm	mm	kg		
150				
200				
250	275	230		
300	315	300		
350	375	355		
400	415	395		
450	475	430		
500	515	440		
550	575	435		
600	615	430		
650	675	425		
700	715	410		
750	775	400		
800	815	385		
850	875	375		
900	915	360		
1000	1015	340		
1100	1115	300		
1200	1215	275		
1300	1315	245		
1400	1415	220		
1500	1515	175		
1600	1615	155		
1700	1715	135		
1800	1815	110		
1900	1915	85		
2000	2015	60		

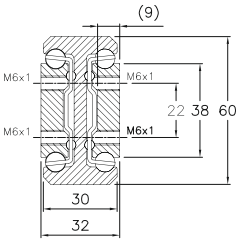
kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN



Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal





38 L	38 D	E1700		E1708
mm	mm	kg		kg
150				
200				
250				
300				
350				
400				
450				
500	500	470		470
550	550	485		485
600	600	497		497
650	650	510		510
700	700	525		525
750	750	537		537
800	800	545		545
850	850	550		550
900	900	550		550
1000	1000	530		530
1100	1100	490		490
1200	1200	443		443
1300	1300	395		395
1400	1400	350		350
1500	1500	307		307
1600	1600	265		265
1700	1700	225		225
1800	1800	185		185
1900	1900	148		148
2000	2000	110		110

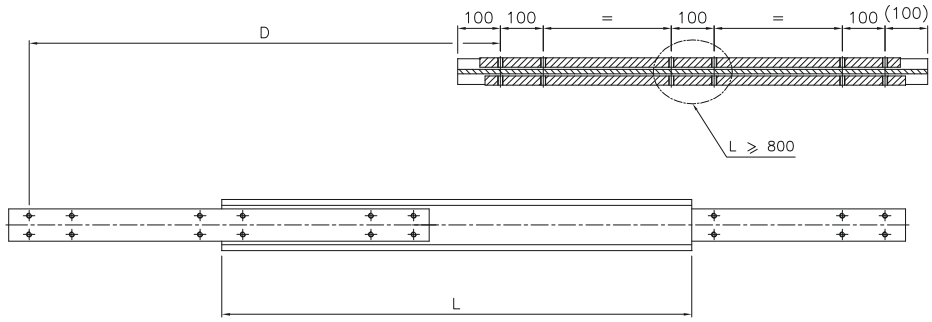
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Draagvermogen per paar rechtstandig gemonteerd

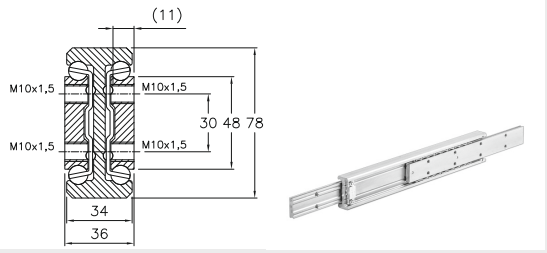
	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✎
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✎
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

RoHS COMPLIANT REACH

oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

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Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
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Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✗
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✎
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✗
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✗
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✗
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✎
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✗

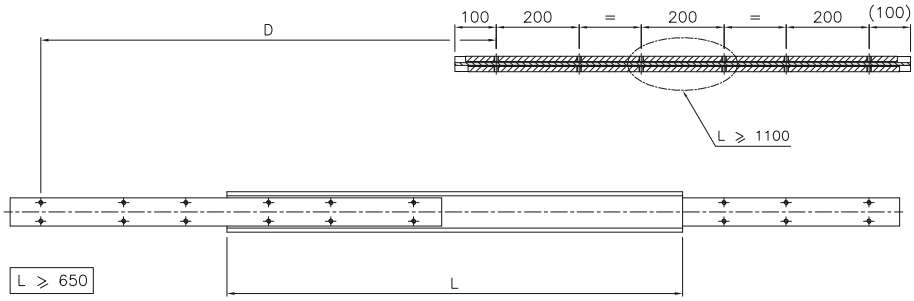
RoHS COMPLIANT · REACH

oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✗
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

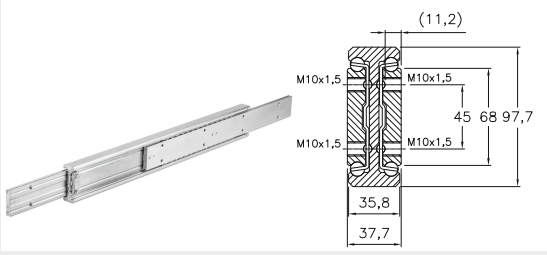
Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.

38 L	38 D	E1902		E1908
mm	mm	kg		kg
150				
200				
250				
300				
350				
400				
450				
500	500	570		570
550	550	605		605
600	600	640		640
650	650	670		670
700	700	695		695
750	750	720		720
800	800	740		740
850	850	755		755
900	900	770		770
1000	1000	785		785
1100	1100	782		782
1200	1200	770		770
1300	1300	745		745
1400	1400	705		705
1500	1500	660		660
1600	1600	600		600
1700	1700	530		530
1800	1800	455		455
1900	1900	380		380
2000	2000	300		300

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd



Extension totale	Acier zingué	Aluminium Anodisé	Inox
Total extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Vollauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Geheel uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal



L	D	E1012		E1018
mm	mm	kg		kg
150				
200				
250				
300				
350				
400				
450				
500	500	600		600
550	550	640		640
600	600	685		685
650	650	720		720
700	700	755		755
750	750	785		785
800	800	810		810
850	850	835		835
900	900	860		860
1000	1000	885		885
1100	1100	900		900
1200	1200	895		895
1300	1300	875		875
1400	1400	845		845
1500	1500	800		800
1600	1600	740		740
1700	1700	665		665
1800	1800	585		585
1900	1900	500		500
2000	2000	400		400

kg Charge par paire sur chant
Load per pair on major axis
38 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✎
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✎
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✎
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

RoHS COMPLIANT REACH

oui / yes / ja / ja ✓
non / no / nein / nee ✕
sur demande / on request / auf Anfrage / op aanvraag ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.



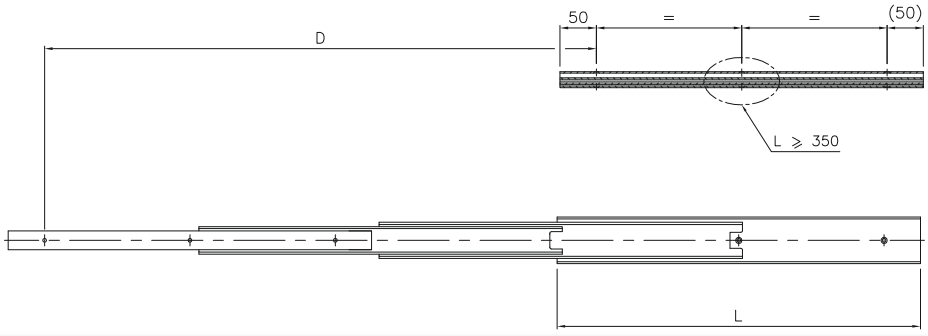
Français **Super Extension**

English **Over Extension**

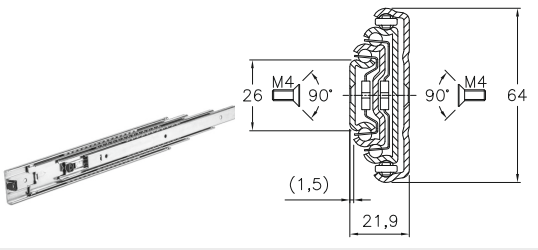
Deutsch **Überauszüge**

Nederlands **Over-uittrekbaar**

CHAMBRELAN



Super Extension	Acier zingué	Aluminium Anodisé	Inox
Over Extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Überauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Over-uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal



L	D	RA414		
mm	mm	kg		
150				
200				
250	380	50		
300	455	55		
350	530	55		
400	605	54		
450	685	53		
500	755	52		
550	830	51		
600	900	50		
650	980	47		
700	1055	45		
750	1125	43		
800	1205	40		
850				
900				
1000				
1100				
1200				
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ ⚠
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

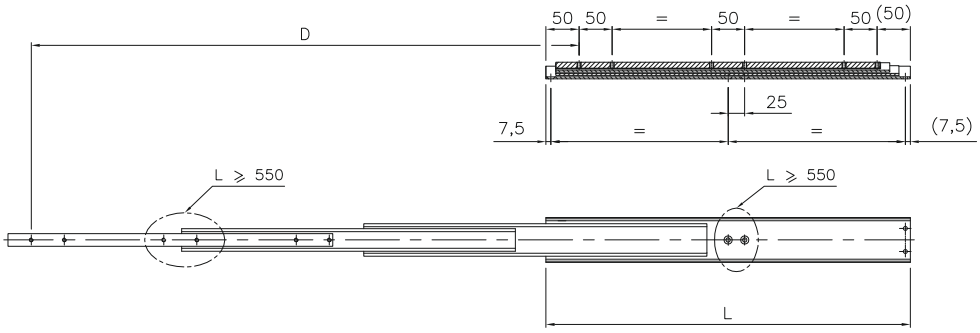
RoHS COMPLIANT · REACH

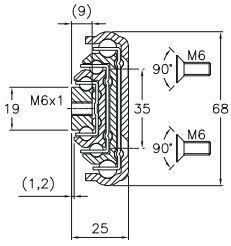
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.

kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN







Super Extension	Acier zingué	Aluminium Anodisé	Inox
Over Extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Überauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Over-uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✎
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✎
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✎
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

RoHS COMPLIANT · REACH

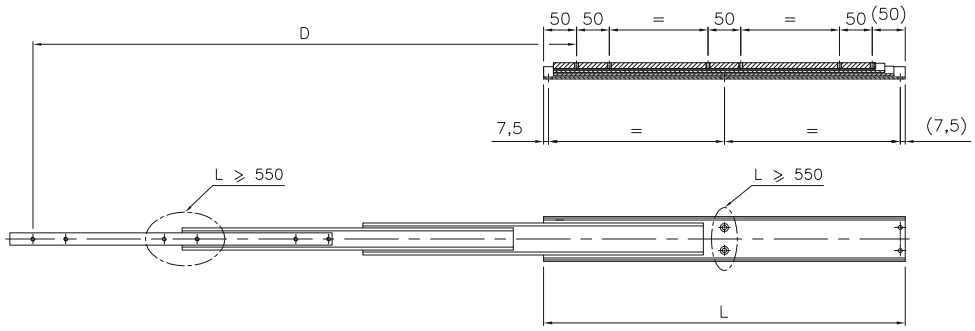
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

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Spécifications techniques données à titre indicatif.	Technical specifications are given for your guidance.	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging.

38 L	38 D	RA554		ST558
mm	mm	kg		kg
150				
200				
250				
300	470	75		75
350	540	92		92
400	630	106		106
450	700	112		112
500	770	116		116
550	840	114		114
600	930	111		111
650	1000	105		105
700	1070	98		98
750	1140	90		90
800	1230	82		82
850	1300	73		73
900	1370	64		64
1000	1530	50		50
1100	1670	36		36
1200	1830	25		25
1300				
1400				
1500				
1600				
1700				
1800				
1900				
2000				

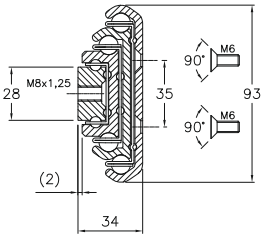
kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN



Super Extension	Acier zingué	Aluminium Anodisé	Inox
Over Extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Überauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Over-uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal





38 L	38 D	RA774		
mm	mm	kg		
150				
200				
250				
300	470	190		
350	540	207		
400	630	220		
450	700	226		
500	770	228		
550	840	224		
600	930	220		
650	1000	212		
700	1070	202		
750	1140	192		
800	1230	182		
850	1300	170		
900	1370	160		
1000	1530	140		
1100	1670	121		
1200	1830	105		
1300	1970	90		
1400	2130	76		
1500	2270	60		
1600				
1700				
1800				
1900				
2000				

		Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
36		Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
36		Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✓ ⚠→
41		Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
38		Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
38		Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
38		Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
37		Synchroni-sation	Synchronization	Synchronisation	Synchronisatie	✕
38		Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
39		Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

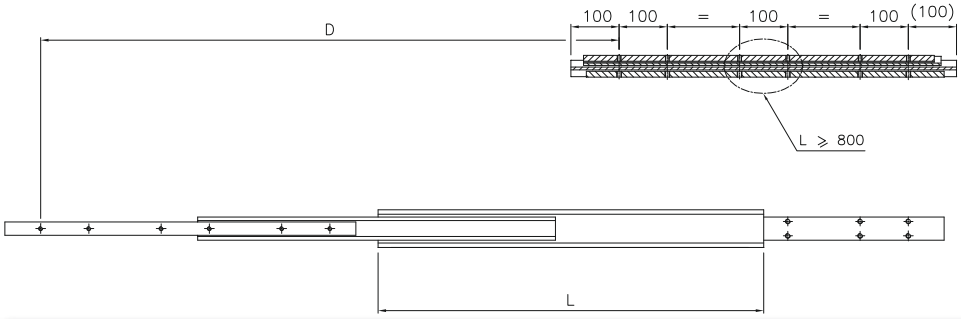
RoHS COMPLIANT · REACH · Cd

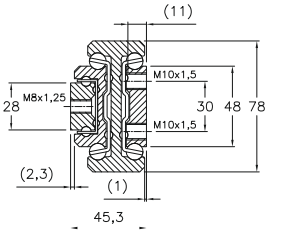
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
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kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN







Super Extension	Acier zingué	Aluminium Anodisé	Inox
Over Extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Überauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Over-uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord	✕
	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd	✓
	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage	✎
	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage	✎
	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open	✕
	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten	✕
	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten	✕
	Synchronisation	Synchronization	Synchronisation	Synchronisatie	✕
	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar	✕
	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar	✕

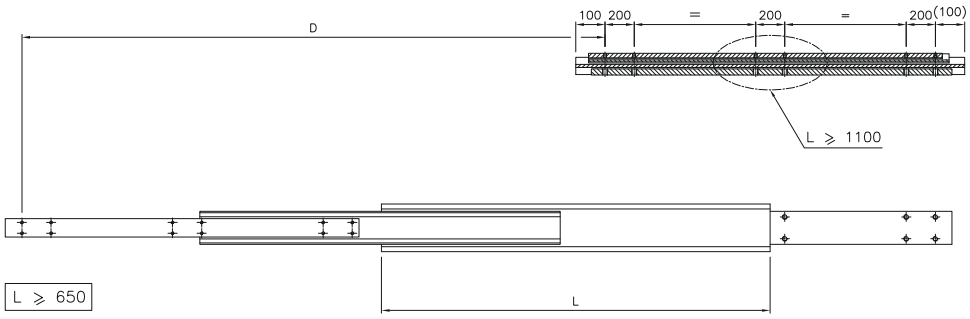
oui / yes / ja / ja ..... ✓
non / no / nein / nee ..... ✕
sur demande / on request / auf Anfrage / op aanvraag ..... ✎

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L mm	D mm	E1904 kg		
150				
200				
250				
300				
350				
400				
450				
500	760	220		
550	840	210		
600	900	200		
650	980	195		
700	1060	190		
750	1140	180		
800	1200	170		
850	1280	165		
900	1360	160		
1000	1500	150		
1100	1660	135		
1200	1800	120		
1300	1960	105		
1400	2100	90		
1500	2260	80		
1600	2400	70		
1700	2560	60		
1800	2700	50		
1900	2860	40		
2000	3000	30		

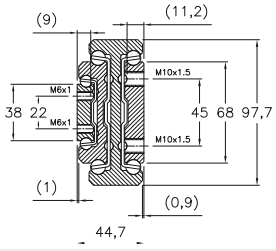
kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

CHAMBRELAN



Super Extension	Acier zingué	Aluminium Anodisé	Inox
Over Extension	Zinc plated steel	Anodised Aluminium	Stainless steel
Überauszug	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
Over-uittrekbaar	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal





38 L	38 D	E1014		
mm	mm	kg		
150				
200				
250				
300				
350				
400				
450				
500	750	350		
550	825	375		
600	900	400		
650	975	425		
700	1050	450		
750	1125	475		
800	1200	500		
850	1275	475		
900	1350	450		
1000	1500	400		
1100	1650	375		
1200	1800	350		
1300	1950	325		
1400	2100	300		
1500	2250	275		
1600	2400	250		
1700	2550	225		
1800	2700	200		
1900	2850	175		
2000	3000	150		

	Prévoir un léger fraisage du support	A slight countersinking of the frame is required	unbedingt eine Senkung Ihrer Montageflächen vorsehen (siehe Zeichnung)	Frame dient te worden voorgeboord
36	Montage à chant	Major axis	Hochkantmontage	Rechtstandig gemonteerd
36	Montage à plat	Mounting on minor axis	Flachmontage	Bodemmontage
41	Montage vertical	Vertical mounting	Vertikalmontage	Verticale montage
38	Verrou ouvert	Lock out	Verriegelung offen	Vergrendeling open
38	Verrou fermé	Lock in	Verriegelung geschlossen	Vergrendeling gesloten
38	Verrou ouvert et fermé	Lock out and in	Verriegelung offen und geschlossen	Vergrendeling open en gesloten
37	Synchronisation	Synchronization	Synchronisation	Synchronisatie
38	Double développement	Double extension	Doppelauszug	2-zijdig Uittrekbaar
39	Débrochabilité	Lock out + disconnect	Trennbarkeit + Verriegelung	Binnenprofiel uitneembaar

oui / yes / ja / ja
non / no / nein / nee
sur demande / on request / auf Anfrage / op aanvraag

Personnalisation et autres longueurs sur demande.	Other lengths and designs on request.	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag.
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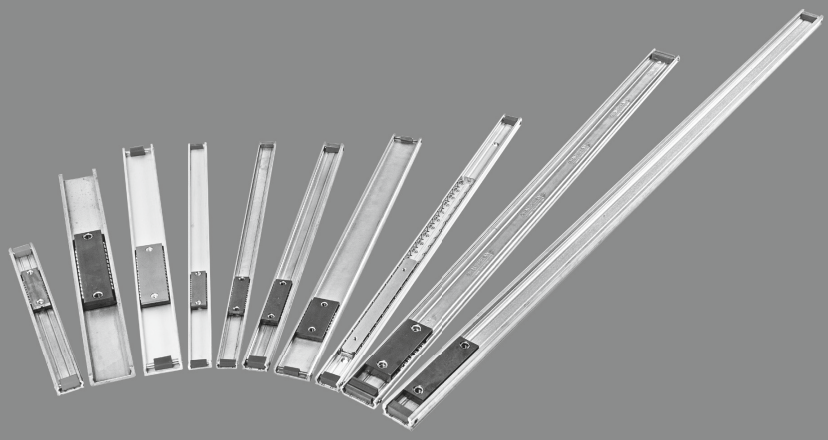
kg Charge par paire sur chant
Load per pair on major axis
36 Tragfähigkeit pro Schienenpaar hochkant montiert
Draagvermogen per paar rechtstandig gemonteerd

Français English Deutsch Nederlands

CHAMBRELAN
www.chambrelan.com

Spécifications techniques	Telescopic Slides Technical Specs	Spezifikationen Teleskopschienen	Technische specificaties
Sur notre site web, téléchargez les fiches techniques et tous les plans pour incorporation dans les applications CAO/DAO.	On our web site, you can find our product technical data sheets, including 3D, in every standard CAD format.	Sie können sämtliche 3D-Modelle in verschiedenen Formaten sowie auch die technischen Datenblätter von unserer Website downloaden.	Op onze website vindt u onze technische specificaties per product en 3D tekeningen die u kunt downloaden voor CAD/CAM gebruik.
LONGUEURS REPLIÉES (L) Pour les glissières standard, les longueurs en stock vont, selon les références, de 150 mm à 2'000 mm.	**CLOSED LENGTHS (L)** Standard slides are stocked according to model in lengths of 150 mm to 2,000 mm.	**EINBAULÄNGEN** Je nach Schienentyp sind Längen von 150 mm bis 2.000 mm ab Lager erhältlich.	**BESCHIKBARE LENGTEN (L)** Standaard geleiders worden afhankelijk van het type op voorraad gehouden in lengtes vanaf 150 mm tot 2000 mm.
GRAND CHOIX EXTENSIONS Il existe 3 grandes catégories de développement : ▸ Développement partiel ≈ 0,7 L ▸ Développement total ≈ L ▸ Super développement ≈ 1,5 L	**A LARGE CHOICE OF EXTENSIONS** There are three categories of extension : ▸ Partial extension ≈ 0,7 L ▸ Total extension ≈ L ▸ Over extension ≈ 1,5 L	**VERSCHIEDENE AUSZUGSARTEN** Wählen Sie zwischen: ▸ Teilauszug ≈ 0,7 L ▸ Vollauszug ≈ L ▸ Überauszug ≈ 1,5 L	**GROTE KEUZE IN UITTREKBAARHEID** Wij onderscheiden 3 categoriën uittrekbaarheid : ▸ gedeeltelijk uittrekbaar ≈ 0,7 L ▸ Volledig uittrekbaar ≈ L ▸ Over-uittrekbaar ≈ 1,5 L
CHARGES ADMISSIBLES Capacité de charge allant de quelques kg à plus de 1000 kg. La charge admissible s'entend : ▸ par paire de glissières sur chant, ▸ glissières entièrement développées, ▸ charge uniformément répartie sur le petit élément mobile de la glissière. Le montage à plat est déconseillé et implique une très forte diminution des charges admissibles, voire même une charge minimale pour certains modèles.	**LOAD CAPACITY** Load capacity from a few kilos to more than 1000 KGs. The maximum safe load is given : ▸ for a fully extended pair of slides, ▸ mounted on the major axis, ▸ with a load spread uniformly along the small inner beam. A mounting of the slides on the minor axis is not recommended. It induces a substantial decrease of the load. An increased deflection has to be considered.	**BELASTBARKEIT** Unsere Produkte sind für kleinere Lasten sowie Belastungen von über 1000 kg ausgelegt. Die Belastungsangaben beziehen sich auf: ▸ ein hochkant montiertes Schienenpaar, ▸ im ausgezogenen Zustand, ▸ bei gleichmäßiger Lastverteilung auf dem Läufer. Wir raten von einem liegenden (flachen) Einbau ab. Die Last muss bei diesem Aufbau erheblich reduziert werden. Eine Steigerung der Durchbiegung muss berücksichtigt werden.	**DRAAGVERMOGEN** Van slechts een paar kilo tot meer dan 1000 kg per paar. Het draagvermogen is het maximale gewicht evenredig verdeeld dat een paar geleiders rechtstandig gemonteerd kan dragen in volledig uitgetrokken toestand. Bodemmontage (plat liggend) van geleiders raden wij af. Voor zover mogelijk – alleen bij versterkte modellen – neemt het draagvermogen van de geleiders aanzienlijk af.

CHAMBRELAN

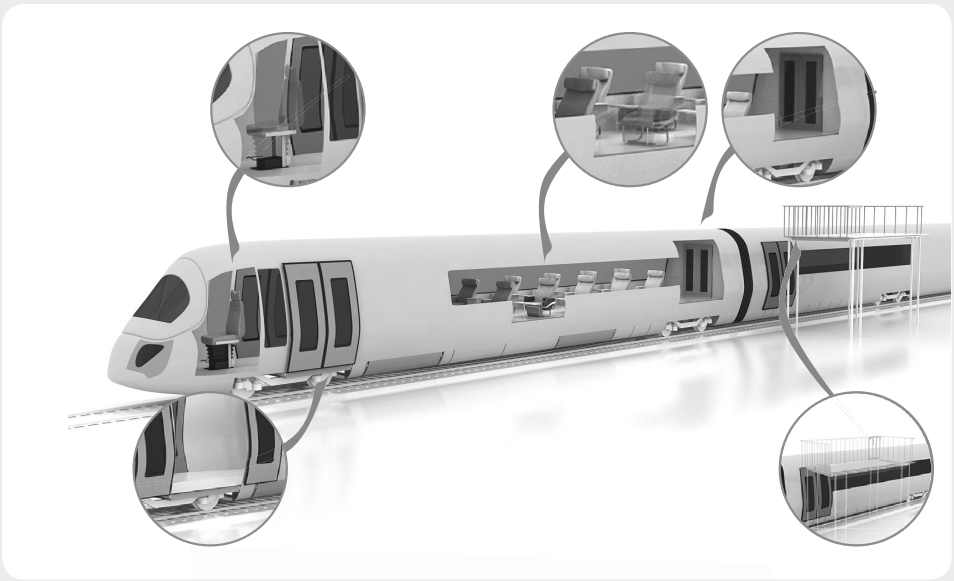


Français **Rails Linéaires**

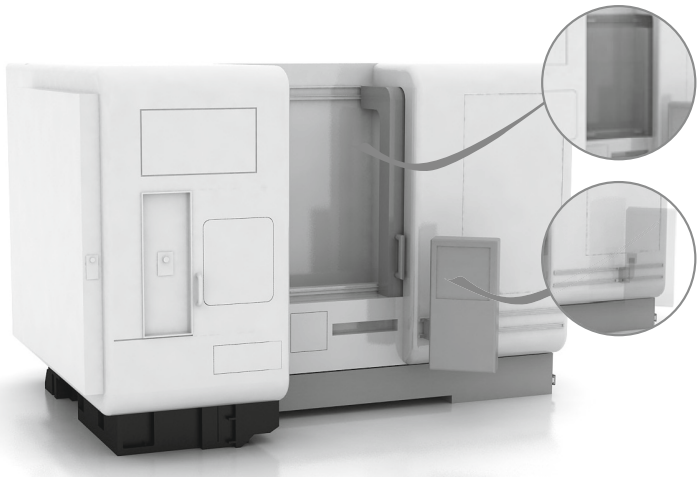
English **Linear Rails**

Deutsch **Linearführungen**

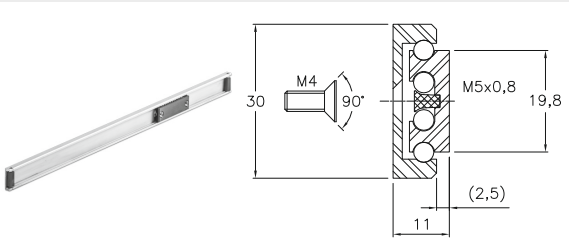
Nederlands **Lineair Geleiders**





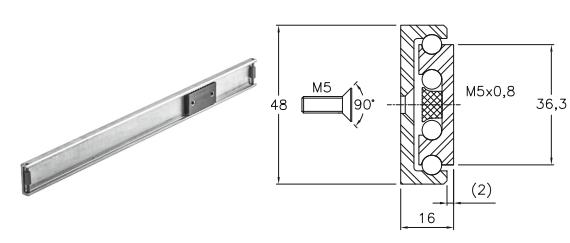


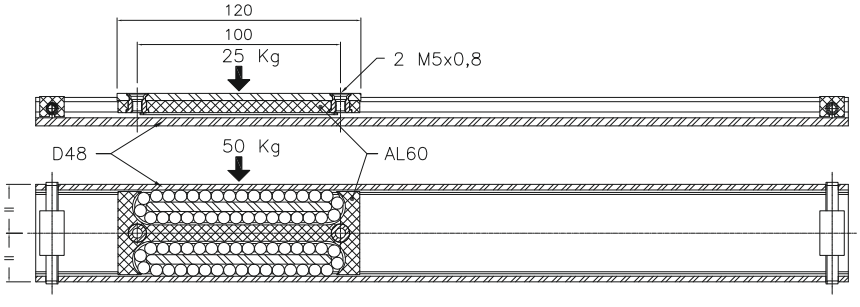
	Acier zingué	Alu Anodisé	Inox
	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
		D409/AL40	





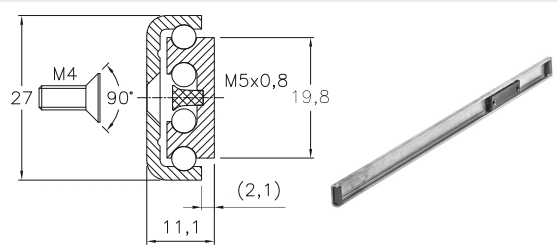
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	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
		D48/AL60	



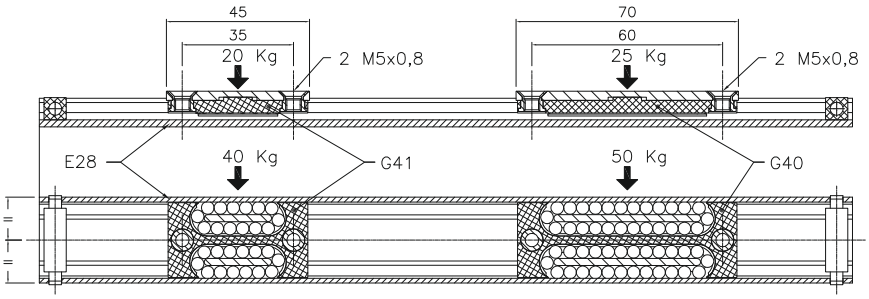


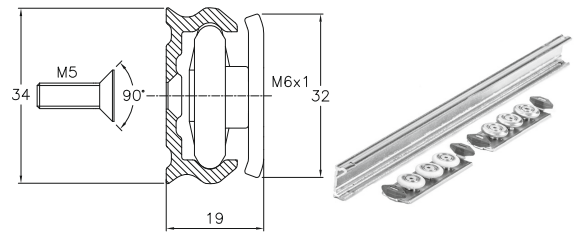
Personnalisation et autres longueurs sur demande	Other lengths and designs on request	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag
Spécifications techniques données à titre indicatif	Technical specifications are given for your guidance	Unsere technischen Daten sind ohne Gewähr und können ohne Benachrichtigung verändert werden.	Technische specificaties onder voorbehoud van tussentijdse wijziging

CHAMBRELAN

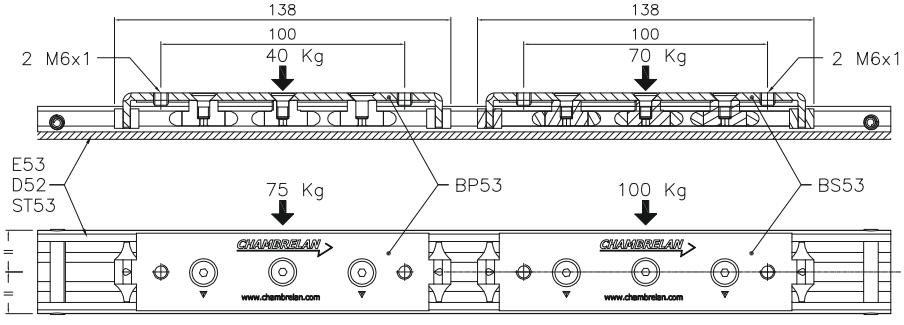


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	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E28		



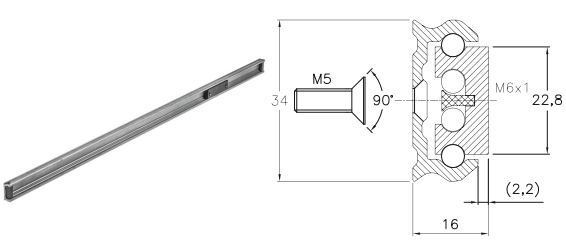


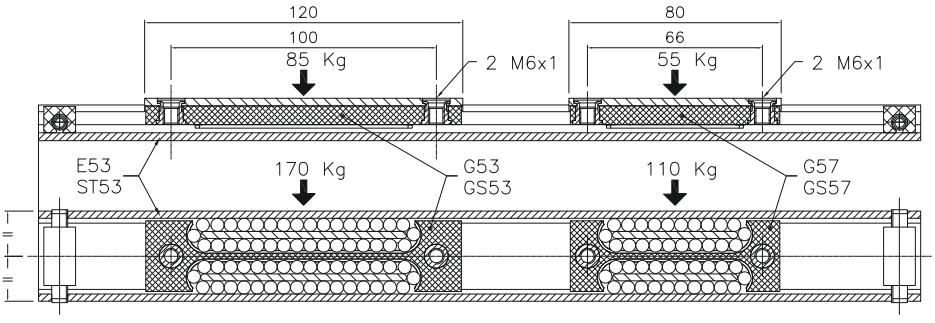
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	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E53	D52	ST53



Personnalisation et autres longueurs sur demande	Other lengths and designs on request	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag
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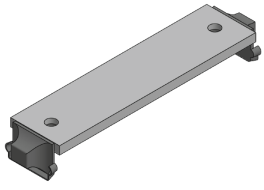
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	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E53		ST53



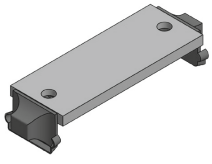


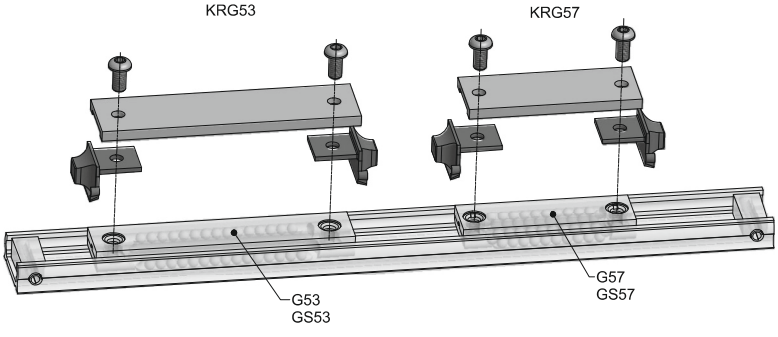
	Kit Racleur
	Wiper kit
	Abstreifer Bausatz
	Veger kit

KRG53



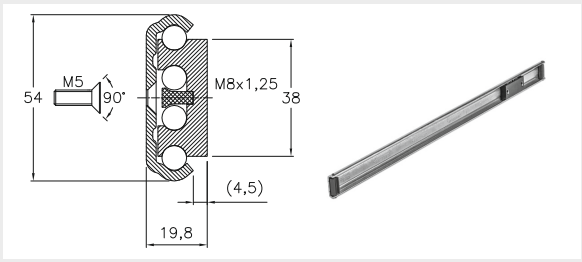
KRG57



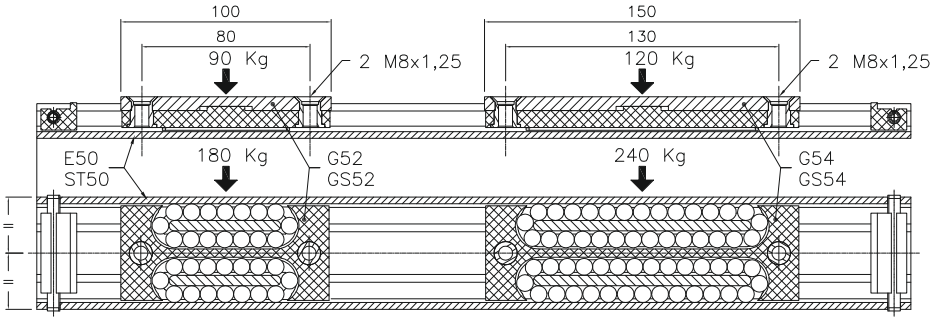


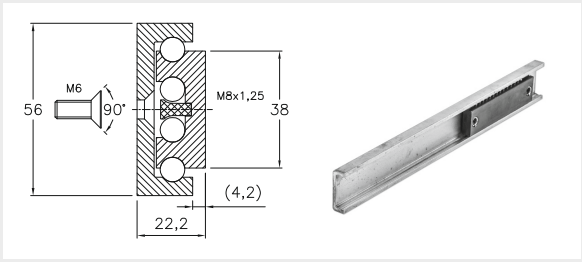
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CHAMBRELAN

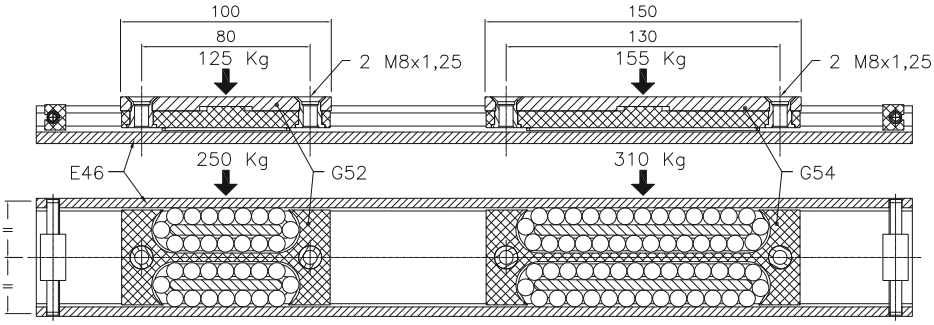


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	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E50		ST50



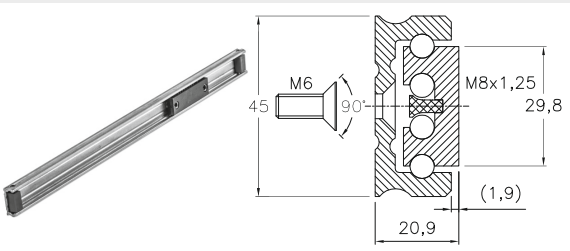


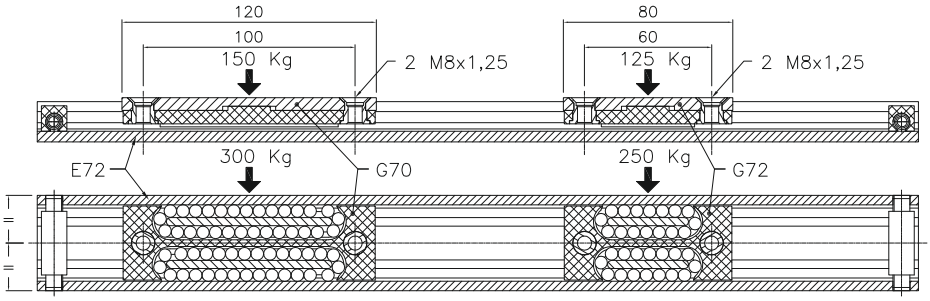
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	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E46		



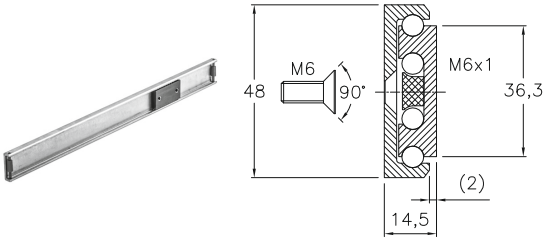
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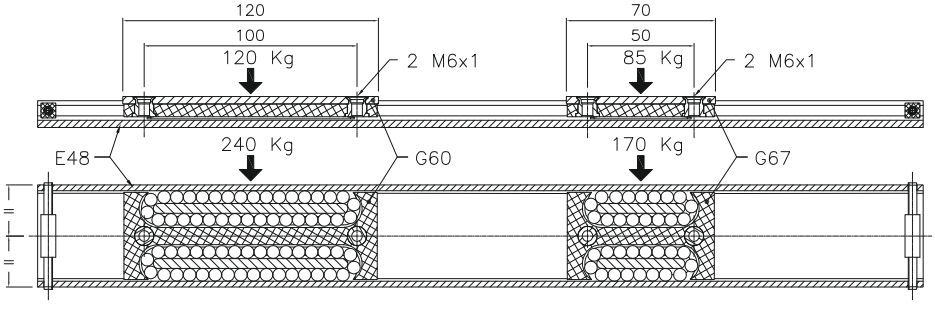
	Acier zingué	Alu Anodisé	Inox
	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E72		





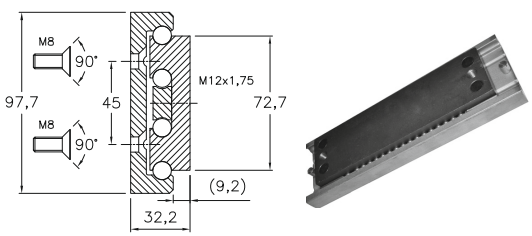
	Acier zingué	Alu Anodisé	Inox
	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E48		



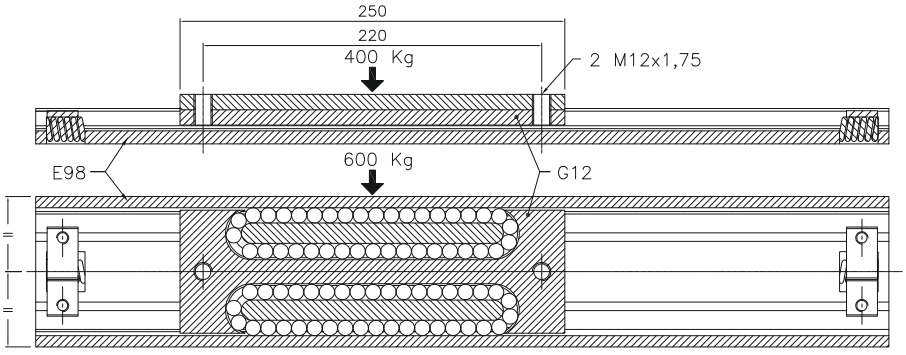


Personnalisation et autres longueurs sur demande	Other lengths and designs on request	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag
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	Acier zingué	Alu Anodisé	Inox
	Zinc plated steel	Anodised Aluminium	Stainless steel
	Stahl silbern verzinkt	Aluminium farblos eloxiert	Edelstahl
	Verzinkt staal	Geanodiseerd aluminium	Roestvrij staal
	E98/G12		



Personnalisation et autres longueurs sur demande	Other lengths and designs on request	Lassen Sie sich zu Sonderlängen beraten!	Andere lengtes en uitvoeringen op aanvraag
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