mechanics

Drive elements

Overview

Information

The ball screw nuts from **isel Germany AG** are of high quality, precise and abrasion-resistant (hardened and polished). Together with the ball screw spindles, they convert rotations into linear movements most friction-poorly.

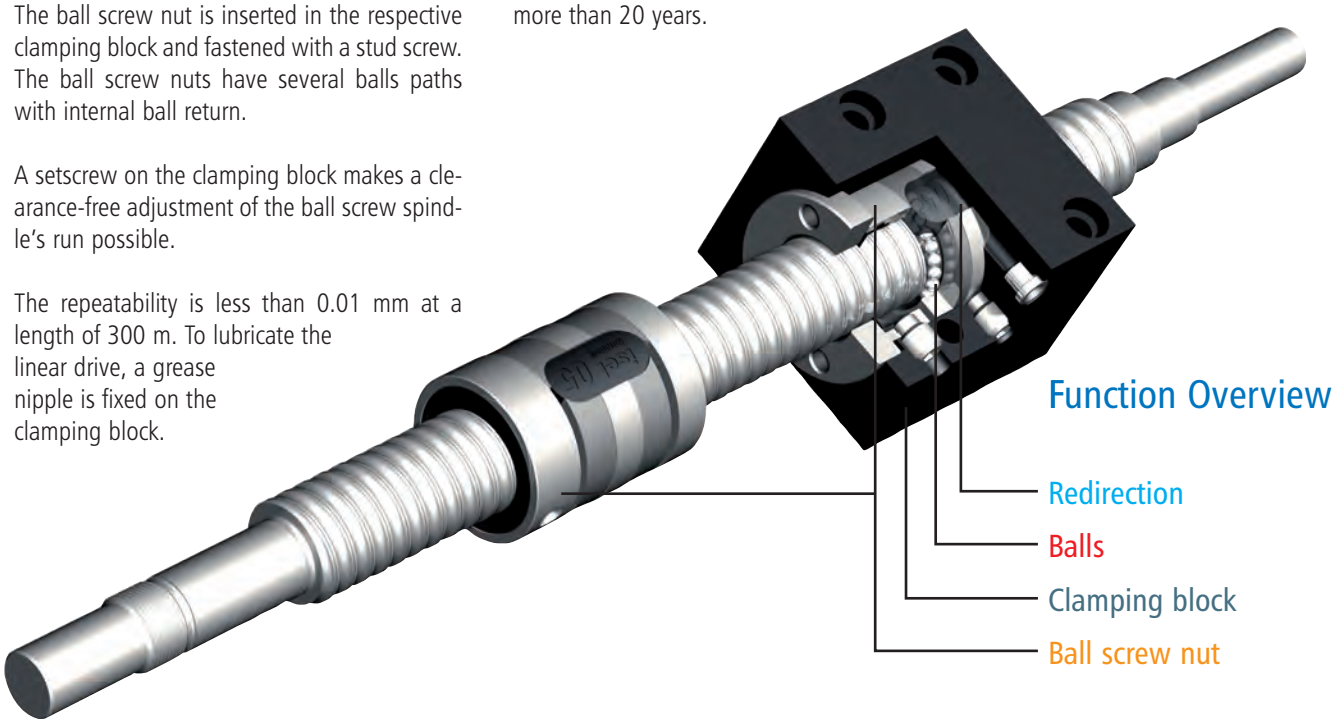
The ball screw nut is inserted in the respective clamping block and fastened with a stud screw. The ball screw nuts have several balls paths with internal ball return.

A setscrew on the clamping block makes a clearance-free adjustment of the ball screw spindle's run possible.

The repeatability is less than 0.01 mm at a length of 300 m. To lubricate the linear drive, a grease nipple is fixed on the clamping block.

The ball screw spindles are produced with modern machines; they are rolled, hardened and polished.

Our linear drives are technically mature and have stood the test in practice for more than 20 years.

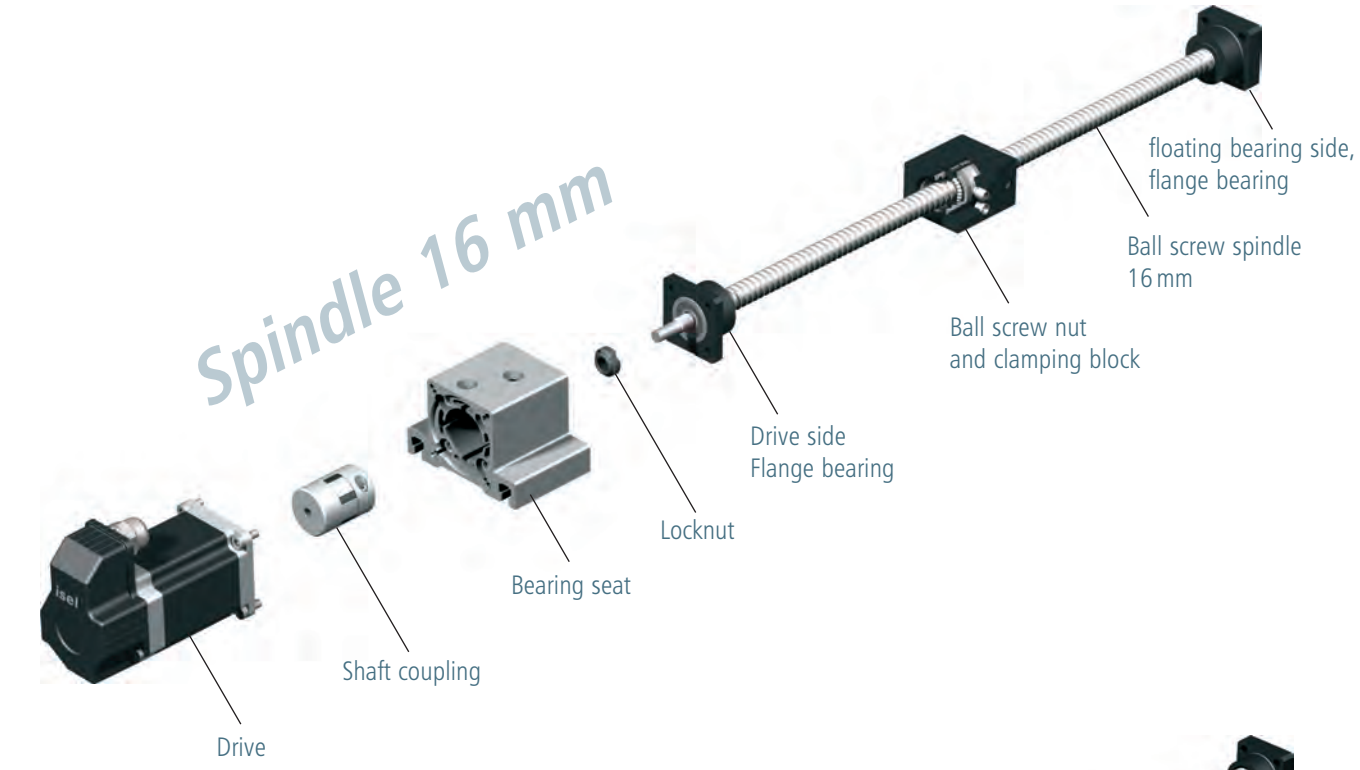


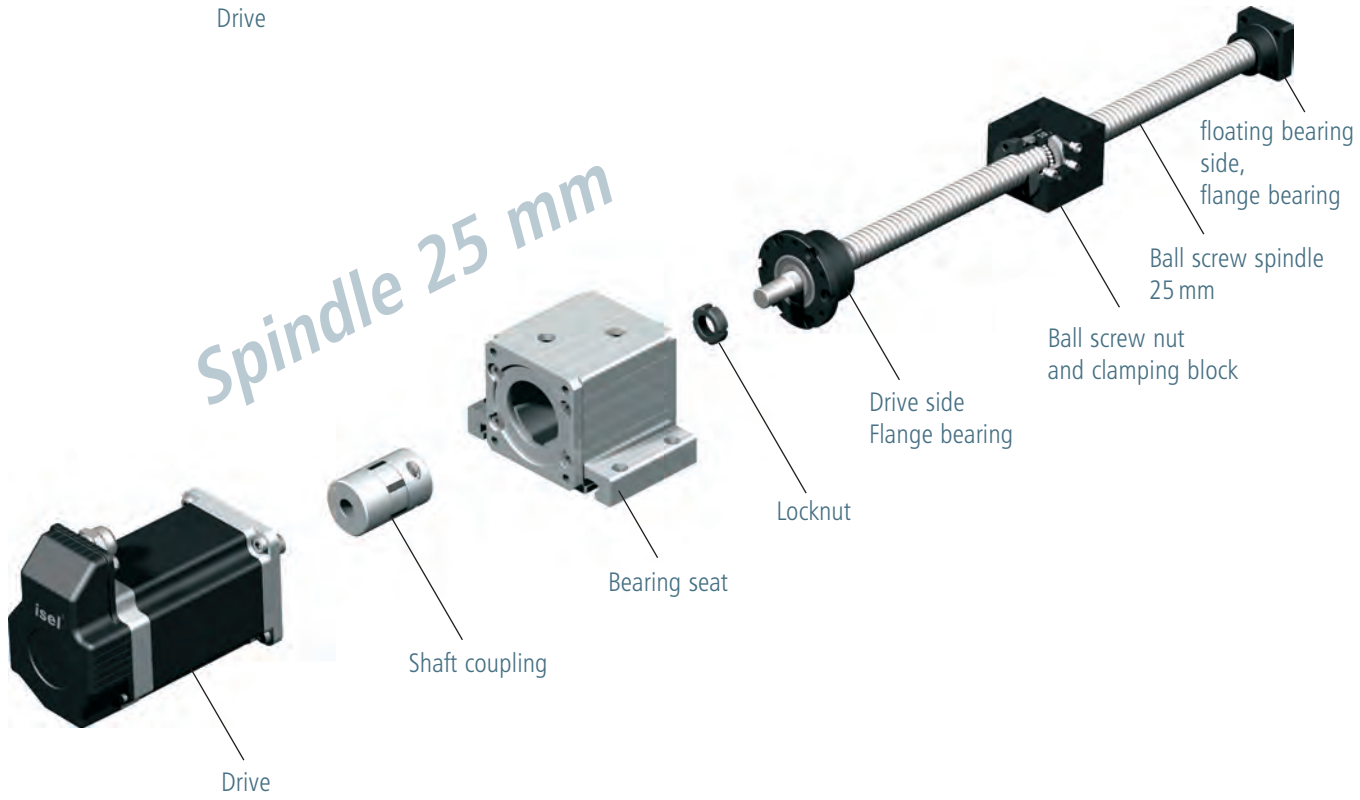
Drive elements

Overview

Linear Drives

The most commonly used type of drive for a linear unit is a directly or by a tooth belt driven ball screw spindle.





mechanics

Ball screw spindles Ø 16, 25 mm

Ø 16 features

- Ø16 mm, rolled, hardened and polished
- Material CF 53, inductively hardened (HRC 60 ± 2); (for detailed information see DIN 17212)
- Spindle pitches: 2.5 / 4 / 5 / 10 and 20 mm
- Lengths up to max. 3052 mm available
- End machining to isel standard or to order (see "Available lengths")
- Produced to DIN 69051, Part3, Tolerance class 7

Options
- End machining to order

Available lengths

Without end machining
in 100 mm raster
- 452 to 1052 mm
- 1252 mm • 1552 mm
- 1752 mm • 2052 mm
- 2252 mm • 2752 mm
- 3052 mm

Special length according to drawing: 211 13X 0998

Both-sided end machining
in 100 mm raster
- 368 mm to 3068 mm

Special length to drawing: 211 13X 5999

Ordering key

211 13X XXXX

Spindle pitch
2 = 2.5 mm
3 = 4 mm
4 = 5 mm
5 = 10 mm
6 = 20 mm

End machining
0 = not machined
5 = both-sided machining suitable for all feeds (aluminium profile length +78 mm)

Lengths
e.g. **045** = 452 mm
086 = 868 mm
305 = 3052 mm
(rounded to the final digit)

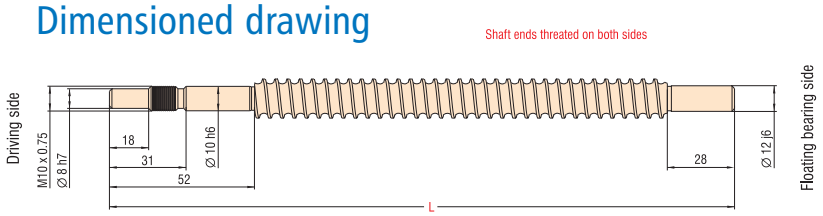
See "Available lengths" for permissible Combinations.

Ordering information

Slotted nut
- Self-locking
- M 10 x 0.75 mm

Part no.: **890257 0011**

Dimensioned drawing



Ø 25 features

- Ø 25 mm, hardened and polished
- Material CF 53, inductively hardened (HRC 60 ± 2); (for detailed information see DIN 17212)
- Spindle pitches: 5/10 and 20 mm
- Lengths up to max. 3052 mm available
- End machining to isel standard or to order (see "Available lengths")
- Produced to DIN 69051, Part 3, Tolerance class 7

Options
- End machining to order

Available lengths

Without end machining
in 100 mm raster
- 500 to 3,000 mm

Special length to drawing: 211 14X 0999

Shaft ends on both sides machined in steps of 100 mm
- 295 to 2,995 mm

Ordering key

211 14X XXXX

Spindle pitch
4 = 5 mm
5 = 10 mm
6 = 20 mm

End machining
0 = not machined
2 = both sides

Lengths
e.g. **050** = 500 mm
100 = 1000 mm
289 = 2895 mm
(rounded to the final digit)

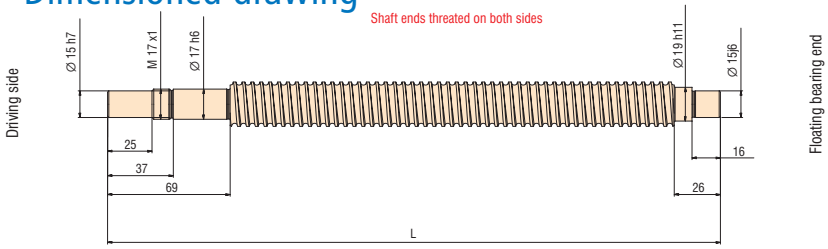
See "Available lengths" for permitted combinations.

Ordering information

Slotted nut
- Self-locking
- M 17 × 1.0 mm

Part no.: **890259 0011**

Dimensioned drawing



Ball bearing nuts

Version 2-Ø16

Features

- Material 16MnCr5 or 20MnCr5, pressed, hardened, polished
- Versions for recirculating ball spindle Ø16 mm
- Nut pitches: 2.5/4/5/10 mm
- Balls are rerouted internally
- as block housing with base fixing
- Regreasing through grease nipples 90°, 0°

Load factors

Pitch	Nominal Ø	Dynamic load factor	Static load factor
2.5 mm	16 mm	3500 N	5500 N
4.0 mm	16 mm	4600 N	7200 N
5.0 mm	16 mm	4600 N	7200 N
10.0 mm	16 mm	4200 N	6500 N

Ordering information

only for spindles Ø16

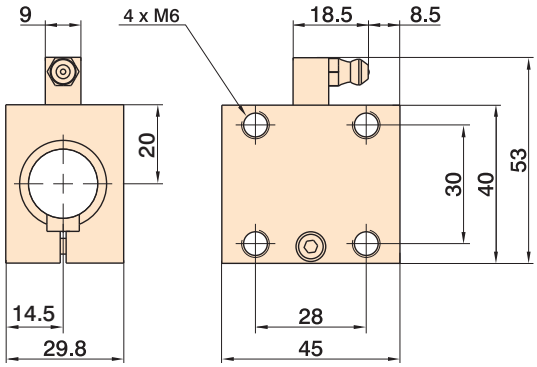
Pitch	Part no.
2.5 mm	213 003 1003
4.0 mm	213 003 1004
5.0 mm	213 003 1005
10.0 mm	213 003 1010

matching:

Dirt scraper

- VE 2 pcs. Part no.: 213500 0001

Dimensioned drawings



Version 3–Ø16 Ø25

Features

- Material 16MnCr5, ground
- Versions for recirculating ball spindles Ø16 and Ø25 mm
- Nut pitches: 2.5/4/5/10 and 20 mm (Ø 16 mm), 5/10 and 20 mm (Ø25 mm)
- Balls are rerouted internally
- The version with nut pitch 20 mm is supplied with scrapers

Load factors

Pitch (mm)	Nominal Ø (mm)	Dyn. load factor (N)	Static load factor (N)
2.5	16	3500	5500
4.0	16	4600	7200
5.0	16	4600	7200
10.0	16	4200	6500
5.0	25	5100	12600
10.0	25	5100	12600
20.0	25	3570	8800

Ordering information

only for spindles Ø 25

Pitch	Part no.
5.0 mm	213 700 0005
10.0 mm	213 700 0010
20.0 mm	213 700 0020

matching:

dirt scraper

- VE 2 pcs.

Part no.: 213700 9000

only for spindles Ø 16

Pitch	Part no.
2.5 mm	213 503
4.0 mm	213 514
5.0 mm	213 505
10.0 mm	213 510
20.0 mm	213 520

matching:

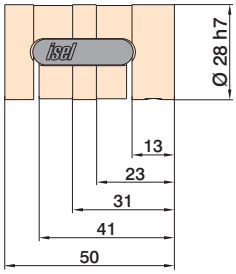
dirt scraper

- VE 2 pcs.

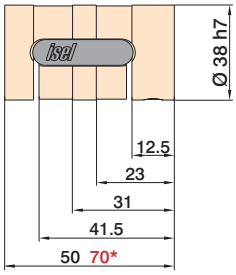
Part no.: 213500 0001

Dimensioned drawings

for spindle Ø 16



for spindle Ø 25



*) At pitch = 20

Clamping blocks For nut version 3

Flange securing

Base securing

Features

- Material steel, gunmetal finish
- Versions for recirculating ball spindles Ø 25 and Ø 16 mm
- Nut pitches
  5 / 10 and 20 mm (Ø 25 mm)
  2.5 / 4 / 5 / 10 and 20 mm (Ø 16 mm)
- Recirculating ball nuts are adjustable for no play
- Clamping blocks for base and flange securing

Ordering information

Clamping block 2 Ø16

Flange securing

Pitch	Part no.
all	213 501

Clamping block 1 Ø16

Base securing

Pitch	Part no.
all	213 500

Clamping block 2 Ø25

Flange securing

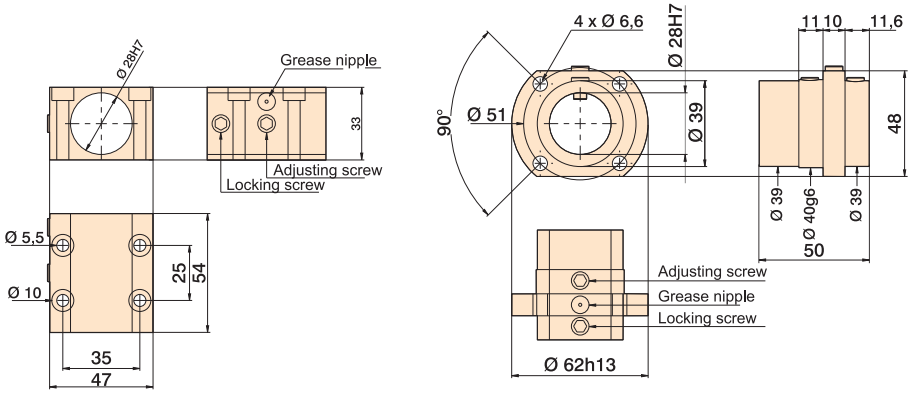
Pitch	Part no.
5 / 10	213 700 9003
20	213 700 9004

Clamping block 1 Ø25

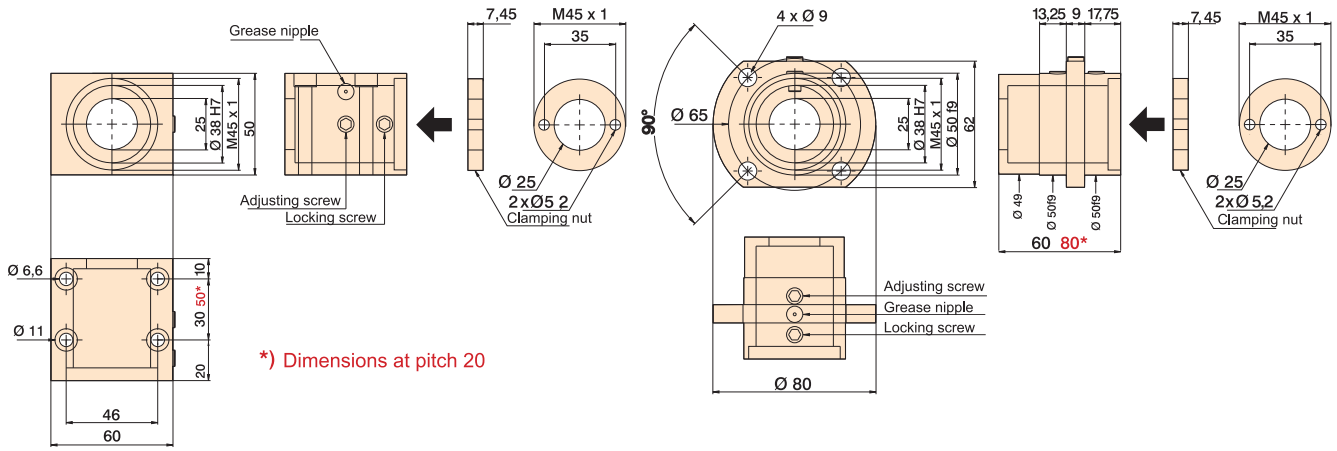
Base securing

Pitch	Part no.
5 / 10	213 700 9001
20	213 700 9002

Dimensioned drawings – spindle clamping blocks Ø 16



Dimensioned drawings – spindle clamping blocks Ø 25



Flange bearing

for spindle ∅ 16 mm

Flange bearing

drive side

Flange bearing

Floating bearing side

Ordering information

Flange bearing, drive side

Part no.: 216 504 0001

Flange bearing, floating bearing side

Part no.: 216 504 0002

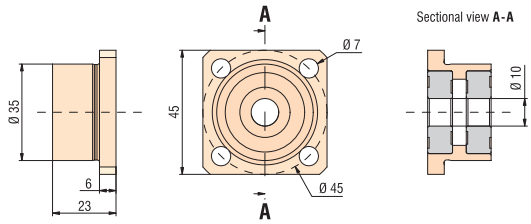
Features

- Bearing, spindle drive side (fixed bearing side) and the spindle floating bearing side
- Flange bearing, drive side: Bushing with two pressed angular contact ball bearings in an O-configuration
- Flange bearing, floating bearing side (counterbearing): bushing with a pressed needle bearing

Dimensioned drawings

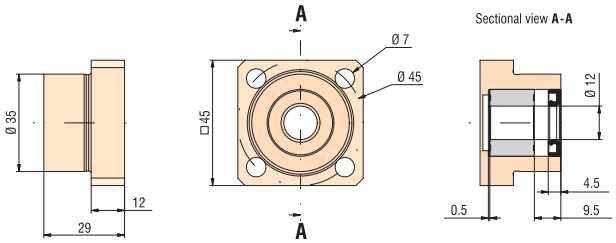
Flange bearing

drive side



Flange bearing

Floating bearing side



for spindle ∅ 25 mm

Flange bearing

drive side

Flange bearing

floating bearing side

Ordering information

Flange bearing, drive side

Part no.: 216 504 0006

Flange bearing, floating bearing side

Part no.: 216 504 0005

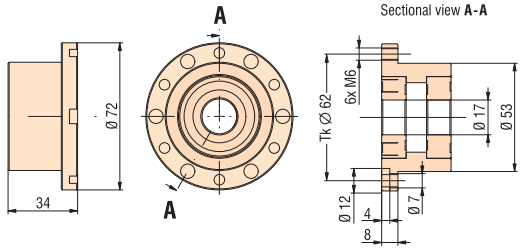
Features

- Bearing, spindle drive side (fixed bearing side) and the spindle floating bearing side
- Flange bearing, drive side: Bushing with two pressed angular contact ball bearings in an O-configuration
- Flange bearing, floating bearing side (counterbearing): bushing with a pressed needle bearing

Dimensioned drawings

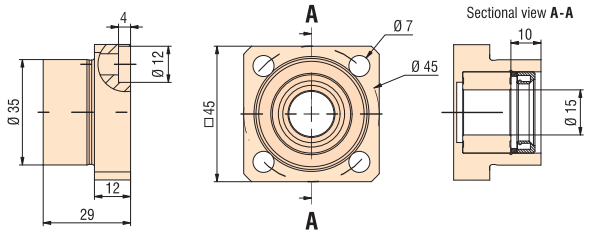
Flange bearing

drive side



Flange bearing

floating bearing side



Bearing supports

Bearing support 1

- Aluminium profile to DIN EN 12020-2
- As a parallel connection of flange bearing and motor flange
- Flat milled securing surfaces
- Version for recirculating ball spindle Ø 16 mm
- Universal securing options

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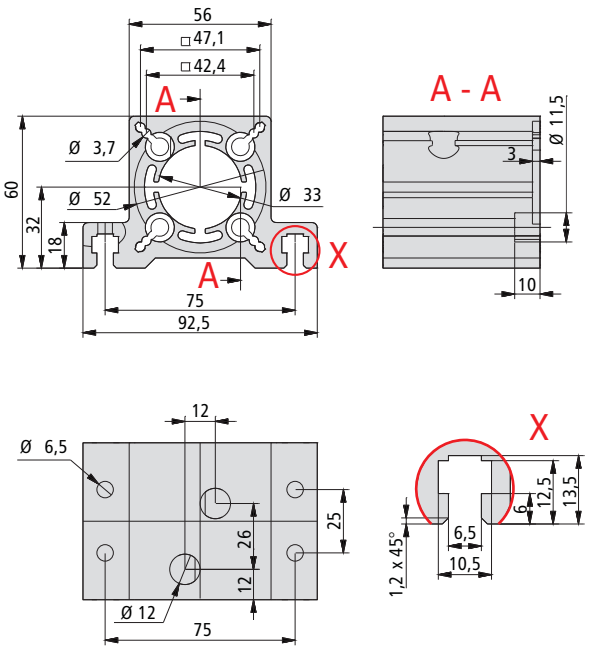
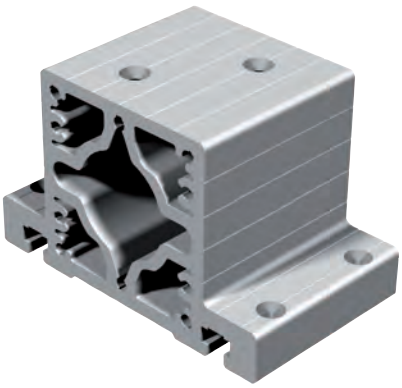
Part no.: **216504 0007**



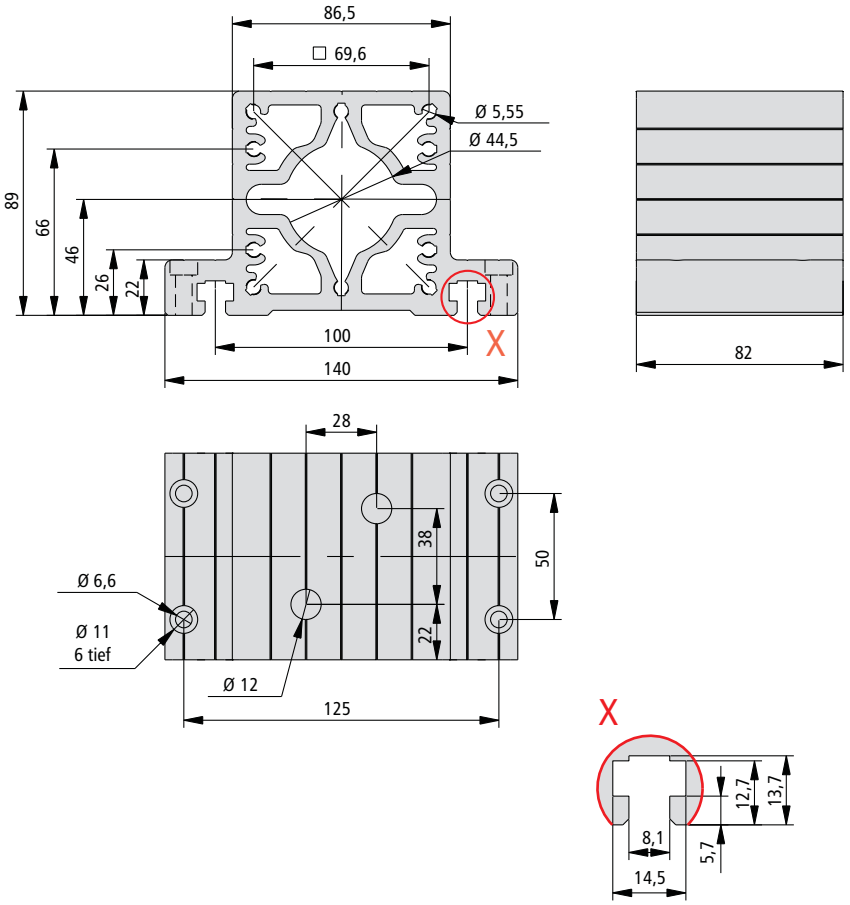
Bearing support 2



- Aluminium profile to DIN EN 12020-2
- As a parallel linkage of flange bearing and motor flange
- Version for recirculating ball spindle Ø 25 mm
- Universal securing options

.

Part no.: **216504 0008**



Shaft couplings

Connection options Direct drive	LES 4	LES 6	LES 5	Angular transmission Securing 0°	Angular transmission Securing 90°
MS 135 HT - 2 MS 200 HT - 2 DC 100 EC 60	Connection via clutch housing 1 short bushing with corresponding shaft coupling				Clutch housing 1 long bushing
MS 600 HT MS 900 HT DC 300 EC 86	Connection via clutch housing 2 short bushing with corresponding shaft coupling				Clutch housing 2 long bushing
Angular transmission Securing 0°	split clutch housing short bushing with corresponding shaft coupling			Connection via Transmission shaft set	
Angular transmission Securing 90°	split clutch housing long bushing with corresponding shaft coupling				

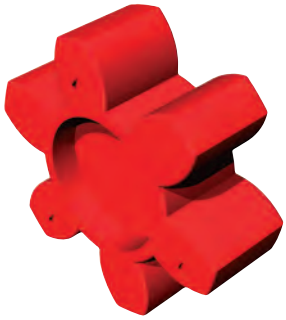
Shaft couplings

Deliverables: 2 aluminium blocks,
3 PUR sprockets (86°, 92° and 98° Shore) and matching adjusting screws

For part no. see table

Clutch	Part no.	d 1	d 2
20/30	218001 5060	5.0	6.0
	218001 9999	from 4 to 7 mm	
30/40	218002 6380	6.35	8.0
	218002 8080	8.0	8.0
	218002 9999	from 4 to 13 mm	
40/60	218003 9580	9.52	8.0
	218003 9999	from 4 to 18 mm	

PUR sprockets

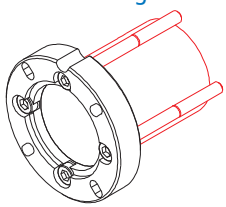


for WK 20/30 Part no.: 217 011 00**
for WK 30/40 Part no.: 217 012 00**
for WK 40/60 Part no.: 217 013 00**

for ** use the Shore hardness

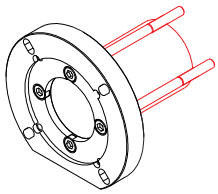
Other clutches to order.

Clutch housing 1 + 2



short bushing
Part no.: 218 100 0001

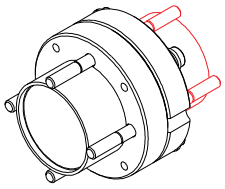
long bushing
Part no.: 218 100 0002



short bushing
Part no.: 218 100 1001

long bushing
Part no.: 218 100 1002

split clutch housing



short bushing
Part-no.: 218 100 2001

long bushing
Part-no.: 218 100 2002