

Drive elements

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Ball screw nuts supplied by isel Germany are high-quality, precise and wear-free (hardened and ground). Combined with ball screw spindles, ball screw nuts ensure that rotary motion is converted into linear motion at extremely low values of friction.

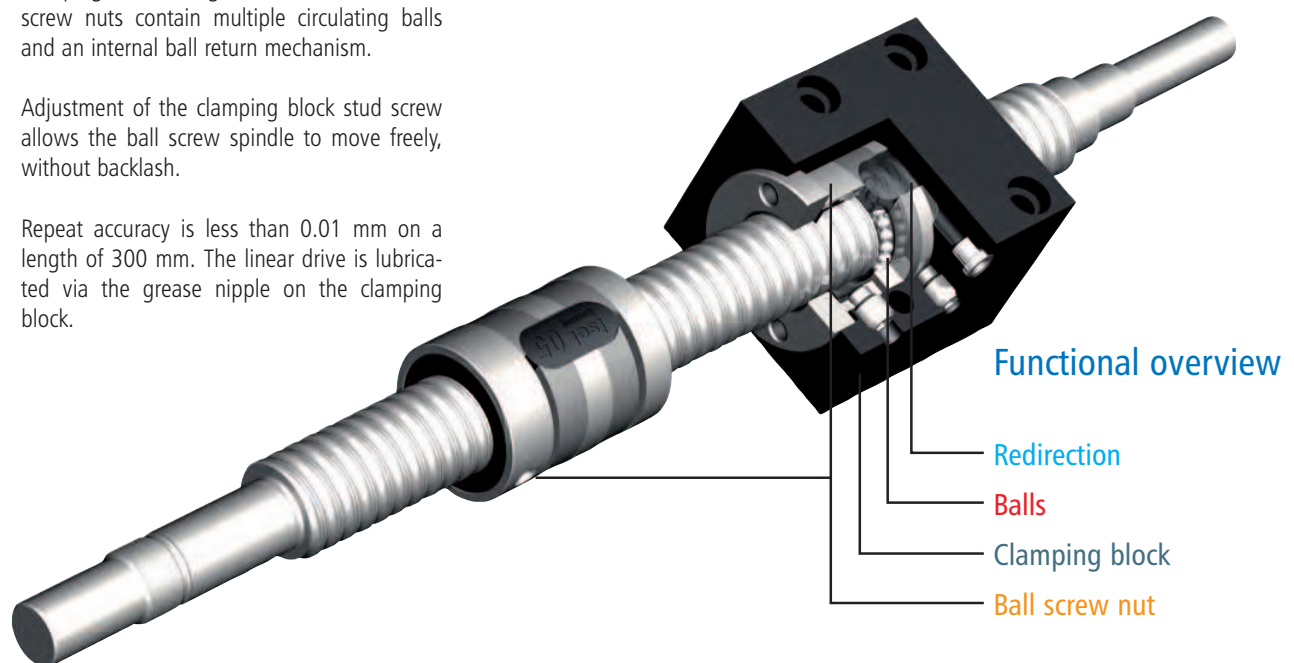
The ball screw nut is positioned and held in the clamping block using a stud screw. The ball screw nuts contain multiple circulating balls and an internal ball return mechanism.

Adjustment of the clamping block stud screw allows the ball screw spindle to move freely, without backlash.

Repeat accuracy is less than 0.01 mm on a length of 300 mm. The linear drive is lubricated via the grease nipple on the clamping block.

Ball screw spindles are roll manufactured using modern machines prior to hardening and polishing.

Our linear drives are technically advanced and have proven themselves over a period of more than 20 years of practical application.



Functional overview

Redirection

Balls

Clamping block

Ball screw nut

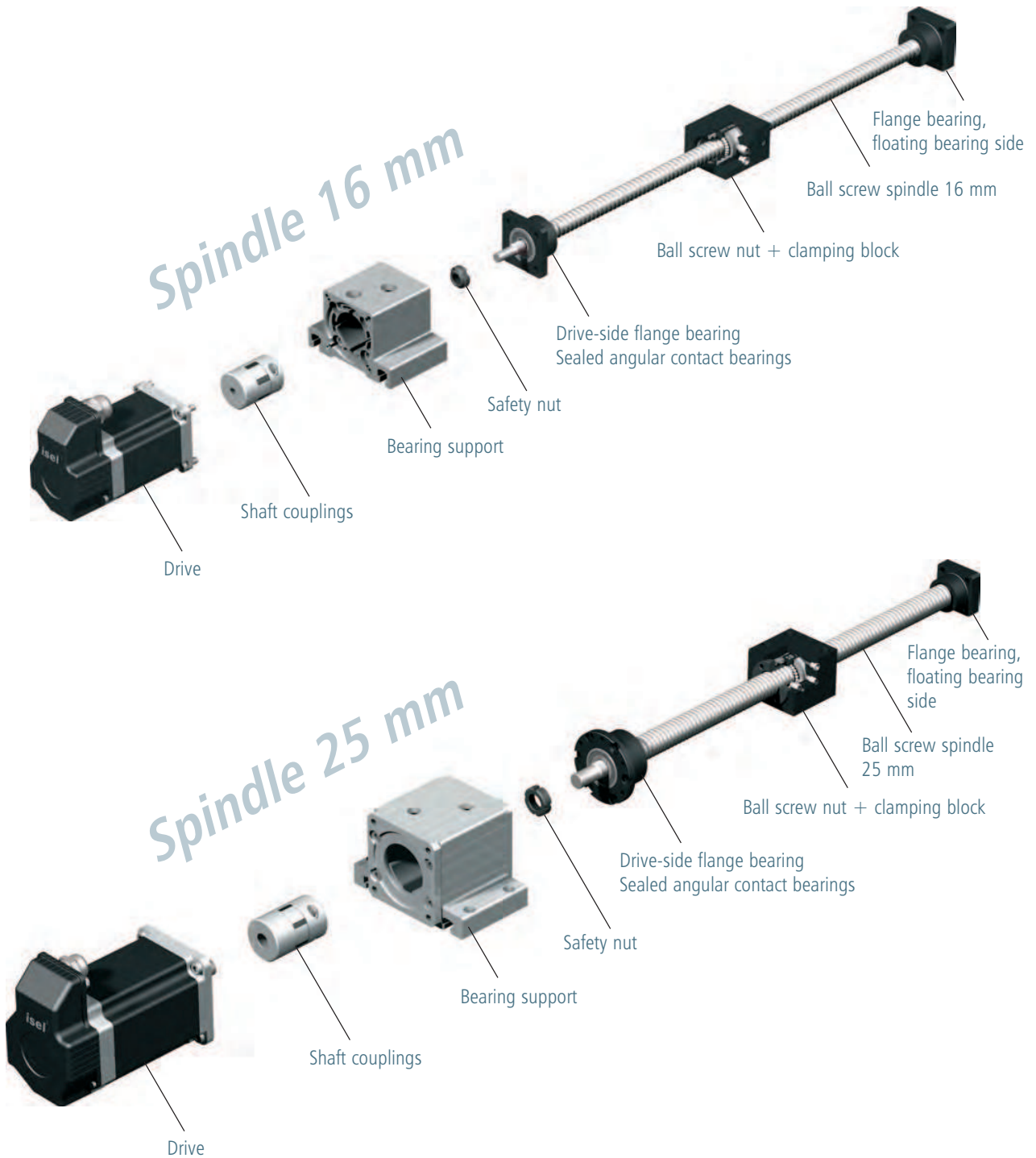
Drive elements

Overview

mechanics

Linear drive

The most common variable when using linear drives is whether the spindles are driven directly or via toothed-belt.



Recirculating ball 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 according to customer specification (see "Available lengths")
- Produced to DIN 69051, Part 3, Tolerance class 7

Options

- **End machining according to customer specification**
- **Available in other lengths**

Available lengths

Without end machining
in 100 mm raster

- 352 to 3052 mm

Two-sided end machining
in 100 mm raster

- 368 mm to 3068 mm
- Special length to dimensioned drawing:
211 13X XXXX

Special length to
Drawing: 211 13X 0998

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.

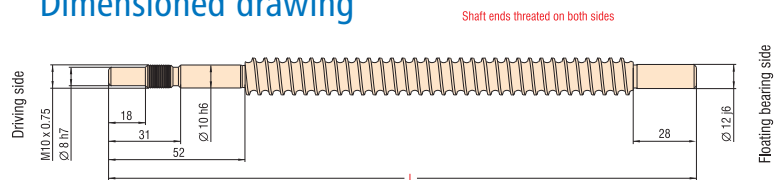
Ordering data

Slotted nut

- Self-locking
- M 10 × 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. 3000 mm available
- End machining to isel standard or according to customer specification (see "Available lengths")
- Produced in accordance with DIN 69051, Part 3, Tolerance class 7

Option

- **End machining to order**

Available lengths

Without end machining
in 100 mm raster

- 500 to 3000 mm

Special length in accordance
with drawing: 211 14X 0998

Two-sided end machining
in 100 mm raster

- 295 to 2995 mm
- Special length in accordance
with drawing: 21114X XXXX

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 last digit)

See "Available lengths" for permissible combinations.

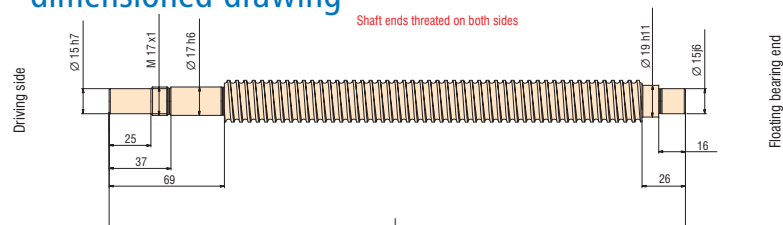
Ordering data

Slotted nut

- Self-locking
- M 17 × 1.0 mm

Part no.: **890259 0011**

dimensioned drawing



Ball 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 data

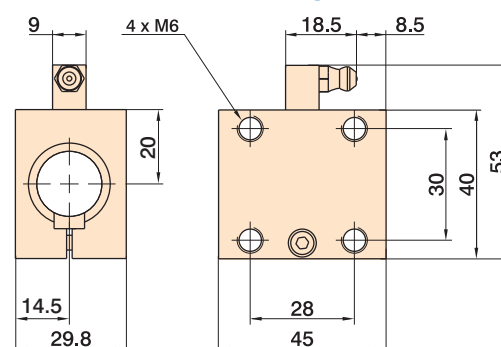
only for spindles Ø16

| 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 |

with matching:
dirt scraper

- VE 2 unit 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 mm
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 | 25 | 3570 | 8800 |

Ordering data

only for spindles Ø25

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

with matching:

dirt scraper

- VE 2 unit
Part no.: 213700 9000

only for
spindles Ø16

| 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 |

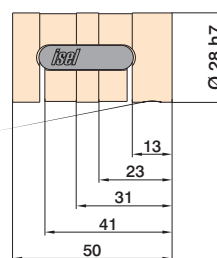
with matching:

dirt scraper

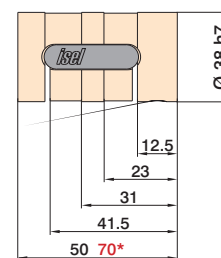
- VE 2 unit
Part no.: 213500 0001

Dimensioned drawings

for spindle Ø 16



for spindle Ø 25

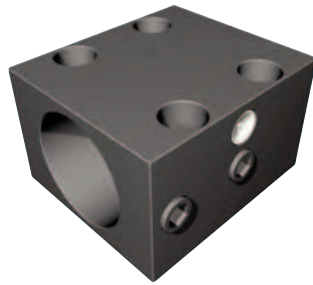


*) At pitch = 20

Clamping blocks for nut version 3



Flange securing



Base securing

Features

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

Ordering data

Clamping block 2 $\varnothing 16$
Flange securing

| Pitch | Part no. |
|-------|----------|
| all | 213 501 |

Clamping block 1 $\varnothing 16$
Base securing

| Pitch | Part no. |
|-------|----------|
| all | 213 500 |

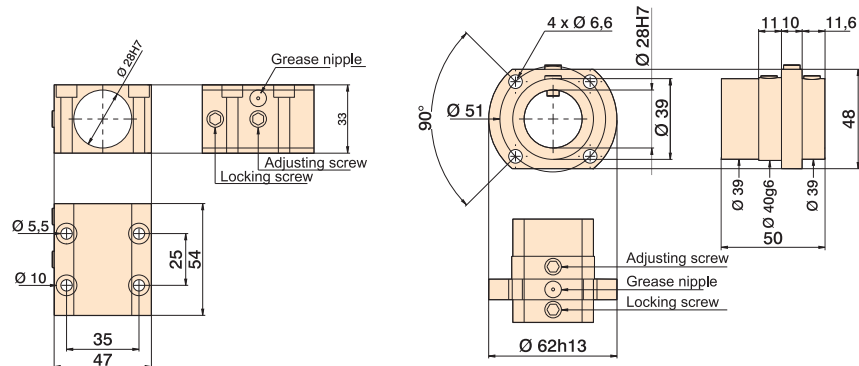
Clamping block 2 $\varnothing 25$
Flange securing

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

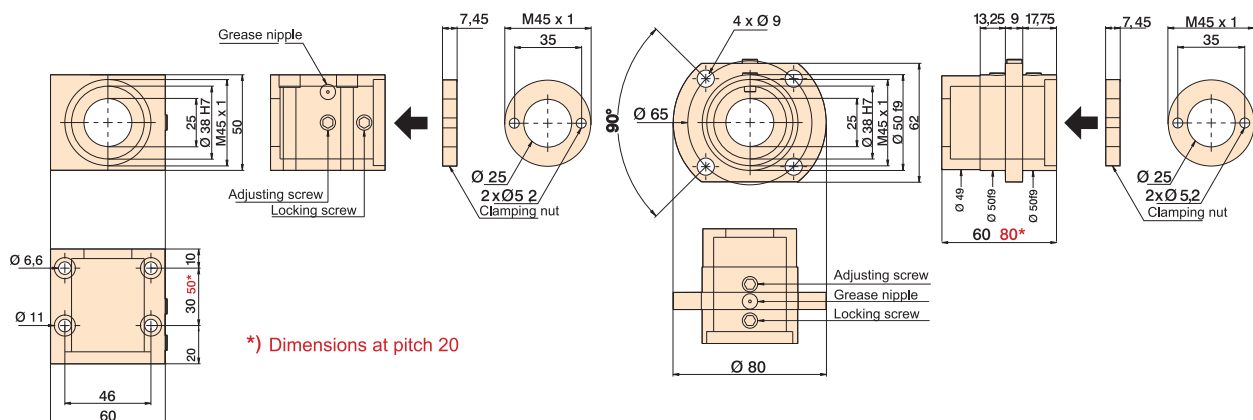
Clamping block 1 $\varnothing 25$
Base securing

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

Dimensioned drawings - spindle clamping blocks $\varnothing 16$



Dimensioned drawings - spindle clamping blocks $\varnothing 25$



Flange bearing

for spindle \varnothing 16 mm



Flange bearing
drive side



Flange bearing
floating bearing side

Ordering data

Flange bearing, drive side

Part no.: **216 504 0001**

Flange bearing, floating bearing side

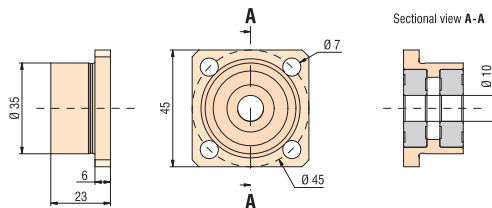
Part no.: **216 504 0002**

Features

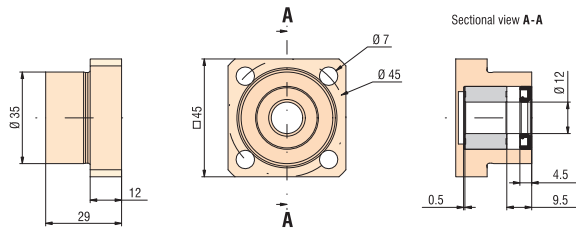
- Bearing, spindle drive side (fixed bearing side) and the spindle floating bearing side
- Flange bearing, drive side: bushing with two pressed angular contact ball bearings in an O-configuration
- Flange bearing, floating bearing side (counter-bearing): bushing with pressed needle bearing

Dimensioned drawings

Flange bearing
drive side



Flange bearing
floating bearing side



for spindle \varnothing 25 mm



Flange bearing
drive side



Flange bearing
floating bearing side

Ordering data

Flange bearing, drive side

Part no.: **216 504 0006**

Flange bearing, floating bearing side

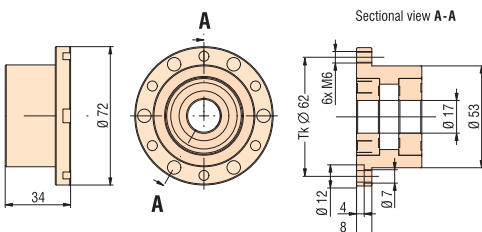
Part no.: **216 504 0005**

Features

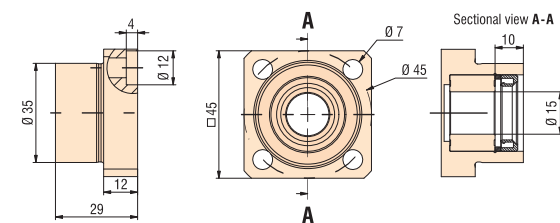
- Bearing, spindle drive side (fixed bearing side) and the spindle floating bearing side
- Flange bearing, drive side: bushing with two pressed angular contact ball bearings in an O-configuration
- Flange bearing, floating bearing side (counter-bearing): bushing with pressed needle bearing

Dimensioned drawings

Flange bearing
drive side

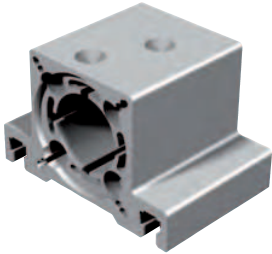


Flange bearing
floating bearing side



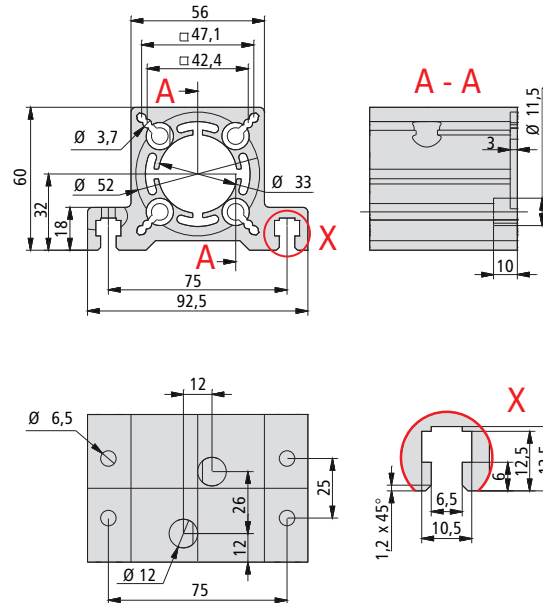
Bearing supports

Bearing support 1

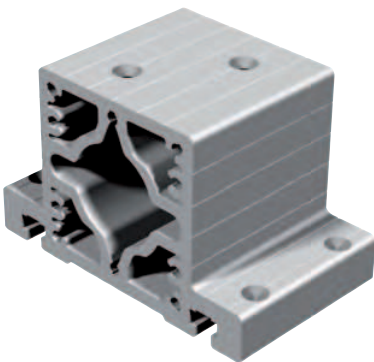


- Aluminium profile compliant with DIN EN 12020-2
- As a parallel connection between the flange bearing and motor flange
- Flat milled securing surfaces
- Version for recirculating ball spindle $\varnothing 16$ mm
- Universal securing options

Part no.: **216504 0007**



Bearing support 2



- Aluminium profile compliant with DIN EN 12020-2
- As a parallel connection between the flange bearing and motor flange
- Version for recirculating ball spindle $\varnothing 25$ mm
- Universal securing options

Part no.: **216504 0008**

