

HIWIN®

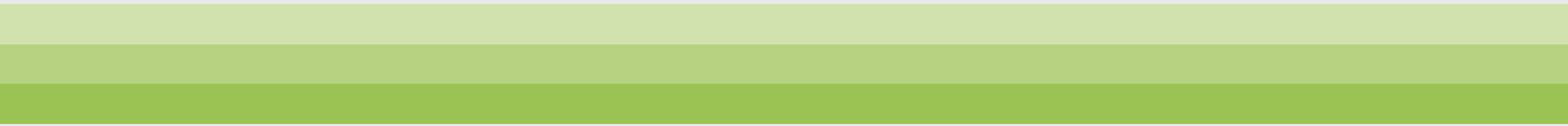
Linear Technology



HIWIN Compact

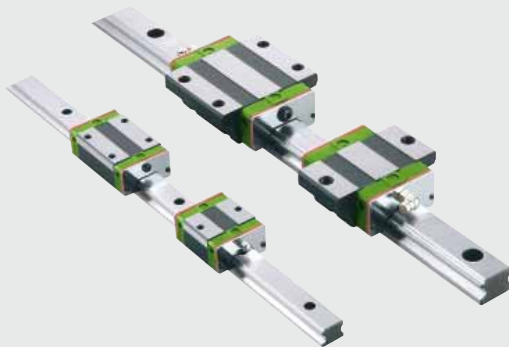
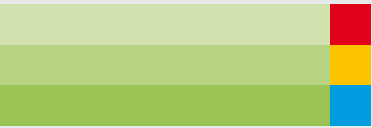
Linear Guideways
Ballscrews
Linear Stages

www.hiwin.de



Welcome to HIWIN

HIWIN offers a complete range of linear technology products. Our Compact Catalog provides an overview of our standard range, in stock and ready for delivery.



HIWIN Compact



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Linear Guideway



A linear guideway facilitates linear movement using ball bearings. Thanks to the use of ball bearings between the rail and the block, it is possible for a linear guideway to achieve extremely precise linear movement. In comparison with a conventional guide rail, the friction coefficient is still only one fiftieth. Due to the restricted guidance of the block on the rail, linear guideways can carry loads in both a vertical and horizontal direction.



Linear Guideway

HG, EG series

1.1 Linear Guideway Series HG / EG

1.1.1 Special characteristics of the linear guideway series HG and EG

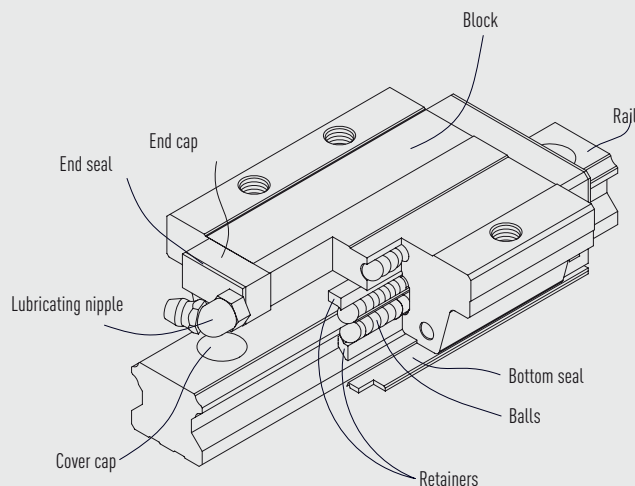
The super heavy duty HIWIN linear guideways of the HG/ EG series, with four ball bearing paths, are designed for loads and rigidity 30 % higher than with similar products. This is thanks to optimization of the running arc and its construction. The system also owes its light running to the optimal design of the recirculation system.

The retainers prevent the ball bearings from falling out, in particular when the block is pulled off the rail during installation.

1.1.3 Article numbers for the HG series

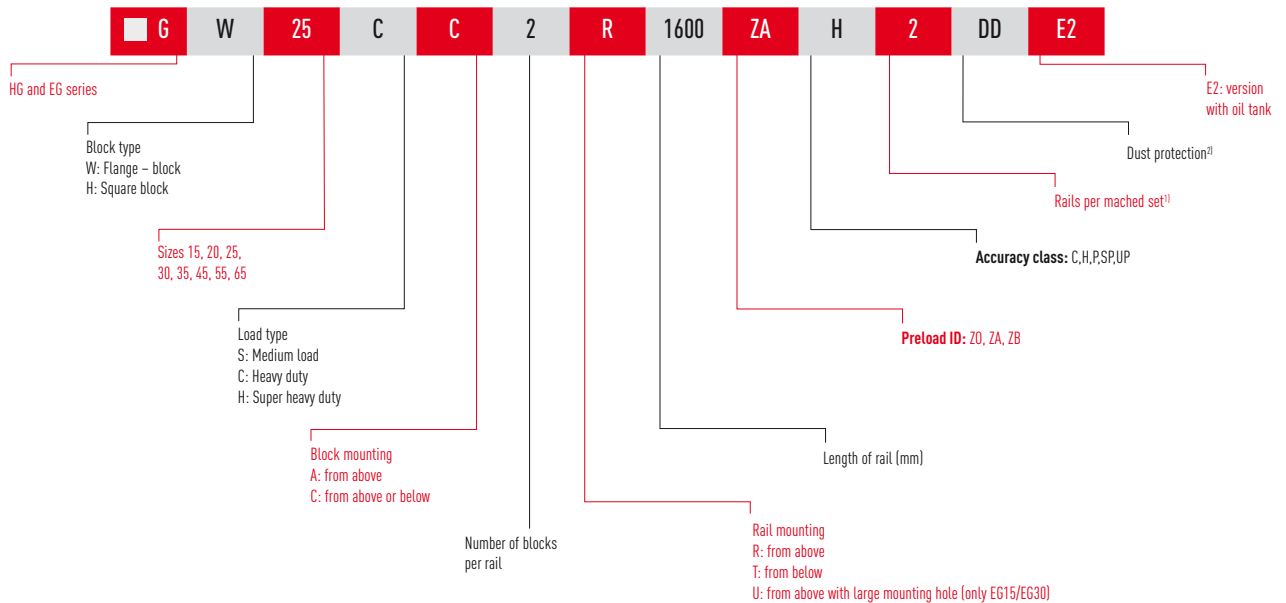
Linear guideways are available as either interchangeable or non-interchangeable versions. The dimensions of both models are identical. The interchangeable models are more user friendly, as the block and rail can be replaced freely. However, accuracy is lower than that of the non-interchangeable models. Due to the strict control of dimensional accuracy, the interchangeable models are a good choice for customers not using pairs of rails on a stage. The article numbers include the dimensions, model, accuracy class and preload class etc.

1.1.2 Construction of the HG and EG series



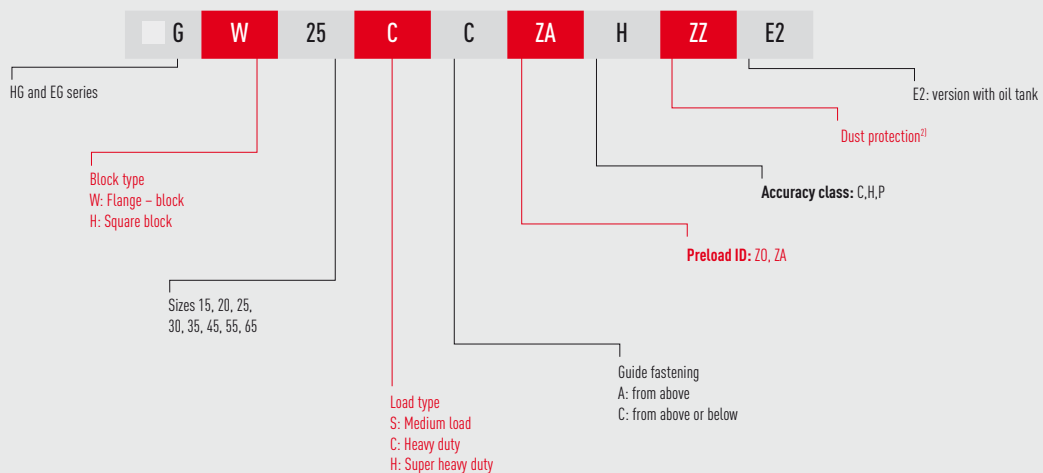
- Recirculation system: block, rail, end cap and retainers
- Lubrication system: Lubricating nipple; optional: lubrication adapter
- Dust protection: End seal, bottom seal, cover cap; optional: double seals, scraper (see Chapter 1.1.9)

1. Non-interchangeable models (customized models)

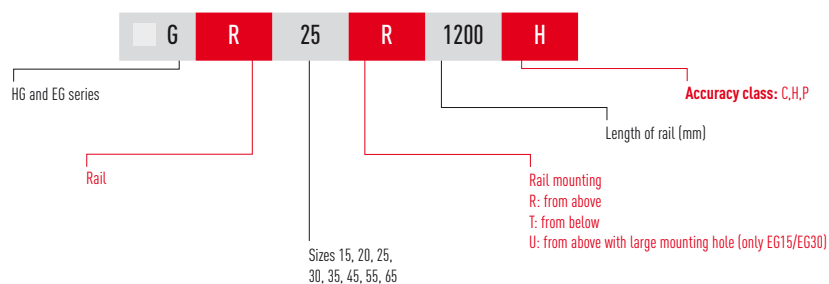


2. Interchangeable models

○ Article number of the HG/EG block



○ Article number of the HG/EG rail



Note: ¹⁾ Figure 2 is also a quantity statement, i.e. a part of the article described above consists of a pair of rails. No figures are provided for individual linear guideways.

²⁾ No information is provided for the standard version for dust protection (end seal and bottom seal)

ZZ: End seal, bottom seal and scraper

KK: Double seals, bottom seal and scraper

DD: Double seals and bottom seal

Linear Guideway

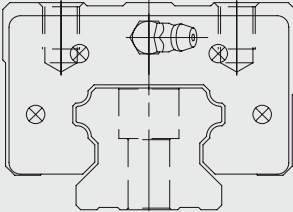
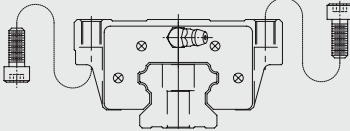
HG, EG series

1.1.4 Types

1. Block types

HIWIN offers square blocks and flange blocks for its linear guideways. The low assembly height and larger installation surface makes flange blocks more suitable for heavy loads.

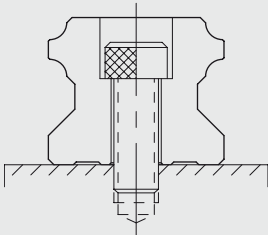
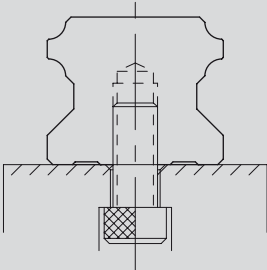
Table 1.1: Block types

| Type | Model [mm] | Construction | Height [mm] | Rail length [mm] | Typical application |
|--------|--------------------------------------|---|---------------|-------------------|---|
| Square | HGH-CA HGH-HA EGH-SA EGH-CA |  | 24 ↓ 90 | 100 ↓ 4.000 | <ul style="list-style-type: none"> ○ Machining centers ○ NC lathes ○ Grinders ○ Precision milling ○ High-performance cutting machinery |
| | | | | | <p>Flange</p> <td> HGW-CC HGW-HC EGW-SC EGW-CC </td> <td> Standard version  </td> <td> 24 ↓ 90 </td> <td> 100 ↓ 4.000 </td> <td> <ul style="list-style-type: none"> ○ Automation technology ○ Transportation technology ○ Measuring technology ○ Machines and devices requiring a high level of positioning accuracy </td> |

2. Rail types - mounting

In addition to rails with mounting from above, HIWIN also offers rail types for mounting from below.

Table 1.2: Rail types

| Mounting from above | Mounting from below |
|--|--|
|  <p>HGR...R EGR...R EGR...U</p> |  <p>HGR...T EGR...T</p> |

1.1.5 Accuracy classes

The HG and EG series is divided into five classes according to respective accuracy - normal (C), high (H), precision class (P), super precision class (SP) and ultra precision class (UP). The requirements of the machinery in which the linear guideway is used, determine the selection.

1. Accuracy classes of non-interchangeable types

Table 1.3: Accuracy characteristics

| Series / Size | HG / EG - 15, 20 | | | | |
|---|------------------|----------|---------------|----------------------|----------------------|
| Accuracy class | normal (C) | high (H) | Precision (P) | Super precision (SP) | Ultra precision (UP) |
| Height tolerance H_{11} | ±0.1 | ±0.03 | 0 -0.03 | 0 -0.015 | 0 -0.008 |
| Width tolerance N_{11} | ±0.1 | ±0.03 | 0 -0.03 | 0 -0.015 | 0 -0.008 |
| Height variance of H_{21} | 0.02 | 0.01 | 0.006 | 0.004 | 0.003 |
| Width variance of N_{21} | 0.02 | 0.01 | 0.006 | 0.004 | 0.003 |
| Parallelism of block surface C with surface A | See table 1.11 | | | | |
| Parallelism of block surface D with surface B | See table 1.11 | | | | |

Unit: [mm]

Table 1.4: Accuracy characteristics

| Series / Size | HG / EG - 25, 30, 35 | | | | |
|---|----------------------|----------|---------------|----------------------|----------------------|
| Accuracy class | normal (C) | high (H) | Precision (P) | Super precision (SP) | Ultra precision (UP) |
| Height tolerance H_{11} | ±0.1 | ±0.04 | 0 -0.04 | 0 -0.02 | 0 -0.01 |
| Width tolerance N_{11} | ±0.1 | ±0.04 | 0 -0.04 | 0 -0.02 | 0 -0.01 |
| Height variance of H_{21} | 0.02 | 0.015 | 0.007 | 0.005 | 0.003 |
| Width variance of N_{21} | 0.03 | 0.015 | 0.007 | 0.005 | 0.003 |
| Parallelism of block surface C with surface A | See table 1.11 | | | | |
| Parallelism of block surface D with surface B | See table 1.11 | | | | |

Unit: [mm]

¹⁾ Tolerance data that applies to any rail with any block

²⁾ Permissible absolute dimensional deviation between several blocks distributed over one individual rail or located on a pair of rails

Linear Guideway

HG, EG series

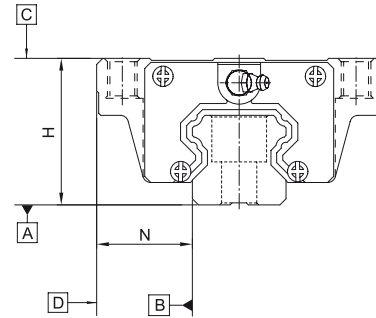


Table 1.5: Accuracy characteristics

| Series / Size | HG - 45, 55 | | | | |
|---|----------------|------------|---------------|----------------------|----------------------|
| Accuracy class | normal (C) | high (H) | Precision (P) | Super precision (SP) | Ultra precision (UP) |
| Height tolerance H_{11} | ± 0.1 | ± 0.05 | 0 -0.05 | 0 -0.03 | 0 -0.02 |
| Width tolerance N_{11} | ± 0.1 | ± 0.05 | 0 -0.05 | 0 -0.03 | 0 -0.02 |
| Height variance of H_{21} | 0.03 | 0.015 | 0.007 | 0.005 | 0.003 |
| Width variance of N_{21} | 0.03 | 0.02 | 0.01 | 0.007 | 0.005 |
| Parallelism of block surface C with surface A | See table 1.11 | | | | |
| Parallelism of block surface D with surface B | See table 1.11 | | | | |

Unit: [mm]

Table 1.6: Accuracy characteristics

| Series / Size | HG - 65 | | | | |
|---|----------------|------------|---------------|----------------------|----------------------|
| Accuracy class | normal (C) | high (H) | Precision (P) | Super precision (SP) | Ultra precision (UP) |
| Height tolerance H_{11} | ± 0.1 | ± 0.07 | 0 -0.07 | 0 -0.05 | 0 -0.03 |
| Width tolerance N_{11} | ± 0.1 | ± 0.07 | 0 -0.07 | 0 -0.05 | 0 -0.03 |
| Height variance of H_{21} | 0.03 | 0.02 | 0.01 | 0.007 | 0.005 |
| Width variance of N_{21} | 0.03 | 0.025 | 0.015 | 0.01 | 0.007 |
| Parallelism of block surface C with surface A | See table 1.11 | | | | |
| Parallelism of block surface D with surface B | See table 1.11 | | | | |

Unit: [mm]

¹⁾ Tolerance data that applies to any block on any rail

²⁾ Permissible absolute dimensional deviation between several blocks, distributed over one individual rail or located on a pair of rails

○ Accuracy classes of interchangeable types

Table 1.7: Accuracy characteristics

| Series / Size | HG / EG - 15, 20 | | |
|---|------------------|------------|---------------|
| Accuracy class | normal (C) | high (H) | Precision (P) |
| Height tolerance H_{11} | ± 0.1 | ± 0.03 | ± 0.015 |
| Width tolerance N_{11} | ± 0.1 | ± 0.03 | ± 0.015 |
| Height variance of H_{21} | 0.02 | 0.01 | 0.006 |
| Width variance of N_{21} | 0.02 | 0.01 | 0.006 |
| Parallelism of block surface C with surface A | See table 1.11 | | |
| Parallelism of block surface D with surface B | See table 1.11 | | |

Unit: [mm]

Table 1.9: Accuracy characteristics

| Series / Size | HG - 45, 55 | | |
|---|----------------|------------|---------------|
| Accuracy class | normal (C) | high (H) | Precision (P) |
| Height tolerance H_{11} | ± 0.1 | ± 0.05 | ± 0.025 |
| Width tolerance N_{11} | ± 0.1 | ± 0.05 | ± 0.025 |
| Height variance of H_{21} | 0.03 | 0.015 | 0.007 |
| Width variance of N_{21} | 0.03 | 0.02 | 0.01 |
| Parallelism of block surface C with surface A | See table 1.11 | | |
| Parallelism of block surface D with surface B | See table 1.11 | | |

Unit: [mm]

Table 1.11: Tolerance parallelism between block and rail

| Accuracy class | C | H | P | SP | UP |
|------------------|----|----|----|----|----|
| Rail length [mm] | | | | | |
| -100 | 12 | 7 | 3 | 2 | 2 |
| 100 - 200 | 14 | 9 | 4 | 2 | 2 |
| 200 - 300 | 15 | 10 | 5 | 3 | 2 |
| 300 - 500 | 17 | 12 | 6 | 3 | 2 |
| 500 - 700 | 20 | 13 | 7 | 4 | 2 |
| 700 - 900 | 22 | 15 | 8 | 5 | 3 |
| 900 - 1100 | 24 | 16 | 9 | 6 | 3 |
| 1100 - 1500 | 26 | 18 | 11 | 7 | 4 |
| 1500 - 1900 | 28 | 20 | 13 | 8 | 4 |
| 1900 - 2500 | 31 | 22 | 15 | 10 | 5 |
| 2500 - 3100 | 33 | 25 | 18 | 11 | 6 |
| 3100 - 3600 | 36 | 27 | 20 | 14 | 7 |
| 3600 - 4000 | 37 | 28 | 21 | 15 | 7 |

Unit: [μ m]

Table 1.8: Accuracy characteristics

| Series / Size | HG / EG - 25, 30, 35 | | |
|---|----------------------|------------|---------------|
| Accuracy class | normal (C) | high (H) | Precision (P) |
| Height tolerance H_{11} | ± 0.1 | ± 0.04 | ± 0.02 |
| Width tolerance N_{11} | ± 0.1 | ± 0.04 | ± 0.02 |
| Height variance of H_{21} | 0.02 | 0.015 | 0.007 |
| Width variance of N_{21} | 0.03 | 0.015 | 0.007 |
| Parallelism of block surface C with surface A | See table 1.11 | | |
| Parallelism of block surface D with surface B | See table 1.11 | | |

Unit: [mm]

Table 1.10: Accuracy characteristics

| Series / Size | HG - 65 | | |
|---|----------------|------------|---------------|
| Accuracy class | normal (C) | high (H) | Precision (P) |
| Height tolerance H_{11} | ± 0.1 | ± 0.07 | ± 0.035 |
| Width tolerance N_{11} | ± 0.1 | ± 0.07 | ± 0.035 |
| Height variance of H_{21} | 0.03 | 0.02 | 0.01 |
| Width variance of N_{21} | 0.03 | 0.025 | 0.015 |
| Parallelism of block surface C with surface A | See table 1.11 | | |
| Parallelism of block surface D with surface B | See table 1.11 | | |

Unit: [mm]

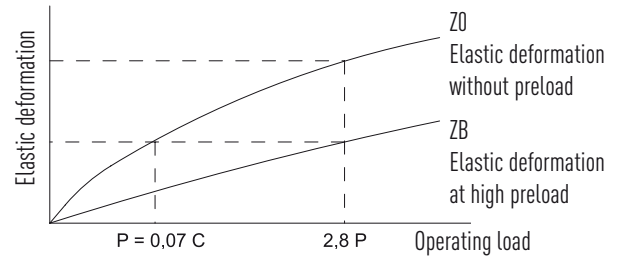
Linear Guideway

HG, EG series

1.1.6 Preload

○ Definition

A preload can be applied to any rails version. For this purpose, oversized balls are used. Normally a linear guideway has a negative clearance between the path and the ball bearings, to increase rigidity and precision. The curve shows that rigidity doubles with a high preload. A preload not larger than ZA would be recommended for all model sizes under HG20 to avoid a reduction of service life.



○ Preload ID

Table 1.12: Preload ID

| ID | Preload | | Application | Example applications |
|----|----------------|------------------------------------|---|---|
| Z0 | light preload | 0-0.02C | Constant load direction, low impacts, low accuracy required | Transportation technology, automatic packaging machinery, X-Y stages for industrial machinery Automated welding machinery |
| ZA | medium preload | EG: 0.03-0.05 C HG: 0.05-0.07 C | High accuracy required | Machining centers, Z stages for industrial machinery, erosion machinery, NC lathes, precision X-Y benches, measuring technology |
| ZB | high preload | EG: 0.06-0.08C HG: above 0.1C | High rigidity required, with vibrations and impacts | Machining centers, grinding machinery, NC lathes, horizontal and vertical milling machinery, Z stage of machine tools, high-performance cutting machinery |

Note: 1. The "C" in the preload column represents the dynamic load

2. Preload classes for interchangeable versions **Z0 and ZA**. For non-interchangeable versions: **Z0, ZA, ZB**.

1.1.7 Rigidity

Rigidity is dependent on the preload. Using formula 1.1, it is possible to determine the deformation in relation to the rigidity.

Formula 1.1

$$\delta = \frac{P}{k}$$

δ : Deformation [μm]

P : Operating load [N]

k : Rigidity value [N/ μm]

Table 1.13: Rigidity value HG

| Load class | Model | Preload | | |
|------------------|-------|---------|------|------|
| | | Z0 | ZA | ZB |
| Heavy load | HG15C | 380 | 460 | 510 |
| | HG20C | 460 | 540 | 620 |
| | HG25C | 520 | 630 | 730 |
| | HG30C | 630 | 770 | 900 |
| | HG35C | 680 | 830 | 980 |
| | HG45C | 800 | 940 | 1090 |
| | HG55C | 950 | 1080 | 1230 |
| | HG65C | 1080 | 1210 | 1340 |
| Super heavy load | HG20H | 560 | 670 | 770 |
| | HG25H | 670 | 810 | 950 |
| | HG30H | 800 | 970 | 1150 |
| | HG35H | 860 | 1060 | 1260 |
| | HG45H | 1020 | 1200 | 1400 |
| | HG55H | 1210 | 1380 | 1570 |
| | HG65H | 1460 | 1620 | 1800 |

Unit: [N / μm]

Table 1.14: Rigidity value EG

| Load class | Model | Preload | | |
|-------------|-------|---------|-----|-----|
| | | Z0 | ZA | ZB |
| Medium load | EG15S | 130 | 160 | 180 |
| | EG20S | 160 | 190 | 210 |
| | EG25S | 200 | 240 | 270 |
| | EG30S | 230 | 280 | 310 |
| Heavy load | EG15C | 200 | 250 | 280 |
| | EG20C | 230 | 290 | 320 |
| | EG25C | 290 | 360 | 400 |
| | EG30C | 340 | 430 | 480 |

Unit: [N / μm]

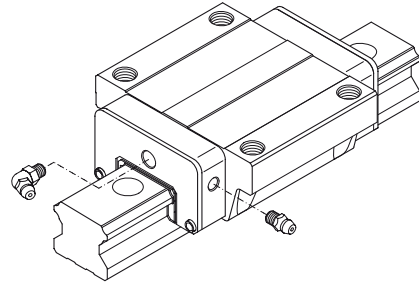
Linear Guideway

HG, EG series

1.1.8 Lubrication

○ Mounting position

The end of the block is equipped with a lubricating nipple as standard. Installation on the side of the block is also possible. If the nipple is installed on the side, it must not be fitted to the reference side. Lubrication is also possible via a lubrication unit.

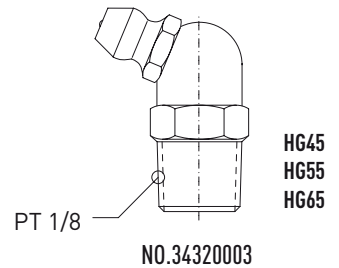
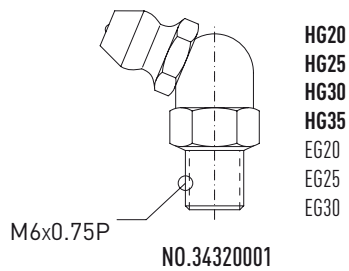
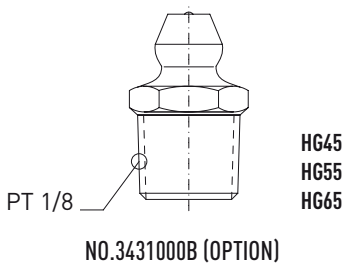
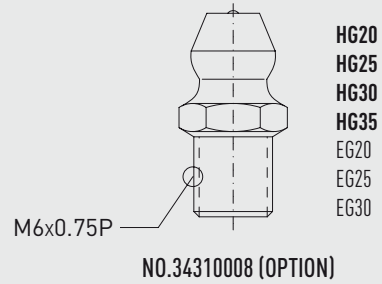
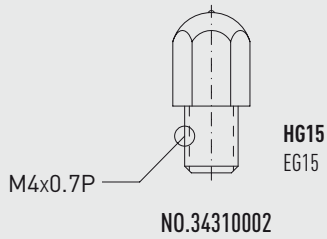


○ Grease lubrication

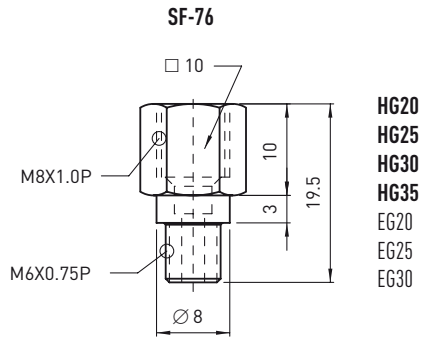
○ Lubricating nipple

○ The indicated article numbers apply to the standard dust protection.

Article numbers for optional dust protection on request.

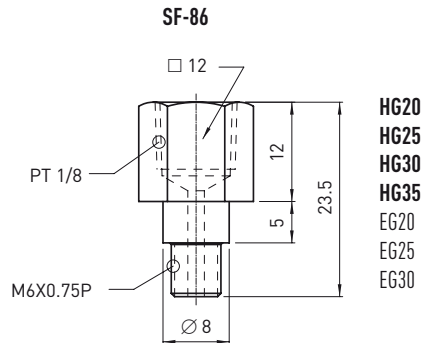


- Oil lubrication
- Lubrication adapter
- The indicated article numbers apply to the standard dust protection.
Article numbers for optional dust protection on request.



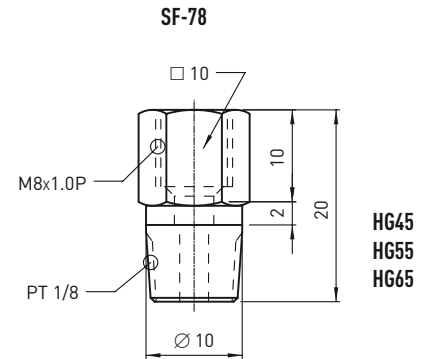
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HG20
HG25
HG30
HG35
EG20
EG25
EG30



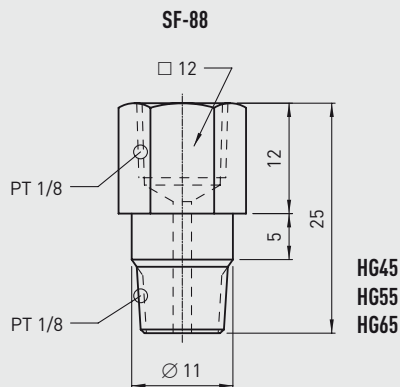
NO.970003A1

HG20
HG25
HG30
HG35
EG20
EG25
EG30



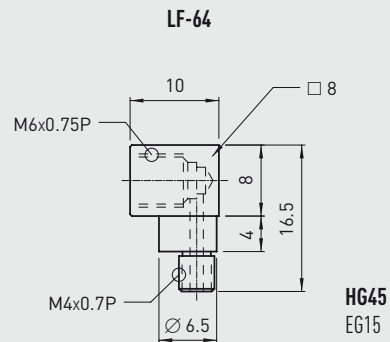
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HG45
HG55
HG65



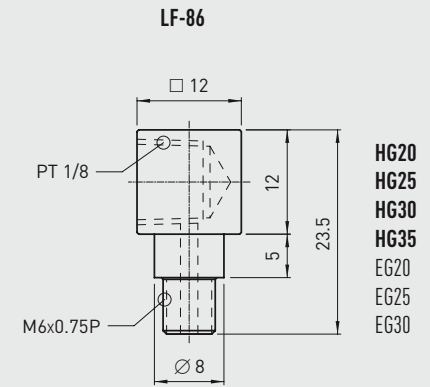
NO.970007A1

HG45
HG55
HG65



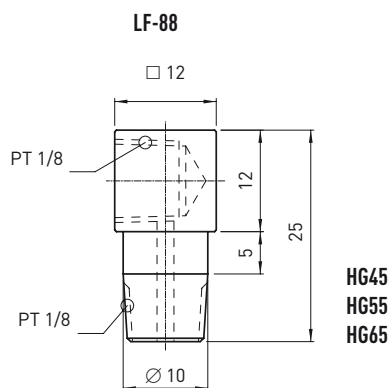
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HG45
EG15



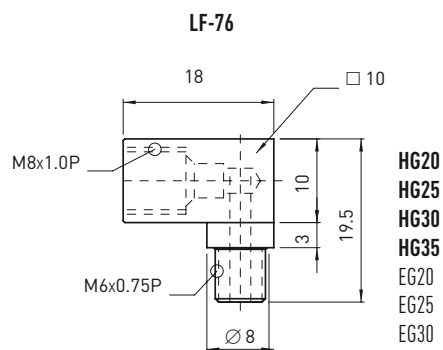
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HG20
HG25
HG30
HG35
EG20
EG25
EG30



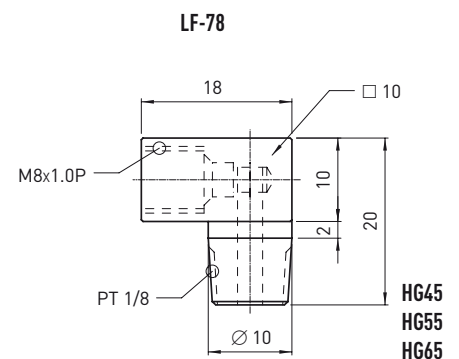
NO.970008A1

HG45
HG55
HG65



NO.970002A1

HG20
HG25
HG30
HG35
EG20
EG25
EG30



NO.970006A1

HG45
HG55
HG65

Linear Guideway

HG, EG series

1.1.9 Coated Linear Guideways

Depending on the application, various coatings are available. The properties and fields of use of the coatings are listed below.

It is possible to coat the rail only, or to coat both the rail and the block.

All coatings are free of chromium 6 components.

HICOAT 1

| | |
|------------------|--|
| Type of coating: | Phosphatization |
| Layer thickness: | > 10µm |
| Color: | black |
| Properties: | Basic corrosion protection e.g. as transport protection for sea freight |

The coating is soft and works itself into the base material and is consequently not suitable for use with blocks with a high pre-tension and loading.

HICOAT 2

| | |
|--------------------------------|--|
| Type of coating: | Thin-layer chromium plating |
| Layer thickness: | 2 - 4µm |
| Color: | matt gray |
| Salt spray testing DIN 50021SS | > 20 h |
| Properties: | Protection against wear for mixed friction |

Due to the high hardness level of the coating, this has no influence on loading capacity and service life.

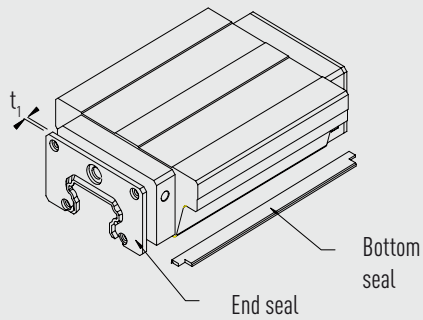
HICOAT 3

| | |
|--------------------------------|--|
| Type of coating: | Two layer chromium plating |
| Layer thickness: | 4 - 6µm |
| Color: | black |
| Salt spray testing DIN 50021SS | > 100 h |
| Properties: | HICOAT 3 is a further development of the HICOAT coating Double coating with an additional "top coat". Protection against wear in the event of a lack of lubrication |

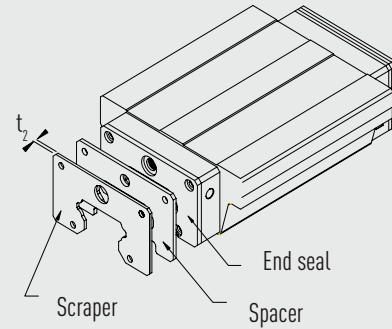
Due to the high hardness level of the coating, this has no influence on loading capacity and service life.

1.1.10 Dust protection equipment

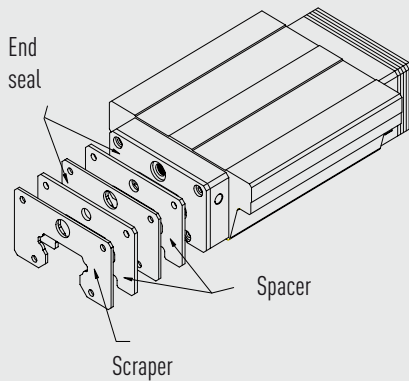
1. IDs for dust protection equipment



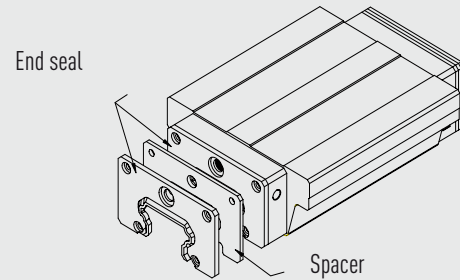
Without ID : Standard equipment
(End seal + bottom seal)



ZZ (End seal + bottom seal + scraper)



KK (Double seals + bottom seal + scraper)



DD (Double seals + bottom seal)

2. End seal and bottom seal

This equipment prevents shortening of the service life due to damage to the block caused by the penetration of metal chips or dust.

Linear Guideway

HG, EG series

3. Double seals

Thanks to the increased scraper effect, the block has better protection from the ingress of dirt particles.

Table 1.15: Article numbers for end seals

| Series/ Size | Article number | Thickness (t ₁) [mm] | Series/ Size | Article number | Thickness (t ₁) [mm] | Series/ Size | Article number | Thickness (t ₁) [mm] |
|-----------------|----------------|-------------------------------------|-----------------|----------------|-------------------------------------|-----------------|----------------|-------------------------------------|
| HG 15 | HG-15-ES | 3 | HG 35 | HG-35-ES | 3.2 | EG 15 | EG-15-ES | 2.0 |
| HG 20 | HG-20-ES | 3 | HG 45 | HG-45-ES | 4.5 | EG 20 | EG-20-ES | 2.0 |
| HG 25 | HG-25-ES | 3 | HG 55 | HG-55-ES | 5 | EG 25 | EG-25-ES | 2.0 |
| HG 30 | HG-30-ES | 3.2 | HG 65 | HG-65-ES | 5 | EG 30 | EG-30-ES | 2.0 |

4. Scraper

The scraper protects the seals against metal chips and removes large particles of dirt.

Table 1.16: Article numbers for scraper

| Series/ Size | Article number | Thickness (t ₂) [mm] | Series/ Size | Article number | Thickness (t ₂) [mm] | Series/ Size | Article number | Thickness (t ₂) [mm] |
|-----------------|----------------|-------------------------------------|-----------------|----------------|-------------------------------------|-----------------|----------------|-------------------------------------|
| HG 15 | HG-15-SC | 1.5 | HG 35 | HG-35-SC | 1.5 | EG 15 | EG-15-SC | 0.8 |
| HG 20 | HG-20-SC | 1.5 | HG 45 | HG-45-SC | 1.5 | EG 20 | EG-20-SC | 0.8 |
| HG 25 | HG-25-SC | 1.5 | HG 55 | HG-55-SC | 1.7 | EG 25 | EG-25-SC | 1.0 |
| HG 30 | HG-30-SC | 1.5 | HG 65 | HG-65-SC | 1.7 | EG 30 | EG-30-SC | 1.0 |

5. Cover cap for rail fixing holes

The cover caps are used to keep the fixing holes free from chips and dirt. Cover caps are supplied with each rail.

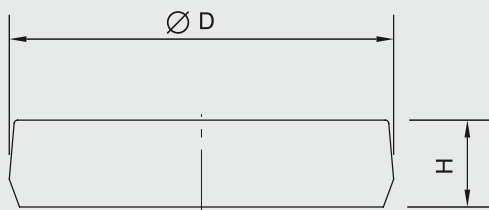


Table 1.17: Cover cap for rail fixing holes

| Rail | Screw | Article number | Diameter (D) [mm] | Height (H) [mm] |
|-------------------------------------|-------|----------------|-------------------|-----------------|
| EGR 15 R | M3 | C3 | 6.3 | 1.2 |
| HGR 15 / EGR 15 U | M4 | C4 | 7.7 | 1.1 |
| HGR 20 / EGR 20 R | M5 | C5 | 9.7 | 2.2 |
| HGR 25 / EGR 25 R / EG R30 R | M6 | C6 | 11.3 | 2.5 |
| HGR 30 / EGR 30 U | M8 | C8 | 14.3 | 3.3 |
| HGR 35 | M8 | C8 | 14.3 | 3.3 |
| HGR 45 | M12 | C12 | 20.3 | 4.6 |
| HGR 55 | M14 | C14 | 23.5 | 5.5 |
| HGR 65 | M16 | C16 | 26.6 | 5.5 |

6. Tightening torques for fixing screws

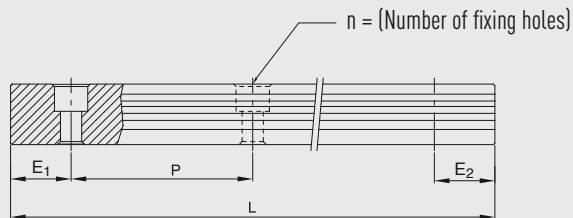
Insufficient tightening of the fixing screws will highly detract from the accuracy of the linear guideway; the following tightening torques are recommended for the respective screw sizes.

Table 1.18: Tightening torque for fixing screws to DIN 912-12.9

| Series / Size | Screw size | Torque [Nm] | Series / Size | Screw size | Torque [Nm] |
|---------------------|------------|-------------|---------------|------------|-------------|
| EG15 | M3 x 16 | 2 | HG35 | M8 x 25 | 30 |
| HG15 / EG15U | M4 x 16 | 4 | HG45 | M12 x 35 | 120 |
| HG20 / EG20R | M5 x 16 | 9 | HG55 | M14 x 45 | 160 |
| HG25 / EG25 / EG30R | M6 x 20 | 13 | HG65 | M16 x 50 | 200 |
| HG30 / EG30U | M8 x 25 | 30 | | | |

1.1.11 Rail length

HIWIN offers customer-specific lengths. To ensure that the ends of the rails for non-standard lengths are stable, value E must not exceed half the distance between the fixing holes (P). In addition, value $E_{1/2}$ must not be less than $E_{1/2 \text{ min}}$ and must not exceed $E_{1/2 \text{ max}}$ to prevent breakage of the fixing hole.



Formula 1.2

$$L = (n - 1) \cdot P + E_1 + E_2$$

L : Total rail length [mm]

n : Number of fixing holes

P : Distance between two fixing holes [mm]

$E_{1/2}$: Distance from the center of the last fixing hole to the end of the rail [mm]

Table 1.19: Maximum rail lengths

| Rail/Size | HGR15 EGR15 | HGR 20 EGR 20 | HGR 25 EGR 25 | HGR 30 EGR 30 | HGR35 | HGR45 | HGR55 | HGR65 |
|----------------------------|----------------|------------------|------------------|------------------|-------|-------|-------|-------|
| Hole distance (P) | 60 | 60 | 60 | 80 | 80 | 105 | 120 | 150 |
| E1/2 min | 6 | 7 | 8 | 9 | 9 | 12 | 14 | 15 |
| E1/2 max | 54 | 53 | 52 | 71 | 71 | 93 | 106 | 135 |
| max. length (joint free) | 2000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 | 4000 |

Unit: [mm]

Note: 1. The tolerance for E is 0 to -1 mm for standard, for joint connections 0 to -0.3 mm

2. If no information is provided on the $E_{1/2}$ dimensions, the maximum number of fixing holes is determined taking into account $E_{1/2 \text{ min}}$

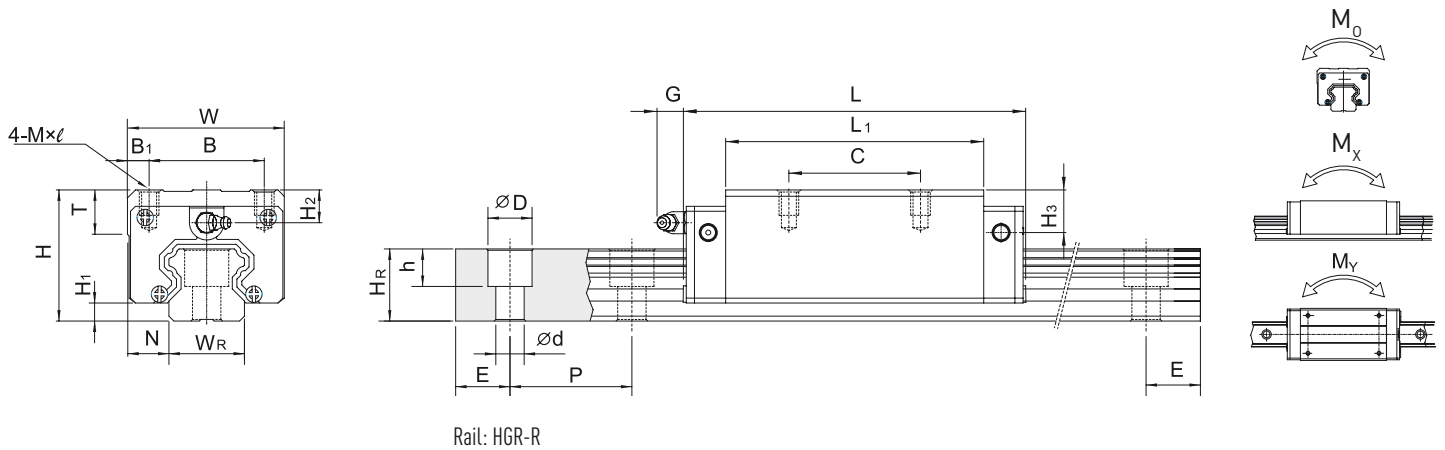
3. The rails are shortened to the desired length. If no information on the $E_{1/2}$ dimensions is provided, then the rails are manufactured symmetrically.

Linear Guideway

HG Series

1.1.12 Dimensions of the HG series

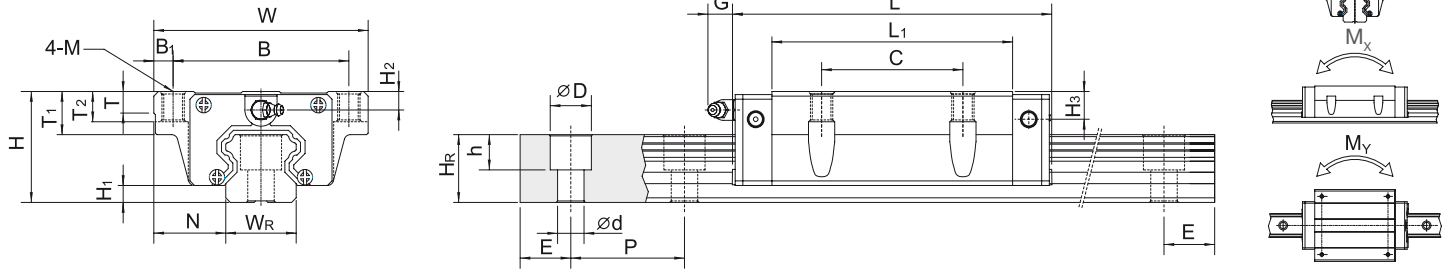
1. HGH-CA / HGH-HA



| Model | Installation dimensions [mm] | | | Dimensions of the block [mm] | | | | | | | | | | Dimensions of the rail [mm] | | | | | | | | | | Screws for rail [mm] | Dynamic load C_{dyn} [N] | Static load C_0 [N] | Static moment | | | Mass | |
|---------|------------------------------|----------------|------|------------------------------|----|----------------|-----|----------------|-------|------|--------|------|----------------|-----------------------------|----------------|----------------|-----|-----|-----|-----|---|---------------------|---------------------|----------------------|----------------------------|-----------------------|---------------------|------------|-------------|------|--|
| | H | H ₁ | N | W | B | B ₁ | C | L ₁ | L | G | Mxℓ | T | H ₂ | H ₃ | W _R | H _R | D | h | d | P | E | M ₀ [Nm] | M _x [Nm] | | | | M _y [Nm] | Block [kg] | Rail [kg/m] | | |
| HGH15CA | 28 | 4.3 | 9.5 | 34 | 26 | 4 | 26 | 39.4 | 61.4 | 5.3 | M4x5 | 6 | 8.5 | 9.5 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | * | M4x16 | 11380 | 25310 | 170 | 150 | 150 | 0.18 | 1.45 | | |
| HGH20CA | 30 | 4.6 | 12 | 44 | 32 | 6 | 36 | 50.5 | 77.5 | 12 | M5x6 | 8 | 6 | 7 | 20 | 17.5 | 9.5 | 8.5 | 6 | 60 | * | M5x16 | 17750 | 37840 | 380 | 270 | 270 | 0.38 | 2.21 | | |
| HGH20HA | | | | | | | 50 | 65.2 | 92.2 | | | | | | | | | | | | | | 21180 | 48840 | 480 | 470 | 470 | 0.39 | | | |
| HGH25CA | 40 | 5.5 | 12.5 | 48 | 35 | 6.5 | 35 | 58 | 84 | 12 | M6x8 | 8 | 10 | 13 | 23 | 22 | 11 | 9 | 7 | 60 | * | M6x20 | 26480 | 56190 | 640 | 510 | 510 | 0.67 | 3.21 | | |
| HGH25HA | | | | | | | 50 | 78.6 | 104.6 | | | | | | | | | | | | | | 32750 | 76000 | 870 | 880 | 880 | 0.69 | | | |
| HGH30CA | 45 | 6 | 16 | 60 | 40 | 10 | 40 | 70 | 97.4 | 12 | M8x10 | 8.5 | 9.5 | 13.8 | 28 | 26 | 14 | 12 | 9 | 80 | * | M8x25 | 38740 | 83060 | 1060 | 850 | 850 | 1.14 | 4.47 | | |
| HGH30HA | | | | | | | 60 | 93 | 120.4 | | | | | | | | | | | | | | 47270 | 110130 | 1400 | 1470 | 1470 | 1.16 | | | |
| HGH35CA | 55 | 7.5 | 18 | 70 | 50 | 10 | 50 | 80 | 112.4 | 12 | M8x12 | 10.2 | 16 | 19.6 | 34 | 29 | 14 | 12 | 9 | 80 | * | M8x25 | 49520 | 102870 | 1730 | 1200 | 1200 | 1.88 | 6.3 | | |
| HGH35HA | | | | | | | 72 | 105.8 | 138.2 | | | | | | | | | | | | | | 60210 | 136310 | 2290 | 2080 | 2080 | 1.92 | | | |
| HGH45CA | 70 | 9.5 | 20.5 | 86 | 60 | 13 | 60 | 97 | 139.4 | 12.9 | M10x17 | 16 | 18.5 | 30.5 | 45 | 38 | 20 | 17 | 14 | 105 | * | M12x35 | 77570 | 155930 | 3010 | 2350 | 2350 | 3.54 | 10.41 | | |
| HGH45HA | | | | | | | 80 | 128.8 | 171.2 | | | | | | | | | | | | | | 94540 | 207120 | 4000 | 4070 | 4070 | 3.61 | | | |
| HGH55CA | 80 | 13 | 23.5 | 100 | 75 | 12.5 | 75 | 117.7 | 166.7 | 12.9 | M12x18 | 17.5 | 22 | 29 | 53 | 44 | 23 | 20 | 16 | 120 | * | M14x45 | 114440 | 227810 | 5660 | 4060 | 4060 | 5.38 | 15.08 | | |
| HGH55HA | | | | | | | 95 | 155.8 | 204.8 | | | | | | | | | | | | | | 139350 | 301260 | 7490 | 7010 | 7010 | 5.49 | | | |
| HGH65CA | 90 | 15 | 31.5 | 126 | 76 | 25 | 70 | 144.2 | 200.2 | 12.9 | M16x20 | 25 | 15 | 15 | 63 | 53 | 26 | 22 | 18 | 150 | * | M16x50 | 163630 | 324710 | 10020 | 6440 | 6440 | 7.00 | 21.18 | | |
| HGH65HA | | | | | | | 120 | 203.6 | 259.6 | | | | | | | | | | | | | | 208360 | 457150 | 14150 | 11120 | 11120 | 9.82 | | | |

*see Page 17, Tab. 1.19

2. HGW-CC / HGW-HC



Rail: HGR-R

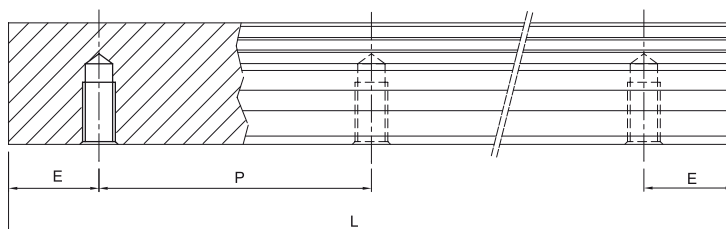
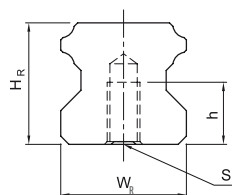
| Model | Installation dimensions [mm] | | | Dimensions of the block [mm] | | | | | | | | | | Dimensions of the rail [mm] | | | | | | | | | | Screws for rail [mm] | Dynamic load C_{dyn} [N] | Static load C_0 [N] | Static moment | | | Mass | |
|---------|------------------------------|----------------|------|------------------------------|-----|----------------|-----|----------------|-------|------|-----|------|----------------|-----------------------------|----------------|----------------|----------------|----------------|-----|-----|-----|-----|---|----------------------|----------------------------|-----------------------|---------------------|---------------------|---------------------|------------|-------------|
| | H | H ₁ | N | W | B | B ₁ | C | L ₁ | L | G | M | T | T ₁ | T ₂ | H ₂ | H ₃ | W _R | H _R | D | h | d | P | E | | | | M ₀ [Nm] | M _x [Nm] | M _y [Nm] | Block [kg] | Rail [kg/m] |
| HGW15CC | 24 | 4.3 | 16 | 47 | 38 | 4.5 | 30 | 39.4 | 61.4 | 5.3 | M5 | 6 | 8.9 | 6.95 | 4.5 | 5.5 | 15 | 15 | 7.5 | 5.3 | 4.5 | 60 | * | M4x16 | 11380 | 25310 | 170 | 150 | 150 | 0.17 | 1.45 |
| HGW20CC | 30 | 4.6 | 21.5 | 63 | 53 | 5 | 40 | 50.5 | 77.5 | 12 | M6 | 8 | 10 | 9.5 | 6 | 7 | 20 | 17.5 | 9.5 | 8.5 | 6 | 60 | * | M5x16 | 17750 | 37840 | 380 | 270 | 270 | 0.51 | 2.21 |
| HGW20HC | | | | | | | | 65.2 | 92.2 | | | | | | | | | | | | | | | | 21180 | 48840 | 480 | 470 | 470 | 0.52 | |
| HGW25CC | 36 | 5.5 | 23.5 | 70 | 57 | 6.5 | 45 | 58 | 84 | 12 | M8 | 8 | 14 | 10 | 6 | 9 | 23 | 22 | 11 | 9 | 7 | 60 | * | M6x20 | 26480 | 56190 | 640 | 510 | 510 | 0.78 | 3.21 |
| HGW25HC | | | | | | | | 78.6 | 104.6 | | | | | | | | | | | | | | | | 32750 | 76000 | 870 | 880 | 880 | 0.80 | |
| HGW30CC | 42 | 6 | 31 | 90 | 72 | 9 | 52 | 70 | 97.4 | 12 | M10 | 8.5 | 16 | 10 | 6.5 | 10.8 | 28 | 26 | 14 | 12 | 9 | 80 | * | M8x25 | 38740 | 83060 | 1060 | 850 | 850 | 1.42 | 4.47 |
| HGW30HC | | | | | | | | 93 | 120.4 | | | | | | | | | | | | | | | | 47270 | 110130 | 1400 | 1470 | 1470 | 1.44 | |
| HGW35CC | 48 | 7.5 | 33 | 100 | 82 | 9 | 62 | 80 | 112.4 | 12 | M10 | 10.1 | 18 | 13 | 9 | 12.6 | 34 | 29 | 14 | 12 | 9 | 80 | * | M8x25 | 49520 | 102870 | 1730 | 1200 | 1200 | 2.03 | 6.3 |
| HGW35HC | | | | | | | | 105.8 | 138.2 | | | | | | | | | | | | | | | | 60210 | 136310 | 2290 | 2080 | 2080 | 2.06 | |
| HGW45CC | 60 | 9.5 | 37.5 | 120 | 100 | 10 | 80 | 97 | 139.4 | 12.9 | M12 | 15.1 | 22 | 15 | 8.5 | 20.5 | 45 | 38 | 20 | 17 | 14 | 105 | * | M12x35 | 77570 | 155930 | 3010 | 2350 | 2350 | 3.54 | 10.41 |
| HGW45HC | | | | | | | | 128.8 | 171.2 | | | | | | | | | | | | | | | | 94540 | 207120 | 4000 | 4070 | 4070 | 3.69 | |
| HGW55CC | 70 | 13 | 43.5 | 140 | 116 | 12 | 95 | 117.7 | 166.7 | 12.9 | M14 | 17.5 | 26.5 | 17 | 12 | 19 | 53 | 44 | 23 | 20 | 16 | 120 | * | M14x45 | 114440 | 227810 | 5660 | 4060 | 4060 | 5.38 | 15.08 |
| HGW55HC | | | | | | | | 155.8 | 204.8 | | | | | | | | | | | | | | | | 139350 | 301260 | 7490 | 7010 | 7010 | 5.96 | |
| HGW65CC | 90 | 15 | 53.5 | 170 | 142 | 14 | 110 | 144.2 | 200.2 | 12.9 | M16 | 25 | 37.5 | 23 | 15 | 15 | 63 | 53 | 26 | 22 | 18 | 150 | * | M16x50 | 163630 | 324710 | 10020 | 6440 | 6440 | 9.17 | 21.18 |
| HGW65HC | | | | | | | | 203.6 | 259.6 | | | | | | | | | | | | | | | | 208360 | 457150 | 14150 | 11120 | 11120 | 12.89 | |

*see Page 17, Tab. 1.19

Linear Guideway

HG Series

3. Dimensions HGR-T (Rail mounted from below)

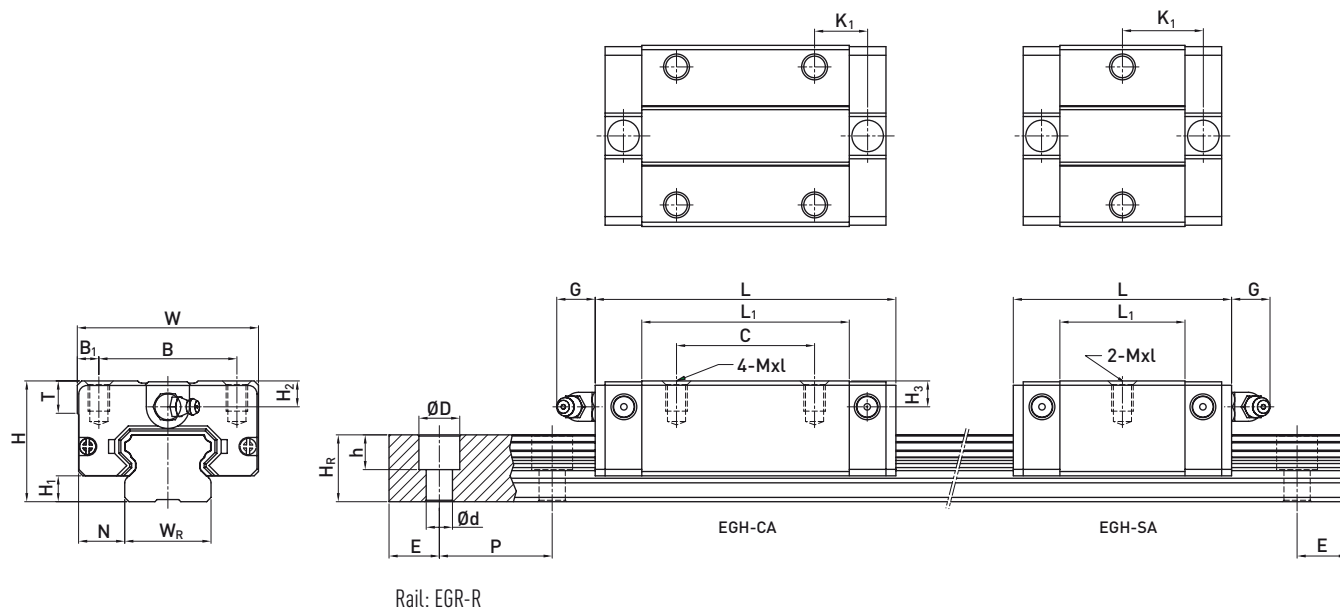


| Model | Dimensions of the rail [mm] | | | | | | | Mass [kg/m] |
|--------|-----------------------------|-------|-----|----|-----|---|-------|-------------|
| | W_R | H_R | S | H | P | E | | |
| HGR15T | 15 | 15 | M5 | 8 | 60 | * | 1.48 | |
| HGR20T | 20 | 17.5 | M6 | 10 | 60 | * | 2.29 | |
| HGR25T | 23 | 22 | M6 | 12 | 60 | * | 3.35 | |
| HGR30T | 28 | 26 | M8 | 15 | 80 | * | 4.67 | |
| HGR35T | 34 | 29 | M8 | 17 | 80 | * | 6.51 | |
| HGR45T | 45 | 38 | M12 | 24 | 105 | * | 10.87 | |
| HGR55T | 53 | 44 | M14 | 24 | 120 | * | 15.67 | |
| HGR65T | 63 | 53 | M20 | 30 | 150 | * | 21.73 | |

*see Page 17, Tab. 1.19

1.1.13 Dimensions for the EG Series

1. EGH-SA / EGH-CA



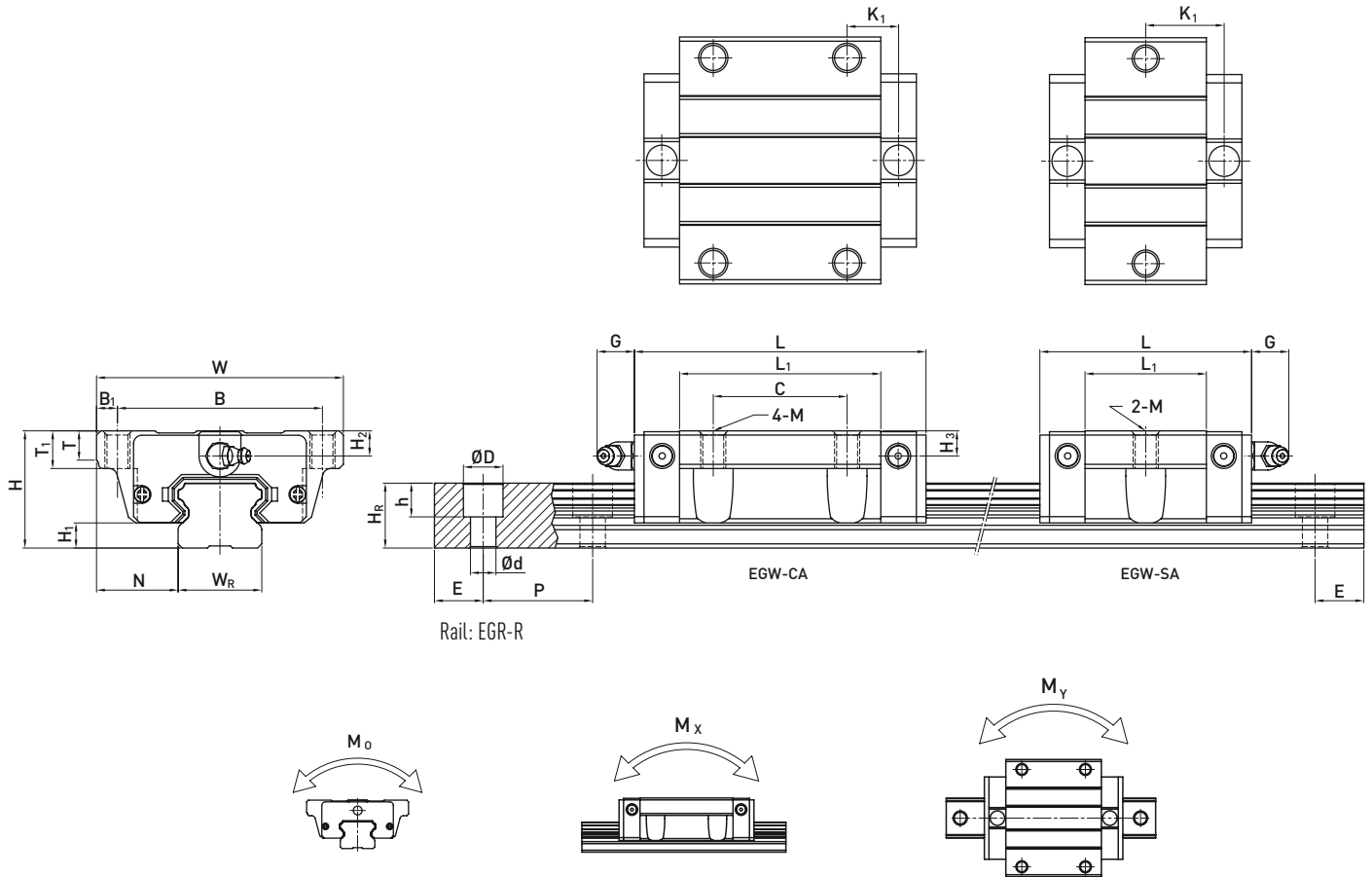
| Model | Installation dimensions [mm] | | Dimensions of the block [mm] | | | | | | | | | | | | | Dimensions of the rail [mm] | | | | | Static moment | | | Mass | | | | | | |
|---------|------------------------------|----------------|------------------------------|----|----|----------------|----|----------------|------|-----|-------|----------------|-----|----------------|----------------|-----------------------------|----------------|-----|-----|-----|---------------|---|----------------------|------------------------------------|---------------------------------|---------------------|---------------------|---------------------|------------|-------------|
| | H | H ₁ | N | W | B | B ₁ | C | L ₁ | L | G | MXL | K ₁ | T | H ₂ | H ₃ | W _R | H _R | D | h | d | P | E | Screws for rail [mm] | Dynamic load C _{dyn} [kN] | Static load C ₀ [kN] | M ₀ [Nm] | M _x [Nm] | M _y [Nm] | Block [kg] | Rail [kg/m] |
| EGH15SA | 24 | 4.5 | 9.5 | 34 | 26 | 4 | - | 23.1 | 40.1 | 5.7 | M4x6 | 14.8 | 6 | 5.5 | 6 | 15 | 12.5 | 6 | 4.5 | 3.5 | 60 | * | M3x16 | 5.35 | 9.40 | 80 | 40 | 40 | 0.09 | 1.25 |
| EGH15CA | 24 | 4.5 | 9.5 | 34 | 26 | 4 | 26 | 39.8 | 56.8 | 5.7 | M4x6 | 10.15 | 6 | 5.5 | 6 | 15 | 12.5 | 6 | 4.5 | 3.5 | 60 | * | M3x16 | 7.83 | 16.19 | 130 | 100 | 100 | 0.15 | 1.25 |
| EGH20SA | 28 | 6 | 11 | 42 | 32 | 5 | - | 29 | 50.0 | 12 | M5x7 | 18.75 | 7.5 | 6 | 6 | 20 | 15.5 | 9.5 | 8.5 | 6 | 60 | * | M5x16 | 7.23 | 12.74 | 130 | 60 | 60 | 0.15 | 2.08 |
| EGH20CA | 28 | 6 | 11 | 42 | 32 | 5 | 32 | 48.1 | 69.1 | 12 | M5x7 | 12.3 | 7.5 | 6 | 6 | 20 | 15.5 | 9.5 | 8.5 | 6 | 60 | * | M5x16 | 10.31 | 21.13 | 220 | 160 | 160 | 0.24 | 2.08 |
| EGH25SA | 33 | 7 | 12.5 | 48 | 35 | 6.5 | - | 35.5 | 59.1 | 12 | M6x9 | 21.9 | 8 | 8 | 8 | 23 | 18 | 11 | 9 | 7 | 60 | * | M6x20 | 11.40 | 19.50 | 230 | 120 | 120 | 0.25 | 2.67 |
| EGH25CA | 33 | 7 | 12.5 | 48 | 35 | 6.5 | 35 | 59 | 82.6 | 12 | M6x9 | 16.15 | 8 | 8 | 8 | 23 | 18 | 11 | 9 | 7 | 60 | * | M6x20 | 16.27 | 32.40 | 380 | 320 | 320 | 0.41 | 2.67 |
| EGH30SA | 42 | 10 | 16 | 60 | 40 | 10 | - | 41.5 | 69.5 | 12 | M8x12 | 26.75 | 9 | 8 | 9 | 28 | 23 | 11 | 9 | 7 | 80 | * | M6x25 | 16.42 | 28.10 | 400 | 210 | 210 | 0.45 | 4.35 |
| EGH30CA | 42 | 10 | 16 | 60 | 40 | 10 | 40 | 70.1 | 98.1 | 12 | M8x12 | 21.05 | 9 | 8 | 9 | 28 | 23 | 11 | 9 | 7 | 80 | * | M6x25 | 23.70 | 47.46 | 680 | 550 | 550 | 0.76 | 4.35 |

*see Page 17, Tab. 1.19

Linear guideway

EG series

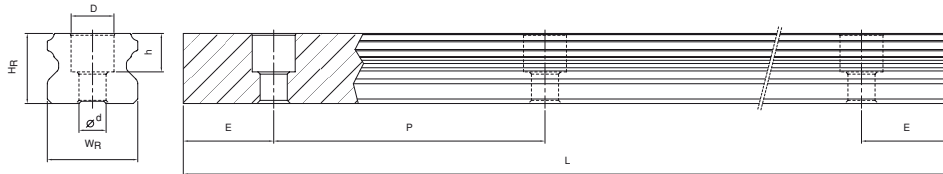
2. EGW-SA / EGW-CA



| Model | Installation dimensions [mm] | | Dimensions of the block [mm] | | | | | | | | | | | | | Dimensions of the rail [mm] | | | | | | Static moment | | | Mass | | | | | | |
|---------|------------------------------|----------------|------------------------------|----|----|----------------|----|----------------|------|-----|-----|----------------|-----|----------------|----------------|-----------------------------|----------------|----------------|-----|-----|-----|---------------|----|----------------------|------------------------------------|---------------------------------|---------------------|---------------------|---------------------|------------|-------------|
| | H | H ₁ | N | W | B | B ₁ | C | L ₁ | L | G | M | K ₁ | T | T ₁ | H ₂ | H ₃ | W _R | H _R | D | h | d | P | E | Screws for rail [mm] | Dynamic load C _{dyn} [kN] | Static load C ₀ [kN] | M ₀ [Nm] | M _x [Nm] | M _y [Nm] | Block [kg] | Rail [kg/m] |
| EGW15SC | 24 | 4.5 | 18.5 | 52 | 41 | 5.5 | - | 23.1 | 40.1 | 5.7 | M5 | 14.8 | 5 | 7 | 5.5 | 6 | 15 | 12.5 | 6 | 4.5 | 3.5 | 60 | 20 | M3x16 | 5.35 | 9.40 | 80 | 40 | 40 | 0.12 | 1.25 |
| EGW15CC | 24 | 4.5 | 18.5 | 52 | 41 | 5.5 | 26 | 39.8 | 56.8 | 5.7 | M5 | 10.15 | 5 | 7 | 5.5 | 6 | 15 | 12.5 | 6 | 4.5 | 3.5 | 60 | 20 | M3x16 | 7.83 | 16.19 | 130 | 100 | 100 | 0.21 | 1.25 |
| EGW20SC | 28 | 6 | 19.5 | 59 | 49 | 5 | - | 29 | 50.0 | 12 | M6 | 18.75 | 7 | 9 | 6 | 6 | 20 | 15.5 | 9.5 | 8.5 | 6 | 60 | 20 | M5x16 | 7.23 | 12.74 | 130 | 60 | 60 | 0.19 | 2.08 |
| EGW20CC | 28 | 6 | 19.5 | 59 | 49 | 5 | 32 | 48.1 | 69.1 | 12 | M6 | 12.3 | 7 | 9 | 6 | 6 | 20 | 15.5 | 9.5 | 8.5 | 6 | 60 | 20 | M5x16 | 10.31 | 21.13 | 220 | 160 | 160 | 0.32 | 2.08 |
| EGW25SC | 33 | 7 | 25 | 73 | 60 | 6.5 | - | 35.5 | 59.1 | 12 | M8 | 21.9 | 7.5 | 10 | 8 | 8 | 23 | 18 | 11 | 9 | 7 | 60 | 20 | M6x20 | 11.40 | 19.50 | 230 | 120 | 120 | 0.35 | 2.67 |
| EGW25CC | 33 | 7 | 25 | 73 | 60 | 6.5 | 35 | 59 | 82.6 | 12 | M8 | 16.15 | 7.5 | 10 | 8 | 8 | 23 | 18 | 11 | 9 | 7 | 60 | 20 | M6x20 | 16.27 | 32.40 | 380 | 320 | 320 | 0.59 | 2.67 |
| EGW30SC | 42 | 10 | 31 | 90 | 72 | 9 | - | 41.5 | 69.5 | 12 | M10 | 26.75 | 7 | 10 | 8 | 9 | 28 | 23 | 11 | 9 | 7 | 80 | 20 | M6x25 | 16.42 | 28.10 | 400 | 210 | 210 | 0.62 | 4.35 |
| EGW30CC | 42 | 10 | 31 | 90 | 72 | 9 | 40 | 70.1 | 98.1 | 12 | M10 | 21.05 | 7 | 10 | 8 | 9 | 28 | 23 | 11 | 9 | 7 | 80 | 20 | M6x25 | 23.70 | 47.46 | 680 | 550 | 550 | 1.04 | 4.35 |

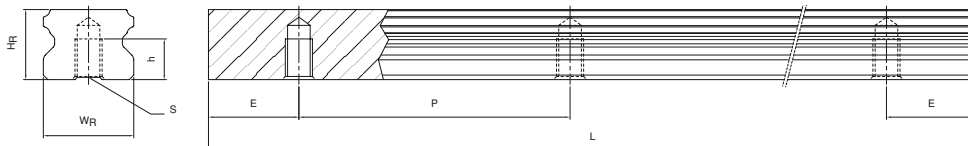
*see Page 17, Tab. 1.19

3. Dimensions for EGR-U rail (large fixing hole)



| Model | Fixing bolt for rail [mm] | Dimensions of the rail [mm] | | | | | | | Mass [kg/m] |
|--------|---------------------------|-----------------------------|------|-----|-----|-----|----|----|-------------|
| | | WR | HR | D | h | d | P | E | |
| EGR15U | M4 x 16 | 15 | 12.5 | 7.5 | 5.3 | 4.5 | 60 | 20 | 1.23 |
| EGR30U | M8 x 25 | 28 | 23 | 14 | 12 | 9 | 80 | 20 | 4.23 |

4. Dimensions for EGR-T rail (rail mounted from below)



| Model | Dimensions of the rail [mm] | | | | | | Mass [kg/m] |
|--------|-----------------------------|------|----|----|----|----|-------------|
| | WR | HR | S | h | P | E | |
| EGR15T | 15 | 12.5 | M5 | 7 | 60 | 20 | 1.26 |
| EGR20T | 20 | 15.5 | M6 | 9 | 60 | 20 | 2.15 |
| EGR25T | 23 | 18 | M6 | 10 | 60 | 20 | 2.79 |
| EGR30T | 28 | 23 | M8 | 14 | 80 | 20 | 4.42 |

Linear guideway

MG series

1.2 Linear Guideway MG Miniature Series

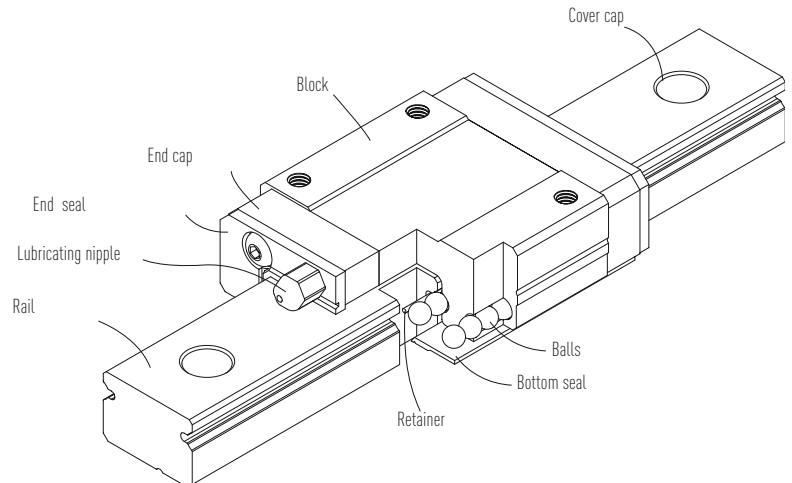
1.2.1 Special characteristics of the MGN Series

1. Compact, light-weight and suitable for small devices
2. Rails and blocks manufactured in stainless steel
3. The bearing surface profile carries loads in all directions and is particularly rigid and accurate

4. Steel balls are secured by a retainer in the block

5. Interchangeable models are available in defined accuracy classes

1.2.2 Construction of the MGN series

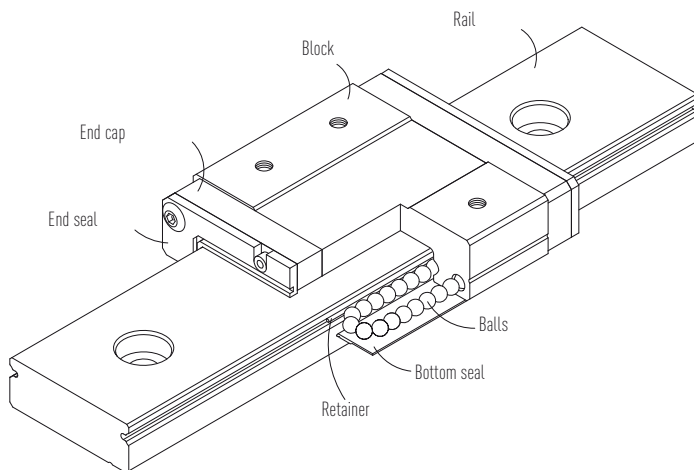


- Recirculation system: block, rail, end cap and retainer
- Lubrication system: a lubricating nipple is available for MGN15, a grease gun can be used
- Dust protection: end seal, bottom seal (optional for sizes 12,15), cover cap (for sizes 12,15)

1.2.3 Special characteristics of the MGW Series

The special features of the extra wide MGW miniature rails include:

1. The wider format improves the torque
2. The bearing surface profile is particularly rigid in all directions
3. Steel balls are secured by a retainer in the block
4. All metal components are manufactured in corrosion-resistant stainless steel



1.2.4 Construction of the MGW Series

- Recirculation system: block, rail, end cap and retaining wire
- Lubrication system: a lubricating nipple is available for MGW15, a grease gun can be used
- Dust protection: End seal, bottom seal (optional for sizes 12,15), cover cap (for sizes 12,15)

1.2.5 Application

The MGN/MGW series can be used in many different areas, for example, in the semiconductor industry, in component insertion machinery, medical technology, industrial robots, measuring equipment, in office automation and in other areas that need miniature versions.

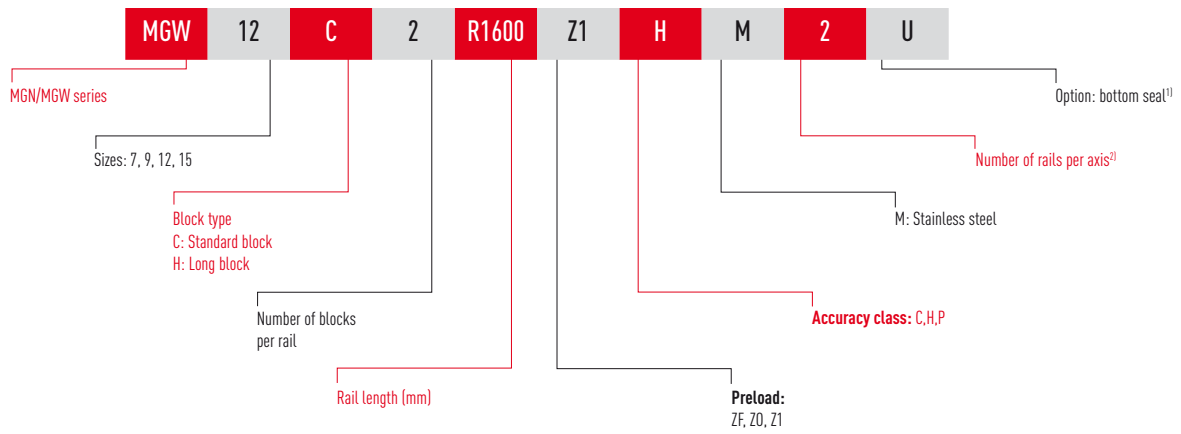
1.2.6 Article numbers for the MGN/MGW series

Linear guideways are available as either interchangeable or non-interchangeable versions. The dimensions of both models are identical. The interchangeable models are more user friendly as the block and rail can be replaced freely. However, accuracy is lower than that of the non-interchangeable models. Due to the strict control of dimensional accuracy, the interchangeable models are a good choice for customers not using pairs of rails on a stage. The article numbers include the dimensions, model, accuracy class and preload etc.

Linear guideway

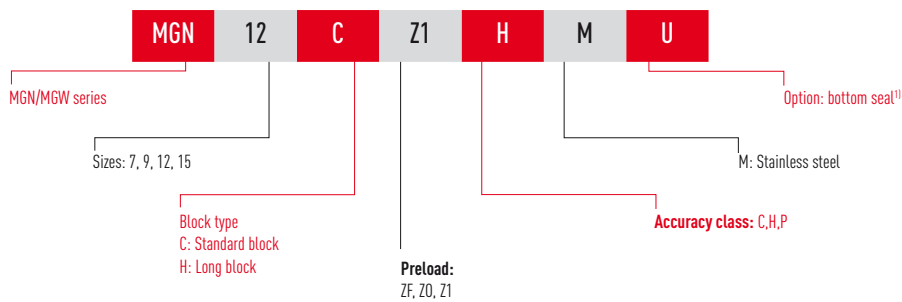
MG series

1. Non-interchangeable models

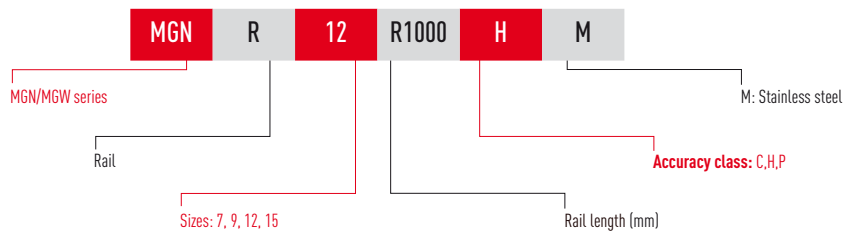


2. Interchangeable models

○ Article number of the MG block



○ Article number of the MG rail



Note:

- ¹⁾ The bottom seal is available for MGN and MGW sizes 12, 15
- ²⁾ Figure 2 is also a quantity statement, i.e. an item of the abovenamed article consists of a pair of rails. No figure is provided for individual rails.

1.2.7 Accuracy classes

The MG series is divided into three classes according to respective accuracy - normal (C), high precision (H) and precision class (P). The correct rail can be determined according to the requirements of the machinery in which it is used.

1. Non-interchangeable models

The characteristics refer to the mean dimensions determined at the central section of the block.

2. Interchangeable models

Due to the height tolerance with several sets of pairs, there are some differences between the interchangeable and non-interchangeable models.

3. Parallelism tolerance

The parallelism from C to A and D to B is dependent on the length of the rail.

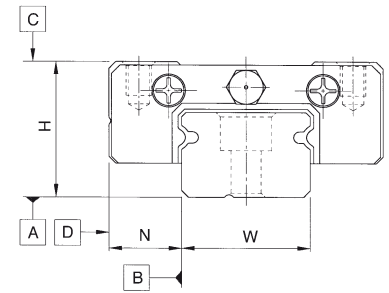


Table 1.20: Characteristics for the accuracy of non-interchangeable models

| Accuracy class | Normal (C) | High (H) | Precision (P) |
|-------------------------------------|-------------------|-------------|---------------|
| Height tolerance H_{11} | ± 0.04 | ± 0.02 | ± 0.01 |
| Width tolerance N_{11} | ± 0.04 | ± 0.025 | ± 0.015 |
| Height variance H_{21} | 0.03 | 0.015 | 0.007 |
| Width variance N_{21} | 0.03 | 0.02 | 0.01 |
| Parallelism of block surface C to A | As per Table 1.22 | | |
| Parallelism of block surface D to B | As per Table 1.22 | | |

Unit: [mm]

Table 1.21: Characteristics for the accuracy of non-interchangeable models

| Accuracy class | Normal (C) | High (H) | Precision (P) |
|---|-------------------|-------------|---------------|
| Height tolerance H_{11} | ± 0.04 | ± 0.02 | ± 0.01 |
| Width tolerance N_{11} | ± 0.04 | ± 0.025 | ± 0.015 |
| Height variance H_{21} | 0.03 | 0.015 | 0.007 |
| Width variance N_{21} | 0.03 | 0.02 | 0.01 |
| Height variance H_{31} (several sets) | 0.07 | 0.04 | 0.02 |
| Parallelism of block surface C to A | 0.07 | 0.04 | 0.02 |
| Parallelism of block surface D to B | As per Table 1.22 | | |
| Parallelism of block surface D to B | As per Table 1.22 | | |

Unit: [mm]

¹⁾ Tolerance information that applies to any rail with any block

²⁾ Permissible absolute dimensional deviation between several blocks distributed over one individual rail or located on a pair of rails

³⁾ Permissible absolute dimensional deviation between several paired rails.

Table 1.22: Tolerance of the parallelism between block and rail

| Rail length [mm] | Accuracy class | | | Rail length [mm] | Accuracy class | | |
|------------------|----------------|----|-----|------------------|----------------|----|----|
| | C | H | P | | C | H | P |
| -50 | 12 | 6 | 2 | 315-400 | 18 | 11 | 6 |
| 50-80 | 13 | 7 | 3 | 400-500 | 19 | 12 | 6 |
| 80-125 | 14 | 8 | 3.5 | 500-630 | 20 | 13 | 7 |
| 125-200 | 15 | 9 | 4 | 630-800 | 22 | 14 | 8 |
| 200-250 | 16 | 10 | 5 | 800-1000 | 23 | 16 | 9 |
| 250-300 | 17 | 11 | 5 | 1000-1200 | 25 | 18 | 11 |

Unit: [μ m]

Linear guideway

MG series

1.2.8 Preload

The MGN/MGW series offers three preload classes for various applications.

Table 1.23: Preload classes

| ID | Preload | Accuracy class |
|----|-------------------------------------|----------------|
| ZF | 4-10 μm slight play | C,H |
| Z0 | 0 very light preload | C-P |
| Z1 | 0.02 C_{dyn} light preload | C-P |

1.2.9 Dust protection equipment

Closing seals are fitted as standard to both ends of the block, guaranteeing accuracy and a long service life. Bottom seals are fitted to the sides of the block to prevent contamination. Bottom seals can be ordered using the "+U" code, followed by the article number for the model. Bottom seals are available as an option for sizes 12 und 15, for sizes 7 and 9, they cannot be fitted due to the restricted installation area H_1 . For installation of a bottom seal, the lateral installation surface of the rail must not exceed value H_1 .

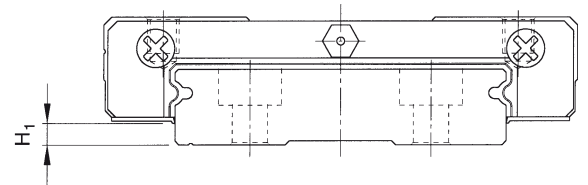


Table 1.24: Installation space H_1

| Series / Size | Bottom seal | H1 | Series / Size | Bottom seal | H1 |
|---------------|-------------|----|---------------|-------------|-----|
| MGN 7 | - | - | MGW 7 | - | - |
| MGN 9 | - | - | MGW 9 | - | - |
| MGN12 | • | 2 | MGW12 | • | 2.6 |
| MGN15 | • | 3 | MGW15 | • | 2.6 |

Unit: [mm]

1.2.10 Shoulder height and fillets

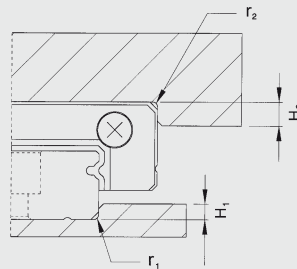


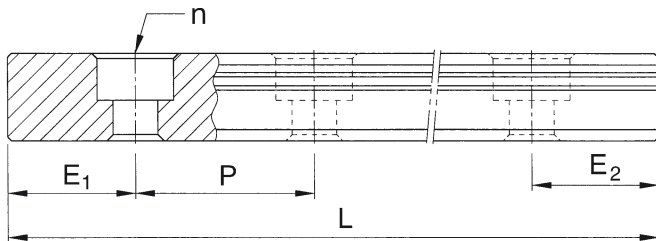
Table 1.25: Shoulder height and fillets

| Series/ Size | Max. radius of fillets | | Shoulder height | | Series/ Size | Max. radius of fillets | | Shoulder height | |
|-----------------|---------------------------|-----|--------------------|----|-----------------|---------------------------|-----|--------------------|----|
| | r1 | r2 | H1 | H2 | | r1 | r2 | H1 | H2 |
| MGN 7 | 0.2 | 0.2 | 1.2 | 3 | MGW 7 | 0.2 | 0.2 | 1.7 | 3 |
| MGN 9 | 0.2 | 0.3 | 1.7 | 3 | MGW 9 | 0.3 | 0.3 | 2.5 | 3 |
| MGN12 | 0.3 | 0.4 | 1.7 | 4 | MGW12 | 0.4 | 0.4 | 3 | 4 |
| MGN15 | 0.5 | 0.5 | 2.5 | 5 | MGW15 | 0.4 | 0.8 | 3 | 5 |

Unit: [mm]

1.2.11 Maximum rail length

To ensure that the ends of rails for non-standard lengths are stable, value E must not exceed half the distance between the fixing holes (P). In addition, value $E_{1/2}$ must not be less than $E_{1/2 \text{ min}}$ and must not exceed $E_{1/2 \text{ max}}$ to prevent breakage of the fixing hole.



Formula 1.3
$$L = (n-1) \cdot P + E_1 + E_2$$

- L: Total rail length [mm]
- n: Number of fixing holes
- P: Distance between two fixing holes [mm]
- $E_{1/2}$: Distance of the last fixing hole from the end of the rail [mm]

Table 1.26:

| Rail/Size | MGNR 7 | MGNR 9 | MGNR 12 | MGNR 15 | MGWR 7 | MGWR 9 | MGWR 12 | MGWR 15 |
|--------------------------|-----------|-----------|------------|------------|-----------|-----------|------------|------------|
| Hole distance (P) | 15 | 20 | 25 | 40 | 30 | 30 | 40 | 40 |
| E1/2 min | 5 | 5 | 5 | 6 | 6 | 6 | 8 | 8 |
| E1/2 max | 10 | 15 | 20 | 34 | 24 | 24 | 32 | 32 |
| max. length (joint free) | 600 | 1000 | 1000 | 1000 | 600 | 1200 | 1200 | 1000 |

Unit: [mm]

- Note:
- The tolerance for E for standard rail is 0.5 to -0. mm, for flush joints 0 to -0.3 mm
 - Type "M" is manufactured in stainless steel
 - If no information is provided on the $E_{1/2}$ dimensions, the maximum number of fixing holes are determined taking into account $E_{1/2 \text{ min}}$

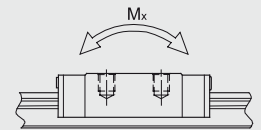
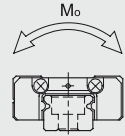
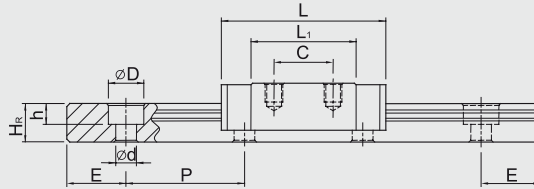
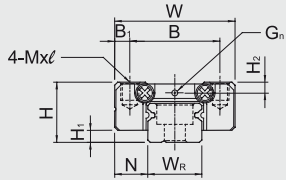
Linear guideway

MG series

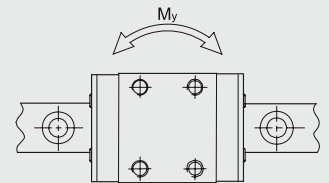
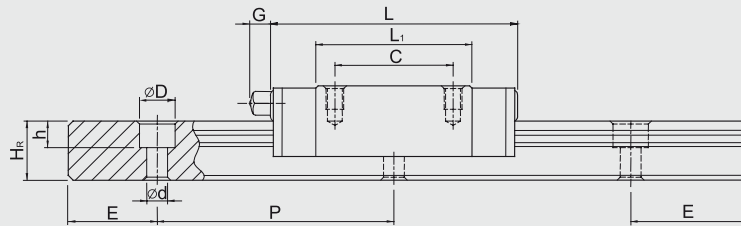
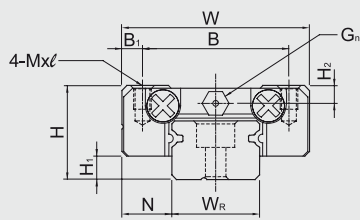
1.2.12 Dimensions for the HIWIN MGN/MGW series

1. MGN-C / MGN-H

○ MGN7, MGN9, MGN12



○ MGN15

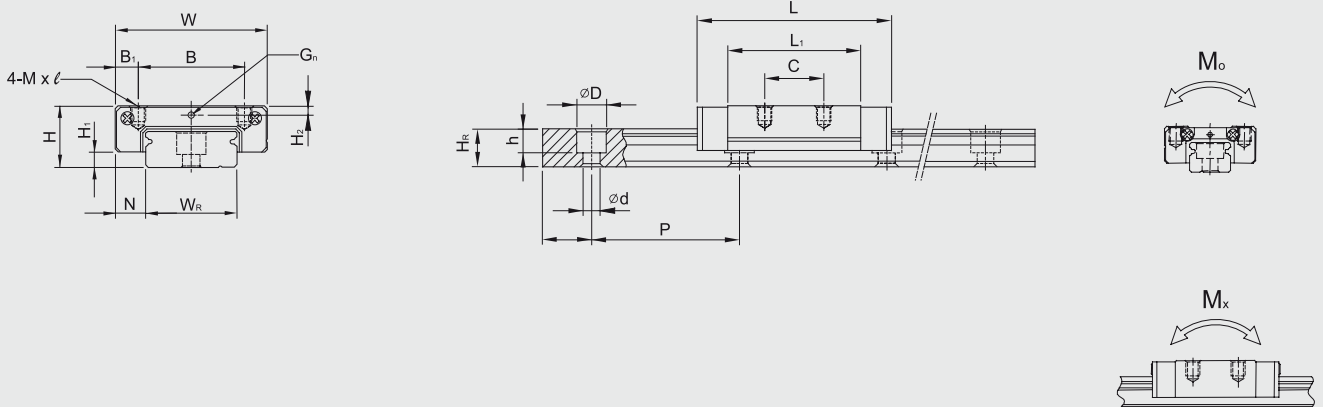


| Model | Installation dimensions [mm] | | | Dimensions of the block [mm] | | | | | | | Dimensions of the rail [mm] | | | | | | | | | | Screw for rail [mm] | Dynamic load C_{dyn} [N] | Static load C_0 [N] | Static moment | | | Mass | |
|------------------|------------------------------|-----|-----|------------------------------|----|-----|----|------|------|-----|-----------------------------|----------|-----|----|-----|-----|-----|-----|----|---|---------------------|----------------------------|-----------------------|---------------|------------|------------|-----------|-------------|
| | H | H1 | N | W | B | B1 | C | L1 | L | G | Gn | M x L | H2 | WR | HR | D | h | d | P | E | | | | M_0 [Nm] | M_X [Nm] | M_Y [Nm] | Block [g] | Rail [kg/m] |
| MGN7C MGN7H | 8 | 1.5 | 5 | 17 | 12 | 2.5 | 8 | 13.5 | 22.5 | - | $\varnothing 0.8$ | M2 x 2.5 | 1.5 | 7 | 4.8 | 4.2 | 2.3 | 2.4 | 15 | * | M2x6 | 1000 | 1270 | 4.8 | 2.9 | 2.9 | 10 | 0.22 |
| | | | | | | | 13 | 21.8 | 30.8 | | | | | | | | | | | | | 1400 | 2000 | 7.8 | 4.9 | 4.9 | 15 | |
| MGN9C MGN9H | 10 | 2 | 5.5 | 20 | 15 | 2.5 | 10 | 18.9 | 28.9 | - | $\varnothing 0.8$ | M3 x 3 | 1.8 | 9 | 6.5 | 6 | 3.5 | 3.5 | 20 | * | M3x8 | 1900 | 2600 | 12 | 7.5 | 7.5 | 16 | 0.38 |
| | | | | | | | 16 | 29.9 | 39.9 | | | | | | | | | | | | | 2600 | 4100 | 20 | 19 | 19 | 26 | |
| MGN12C MGN12H | 13 | 3 | 7.5 | 27 | 20 | 3.5 | 15 | 21.7 | 34.7 | - | $\varnothing 0.8$ | M3 x 3.5 | 2.5 | 12 | 8 | 6 | 4.5 | 3.5 | 25 | * | M3x8 | 2900 | 4000 | 26 | 14 | 14 | 34 | 0.65 |
| | | | | | | | 20 | 32.4 | 45.4 | | | | | | | | | | | | | 3800 | 6000 | 39 | 37 | 37 | 54 | |
| MGN15C MGN15H | 16 | 4 | 8.5 | 32 | 25 | 3.5 | 20 | 26.7 | 42.1 | 4.5 | GN3S | M3 x 4 | 3 | 15 | 10 | 6 | 4.5 | 3.5 | 40 | * | M3x10 | 4700 | 5700 | 46 | 22 | 22 | 59 | 1.06 |
| | | | | | | | 25 | 43.4 | 58.8 | | | | | | | | | | | | | 6500 | 9300 | 75 | 59 | 59 | 92 | |

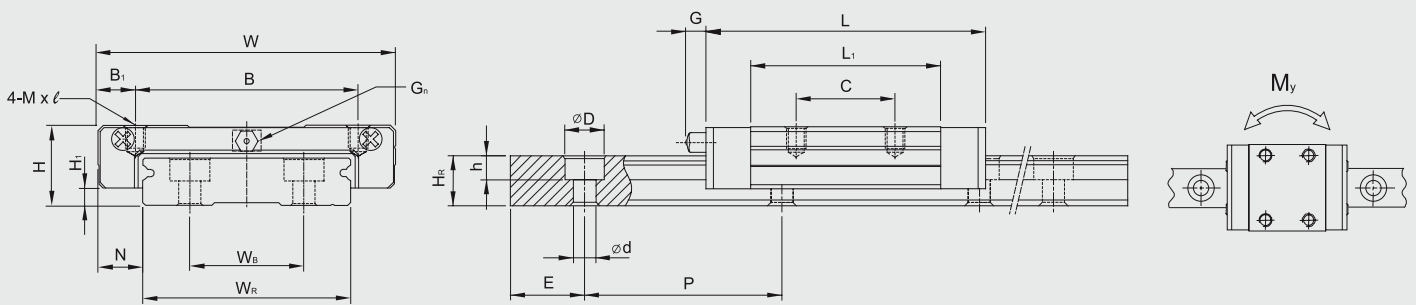
*See Page 29, Tab 1.26

2. MGW-C / MGW-H

○ MGN7, MGN9, MGN12



○ MGW15



| Model | Installation dimensions [mm] | | | Dimensions of the block [mm] | | | | | | | Dimensions of the rail [mm] | | | | | | | | | | Screw for rail [mm] | Dynamic load C_{dyn} [N] | Static load C_0 [N] | Static moment | | | Mass | | |
|------------------|------------------------------|----------------|-----|------------------------------|----|----------------|----|----------------|------|-----|-----------------------------|----------|----------------|----------------|----------------|----------------|---|-----|-----|----|---------------------|----------------------------|-----------------------|---------------|---------------------|---------------------|---------------------|------------|-------------|
| | H | H ₁ | N | W | B | B ₁ | C | L ₁ | L | G | G _n | M x l | H ₂ | W _R | W _B | H _R | D | h | d | P | | | | E | M ₀ [Nm] | M _x [Nm] | M _y [Nm] | Block [g] | Rail [kg/m] |
| MGW7C MGW7H | 9 | 1.9 | 5.5 | 25 | 19 | 3 | 10 | 21 | 31.2 | - | ∅ 0.9 | M3 x 3 | 1.85 | 14 | - | 5.2 | 6 | 3.2 | 3.5 | 30 | * | M3x6 | 1400 1800 | 2100 3200 | 16 23.9 | 7.3 15.8 | 7.3 15.8 | 20 29 | 0.51 |
| MGW9C MGW9H | 12 | 2.9 | 6 | 30 | 21 | 4.5 | 12 | 27.5 | 39.9 | - | ∅ 1.0 | M3 x 3 | 2.4 | 18 | - | 7 | 6 | 4.5 | 3.5 | 30 | * | M3x8 | 2800 3500 | 4200 6000 | 40.9 55.6 | 19.3 34.7 | 19.3 34.7 | 40 57 | 0.91 |
| MGW12C MGW12H | 14 | 3.4 | 8 | 40 | 28 | 6 | 15 | 31.3 | 46.1 | - | ∅ 1.8 | M3 x 3.6 | 2.8 | 24 | - | 8.5 | 8 | 4.5 | 4.5 | 40 | * | M4x8 | 4000 5200 | 5700 8400 | 71.7 104.7 | 28.3 58.5 | 28.3 58.5 | 71 103 | 1.49 |
| MGW15C MGW15H | 16 | 3.4 | 9 | 60 | 45 | 7.5 | 20 | 38 | 54.8 | 5.2 | GN3S | M4 x 4.2 | 3.2 | 42 | 23 | 9.5 | 8 | 4.5 | 4.5 | 40 | * | M4x10 | 6900 9100 | 9400 14100 | 203.2 304.8 | 57.8 125 | 57.8 125 | 143 215 | 2.86 |

*See Page 29, Tab 1.26

Ballscrews



Ballscrews, consist of a ballscrew shaft and ballscrew nut, within which the balls and a ball return system are integrated. Ballscrews are the most commonly used threaded spindles in industrial and precision machine tools, converting a rotary movement into a linear movement, and vice versa. Ballscrews offer high accuracy in combination with high efficiency. HIWIN offers a wide range of different ballscrews to suit your respective application.

The distinguishing features of HIWIN ballscrews are low-friction, accurate running, a low drive torque requirement and a high level of rigidity combined with quiet operation. HIWIN has state-of-the-art production facilities, highly qualified engineers, quality-assured manufacturing and assembly processes, using only high-quality materials to satisfy your demands.

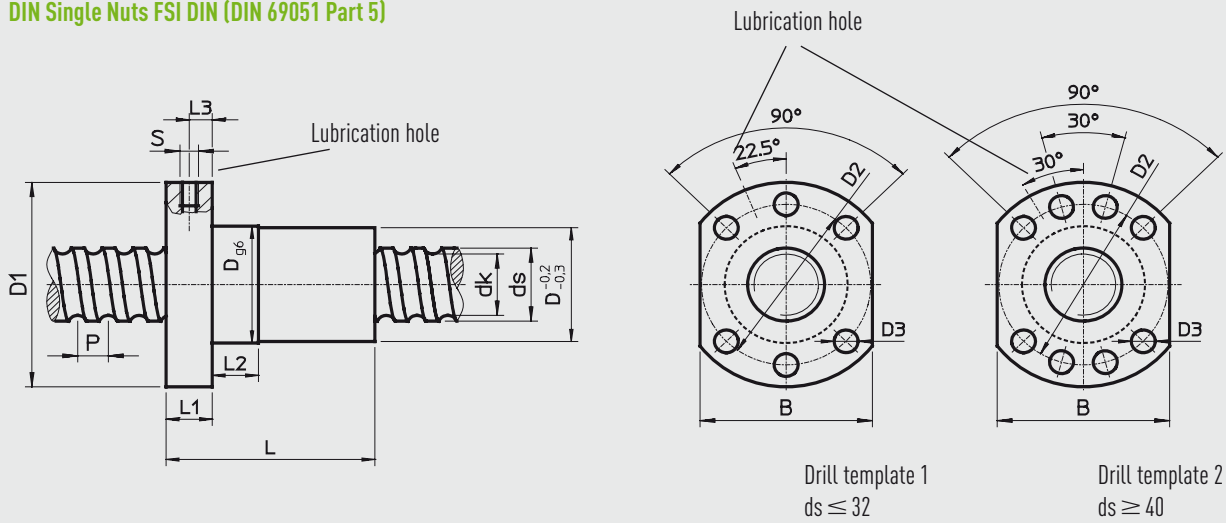
This catalogue provides technical information to help you to choose the right ballscrew for your application.



Ballscrews

Rolled

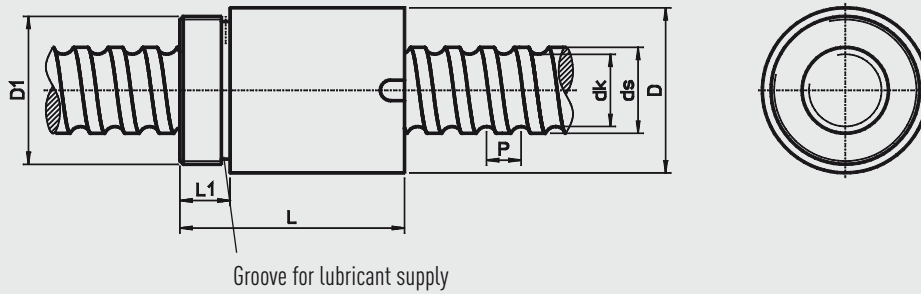
2.1 DIN Single Nuts FSC DIN (DIN 69051 Part 5) DIN Single Nuts FSI DIN (DIN 69051 Part 5)



| Article number | ds | P | D g6 | D1 | D2 | D3 | Drill template | L | L1 | L2 | L3 | S | B | dk | Dyn. load C _{dyn} [N] | Stat. load C ₀ [N] | Axial play max. [mm] | Mass [kg/pc.] |
|-----------------|----|----|------|-----|----|-----|----------------|-----|----|----|----|------|----|------|-----------------------------------|----------------------------------|----------------------|---------------|
| R16-05T3-FSIDIN | 16 | 5 | 28 | 48 | 38 | 5,5 | 1 | 40 | 10 | 10 | 5 | M6 | 40 | 12,8 | 7320 | 12470 | 0,04 | 0,17 |
| R16-10T3-FSIDIN | 16 | 10 | 28 | 48 | 38 | 5,5 | 1 | 60 | 10 | 10 | 5 | M6 | 40 | 12,8 | 6230 | 11000 | 0,04 | 0,25 |
| R20-05T4-FSIDIN | 20 | 5 | 36 | 58 | 47 | 6,6 | 1 | 52 | 10 | 10 | 5 | M6 | 44 | 16,9 | 11560 | 24000 | 0,04 | 0,29 |
| R20-10K3-FSCDIN | 20 | 10 | 36 | 58 | 47 | 6,6 | 1 | 48 | 10 | 10 | 5 | M6 | 44 | 17,3 | 10000 | 23500 | 0,04 | 0,27 |
| R20-20K2-FSCDIN | 20 | 20 | 36 | 58 | 47 | 6,6 | 1 | 57 | 10 | 10 | 5 | M6 | 44 | 17,0 | 6800 | 15300 | 0,04 | 0,30 |
| R25-05T4-FSIDIN | 25 | 5 | 40 | 62 | 51 | 6,6 | 1 | 52 | 10 | 12 | 5 | M6 | 48 | 22,3 | 12400 | 32960 | 0,04 | 0,31 |
| R25-10T3-FSIDIN | 25 | 10 | 40 | 62 | 51 | 6,6 | 1 | 65 | 10 | 16 | 5 | M6 | 48 | 21,2 | 16500 | 32700 | 0,04 | 0,35 |
| R25-25K2-FSCDIN | 25 | 25 | 40 | 62 | 51 | 6,6 | 1 | 70 | 10 | 16 | 5 | M6 | 48 | 22,0 | 7500 | 19300 | 0,04 | 0,37 |
| R32-05T6-FSIDIN | 32 | 5 | 50 | 80 | 65 | 9 | 1 | 66 | 12 | 12 | 6 | M6 | 62 | 29,1 | 20560 | 64700 | 0,04 | 0,70 |
| R32-10T4-FSIDIN | 32 | 10 | 50 | 80 | 65 | 9 | 1 | 85 | 12 | 16 | 6 | M6 | 62 | 27,7 | 38500 | 65000 | 0,04 | 0,82 |
| R32-20K3-FSCDIN | 32 | 20 | 50 | 80 | 65 | 9 | 1 | 88 | 12 | 16 | 7 | M6 | 62 | 28,7 | 17000 | 48500 | 0,04 | 0,88 |
| R32-32K2-FSCDIN | 32 | 32 | 50 | 80 | 65 | 9 | 1 | 88 | 12 | 12 | 6 | M6 | 62 | 28,7 | 11600 | 31800 | 0,04 | 0,88 |
| R40-05T6-FSIDIN | 40 | 5 | 63 | 93 | 78 | 9 | 2 | 66 | 14 | 10 | 7 | M8x1 | 70 | 36,7 | 23360 | 80300 | 0,04 | 1,10 |
| R40-10K4-FSCDIN | 38 | 10 | 63 | 93 | 78 | 9 | 2 | 70 | 14 | 16 | 7 | M8x1 | 70 | 32,9 | 45000 | 123000 | 0,04 | 1,10 |
| R40-20K3-FSCDIN | 38 | 20 | 63 | 93 | 78 | 9 | 2 | 88 | 14 | 16 | 7 | M8x1 | 70 | 32,9 | 34850 | 90000 | 0,07 | 1,13 |
| R40-40K2-FSCDIN | 38 | 40 | 63 | 93 | 78 | 9 | 2 | 102 | 14 | 16 | 7 | M8x1 | 70 | 32,9 | 23000 | 58400 | 0,07 | 1,30 |
| R50-05T6-FSIDIN | 50 | 5 | 75 | 110 | 93 | 11 | 2 | 70 | 16 | 10 | 8 | M8x1 | 85 | 46,8 | 25320 | 104200 | 0,07 | 1,44 |
| R50-10K6-FSCDIN | 50 | 10 | 75 | 110 | 93 | 11 | 2 | 90 | 16 | 20 | 8 | M8x1 | 85 | 44,9 | 74500 | 250000 | 0,07 | 1,55 |
| R50-20K5-FSCDIN | 50 | 20 | 75 | 110 | 93 | 11 | 2 | 132 | 18 | 25 | 9 | M8x1 | 85 | 45,5 | 62000 | 208000 | 0,07 | 2,10 |
| R50-40K3-FSCDIN | 50 | 40 | 75 | 110 | 93 | 11 | 2 | 149 | 18 | 45 | 9 | M8x1 | 85 | 45,0 | 39000 | 123000 | 0,07 | 2,50 |

- DIN nuts for rolled ballscrew spindles
- Mating dimensions to DIN 69051 Part 5
- Nuts with polyamide wipers
- Flange end single nuts
- Precision ground ball grooves
- For nut housing, see Page 41
- Reduced axial play on request

2.2 Cylindrical Single Nuts with SE Screw Thread



| Article number | ds | P | D -0,2 | D1 | L -0,5 | L1 | dk | Dyn. load C _{dyn} [N] | Stat. load C ₀ [N] | Axial play max. [mm] | Mass [kg/pc.] |
|----------------|-----|-----|-----------|---------|--------|-----|------|-----------------------------------|-------------------------------------|----------------------------|------------------|
| SE08025-R-2E0* | 7,8 | 2,5 | 17,5 | M15x1 | 23,5 | 7,5 | 6,1 | 1200 | 3360 | 0,04 | 0,04 |
| SE10025-R-2E0* | 10 | 2,5 | 19,5 | M17x1 | 25 | 7,5 | 8,1 | 1780 | 2630 | 0,04 | 0,06 |
| SE1004-R-2E0* | 10 | 4 | 24 | M22x1 | 32 | 10 | 7,7 | 1980 | 2820 | 0,04 | 0,08 |
| SE1204-R-1G0** | 12 | 4 | 25,5 | M20x1 | 34 | 10 | 9,5 | 3000 | 5700 | 0,04 | 0,1 |
| SE1605-R-3EF | 16 | 5 | 36 | M30x1,5 | 42 | 12 | 13,5 | 9600 | 12700 | 0,02 | 0,45 |
| SE2005-R-4EF | 20 | 5 | 40 | M35x1,5 | 52 | 12 | 17,5 | 13900 | 21800 | 0,02 | 0,53 |
| SE2505-R-4EF | 25 | 5 | 45 | M40x1,5 | 60 | 15 | 22,5 | 15600 | 27900 | 0,02 | 0,82 |
| SE2510-R-3EF | 25 | 10 | 48 | M45x1,5 | 70 | 15 | 21 | 24100 | 36200 | 0,02 | 1 |
| SE3205-R-5EF | 32 | 5 | 52 | M48x1,5 | 60 | 15 | 29,5 | 20700 | 43900 | 0,02 | 1,13 |
| SE3210-R-3EF | 32 | 10 | 56 | M52x1,5 | 80 | 15 | 27,8 | 34100 | 56100 | 0,02 | 1,62 |
| SE3220-R-2EB | 32 | 20 | 56 | M52x1,5 | 80 | 15 | 27,8 | 20300 | 26800 | 0,02 | 1,44 |
| SE4005-R-5EF | 40 | 5 | 65 | M60x1,5 | 68 | 18 | 37,5 | 22500 | 54600 | 0,02 | 1,63 |
| SE4010-R-4EF | 40 | 10 | 65 | M60x1,5 | 88 | 18 | 35,8 | 46800 | 82600 | 0,02 | 1,75 |
| SE4020-R-2EB | 40 | 20 | 65 | M60x1,5 | 88 | 18 | 35,8 | 23800 | 36400 | 0,03 | 1,75 |
| SE5010-R-4EF | 50 | 10 | 80 | M75x1,5 | 100 | 20 | 45,8 | 52800 | 106800 | 0,02 | 2,96 |
| SE5020-R-3EB | 50 | 20 | 80 | M75x1,5 | 114 | 20 | 45,8 | 40000 | 76200 | 0,03 | 3,15 |
| SE6310-R-6EF | 63 | 10 | 95 | M85x2,0 | 120 | 20 | 58,8 | 84700 | 210800 | 0,04 | 4,37 |
| SE6320-R-3EP | 63 | 20 | 95 | M85x2,0 | 138 | 20 | 55,4 | 96000 | 189000 | 0,04 | 4,4 |

Green lines* = Rolled ballscrew spindles

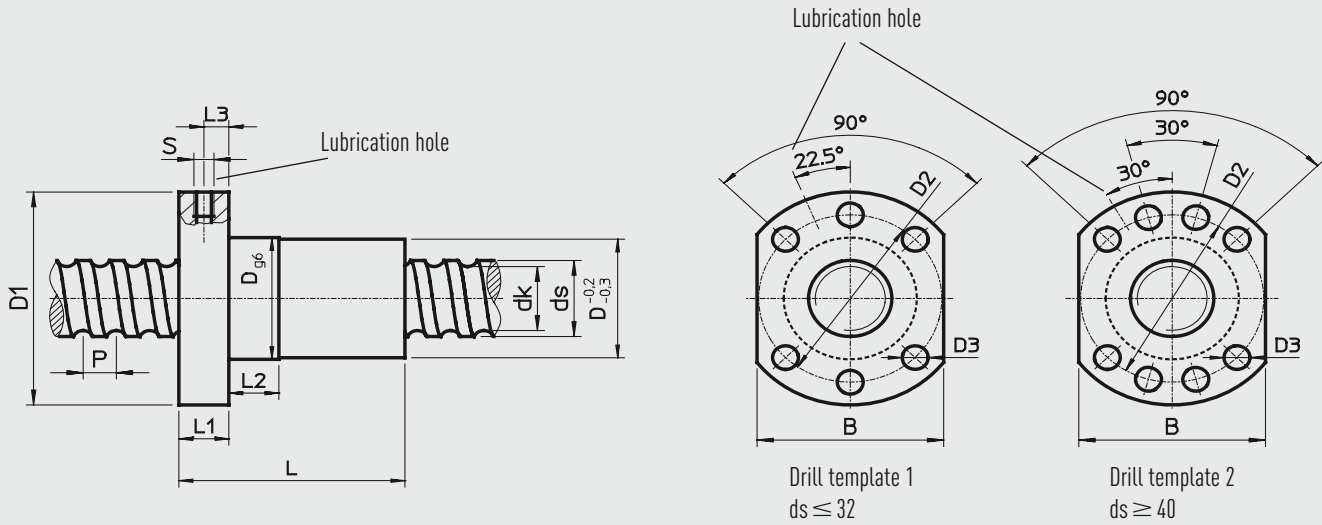
Green lines** = single-sided polyamide wiper

- Reduced axial play on request
- Nuts with wipers
- Precision ground ball grooves

Ballscrews

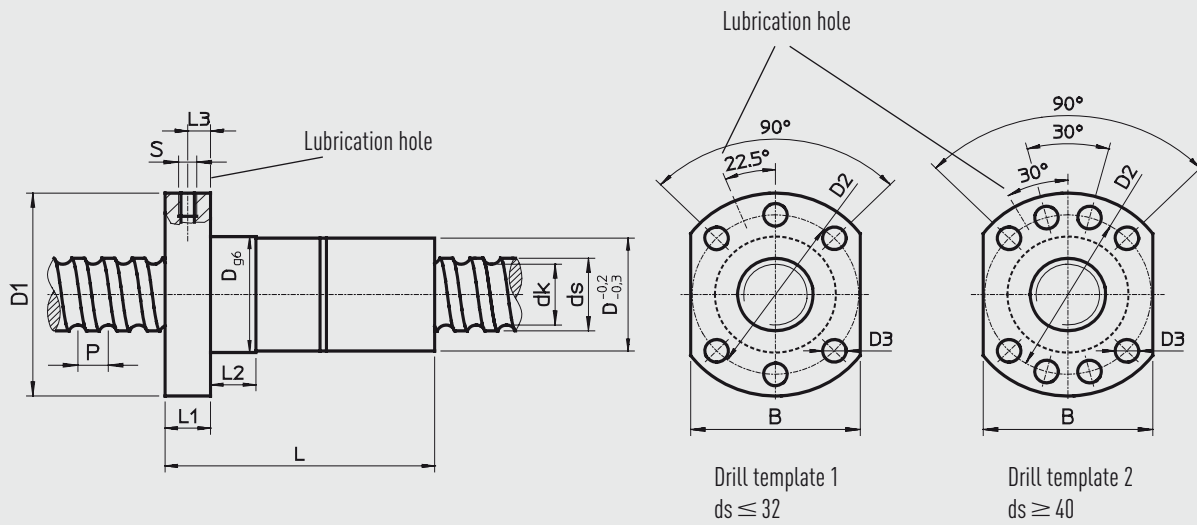
Peeled

2.3 DIN Single Nuts DEB (DIN 69051 Part 5)



| Article number | ds | P | Dg6 | D1 | D2 | D3 | L | L1 | L2 | L3 | S | B | dk | Dyn. load C _{dyn} [N] | Stat. load C ₀ [N] | Axial clearance max. [mm] | Mass [kg/pc.] |
|----------------|----|----|-----|-----|-----|------|-----|----|----|------|------|-----|------|-----------------------------------|----------------------------------|------------------------------|------------------|
| DEB1605-R-3EF | 16 | 5 | 28 | 48 | 38 | 5,5 | 40 | 10 | 10 | 5 | M6 | 40 | 13,5 | 9600 | 12700 | 0,02 | 0,17 |
| DEB2005-R-4EF | 20 | 5 | 36 | 58 | 47 | 6,6 | 52 | 10 | 10 | 5 | M6 | 44 | 17,5 | 13900 | 21800 | 0,02 | 0,29 |
| DEB2505-R-4EF | 25 | 5 | 40 | 62 | 51 | 6,6 | 52 | 10 | 10 | 5 | M6 | 48 | 22,5 | 15600 | 27900 | 0,02 | 0,31 |
| DEB2510-R-3EF | 25 | 10 | 40 | 62 | 51 | 6,6 | 65 | 10 | 16 | 5 | M6 | 48 | 21 | 24100 | 36200 | 0,02 | 0,35 |
| DEB3205-R-5EF | 32 | 5 | 50 | 80 | 65 | 9 | 60 | 12 | 10 | 6 | M6 | 62 | 29,5 | 20700 | 43900 | 0,02 | 0,66 |
| DEB3210-R-4EF | 32 | 10 | 50 | 80 | 65 | 9 | 85 | 14 | 16 | 7 | M6 | 62 | 27,8 | 40900 | 63200 | 0,02 | 0,82 |
| DEB3220-R-2EB | 32 | 20 | 50 | 80 | 65 | 9 | 80 | 14 | 16 | 7 | M6 | 62 | 27,8 | 20300 | 26800 | 0,02 | 0,66 |
| DEB4005-R-5EF | 40 | 5 | 63 | 93 | 78 | 9 | 69 | 14 | 10 | 7 | M8x1 | 70 | 37,5 | 22500 | 54600 | 0,02 | 1,12 |
| DEB4010-R-4EF | 40 | 10 | 63 | 93 | 78 | 9 | 88 | 14 | 16 | 7 | M8x1 | 70 | 35,8 | 46800 | 82600 | 0,02 | 1,12 |
| DEB4020-R-2EB | 40 | 20 | 63 | 93 | 78 | 9 | 88 | 14 | 16 | 7 | M8x1 | 70 | 35,8 | 23800 | 36400 | 0,03 | 1,13 |
| DEB5005-R-5EF | 50 | 5 | 75 | 110 | 93 | 11 | 69 | 16 | 10 | 8 | M8x1 | 85 | 47,5 | 24900 | 69800 | 0,02 | 1,44 |
| DEB5010-R-4EF | 50 | 10 | 75 | 110 | 93 | 11 | 98 | 16 | 16 | 8 | M8x1 | 85 | 45,8 | 52800 | 106800 | 0,02 | 1,61 |
| DEB5020-R-3EB | 50 | 20 | 75 | 110 | 93 | 11 | 114 | 16 | 16 | 8 | M8x1 | 85 | 45,8 | 40000 | 76200 | 0,03 | 1,91 |
| DEB6310-R-6EF | 63 | 10 | 90 | 125 | 108 | 11 | 120 | 18 | 16 | 9 | M8x1 | 95 | 58,8 | 84700 | 210800 | 0,04 | 2,98 |
| DEB6320-R-4EP | 63 | 20 | 95 | 135 | 115 | 13,5 | 150 | 20 | 25 | 10 | M8x1 | 100 | 55,4 | 105000 | 250000 | 0,04 | 3,83 |
| DEB6320-R-5EP | 63 | 20 | 95 | 135 | 115 | 13,5 | 175 | 20 | 25 | 10 | M8x1 | 100 | 55,4 | 125000 | 300000 | 0,04 | 4,30 |
| DEBH6320-R-6GP | 60 | 20 | 125 | 165 | 145 | 13,5 | 170 | 25 | 25 | 12 | M8x1 | 130 | 50,2 | 230000 | 600000 | 0,04 | 9,4 |
| DEB8010-R-6EF | 80 | 10 | 105 | 145 | 125 | 13,5 | 120 | 20 | 16 | 10 | M8x1 | 110 | 75,8 | 93400 | 269200 | 0,04 | 3,13 |
| DEBH8010-R-7GP | 78 | 10 | 125 | 165 | 145 | 13,5 | 120 | 25 | 25 | 12 | M8x1 | 130 | 72,6 | 120000 | 380000 | 0,04 | 8,1 |
| DEB8020-R-4EP | 80 | 20 | 125 | 165 | 145 | 13,5 | 160 | 25 | 25 | 12 | M8x1 | 130 | 72,4 | 135000 | 322000 | 0,05 | 7,95 |
| DEB8020-R-5EP | 80 | 20 | 125 | 165 | 145 | 13,5 | 175 | 25 | 25 | 12 | M8x1 | 130 | 72,4 | 161500 | 398000 | 0,05 | 9,25 |
| DEBH8020-R-6GP | 78 | 20 | 135 | 175 | 155 | 13,5 | 170 | 25 | 25 | 12,5 | M8x1 | 140 | 68,2 | 280000 | 720000 | 0,05 | 13 |
| DEBH8020-R-7GP | 78 | 20 | 135 | 175 | 155 | 13,5 | 190 | 25 | 25 | 12,5 | M8x1 | 140 | 68,2 | 320000 | 820000 | 0,05 | 13,6 |

2.4 DIN Double Nuts DDB (DIN 69051 Part 5)



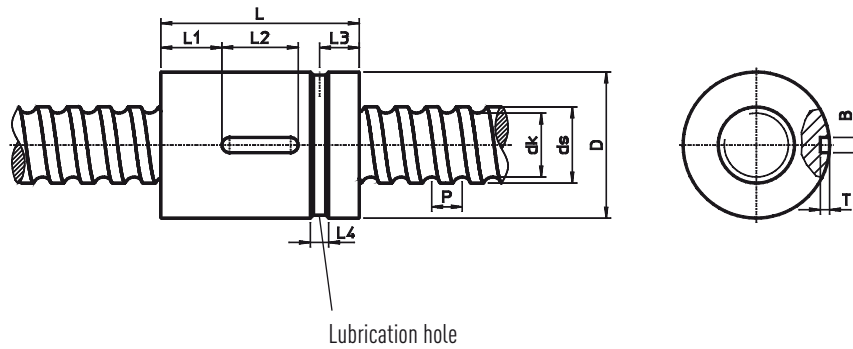
| Article number | ds | P | Dg6 | D1 | D2 | D3 | L | L1 | L2 | L3 | S | B | dk | Dyn. load C _{dyn} [N] | Stat. load C ₀ [N] | Mass [kg/pc.] |
|----------------|----|----|-----|-----|-----|------|-----|----|----|----|------|-----|------|-----------------------------------|----------------------------------|------------------|
| DDB1605-R-3EF | 16 | 5 | 28 | 48 | 38 | 5,5 | 80 | 10 | 10 | 5 | M6 | 40 | 13,5 | 9600 | 12700 | 0,25 |
| DDB2005-R-4EF | 20 | 5 | 36 | 58 | 47 | 6,6 | 82 | 10 | 10 | 5 | M6 | 44 | 17,5 | 13900 | 21800 | 0,42 |
| DDB2505-R-4EF | 25 | 5 | 40 | 62 | 51 | 6,6 | 95 | 10 | 10 | 5 | M6 | 48 | 22,5 | 15600 | 27900 | 0,52 |
| DDB2510-R-3EF | 25 | 10 | 40 | 62 | 51 | 6,6 | 115 | 10 | 16 | 5 | M6 | 48 | 21 | 24100 | 36200 | 0,57 |
| DDB3205-R-5EF | 32 | 5 | 50 | 80 | 65 | 9 | 95 | 12 | 10 | 6 | M6 | 62 | 29,5 | 20700 | 43900 | 0,97 |
| DDB3210-R-4EF | 32 | 10 | 50 | 80 | 65 | 9 | 138 | 14 | 16 | 7 | M6 | 62 | 27,8 | 40900 | 63200 | 1,01 |
| DDB3220-R-2EB | 32 | 20 | 50 | 80 | 65 | 9 | 138 | 14 | 16 | 7 | M6 | 62 | 27,8 | 20300 | 26800 | 1,01 |
| DDB4005-R-5EF | 40 | 5 | 63 | 93 | 78 | 9 | 109 | 14 | 10 | 7 | M8x1 | 70 | 37,5 | 22500 | 54600 | 1,55 |
| DDB4010-R-4EF | 40 | 10 | 63 | 93 | 78 | 9 | 150 | 14 | 16 | 7 | M8x1 | 70 | 35,8 | 46800 | 82600 | 2,13 |
| DDB4020-R-2EB | 40 | 20 | 63 | 93 | 78 | 9 | 150 | 14 | 16 | 7 | M8x1 | 70 | 35,8 | 23800 | 36400 | 1,8 |
| DDB5005-R-5EF | 50 | 5 | 75 | 110 | 93 | 11 | 112 | 16 | 10 | 8 | M8x1 | 85 | 47,5 | 24900 | 69800 | 2,16 |
| DDB5010-R-4EF | 50 | 10 | 75 | 110 | 93 | 11 | 164 | 16 | 16 | 8 | M8x1 | 85 | 45,8 | 52800 | 106800 | 2,5 |
| DDB5020-R-3EB | 50 | 20 | 75 | 110 | 93 | 11 | 196 | 16 | 16 | 8 | M8x1 | 85 | 45,8 | 40000 | 76200 | 4,34 |
| DDB6310-R-6EF | 63 | 10 | 90 | 125 | 108 | 11 | 205 | 18 | 16 | 9 | M8x1 | 95 | 58,8 | 84700 | 210800 | 4,34 |
| DDB6320-R-4EP | 63 | 20 | 95 | 135 | 115 | 13,5 | 270 | 20 | 25 | 10 | M8x1 | 100 | 55,4 | 105000 | 250000 | 6,95 |
| DDB8010-R-6EF | 80 | 10 | 105 | 145 | 125 | 13,5 | 205 | 20 | 16 | 10 | M8x1 | 110 | 75,8 | 93400 | 269200 | 4,71 |
| DDB8020-R-4EP | 80 | 20 | 125 | 165 | 145 | 13,5 | 280 | 25 | 25 | 12 | M8x1 | 130 | 72,4 | 135000 | 322000 | 13,8 |

- DIN nut for rolled ballscrews
- Mating dimensions to DIN 69051 Part 5
- Nuts with dust wipers
- Flange end double nuts (DDB)
- Precision ground ball grooves
- For nut housing see page 41

Ballscrews

Peeled

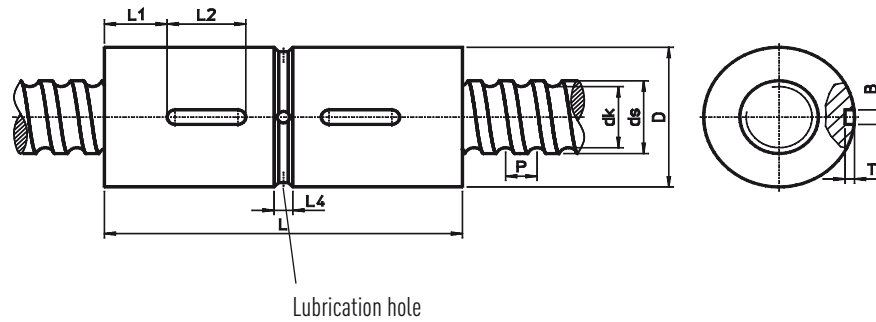
2.5 Cylindrical Single Nuts ZE



| Article number | ds | P | D g7 | L ±0,2 | L1 | L2 | L3 | L4 | T+0,1 | B P9 | dk | Dyn. load C _{dyn} [N] | Stat. load C ₀ [N] | Axial clearance max. [mm] | Mass [kg/pc.] |
|----------------|----|----|---------|--------|------|----|-----|----|-------|---------|------|-----------------------------------|-------------------------------------|---------------------------------|------------------|
| ZE1605-R-3EF | 16 | 5 | 28 | 40 | 12 | 16 | 9 | 4 | 2,4 | 4 | 13,5 | 9600 | 12700 | 0,02 | 0,1 |
| ZE1610-R-3EP | 16 | 10 | 28 | 60 | 8 | 20 | 9,5 | 5 | 2,5 | 4 | 12,6 | 6230 | 11000 | 0,04 | 0,15 |
| ZE2005-R-4EF | 20 | 5 | 36 | 51 | 15 | 20 | 10 | 4 | 2,4 | 4 | 17,5 | 13900 | 21800 | 0,02 | 0,23 |
| ZE2010-R-3EP | 20 | 10 | 34 | 60 | 20 | 20 | 12 | 4 | 2 | 5 | 17,5 | 8100 | 12600 | 0,04 | 0,24 |
| ZE2020-R-4GP | 20 | 20 | 34 | 60 | 20,5 | 20 | 20 | - | 3 | 5 | 17,1 | 14400 | 24800 | 0,04 | 0,24 |
| ZE2505-R-4EF | 25 | 5 | 40 | 60 | 20 | 20 | 12 | 5 | 2,4 | 4 | 22,5 | 15600 | 27900 | 0,02 | 0,29 |
| ZE2510-R-3EF | 25 | 10 | 48 | 65 | 22 | 20 | 15 | 5 | 2,4 | 4 | 21 | 24100 | 36200 | 0,02 | 0,5 |
| ZE3205-R-5EF | 32 | 5 | 48 | 60 | 20 | 20 | 12 | 5 | 2,4 | 4 | 29,5 | 20700 | 43900 | 0,02 | 0,38 |
| ZE3210-R-4EF | 32 | 10 | 56 | 80 | 27 | 25 | 15 | 5 | 2,4 | 4 | 27,8 | 40900 | 63200 | 0,02 | 0,74 |
| ZE3220-R-2EB | 32 | 20 | 56 | 80 | 27 | 25 | 15 | 5 | 2,4 | 4 | 27,8 | 20300 | 26800 | 0,02 | 0,7 |
| ZE4005-R-5EF | 40 | 5 | 56 | 68 | 24 | 20 | 15 | 6 | 2,4 | 4 | 37,5 | 22500 | 54600 | 0,02 | 0,44 |
| ZE4010-R-4EF | 40 | 10 | 62 | 88 | 31 | 25 | 15 | 6 | 2,4 | 4 | 35,8 | 46800 | 82600 | 0,02 | 0,85 |
| ZE4012-R-3EF | 40 | 12 | 62 | 97 | 36 | 25 | 15 | 6 | 2,4 | 4 | 35,8 | 36500 | 61800 | 0,02 | 0,86 |
| ZE4020-R-2EB | 40 | 20 | 62 | 88 | 31 | 25 | 15 | 6 | 2,4 | 4 | 35,8 | 23800 | 36400 | 0,03 | 0,88 |
| ZE4040-R-2GB | 40 | 40 | 72 | 118 | 46 | 25 | 29 | 6 | 2,4 | 4 | 35,8 | 23800 | 42900 | 0,07 | 1,8 |
| ZE5005-R-5EF | 50 | 5 | 68 | 69 | 24 | 20 | 15 | 6 | 2,4 | 4 | 47,5 | 24900 | 69800 | 0,02 | 0,72 |
| ZE5010-R-4EF | 50 | 10 | 72 | 100 | 37 | 25 | 17 | 6 | 2,4 | 4 | 45,8 | 52800 | 106800 | 0,02 | 1,04 |
| ZE5020-R-3EB | 50 | 20 | 72 | 114 | 44 | 25 | 17 | 6 | 2,4 | 4 | 45,8 | 40000 | 76200 | 0,03 | 1,1 |
| ZE6310-R-6EF | 63 | 10 | 85 | 120 | 44 | 32 | 17 | 6 | 3,5 | 6 | 58,8 | 84700 | 210800 | 0,04 | 1,73 |
| ZEN6320-R-4EP | 63 | 20 | 95 | 135 | 52 | 32 | 17 | 6 | 3,5 | 6 | 55,4 | 105000 | 250000 | 0,04 | 3,8 |
| ZE8010-R-6EF | 80 | 10 | 105 | 120 | 44 | 32 | 17 | 8 | 3,5 | 6 | 75,8 | 93400 | 269200 | 0,04 | 2,8 |
| ZE8020-R-4EP | 80 | 20 | 125 | 150 | 52 | 45 | 17 | 8 | 3,5 | 6 | 72,4 | 135000 | 322000 | 0,05 | 7,8 |
| ZEH8020-R-6EP | 78 | 20 | 130 | 182 | 68,5 | 45 | 19 | 8 | 4 | 8 | 68,2 | 200000 | 510000 | 0,05 | 11 |

Green lines = Rolled ballscrew spindles

2.6 Cylindrical Double Nuts ZD



| Article number | ds | P | D g7 | L | L1 | L2 | L4 | T +0,1 | B P9 | dk | Dyn. load C _{dyn} [N] | Stat. load C ₀ [N] | Mass [kg/pc.] |
|----------------|----|----|------|-----|----|----|----|--------|------|------|-----------------------------------|----------------------------------|------------------|
| ZD1605-R-3EF | 16 | 5 | 28 | 72 | 14 | 16 | 4 | 2,4 | 4 | 13,5 | 9600 | 12700 | 0,2 |
| ZD2005-R-4EF | 20 | 5 | 36 | 86 | 15 | 20 | 4 | 2,4 | 4 | 17,5 | 13900 | 21800 | 0,39 |
| ZD2505-R-4EF | 25 | 5 | 40 | 100 | 20 | 20 | 5 | 2,4 | 4 | 22,5 | 15600 | 27900 | 0,48 |
| ZD2510-R-3EF | 25 | 10 | 48 | 115 | 20 | 20 | 5 | 2,4 | 4 | 21 | 24100 | 36200 | 0,8 |
| ZD3205-R-5EF | 32 | 5 | 48 | 100 | 20 | 20 | 5 | 2,4 | 4 | 29,5 | 20700 | 43900 | 0,63 |
| ZD3210-R-3EF | 32 | 10 | 56 | 136 | 25 | 25 | 6 | 2,4 | 4 | 27,8 | 32000 | 47500 | 1,3 |
| ZD3220-R-2EB | 32 | 20 | 56 | 142 | 28 | 25 | 6 | 2,4 | 4 | 27,8 | 20300 | 26800 | 1,3 |
| ZD4005-R-5EF | 40 | 5 | 56 | 108 | 20 | 20 | 6 | 2,4 | 4 | 37,5 | 22500 | 54600 | 0,78 |
| ZD4010-R-4EF | 40 | 10 | 62 | 142 | 28 | 25 | 6 | 2,4 | 4 | 35,8 | 46800 | 82600 | 1,34 |
| ZD4020-R-2EB | 40 | 20 | 62 | 146 | 30 | 25 | 6 | 2,4 | 4 | 35,8 | 23800 | 36400 | 1,51 |
| ZD5005-R-5EF | 50 | 5 | 68 | 108 | 20 | 20 | 6 | 2,4 | 4 | 47,5 | 24900 | 69800 | 1,4 |
| ZD5010-R-4EF | 50 | 10 | 72 | 168 | 35 | 25 | 8 | 2,4 | 4 | 45,8 | 52800 | 106800 | 1,72 |
| ZD5020-R-3EB | 50 | 20 | 72 | 190 | 47 | 25 | 6 | 2,4 | 4 | 45,8 | 40000 | 76200 | 1,95 |
| ZD6310-R-6EF | 63 | 10 | 85 | 208 | 44 | 32 | 6 | 3,5 | 6 | 58,8 | 84700 | 210800 | 2,81 |
| ZDN6320-R-4EP | 63 | 20 | 95 | 260 | 65 | 32 | 6 | 3,5 | 6 | 55,4 | 105000 | 250000 | 7,3 |
| ZD8010-R-6EF | 80 | 10 | 105 | 208 | 44 | 32 | 6 | 3,5 | 6 | 75,8 | 93400 | 269200 | 5,5 |
| ZD8020-R-4EP | 80 | 20 | 125 | 285 | 55 | 32 | 8 | 4,1 | 8 | 72,4 | 135000 | 322000 | 14,9 |

- Preloaded double nuts for peeled ballscrews
- Nuts with dust wiper
- Precision ground ball grooves

Ballscrews

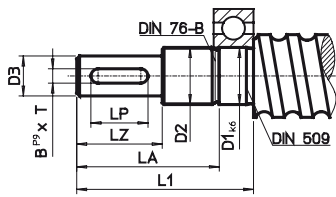
2.7 Shaft Ends and Bearing Configuration

Assembly types

For rigidity, critical speed and buckling load, the installation type and bearing of ballscrew shafts are deciding factors. These circumstances must be carefully considered when choosing the assembly type.

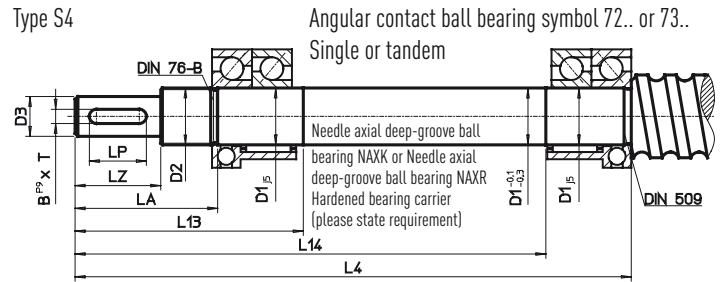
Standard shaft ends

Type S1

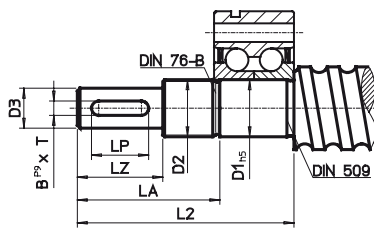


Deep-groove ball bearing 60.. or 62..

Type S4

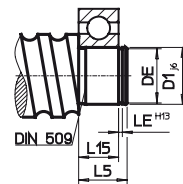


Type S2



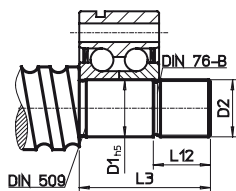
Bearing ZKLF.., ZKLN..

Type S5



Deep-groove ball bearing 62..

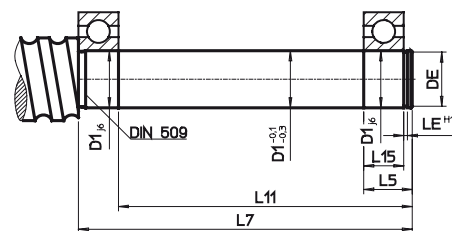
Type S3



Bearing ZKLF.., ZKLN..

Designation of a shaft end type S3 with the Snug fit diameter D1=10: S3-10

Type S7

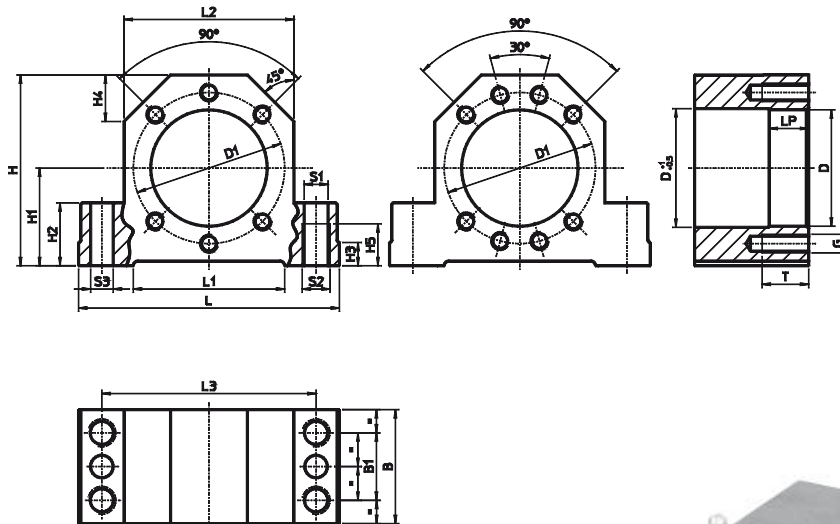


Naturally, we also machine shaft ends according to your drawings and individual requirements.

| Shaft end type | Ball screw nominal \emptyset | D1 | D2 | D3 | L1 | L2 | L3 | L4 | L5 | L7 | L11 | L12 | L13 | L14 | L15 | DE | LE | LA | LP | LZ | B x T |
|----------------|--------------------------------|----|----------|-------|-----|-----|----|-----|----|-----|-----|-----|-----|-----|-----|----------|------|-----|----|-----|-------|
| S_-06 | 12 | 6 | M6x0.5 | 5 j6 | 31 | 37 | - | - | 8 | - | - | - | - | - | 6 | 5.7 h10 | 0.8 | 26 | - | 16 | - |
| S_-10 | 16 | 10 | M10x0.75 | 8 j6 | 39 | 50 | 30 | 120 | 12 | 62 | 53 | 12 | 55 | 97 | 9 | 9.6 h10 | 1.1 | 32 | 14 | 20 | 2x1.2 |
| S_-12 | 20 | 12 | M12x1 | 10 j6 | 43 | 58 | 35 | 128 | 13 | 73 | 63 | 12 | 59 | 104 | 10 | 11.5 h11 | 1.1 | 35 | 16 | 23 | 3x1.8 |
| S_-17 | 25 | 17 | M17x1 | 14 j6 | 60 | 73 | 43 | 180 | 15 | 100 | 88 | 20 | 78 | 152 | 12 | 16.2 h11 | 1.1 | 50 | 20 | 30 | 5x3 |
| S_-20 | (25),32 | 20 | M20x1 | 14 j6 | 62 | 76 | 46 | 195 | 17 | 117 | 103 | 20 | 80 | 165 | 14 | 19 h12 | 1.3 | 50 | 20 | 30 | 5x3 |
| S_-25 | (32),40 | 25 | M25x1.5 | 20 j6 | 83 | 96 | 46 | 230 | 19 | 144 | 129 | 20 | 104 | 196 | 15 | 23.9 h12 | 1.3 | 71 | 36 | 50 | 6x3.5 |
| S_-30 | 40 | 30 | M30x1.5 | 25 j6 | 95 | 108 | 48 | 270 | 20 | 170 | 154 | 22 | 120 | 232 | 16 | 28.6 h12 | 1.6 | 82 | 45 | 60 | 8x4 |
| S_-40 | 50 | 40 | M40x1.5 | 32 k6 | 119 | 135 | 55 | 355 | 22 | 202 | 184 | 24 | 150 | 309 | 18 | 37.5 h12 | 1.85 | 104 | 56 | 80 | 10x5 |
| S_-50 | 63 | 50 | M50x1.5 | 40 k6 | 142 | 155 | 55 | 450 | 25 | 245 | 225 | 24 | 178 | 396 | 20 | 47 h12 | 2.15 | 124 | 70 | 100 | 12x5 |
| S_-60 | 80 | 60 | M60x2 | 50 k6 | 155 | 177 | 67 | 550 | 28 | 310 | 288 | 25 | 202 | 484 | 22 | 57 h12 | 2.15 | 135 | 70 | 110 | 14x5 |

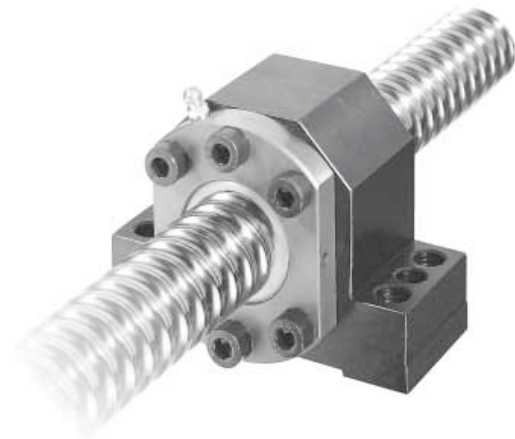
2.8 Accessories

2.8.1 Housing for flange nuts (DIN 69051 Part 5)



Nut housing for flange nuts to DIN 69051 Part 5

The nut housing is suitable for installation of flange nuts to DIN as on Page 34 and on Page 36. The stage height of the housing is matched to the fixed bearing (Page 42) and the floating bearing (Page 44). The housing unscrews from the top (S1) and bottom (S2) and is pinned using two taper pins or cylindrical pins. Two screws of property class 8.8 must be provided to secure the housing.

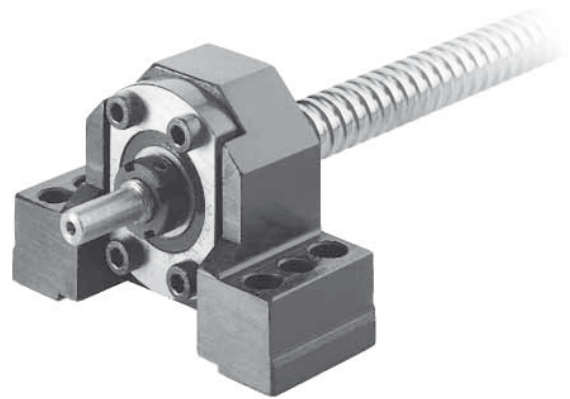
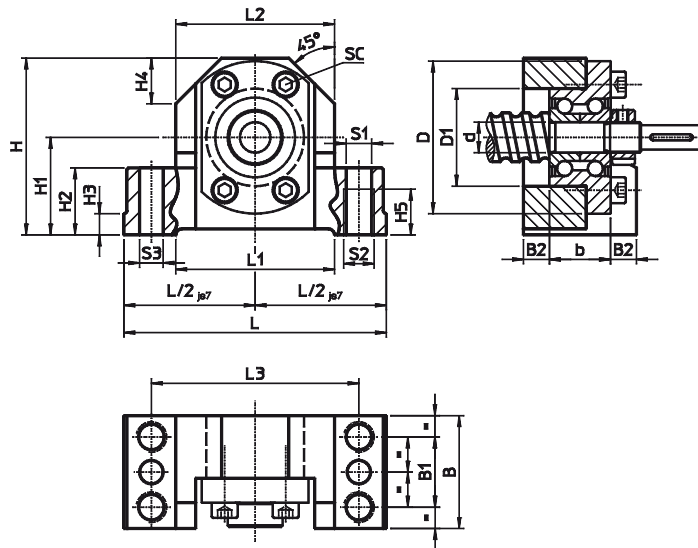


| Spindle | Article number | L | L1 | L2 | L3 | H | H1 JS7 | H2 | H3 | H4 | H5 | D H8 | D1 | LP | B | B1 | S1 H12 | S2 | S3 | Drill template | G | T |
|---------|----------------|-----|----|-----|-----|-----|-----------|----|----|----|----|---------|----|----|----|----|-----------|-----|-----|-------------------|-----|----|
| 16 x 05 | GFD-16 | 86 | 52 | 52 | 68 | 58 | 32 | 22 | 7 | 15 | 15 | 28 | 38 | 10 | 37 | 23 | 8.4 | M10 | 7.7 | 1 | M5 | 12 |
| 20 x 05 | GFD-20 | 94 | 52 | 60 | 77 | 64 | 34 | 22 | 7 | 17 | 15 | 36 | 47 | 16 | 42 | 25 | 8.4 | M10 | 7.7 | 1 | M6 | 15 |
| 25 x 05 | GFD-25 | 108 | 65 | 66 | 88 | 72 | 39 | 27 | 10 | 19 | 18 | 40 | 51 | 16 | 46 | 29 | 10.5 | M12 | 9.7 | 1 | M6 | 15 |
| 25 x 10 | GFD-25 | 108 | 65 | 66 | 88 | 72 | 39 | 27 | 10 | 19 | 18 | 40 | 51 | 16 | 46 | 29 | 10.5 | M12 | 9.7 | 1 | M6 | 15 |
| 32 x 05 | GFD-32 | 112 | 65 | 72 | 92 | 82 | 42 | 27 | 10 | 19 | 18 | 50 | 65 | 16 | 49 | 29 | 10.5 | M12 | 9.7 | 1 | M8 | 20 |
| 32 x 10 | GFD-32 | 112 | 65 | 72 | 92 | 82 | 42 | 27 | 10 | 19 | 18 | 50 | 65 | 16 | 49 | 29 | 10.5 | M12 | 9.7 | 1 | M8 | 20 |
| 32 x 20 | GFD-32 | 112 | 65 | 72 | 92 | 82 | 42 | 27 | 10 | 19 | 18 | 50 | 65 | 16 | 49 | 29 | 10.5 | M12 | 9.7 | 1 | M8 | 20 |
| 40 x 05 | GFD-40 | 126 | 82 | 84 | 105 | 97 | 50 | 32 | 13 | 23 | 21 | 63 | 78 | 16 | 53 | 32 | 12.6 | M14 | 9.7 | 2 | M8 | 20 |
| 40 x 10 | GFD-40 | 126 | 82 | 84 | 105 | 97 | 50 | 32 | 13 | 23 | 21 | 63 | 78 | 16 | 53 | 32 | 12.6 | M14 | 9.7 | 2 | M8 | 20 |
| 40 x 20 | GFD-40 | 126 | 82 | 84 | 105 | 97 | 50 | 32 | 13 | 23 | 21 | 63 | 78 | 16 | 53 | 32 | 12.6 | M14 | 9.7 | 2 | M8 | 20 |
| 50 x 05 | GFD-50 | 146 | 82 | 104 | 125 | 115 | 60 | 32 | 13 | 30 | 21 | 75 | 93 | 16 | 59 | 34 | 12.6 | M14 | 9.7 | 2 | M10 | 25 |
| 50 x 10 | GFD-50 | 146 | 82 | 104 | 125 | 115 | 60 | 32 | 13 | 30 | 21 | 75 | 93 | 16 | 59 | 34 | 12.6 | M14 | 9.7 | 2 | M10 | 25 |
| 50 x 20 | GFD-50 | 146 | 82 | 104 | 125 | 115 | 60 | 32 | 13 | 30 | 21 | 75 | 93 | 16 | 59 | 34 | 12.6 | M14 | 9.7 | 2 | M10 | 2 |

Ballscrews

Accessories

2.8.2 Radial fixed bearings for ballscrews



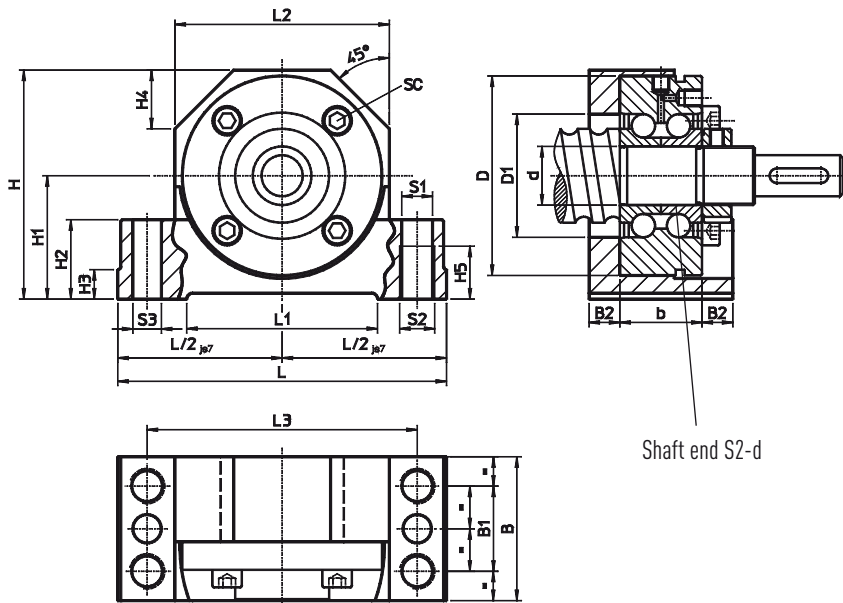
Pillow block as a fixed bearing

The pedestal bearing consists of:

- Steel pillow block housing
- Axial angular contact ball bearing ZKL... with fixing screws 10.9
- Locknut

The stage height of the fixed bearing is matched to the supported bearing (Page 44) and the nut housing (Page 41). The pillow block can be fixed from the top (S1) and bottom (S2). The stop edges on both sides facilitate alignment of the unit. The fixed bearing is pinned using two taper pins or cylindrical pins. The correct end machining for the fixed bearing is type S2-xx Page 40.

| Spindle | Article no. | L | L1 | L2 | L3 | H | H1 JS7 | H2 | H3 | H4 | H5 | d | D | D1 | b |
|---------|-------------|-----|----|-----|-----|-----|-----------|----|----|----|----|----|-----|----|----|
| 12 x 4 | SFA - 06 | 62 | 34 | 38 | 50 | 41 | 22 | 13 | 5 | 11 | 9 | 6 | 30 | 19 | 12 |
| 16 x 5 | SFA - 10 | 86 | 52 | 52 | 68 | 58 | 32 | 22 | 7 | 15 | 15 | 10 | 50 | 32 | 20 |
| 20 x 5 | SFA - 12 | 94 | 52 | 60 | 77 | 64 | 34 | 22 | 7 | 17 | 15 | 12 | 55 | 32 | 25 |
| 25 x 5 | SFA - 17 | 108 | 65 | 66 | 88 | 72 | 39 | 27 | 10 | 19 | 18 | 17 | 62 | 36 | 25 |
| 25 x 10 | SFA - 17 | 108 | 65 | 66 | 88 | 72 | 39 | 27 | 10 | 19 | 18 | 17 | 62 | 36 | 25 |
| 32 x 5 | SFA - 20 | 112 | 65 | 73 | 92 | 78 | 42 | 27 | 10 | 20 | 18 | 20 | 68 | 42 | 28 |
| 32 x 10 | SFA - 20 | 112 | 65 | 73 | 92 | 78 | 42 | 27 | 10 | 20 | 18 | 20 | 68 | 42 | 28 |
| 32 x 20 | SFA - 20 | 112 | 65 | 73 | 92 | 78 | 42 | 27 | 10 | 20 | 18 | 20 | 68 | 42 | 28 |
| 40 x 5 | SFA - 30 | 126 | 82 | 84 | 105 | 92 | 50 | 32 | 13 | 23 | 21 | 30 | 80 | 52 | 28 |
| 40 x 10 | SFA - 30 | 126 | 82 | 84 | 105 | 92 | 50 | 32 | 13 | 23 | 21 | 30 | 80 | 52 | 28 |
| 40 x 20 | SFA - 30 | 126 | 82 | 84 | 105 | 92 | 50 | 32 | 13 | 23 | 21 | 30 | 80 | 52 | 28 |
| 50 x 5 | SFA - 40 | 146 | 82 | 104 | 125 | 112 | 60 | 32 | 13 | 30 | 21 | 40 | 100 | 66 | 34 |
| 50 x 10 | SFA - 40 | 146 | 82 | 104 | 125 | 112 | 60 | 32 | 13 | 30 | 21 | 40 | 100 | 66 | 34 |
| 50 x 20 | SFA - 40 | 146 | 82 | 104 | 125 | 112 | 60 | 32 | 13 | 30 | 21 | 40 | 100 | 66 | 34 |

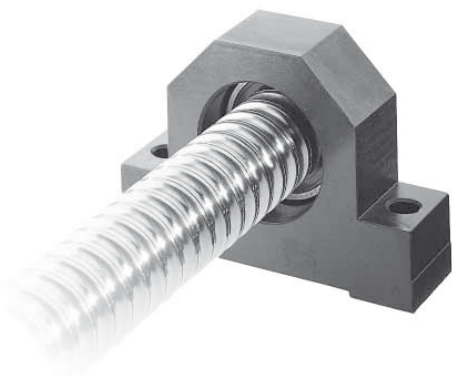


| Spindle | Article no. | B | B1 | B2 | S1 H12 | S2 | S3 | Axial angular contact ball bearing | Locknut | SC DIN 912 10.9 |
|---------|-------------|----|----|------|-----------|-----|-----|------------------------------------|---------|-----------------------|
| 12 x 4 | SFA - 06 | 32 | 16 | 10 | 5.3 | M6 | 3.7 | ZKLFA0630.2Z | HIR 06 | 4 x M3 x 12 |
| 16 x 5 | SFA - 10 | 37 | 23 | 8.5 | 8.4 | M10 | 7.7 | ZKLFA1050.2RS | HIR 10 | 4 x M5 x 20 |
| 20 x 5 | SFA - 12 | 42 | 25 | 8.5 | 8.4 | M10 | 7.7 | ZKLF1255.2RSPE | HIR 12 | 3 x M6 x 35 |
| 25 x 5 | SFA - 17 | 46 | 29 | 10.5 | 10.5 | M12 | 9.7 | ZKLF1762.2RSPE | HIR 17 | 3 x M6 x 35 |
| 25 x 10 | SFA - 17 | 46 | 29 | 10.5 | 10.5 | M12 | 9.7 | ZKLF1762.2RSPE | HIR 17 | 3 x M6 x 35 |
| 32 x 5 | SFA - 20 | 49 | 29 | 10.5 | 10.5 | M12 | 9.7 | ZKLF2068.2RSPE | HIR20x1 | 4 x M6 x 40 |
| 32 x 10 | SFA - 20 | 49 | 29 | 10.5 | 10.5 | M12 | 9.7 | ZKLF2068.2RSPE | HIR20x1 | 4 x M6 x 40 |
| 32 x 20 | SFA - 20 | 49 | 29 | 10.5 | 10.5 | M12 | 9.7 | ZKLF2068.2RSPE | HIR20x1 | 4 x M6 x 40 |
| 40 x 5 | SFA - 30 | 53 | 32 | 12.5 | 12.6 | M14 | 9.7 | ZKLF3080.2RSPE | HIR 30 | 6 x M6 x 40 |
| 40 x 10 | SFA - 30 | 53 | 32 | 12.5 | 12.6 | M14 | 9.7 | ZKLF3080.2RSPE | HIR 30 | 6 x M6 x 40 |
| 40 x 20 | SFA - 30 | 53 | 32 | 12.5 | 12.6 | M14 | 9.7 | ZKLF3080.2RSPE | HIR 30 | 6 x M6 x 40 |
| 50 x 5 | SFA - 40 | 59 | 34 | 12.5 | 12.6 | M14 | 9.7 | ZKLF40100.2RSPE | HIR 40 | 4 x M8 x 50 |
| 50 x 10 | SFA - 40 | 59 | 34 | 12.5 | 12.6 | M14 | 9.7 | ZKLF40100.2RSPE | HIR 40 | 4 x M8 x 50 |
| 50 x 20 | SFA - 40 | 59 | 34 | 12.5 | 12.6 | M14 | 9.7 | ZKLF40100.2RSPE | HIR 40 | 4 x M8 x 5 |

Ballscrews

Accessories

2.8.3 Supported bearing for ballscrews



Pillow block as a supported bearing with deep-groove ball bearing DIN 625

The floating bearing consists of:

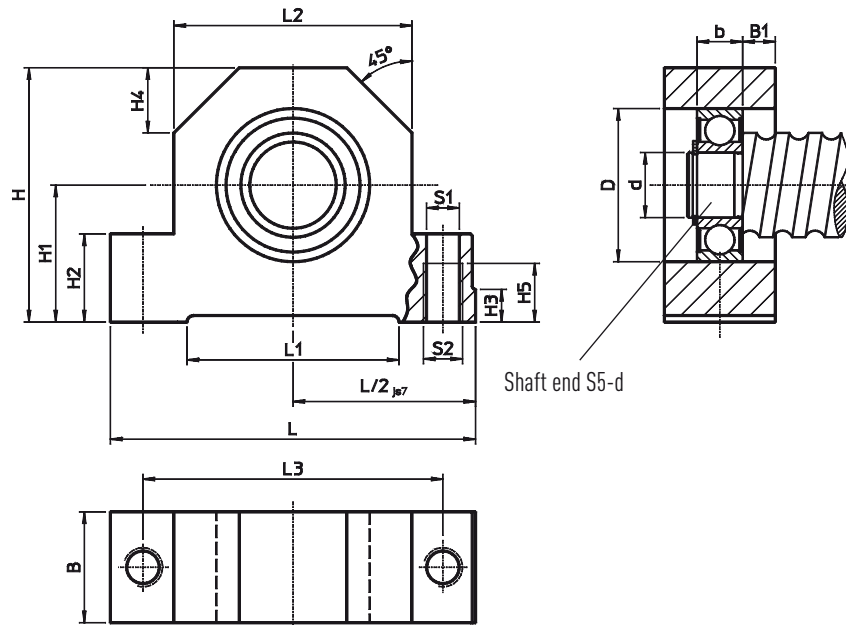
- Steel pillow block housing
- Deep-groove ball bearing DIN 625, 62...2RS
- Circlip DIN 471



The stage height of the supported bearing is adjusted to the fixed bearing (Page 42) and the nut housing (Page 41). The pillow block can be fixed from the top (S1) and bottom (S2). The stop edge facilitates alignment of the unit.

The correct end machining for the supported bearing is type S5-xx, Page 40.

| Spindle | Article no. | L | L1 | L2 | L3 | H | H1 JS7 | H2 | H3 | H4 | H5 | b |
|---------|-------------|-----|----|-----|-----|-----|-----------|----|----|----|----|----|
| 12 x 4 | SLA - 06 | 62 | 34 | 38 | 50 | 41 | 22 | 13 | 5 | 11 | 9 | 6 |
| 16 x 5 | SLA - 10 | 86 | 52 | 52 | 68 | 58 | 32 | 22 | 7 | 15 | 15 | 9 |
| 20 x 5 | SLA - 12 | 94 | 52 | 60 | 77 | 64 | 34 | 22 | 7 | 17 | 15 | 10 |
| 25 x 5 | SLA - 17 | 108 | 65 | 66 | 88 | 72 | 39 | 27 | 10 | 19 | 18 | 12 |
| 25 x 10 | SLA - 17 | 108 | 65 | 66 | 88 | 72 | 39 | 27 | 10 | 19 | 18 | 12 |
| 32 x 5 | SLA - 20 | 112 | 65 | 72 | 92 | 78 | 42 | 27 | 10 | 20 | 18 | 14 |
| 32 x 10 | SLA - 20 | 112 | 65 | 72 | 92 | 78 | 42 | 27 | 10 | 20 | 18 | 14 |
| 32 x 20 | SLA - 20 | 112 | 65 | 72 | 92 | 78 | 42 | 27 | 10 | 20 | 18 | 14 |
| 40 x 5 | SLA - 30 | 126 | 82 | 84 | 105 | 92 | 50 | 32 | 13 | 23 | 21 | 16 |
| 40 x 10 | SLA - 30 | 126 | 82 | 84 | 105 | 92 | 50 | 32 | 13 | 23 | 21 | 16 |
| 40 x 20 | SLA - 30 | 126 | 82 | 84 | 105 | 92 | 50 | 32 | 13 | 23 | 21 | 16 |
| 50 x 5 | SLA - 40 | 146 | 82 | 104 | 125 | 112 | 60 | 32 | 13 | 30 | 21 | 18 |
| 50 x 10 | SLA - 40 | 146 | 82 | 104 | 125 | 112 | 60 | 32 | 13 | 30 | 21 | 18 |
| 50 x 20 | SLA - 40 | 146 | 82 | 104 | 125 | 112 | 60 | 32 | 13 | 30 | 21 | 18 |



| Spindle | Article no. | B | B1 | S1 H12 | S2 | d | D J6 | Circlip DIN 471 | Deep-groove ball bearing DIN 623 |
|---------|-------------|----|-----|-----------|-----|----|---------|--------------------|-------------------------------------|
| 12 x 4 | SLA - 06 | 15 | 4.5 | 5.3 | M6 | 6 | 19 | 6 x 0.7 | 626.2RS |
| 16 x 5 | SLA - 10 | 24 | 7.5 | 8.4 | M10 | 10 | 30 | 10 x 1 | 6200.2RS |
| 20 x 5 | SLA - 12 | 26 | 8 | 8.4 | M10 | 12 | 32 | 12 x 1 | 6201.2RS |
| 25 x 5 | SLA - 17 | 28 | 8 | 10.5 | M12 | 17 | 40 | 17 x 1 | 6203.2RS |
| 25 x 10 | SLA - 17 | 28 | 8 | 10.5 | M12 | 17 | 40 | 17 x 1 | 6203.2RS |
| 32 x 5 | SLA - 20 | 34 | 10 | 10.5 | M12 | 20 | 47 | 20 x 1.2 | 6204.2RS |
| 32 x 10 | SLA - 20 | 34 | 10 | 10.5 | M12 | 20 | 47 | 20 x 1.2 | 6204.2RS |
| 32 x 20 | SLA - 20 | 34 | 10 | 10.5 | M12 | 20 | 47 | 20 x 1.2 | 6204.2RS |
| 40 x 5 | SLA - 30 | 38 | 11 | 12.6 | M14 | 30 | 62 | 30 x 1.5 | 6206.2RS |
| 40 x 10 | SLA - 30 | 38 | 11 | 12.6 | M14 | 30 | 62 | 30 x 1.5 | 6206.2RS |
| 40 x 20 | SLA - 30 | 38 | 11 | 12.6 | M14 | 30 | 62 | 30 x 1.5 | 6206.2RS |
| 50 x 5 | SLA - 40 | 44 | 13 | 12.6 | M14 | 40 | 80 | 40 x 1.75 | 6208.2RS |
| 50 x 10 | SLA - 40 | 44 | 13 | 12.6 | M14 | 40 | 80 | 40 x 1.75 | 6208.2RS |
| 50 x 20 | SLA - 40 | 44 | 13 | 12.6 | M14 | 40 | 80 | 40 x 1.75 | 6208.2R |

Positioning Systems



Linear stages with ballscrew (KK stages)

HIWIN linear stages (KK stages) are compact positioning stages. The advance is generated by a ballscrew, which is mounted in a drive flange ready to use by the motor. Movement is guided by a linear guideway. Various equipment versions and sizes adapt the linear stages to very different tasks and industries.



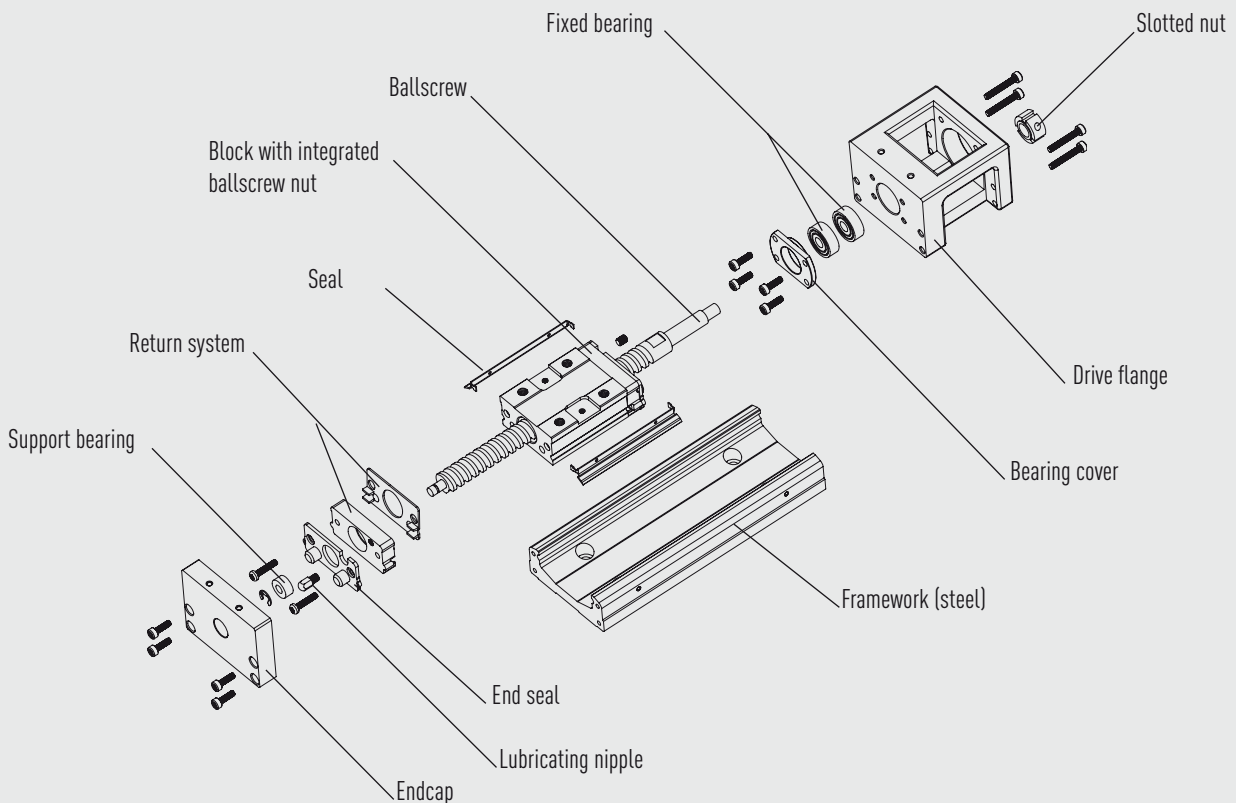
Positioning Systems

Linear Module

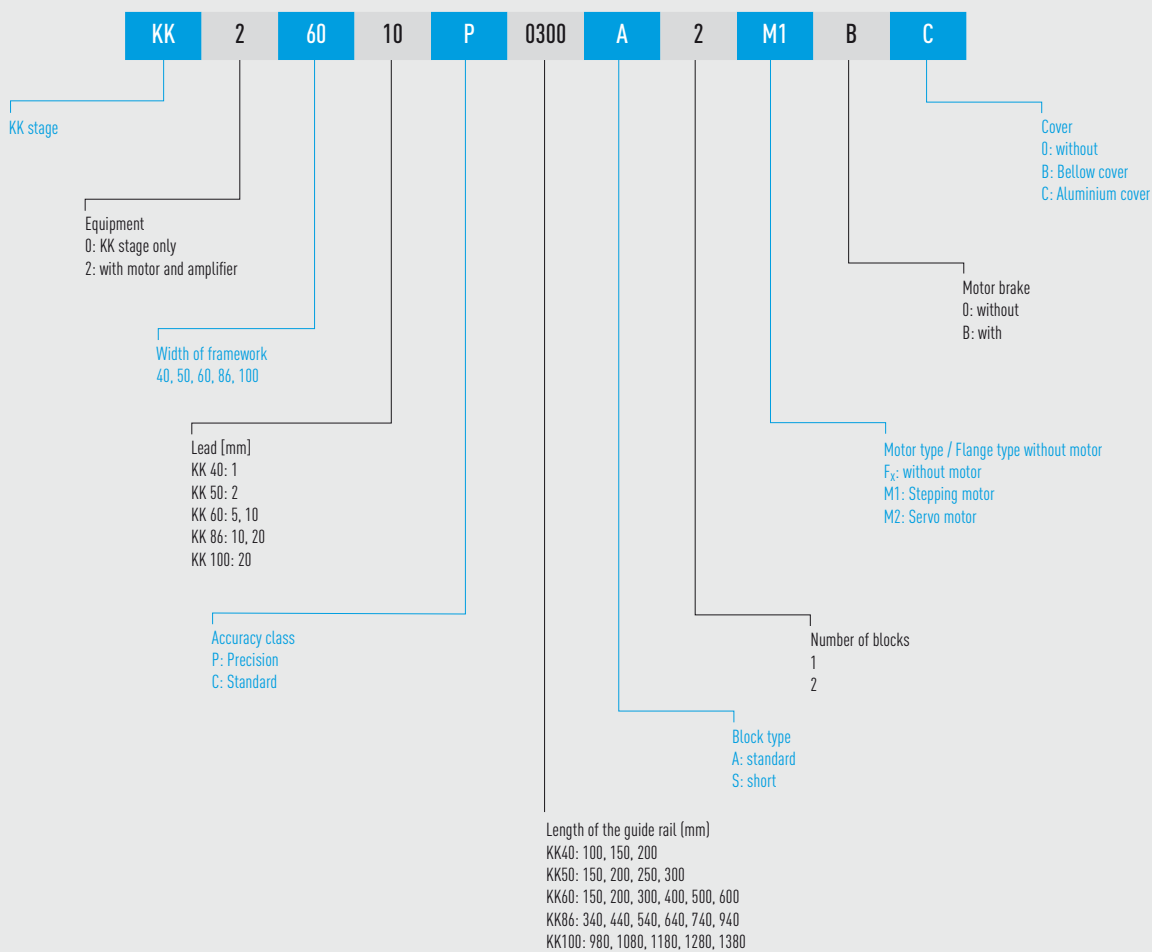
3.1 Product Overview

- Module for positioning tasks – KK linear stages with ballscrews from HIWIN can be used universally and are suitable as ready-to-mount stages for many different positioning tasks
- Lean and light – thanks to their compact and lean construction as well as light mass, KK stages can also be integrated into applications with little space.
- Adaptable and sturdy – KK stages can be equipped with a bellow cover or aluminum cover depending on the ambient requirements.
- Framework and block made of steel with surface corrosion protection

3.1.1 Exploded View of the Linear Stages



3.2 Model Numbers for Linear Stages



Positioning Systems

Linear Module

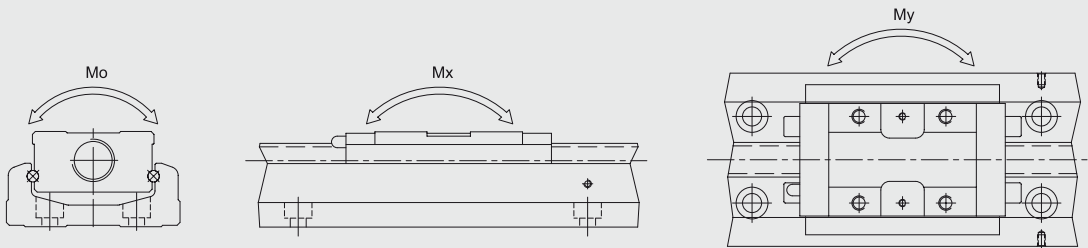
3.3 KK Linear Stages – Technical Data

3.3.1 Maximum Speeds of the KK Modules

| Model | Ballscrew Lead [mm] | Rail length [mm] | Speed [mm/s] Precision | Standard |
|-------|---------------------|------------------|---------------------------|----------|
| KK40 | 01 | 100 | 190 | — |
| | 01 | 150 | 190 | — |
| | 01 | 200 | 190 | — |
| KK50 | 02 | 150 | 270 | — |
| | 02 | 200 | 270 | — |
| | 02 | 250 | 270 | — |
| | 02 | 300 | 270 | — |
| KK60 | 05 | 150 | 550 | 390 |
| | 05 | 200 | 550 | 390 |
| | 05 | 300 | 550 | 390 |
| | 05 | 400 | 550 | 390 |
| | 05 | 500 | 550 | 390 |
| | 05 | 600 | 340 | 340 |
| KK60 | 10 | 150 | 1100 | 790 |
| | 10 | 200 | 1100 | 790 |
| | 10 | 300 | 1100 | 790 |
| | 10 | 400 | 1100 | 790 |
| | 10 | 500 | 1100 | 790 |
| | 10 | 600 | 670 | 670 |
| KK86 | 10 | 340 | 740 | 520 |
| | 10 | 440 | 740 | 520 |
| | 10 | 540 | 740 | 520 |
| | 10 | 640 | 740 | 520 |
| | 10 | 740 | 740 | 520 |
| | 10 | 940 | — | 430 |
| KK86 | 20 | 340 | 1480 | 1050 |
| | 20 | 440 | 1480 | 1050 |
| | 20 | 540 | 1480 | 1050 |
| | 20 | 640 | 1480 | 1050 |
| | 20 | 740 | 1480 | 1050 |
| | 20 | 940 | — | 870 |
| KK100 | 20 | 980 | 1120 | — |
| | 20 | 1080 | 980 | — |
| | 20 | 1180 | 750 | — |
| | 20 | 1280 | 490 | — |
| | 20 | 1380 | 425 | — |

3.3.2 Load Capacities

Display of Static Moments Affecting the KK Stages



Load Capacity of KK Stages

| | | KK4001 | KK5002 | KK6005 | KK6010 | | KK8610 | | KK8620 | | KK10020 | | |
|---|-------------------|--------|--------|--------|--------|-------|--------|-------|--------|-------|---------|-------|-------|
| | | P* | P* | P* | C** | P* | C** | P* | C** | P* | C** | P* | C** |
| Ballscrew | | | | | | | | | | | | | |
| Nominal diameter [mm] | | 8 | 8 | 12 | 12 | 12 | 12 | 15 | 15 | 15 | 15 | 20 | 20 |
| Lead [mm] | | 1 | 2 | 5 | 5 | 10 | 10 | 10 | 10 | 20 | 20 | 20 | 20 |
| Dynamic load [N] | | 735 | 2136 | 3744 | 3377 | 2410 | 2107 | 7144 | 6429 | 4645 | 4175 | 7046 | 4782 |
| Static load [N] | | 1538 | 3489 | 6243 | 5625 | 3743 | 3234 | 12642 | 11387 | 7655 | 6889 | 12544 | 9163 |
| Linear guideway | | | | | | | | | | | | | |
| Dynamic load [N] | Standard block A | 3920 | 8007 | 13230 | 13230 | 13230 | 13230 | 31458 | 31458 | 31458 | 31458 | 39200 | 39200 |
| | Short block S | - | - | 7173 | 7173 | 7173 | 7173 | - | - | - | - | - | - |
| Static load [N] | Standard block A | 6468 | 12916 | 21462 | 21462 | 21462 | 21462 | 50764 | 50764 | 50764 | 50764 | 63406 | 63406 |
| | Short block S | - | - | 11574 | 11574 | 11574 | 11574 | - | - | - | - | - | - |
| Permissible static moment Mx Pitching [N-m] | Standard block A1 | 33 | 116 | 152 | 152 | 152 | 152 | 622 | 622 | 622 | 622 | 960 | 960 |
| | Standard block A2 | 182 | 278 | 348 | 348 | 348 | 348 | 3050 | 3050 | 3050 | 3050 | 4763 | 4763 |
| | Short block S1 | - | - | 72 | 72 | 72 | 72 | - | - | - | - | - | - |
| | Short block S2 | - | - | 205 | 205 | 205 | 205 | - | - | - | - | - | - |
| Permissible static moment My Yawing [N-m] | Standard block A1 | 33 | 116 | 152 | 152 | 152 | 152 | 622 | 622 | 622 | 622 | 960 | 960 |
| | Standard block A2 | 182 | 278 | 348 | 348 | 348 | 348 | 3050 | 3050 | 3050 | 3050 | 4763 | 4763 |
| | Short block S1 | - | - | 72 | 72 | 72 | 72 | - | - | - | - | - | - |
| | Short block S2 | - | - | 205 | 205 | 205 | 205 | - | - | - | - | - | - |
| Permissible static moment Mo Rolling [N-m] | Standard block A1 | 81 | 222 | 419 | 419 | 419 | 419 | 1507 | 1507 | 1507 | 1507 | 2205 | 2205 |
| | Standard block A2 | 162 | 444 | 838 | 838 | 838 | 838 | 3014 | 3014 | 3014 | 3014 | 4410 | 4410 |
| | Short block S1 | - | - | 241 | 241 | 241 | 241 | - | - | - | - | - | - |
| | Short block S2 | - | - | 482 | 482 | 482 | 482 | - | - | - | - | - | - |

* P = Precision KK stage

** C = Standard KK stage

Positioning Systems

Linear Module

3.3.3 Accuracies

Accuracies for KK Stages

| Type | Rail length [mm] | Repeatability [mm] | | Accuracy [mm] | | Guideway parallelism [mm] | | Starting torque [Nmm] | |
|-------|------------------|--------------------|-------|---------------|-----|---------------------------|-----|-----------------------|-----|
| | | P* | C** | P* | C** | P* | C** | P* | C** |
| KK40 | 100 | ±0,003 | - | 0,020 | - | 0,010 | - | 12 | - |
| | 150 | ±0,003 | - | 0,020 | - | 0,010 | - | 12 | - |
| | 200 | ±0,003 | - | 0,020 | - | 0,010 | - | 12 | - |
| KK50 | 150 | ±0,003 | - | 0,020 | - | 0,010 | - | 40 | - |
| | 200 | ±0,003 | - | 0,020 | - | 0,010 | - | 40 | - |
| | 250 | ±0,003 | - | 0,020 | - | 0,010 | - | 40 | - |
| | 300 | ±0,003 | - | 0,020 | - | 0,010 | - | 40 | - |
| KK60 | 150 | ±0,003 | ±0,01 | 0,020 | - | 0,010 | - | 150 | 70 |
| | 200 | ±0,003 | ±0,01 | 0,020 | - | 0,010 | - | 150 | 70 |
| | 300 | ±0,003 | ±0,01 | 0,020 | - | 0,010 | - | 150 | 70 |
| | 400 | ±0,003 | ±0,01 | 0,020 | - | 0,010 | - | 150 | 70 |
| | 500 | ±0,003 | ±0,01 | 0,020 | - | 0,010 | - | 150 | 70 |
| | 600 | ±0,003 | ±0,01 | 0,020 | - | 0,010 | - | 150 | 70 |
| KK86 | 340 | ±0,003 | ±0,01 | 0,025 | - | 0,015 | - | 150 | 100 |
| | 440 | ±0,003 | ±0,01 | 0,025 | - | 0,015 | - | 150 | 100 |
| | 540 | ±0,003 | ±0,01 | 0,025 | - | 0,015 | - | 150 | 100 |
| | 640 | ±0,003 | ±0,01 | 0,025 | - | 0,015 | - | 150 | 100 |
| | 740 | ±0,003 | ±0,01 | 0,030 | - | 0,020 | - | 170 | 100 |
| | 940 | ±0,003 | ±0,01 | 0,040 | - | 0,030 | - | 250 | 100 |
| KK100 | 980 | ±0,005 | ±0,01 | 0,035 | - | 0,025 | - | 170 | 120 |
| | 1080 | ±0,005 | ±0,01 | 0,035 | - | 0,025 | - | 170 | 120 |
| | 1180 | ±0,005 | ±0,01 | 0,040 | - | 0,030 | - | 200 | 120 |
| | 1280 | ±0,005 | ±0,01 | 0,045 | - | 0,030 | - | 230 | 150 |
| | 1380 | ±0,005 | ±0,01 | 0,050 | - | 0,040 | - | 250 | 150 |

* P = Precision KK stage

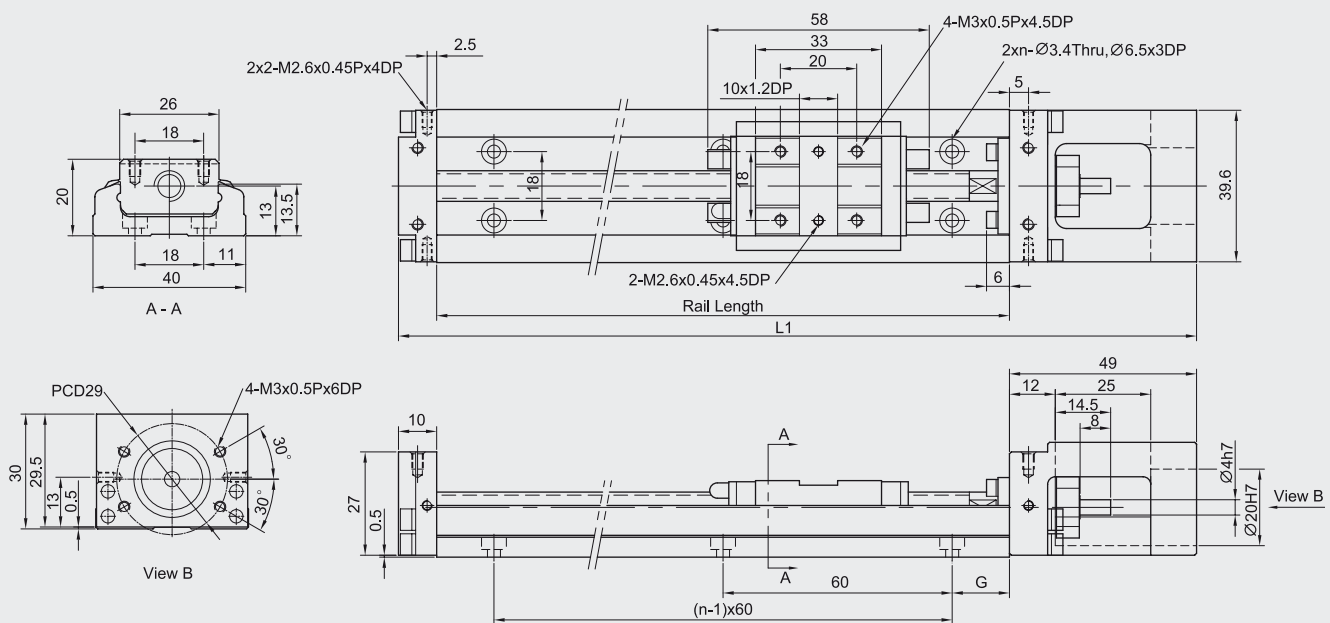
** C = Standard KK stage

Reference Side

When observed from the motor flange, the reference side is located on the left side of the linear module

3.3.4 Dimensions of KK40 Stages

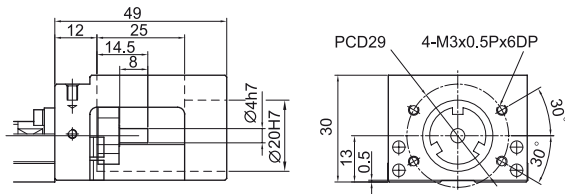
KK40 Stages without Cover



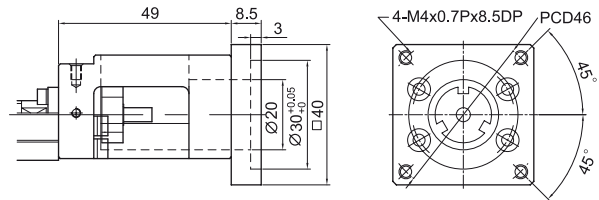
Dimensions and Mass of the KK40 Stages without Cover

| | | Rail length | | |
|----------------------|----------|-------------|------|------|
| | | 100 | 150 | 200 |
| Total length L1 [mm] | | 159 | 209 | 259 |
| Max. stroke [mm] | Block A1 | 36 | 86 | 136 |
| | Block A2 | - | 34 | 84 |
| G [mm] | | 20 | 15 | 40 |
| n | | 2 | 3 | 3 |
| Mass [kg] | Block A1 | 0,48 | 0,6 | 0,72 |
| | Block A2 | - | 0,67 | 0,79 |

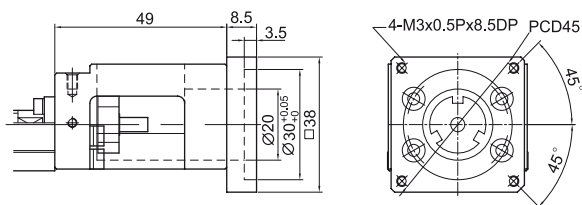
KK40 Stages Adapter Flange F0



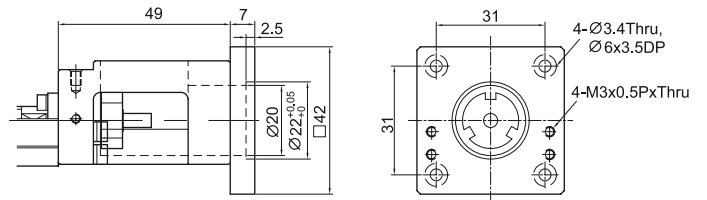
KK40 Stages Adapter Flange F1



KK40 Stages Adapter Flange F2



KK40 Stages Adapter Flange F3

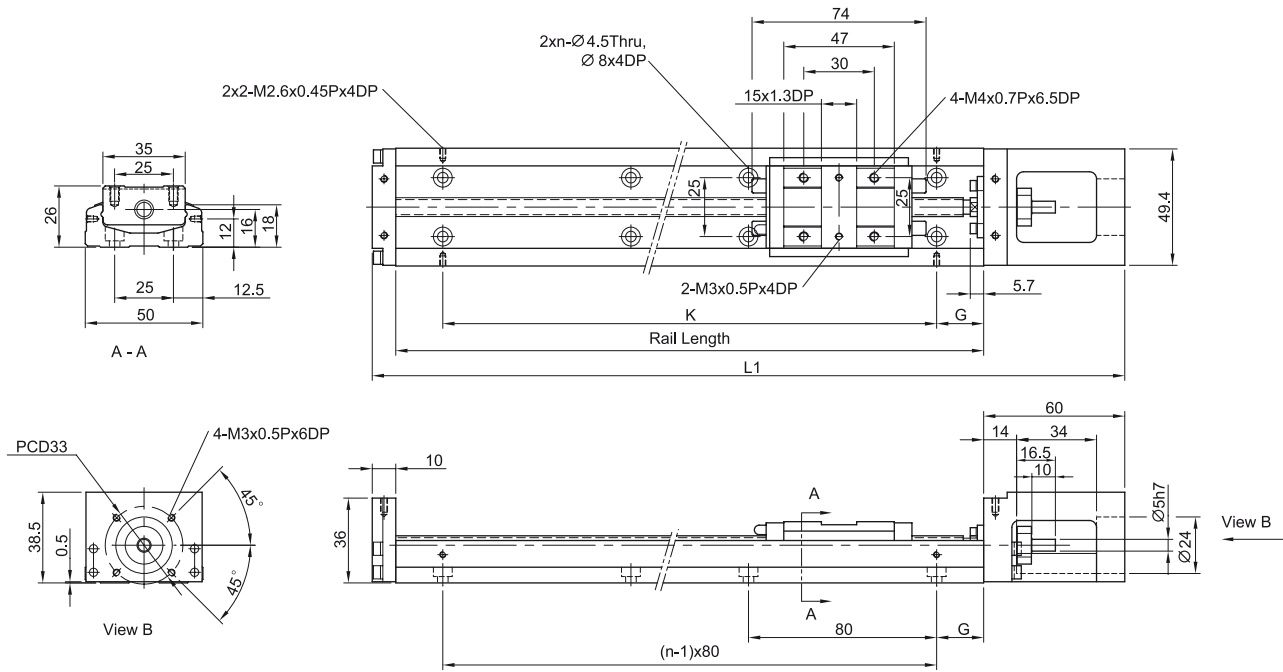


Positioning Systems

Linear Module

3.3.5 Dimensions of KK Stages KK50

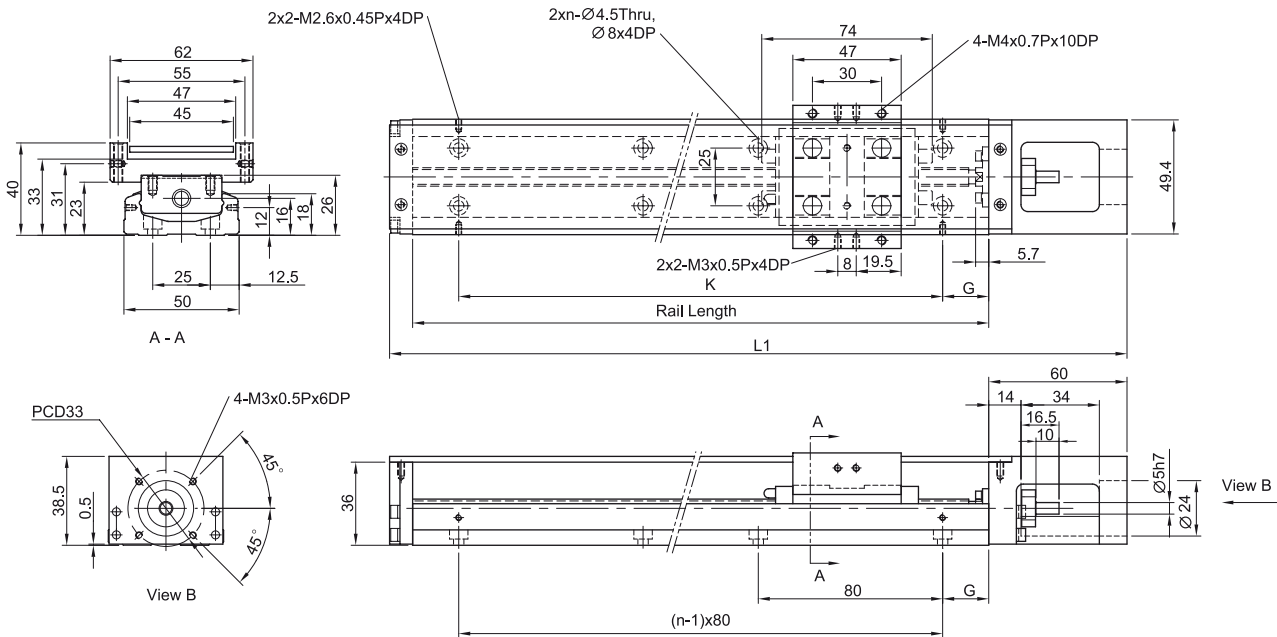
KK50 Stage without Cover



Dimensions and Mass of the KK50 Stages without Cover

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|---|-----------|----------|
| | | Block A1 | Block A2 | | | | Block A1 | Block A2 |
| 150 | 220 | 70 | - | 35 | 80 | 2 | 1 | - |
| 200 | 270 | 120 | 55 | 20 | 160 | 3 | 1,2 | 1,4 |
| 250 | 320 | 170 | 105 | 45 | 160 | 3 | 1,4 | 1,6 |
| 300 | 370 | 220 | 155 | 30 | 240 | 4 | 1,6 | 1,8 |

KK50 Stages with Aluminium Cover



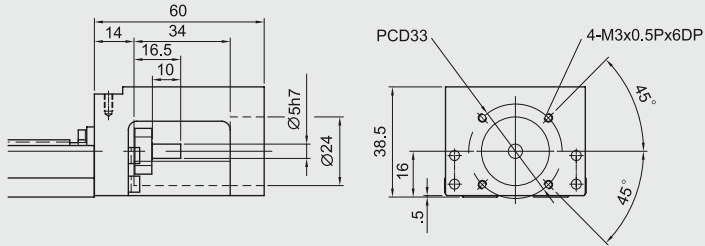
Dimensions and Mass of the KK50 Stages with Aluminium Cover

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|---|-----------|----------|
| | | Block A1 | Block A2 | | | | Block A1 | Block A2 |
| 150 | 220 | 70 | - | 35 | 80 | 2 | 1,1 | - |
| 200 | 270 | 120 | 55 | 20 | 160 | 3 | 1,3 | 1,5 |
| 250 | 320 | 170 | 105 | 45 | 160 | 3 | 1,6 | 1,8 |
| 300 | 370 | 220 | 155 | 30 | 240 | 4 | 1,8 | 2,0 |

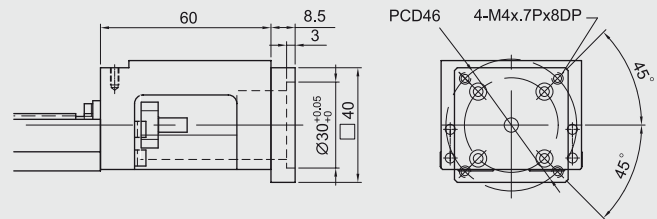
Positioning Systems

Linear Module

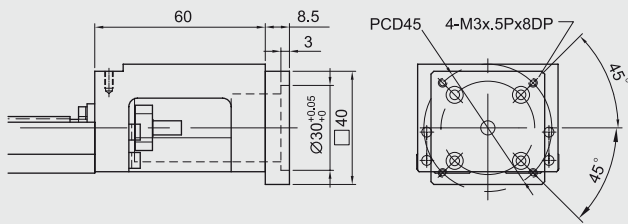
KK50 Stages Adapter Flange F0



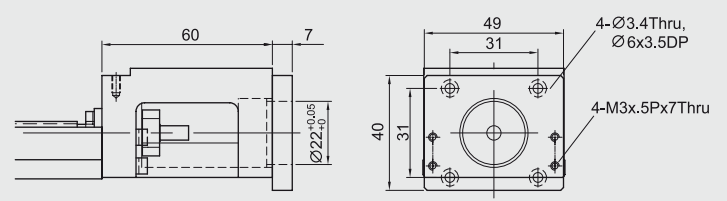
KK50 Stages Adapter Flange F1



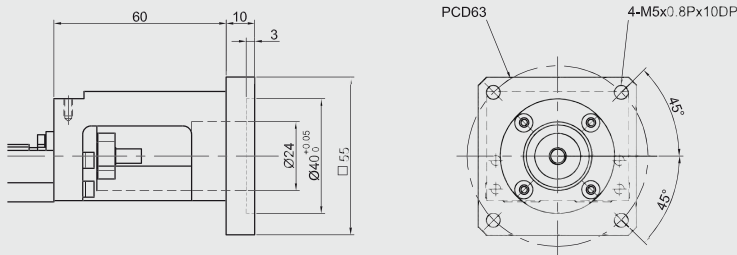
KK50 Stages Adapter Flange F2



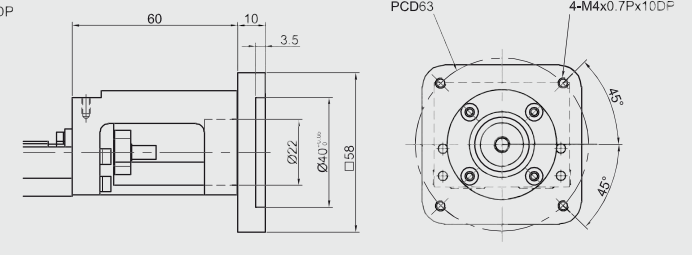
KK50 Stages Adapter Flange F3



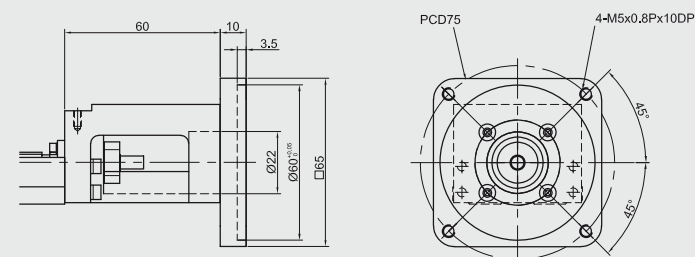
KK50 Stages Adapter Flange F4



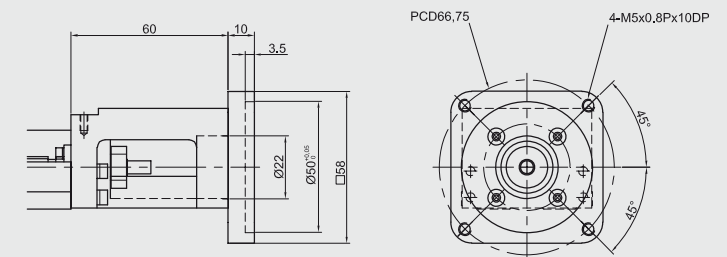
KK50 Stages Adapter Flange F5



KK50 Stages Adapter Flange F6

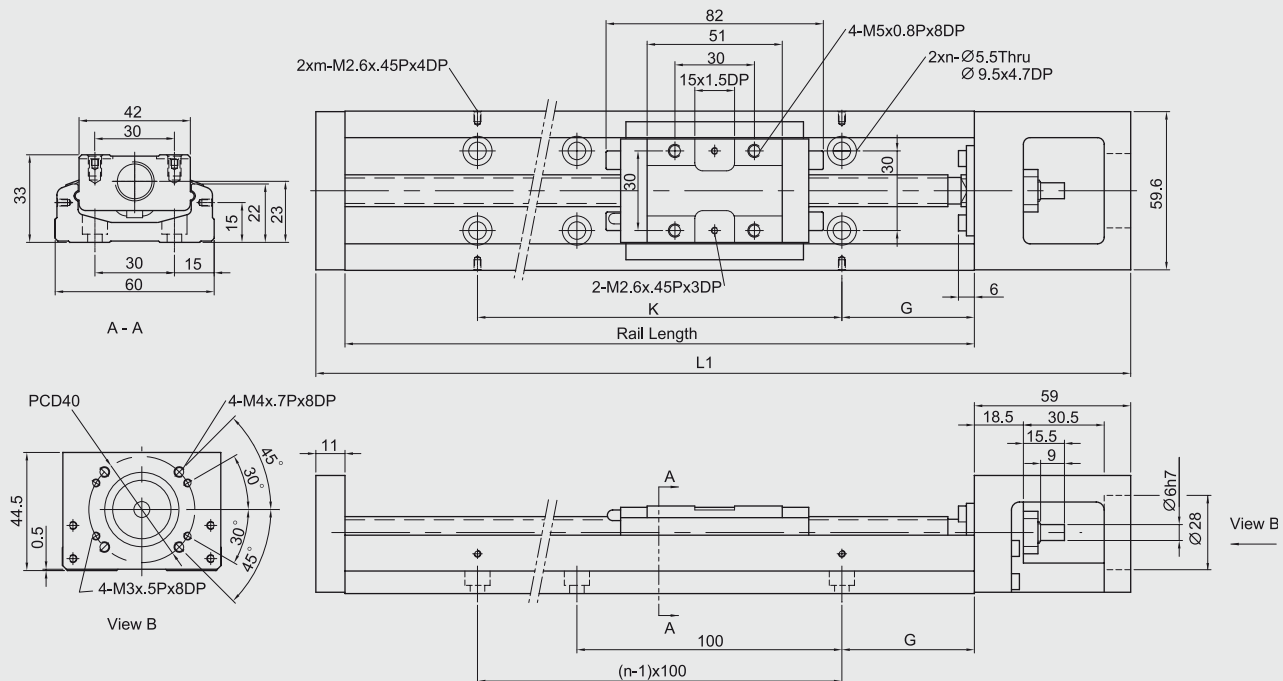


KK50 Stages Adapter Flange F7



3.3.6 Dimensions of KK Stages KK60

KK60 Stages without Cover, Standard Block



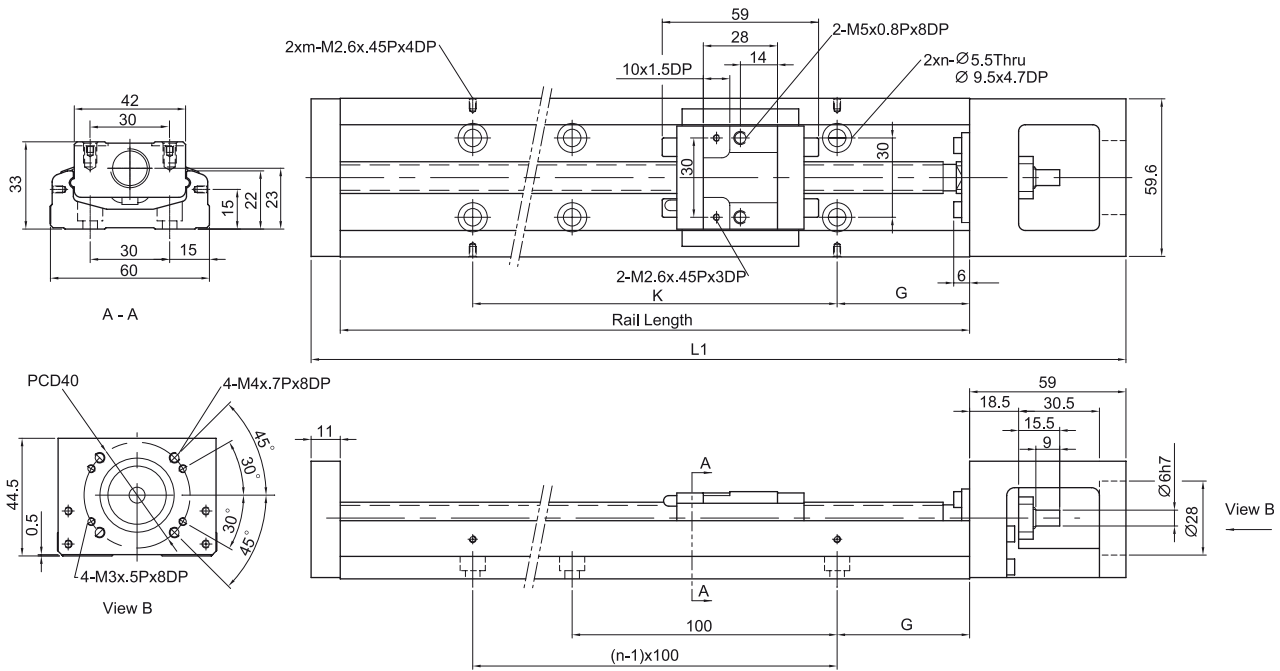
Dimensions and Mass of the KK60 Stages without Cover, Standard Block

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|---|---|-----------|----------|
| | | Block A1 | Block A2 | | | | | Block A1 | Block A2 |
| 150 | 220 | 60 | - | 25 | 100 | 2 | 2 | 1,5 | - |
| 200 | 270 | 110 | - | 50 | 100 | 2 | 2 | 1,8 | - |
| 300 | 370 | 210 | 135 | 50 | 200 | 3 | 2 | 2,4 | 2,7 |
| 400 | 470 | 310 | 235 | 50 | 100 | 4 | 4 | 3 | 3,3 |
| 500 | 570 | 410 | 335 | 50 | 200 | 5 | 3 | 3,6 | 3,9 |
| 600 | 670 | 510 | 435 | 50 | 100 | 6 | 6 | 4,2 | 4,6 |

Positioning Systems

Linear Module

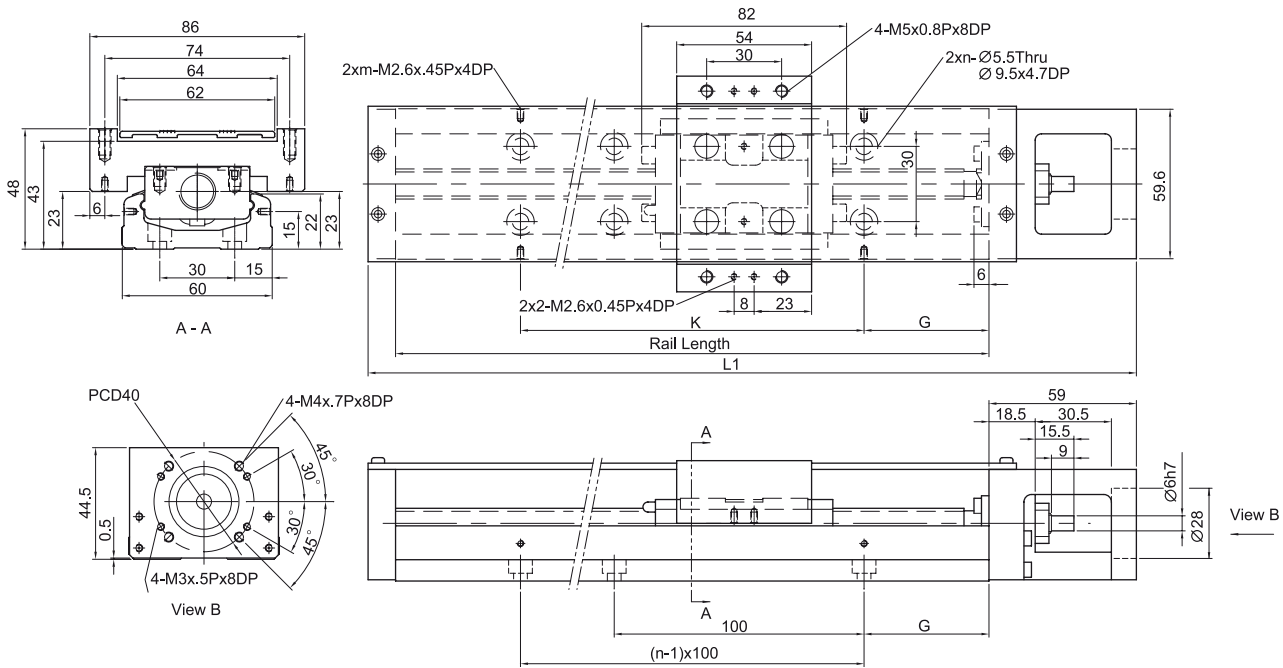
KK60 Stages without Cover, Short Block



Dimensions and Mass of the KK60 Stages without Cover, Short Block

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|---|---|-----------|----------|
| | | Block A1 | Block A2 | | | | | Block A1 | Block A2 |
| 150 | 220 | 85 | 34 | 25 | 100 | 2 | 2 | 1,4 | 1,6 |
| 200 | 270 | 135 | 84 | 50 | 100 | 2 | 2 | 1,7 | 1,9 |
| 300 | 370 | 235 | 184 | 50 | 200 | 3 | 2 | 2,3 | 2,5 |
| 400 | 470 | 335 | 284 | 50 | 100 | 4 | 4 | 2,9 | 3,1 |
| 500 | 570 | 435 | 384 | 50 | 200 | 5 | 3 | 3,5 | 3,7 |
| 600 | 670 | 535 | 484 | 50 | 100 | 6 | 6 | 4,1 | 4,3 |

KK60 Stages with Aluminium Cover, Standard Block



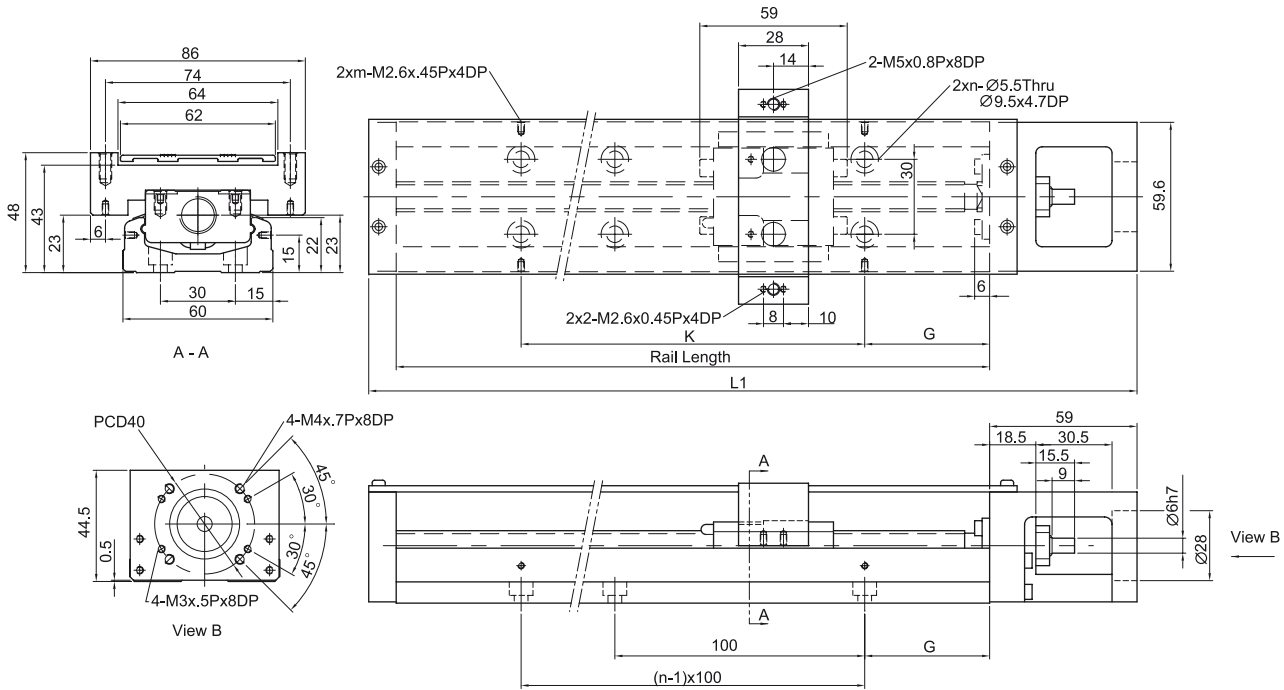
Dimensions and Mass of the KK60 Stages without Cover, Short Block

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|---|---|-----------|----------|
| | | Block A1 | Block A2 | | | | | Block A1 | Block A2 |
| 150 | 220 | 60 | - | 25 | 100 | 2 | 2 | 1,7 | - |
| 200 | 270 | 110 | - | 50 | 100 | 2 | 2 | 2,1 | - |
| 300 | 370 | 210 | 135 | 50 | 200 | 3 | 2 | 2,7 | 3,0 |
| 400 | 470 | 310 | 235 | 50 | 100 | 4 | 4 | 3,3 | 3,6 |
| 500 | 570 | 410 | 335 | 50 | 200 | 5 | 3 | 3,9 | 4,2 |
| 600 | 670 | 510 | 435 | 50 | 100 | 6 | 6 | 4,6 | 5,0 |

Positioning Systems

Linear Module

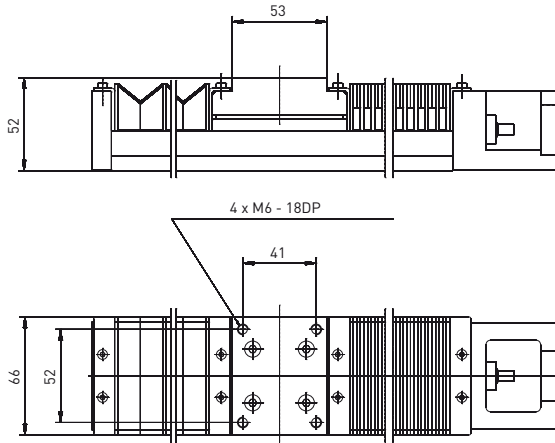
KK60 Stages with Aluminium Cover, Short Block



Dimensions and Mass of the KK60-Stages with Aluminium Cover, Short Block

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|---|---|-----------|----------|
| | | Block A1 | Block A2 | | | | | Block A1 | Block A2 |
| 150 | 220 | 85 | 34 | 25 | 100 | 2 | 2 | 1,6 | 1,8 |
| 200 | 270 | 135 | 84 | 50 | 100 | 2 | 2 | 1,9 | 2,1 |
| 300 | 370 | 235 | 184 | 50 | 200 | 3 | 2 | 2,5 | 2,7 |
| 400 | 470 | 335 | 284 | 50 | 100 | 4 | 4 | 3,1 | 3,3 |
| 500 | 570 | 435 | 384 | 50 | 200 | 5 | 3 | 3,7 | 3,9 |
| 600 | 670 | 535 | 484 | 50 | 100 | 6 | 6 | 4,4 | 4,6 |

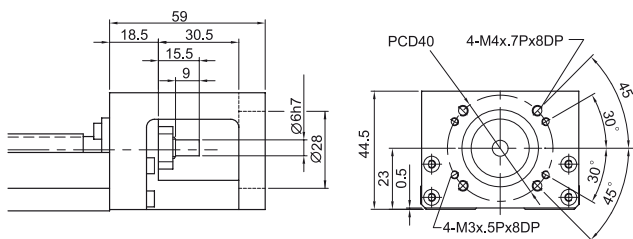
KK60 Stages with Bellow Cover



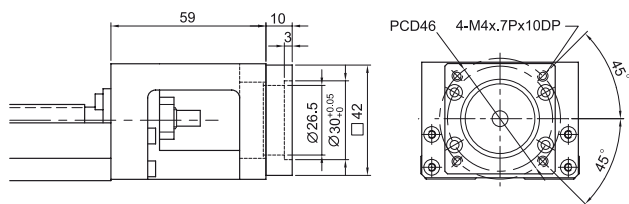
Dimensions and Mass of the KK60 Stages with Bellow Cover

| Rail length [mm] | Mass [kg] | Maximum stroke [mm] | |
|---------------------|--------------|---------------------|----------|
| | | Block A1 | Block A2 |
| 150 | 1,7 | 45 | — |
| 200 | 2,1 | 77 | — |
| 300 | 2,7 | 151 | 93 |
| 400 | 3,3 | 230 | 165 |
| 500 | 3,9 | 300 | 241 |
| 600 | 4,6 | 376 | 317 |

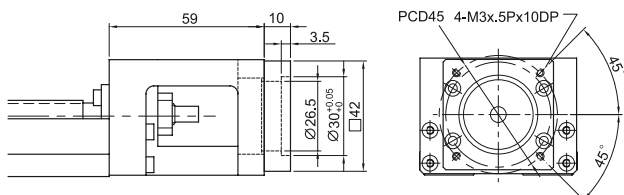
KK60 Stages Adapter Flange F0



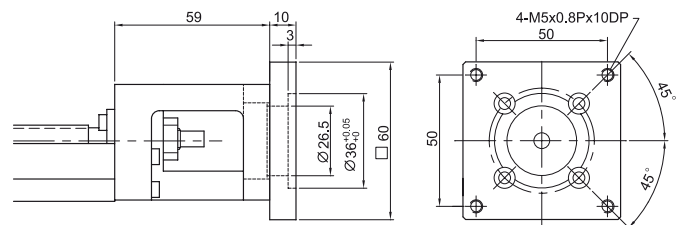
KK60 Stages Adapter Flange F1



KK60 Stages Adapter Flange F2



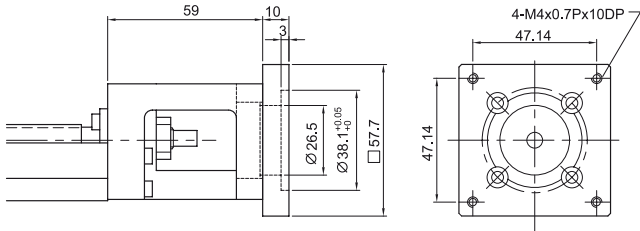
KK60 Stages Adapter Flange F3



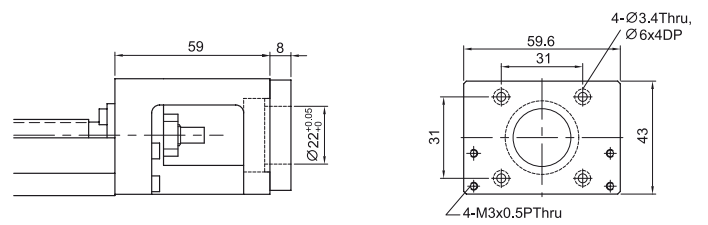
Positioning Systems

Linear Module

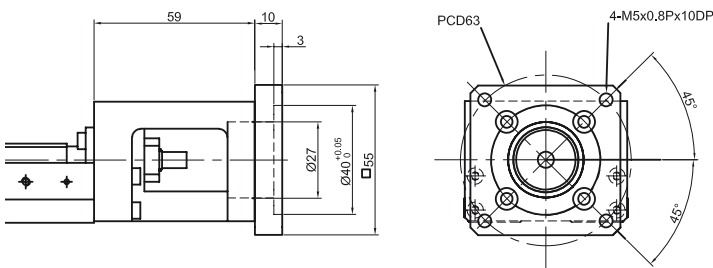
KK60 Stages Adapter Flange F4



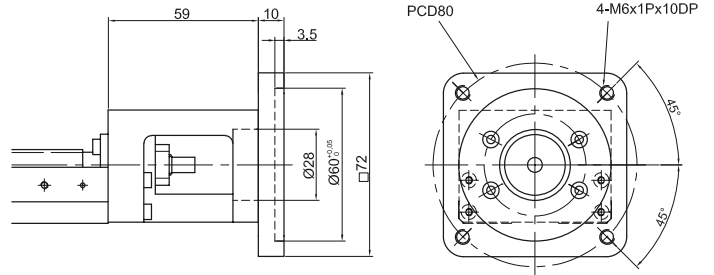
KK60 Stages Adapter Flange F5



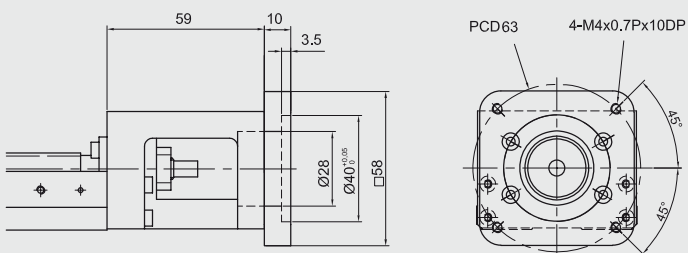
KK60 Stages Adapter Flange F6



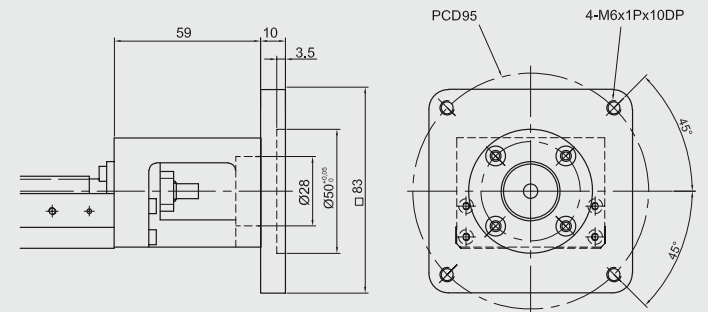
KK60 Stages Adapter Flange F7



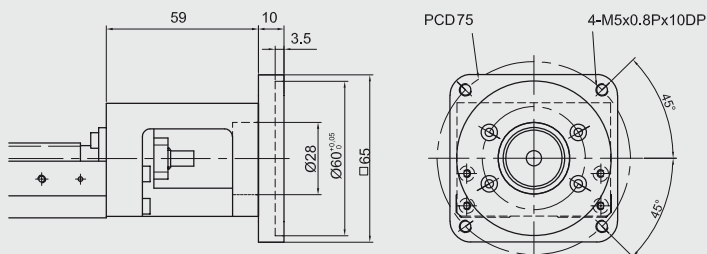
KK60 Stages Adapter Flange F8



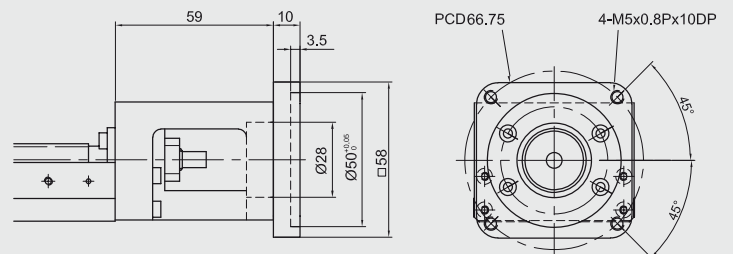
KK60 Stages Adapter Flange F9



KK60 Stages Adapter Flange F10



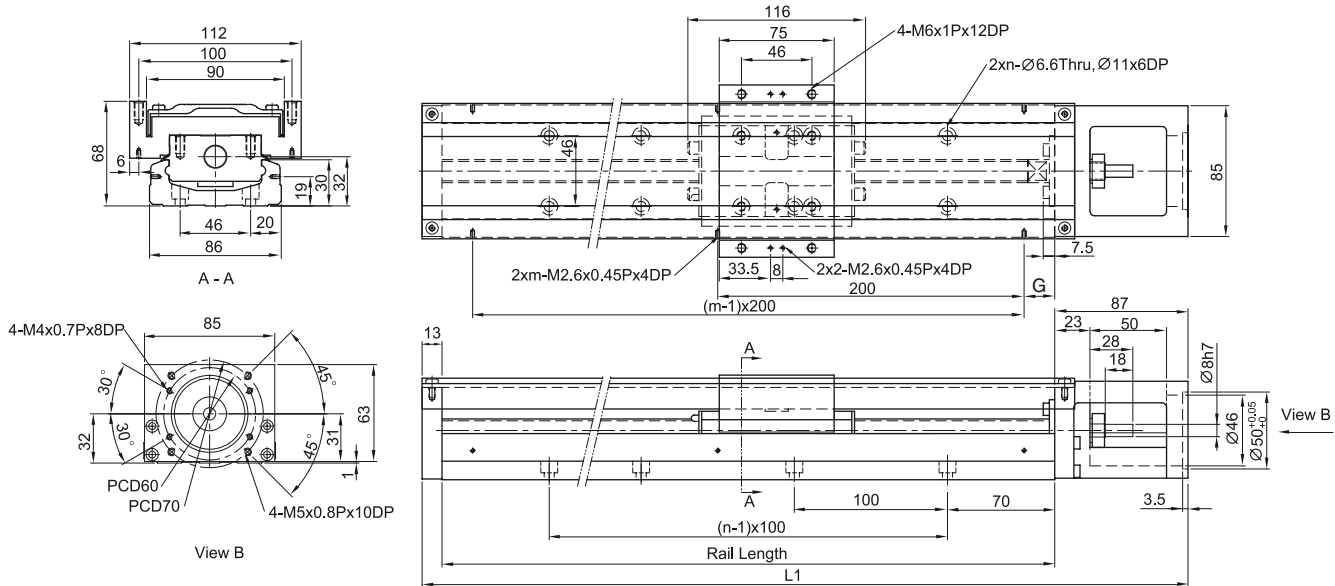
KK60 Stages Adapter Flange F11



Positioning Systems

Linear Module

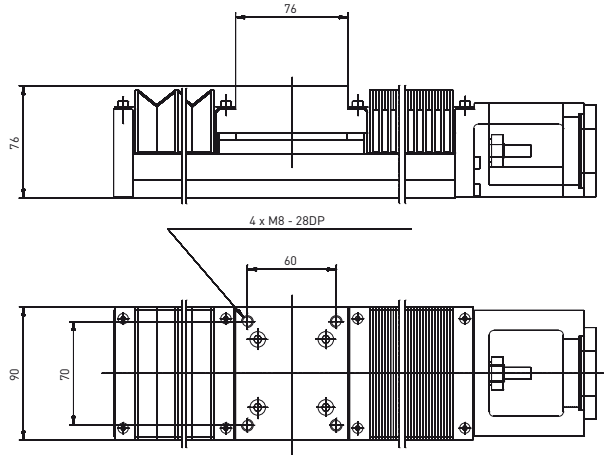
KK86 Stages with Aluminium Cover



Dimensions and Mass of the KK86 Stages with Aluminium Cover

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|---|---|-----------|----------|
| | | Block A1 | Block A2 | | | | Block A1 | Block A2 |
| 340 | 440 | 210 | 100 | 70 | 3 | 2 | 6,5 | 7,3 |
| 440 | 540 | 310 | 200 | 20 | 4 | 3 | 7,8 | 8,6 |
| 540 | 640 | 410 | 300 | 70 | 5 | 3 | 9,0 | 9,8 |
| 640 | 740 | 510 | 400 | 30 | 6 | 4 | 10,3 | 11,3 |
| 740 | 840 | 610 | 500 | 70 | 7 | 4 | 11,6 | 12,4 |
| 940 | 1040 | 810 | 700 | 70 | 9 | 5 | 13,0 | 13,8 |

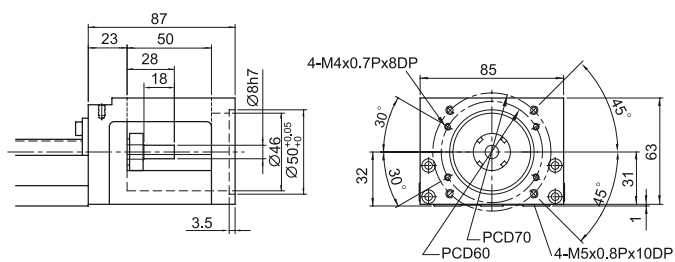
KK86 Stages with Bellow Cover



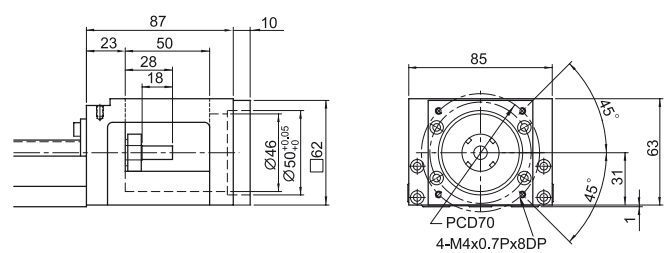
Dimensions and Mass of the KK86 Stages with Bellow Cover

| Rail length [mm] | Mass [kg] | Maximum stroke [mm] | |
|---------------------|--------------|---------------------|----------|
| | | Block A1 | Block A2 |
| 340 | 6,3 | 174 | 84 |
| 440 | 7,6 | 248 | 158 |
| 540 | 8,8 | 327 | 237 |
| 640 | 10 | 410 | 318 |
| 740 | 11,3 | 491 | 399 |
| 940 | 12,7 | 654 | 561 |

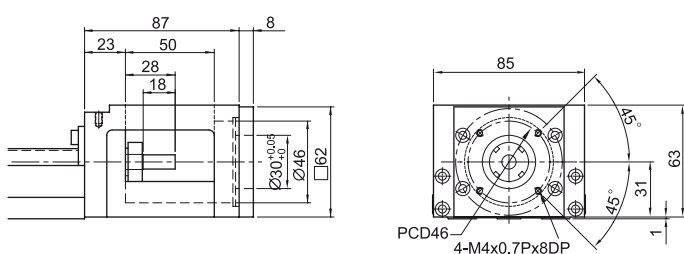
KK86 Stages Adapter Flange F0



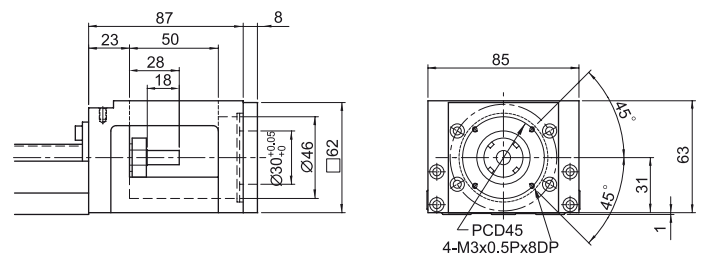
KK86 Stages Adapter Flange F1



KK86 Stages Adapter Flange F2



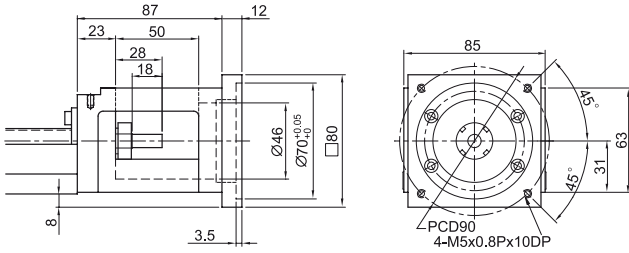
KK86 Stages Adapter Flange F3



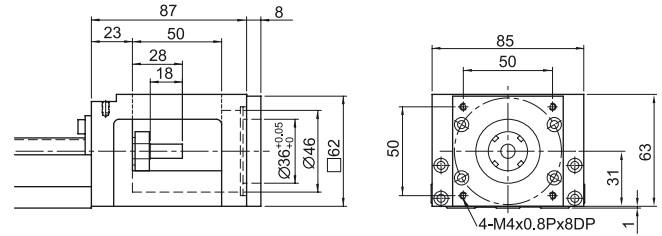
Positioning Systems

Linear Module

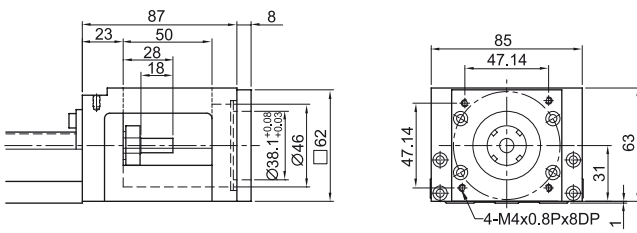
KK86 Stages Adapter Flange F4



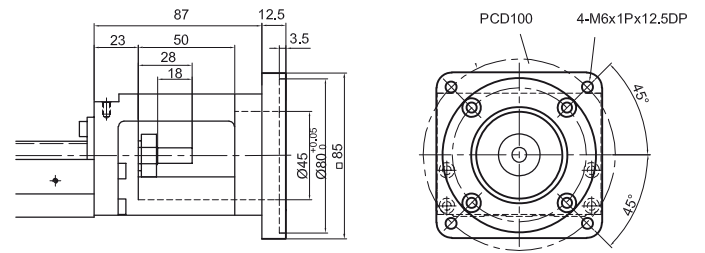
KK86 Stages Adapter Flange F5



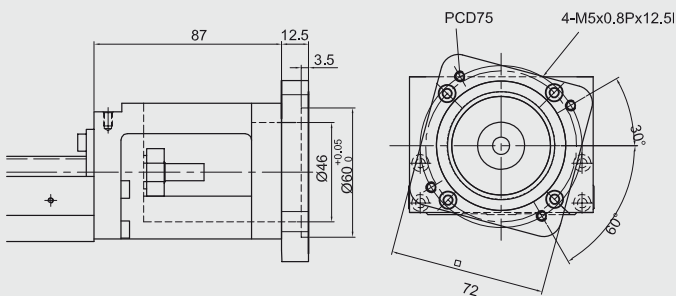
KK86 Stages Adapter Flange F6



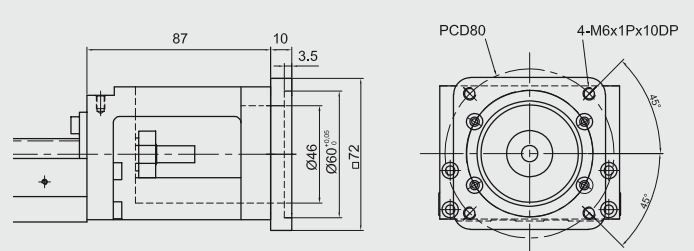
KK86 Stages Adapter Flange F7



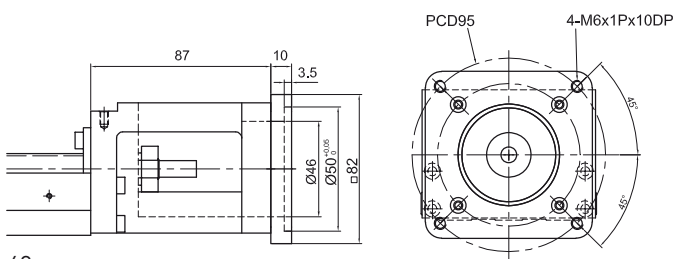
KK86 Stages Adapter Flange F8



KK86 Stages Adapter Flange F9

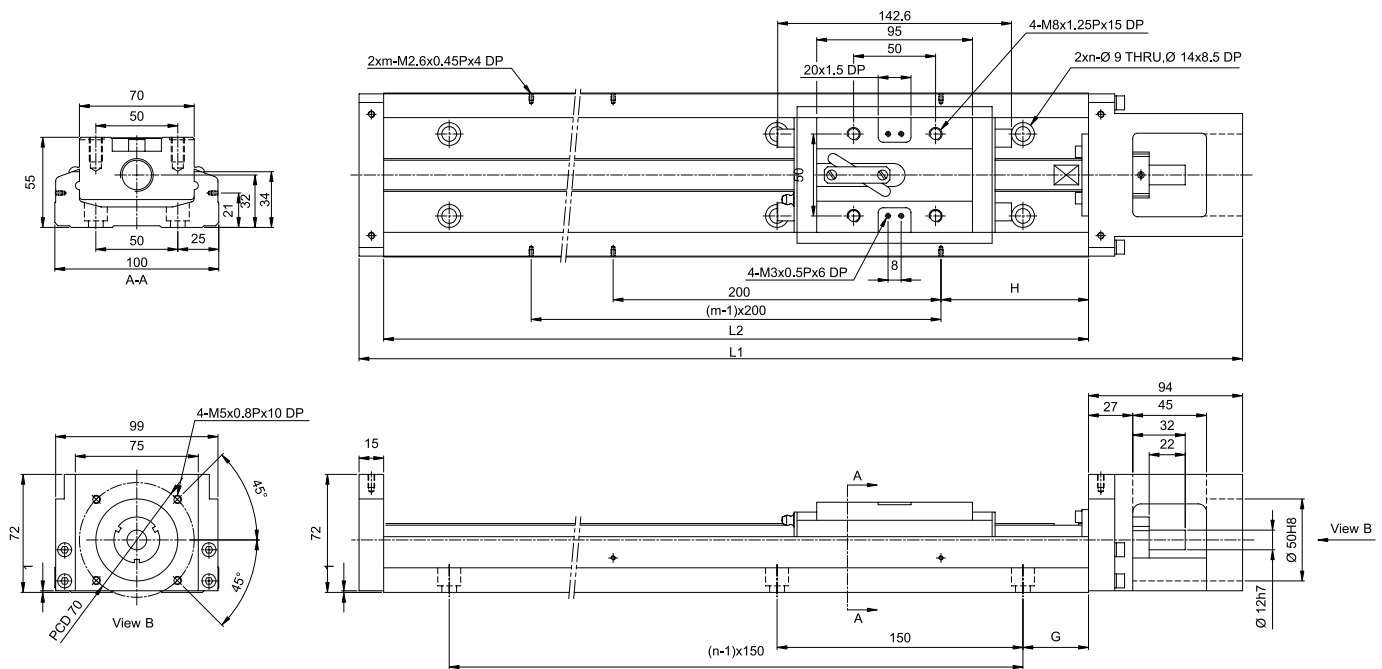


KK86 Stages Adapter Flange F10



3.3.8 Dimensions of KK Stage KK100

KK100 Stages without Cover



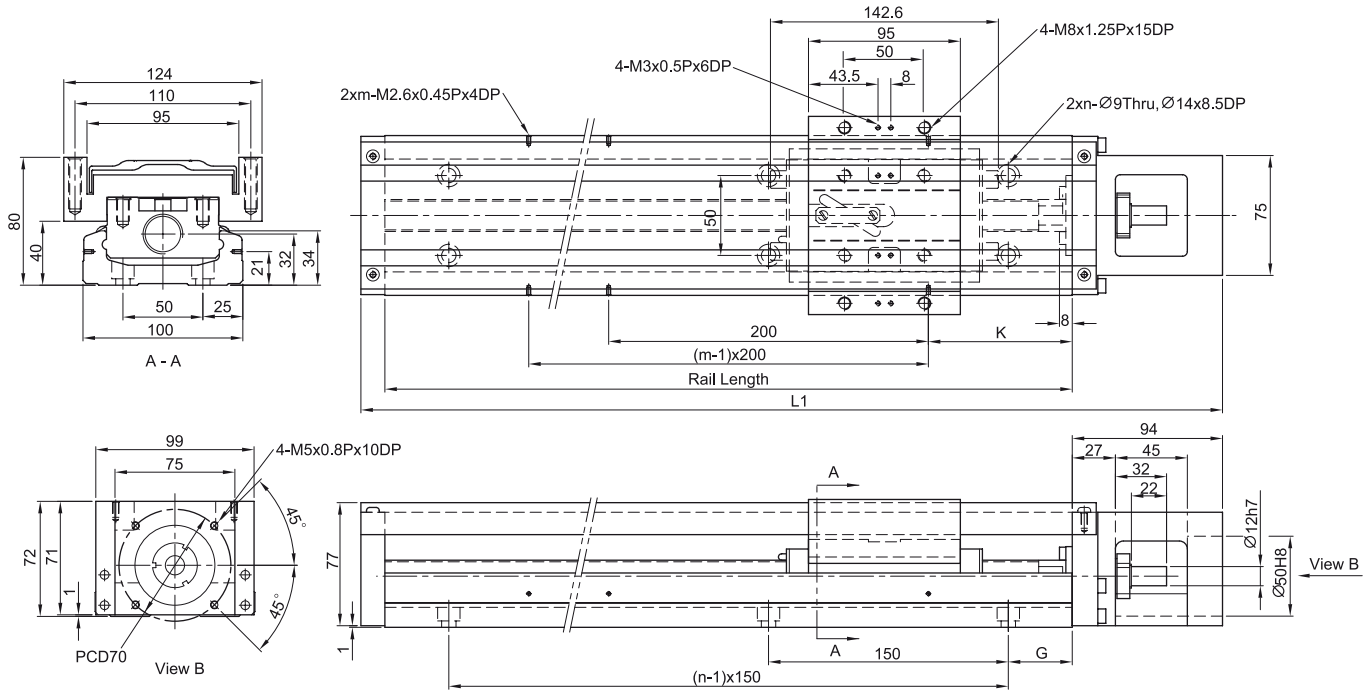
Dimensions and Mass of the KK100 Stages without Cover

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|----|---|-----------|----------|
| | | Block A1 | Block A2 | | | | | Block A1 | Block A2 |
| 980 | 1089 | 828 | 700 | 40 | 90 | 7 | 5 | 18,6 | 20,3 |
| 1080 | 1189 | 928 | 800 | 15 | 40 | 8 | 6 | 20,3 | 22,0 |
| 1180 | 1289 | 1028 | 900 | 65 | 90 | 8 | 6 | 22,0 | 23,7 |
| 1280 | 1389 | 1128 | 1000 | 40 | 40 | 9 | 7 | 23,6 | 25,3 |
| 1380 | 1489 | 1228 | 1100 | 15 | 90 | 10 | 7 | 25,3 | 27,0 |

Positioning Systems

Linear Module

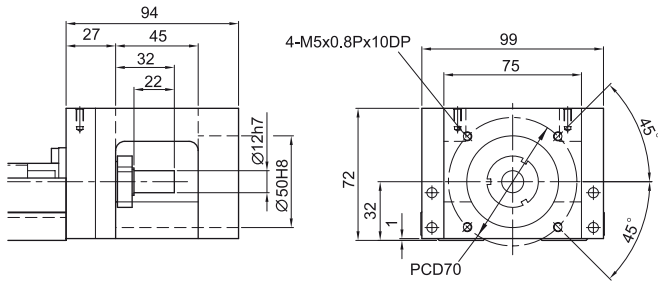
KK100 Stages with Aluminium Cover



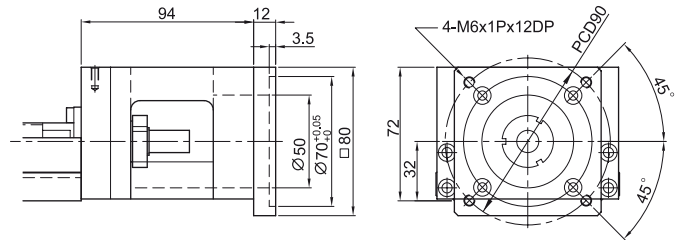
Dimensions and Mass of KK100 Stages with Aluminium Cover

| Rail length [mm] | Total length L1 [mm] | Maximum stroke [mm] | | G [mm] | K [mm] | n | m | Mass [kg] | |
|---------------------|-------------------------|---------------------|----------|-----------|-----------|----|---|-----------|----------|
| | | Block A1 | Block A2 | | | | | Block A1 | Block A2 |
| 980 | 1089 | 828 | 700 | 40 | 90 | 7 | 5 | 20,4 | 22,1 |
| 1080 | 1189 | 928 | 800 | 15 | 40 | 8 | 6 | 22,2 | 23,9 |
| 1180 | 1289 | 1028 | 900 | 65 | 90 | 8 | 6 | 24,0 | 25,7 |
| 1280 | 1389 | 1128 | 1000 | 40 | 40 | 9 | 7 | 25,7 | 27,4 |
| 1380 | 1489 | 1228 | 1100 | 15 | 90 | 10 | 7 | 27,5 | 29,2 |

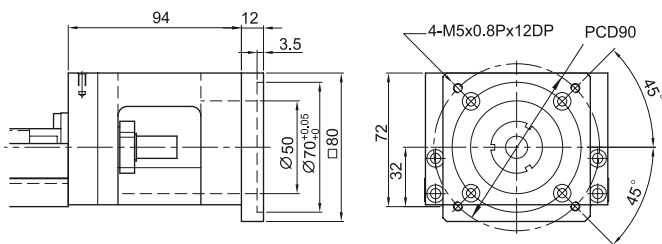
KK100 Stages Adapter Flange F0



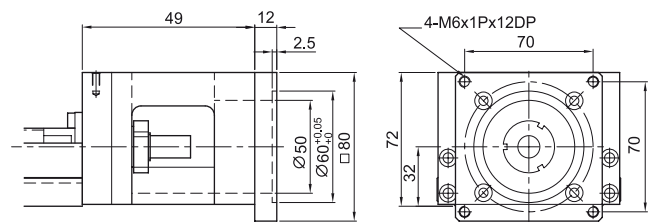
KK100 Stages Adapter Flange F1



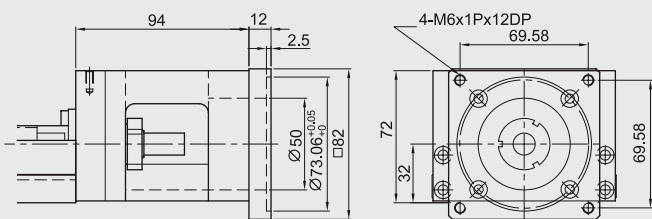
KK100 Stages Adapter Flange F2



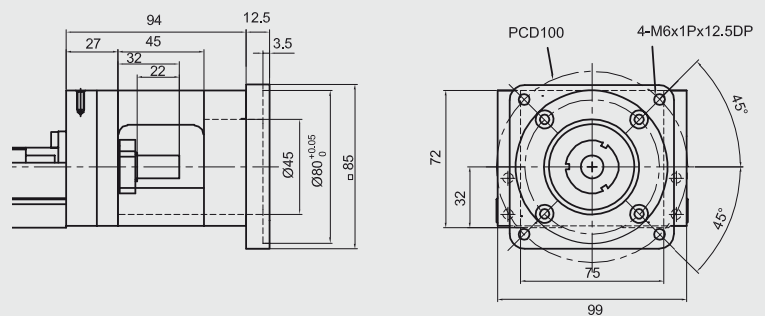
KK100 Stages Adapter Flange F3



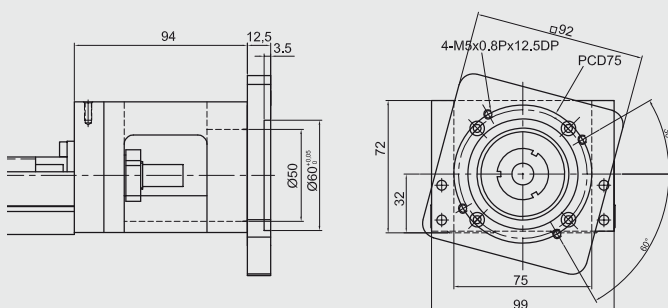
KK100 Stages Adapter Flange F4



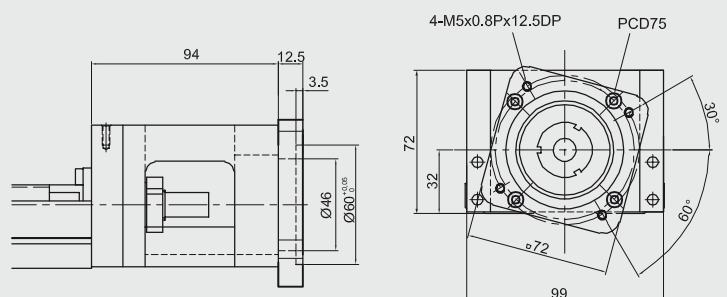
KK100 Stages Adapter Flange F5



KK100 Stages Adapter Flange F6



KK100 Stages Adapter Flange F7



Positioning Systems

Linear Module

3.4 KK Linear Stage - Accessories

3.4.1 Article Overview of Adapter Plates for KK Stages

| Model | Adapter plate | Article number set (comprising adapter plate and fixing screws) |
|-------|---------------|--|
| KK40 | KK-40-F1 | 8-11-0205 |
| | KK-40-F2 | 8-11-0206 |
| | KK-40-F3 | 8-11-0207 |
| KK50 | KK-50-F1 | 8-11-0209 |
| | KK-50-F2 | 8-11-0210 |
| | KK-50-F3 | 8-11-0211 |
| | KK-50-F4 | 8-11-0120 |
| | KK-50-F5 | 8-11-0212 |
| | KK-50-F6 | 8-11-0213 |
| | KK-50-F7 | 8-11-0214 |
| KK60 | KK-60-F1 | 8-11-0215 |
| | KK-60-F2 | 8-11-0216 |
| | KK-60-F3 | 8-11-0217 |
| | KK-60-F4 | 8-11-0218 |
| | KK-60-F5 | 8-11-0219 |
| | KK-60-F6 | 8-11-0129 |
| | KK-60-F7 | 8-11-0220 |
| | KK-60-F8 | 8-11-0221 |
| | KK-60-F9 | 8-11-0222 |
| | KK-60-F10 | 8-11-0223 |
| | KK-60-F11 | 8-11-0224 |
| KK86 | KK-86-F1 | 8-11-0225 |
| | KK-86-F2 | 8-11-0226 |
| | KK-86-F3 | 8-11-0227 |
| | KK-86-F4 | 8-11-0228 |
| | KK-86-F5 | 8-11-0229 |
| | KK-86-F6 | 8-11-0230 |
| | KK-86-F7 | 8-11-0132 |
| | KK-86-F8 | 8-11-0068 |
| | KK-86-F9 | 8-11-0231 |
| | KK-86-F10 | 8-11-0232 |
| KK100 | KK-100-F1 | 8-11-0233 |
| | KK-100-F2 | 8-11-0234 |
| | KK-100-F3 | 8-11-0235 |
| | KK-100-F4 | 8-11-0236 |
| | KK-100-F5 | 8-11-0132 |
| | KK-100-F6 | 8-11-0237 |
| | KK-100-F7 | 8-11-0068 |

3.4.2 Article Overview of Sensor Rails for KK Stages

| KK sizes | Article number Sensor rail set (comprising sensor rail and fixing materials, cam switch) |
|-----------------|---|
| KKx4001P100A1 | 8-11-0239 |
| KKx4001P150A1 | 8-11-0240 |
| KKx4001P200A1 | 8-11-0241 |
| KKx5002P150A1 | 8-11-0242 |
| KKx5002P200A1 | 8-11-0243 |
| KKx5002P250A1 | 8-11-0244 |
| KKx5002P300A1 | 8-11-0245 |
| KKx60xxP150EA1 | 8-11-0246 |
| KKx60xxP200EA1 | 8-11-0247 |
| KKx60xxP300EA1 | 8-11-0248 |
| KKx60xxP400EA1 | 8-11-0249 |
| KKx60xxP500EA1 | 8-11-0250 |
| KKx60xxP600EA1 | 8-11-0251 |
| KKx86xxP340A1 | 8-11-0252 |
| KKx86xxP440A1 | 8-11-0253 |
| KKx86xxP540A1 | 8-11-0254 |
| KKx86xxP640A1 | 8-11-0255 |
| KKx86xxP740A1 | 8-11-0256 |
| KKx86xxP940A1 | 8-11-0257 |
| KKx10020P980A1 | 8-11-0258 |
| KKx10020P1080A1 | 8-11-0259 |
| KKx10020P1180A1 | 8-11-0260 |
| KKx10020P1280A1 | 8-11-0261 |
| KKx10020P1380A1 | 8-11-0262 |

Switch set 8-11-0263

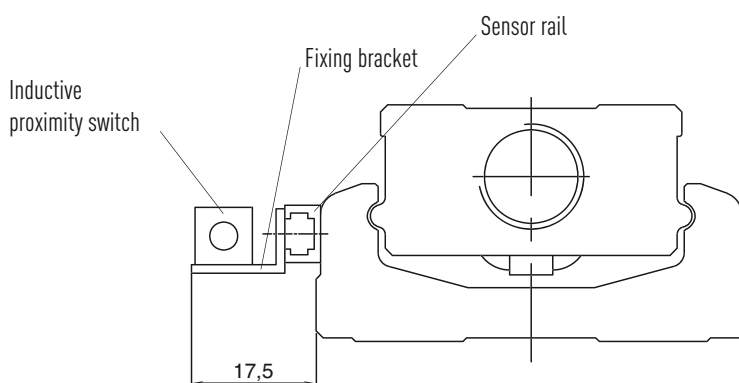
consisting of fixing bracket, one inductive proximity switch and fixing materials) for use as a limit switch or reference switch

Cable length: 2m

Switch set 8-11-0264

consisting of fixing bracket, one inductive proximity switch and fixing materials) for use as a limit switch or reference switch

Cable length: 4m



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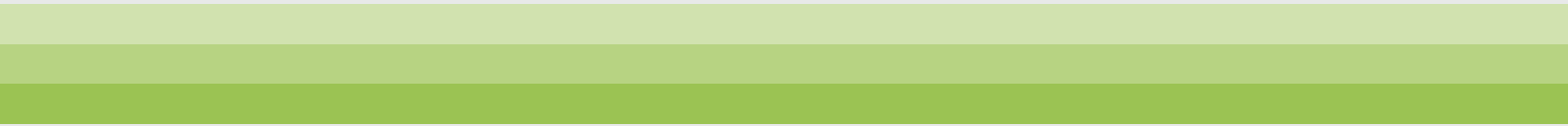
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