








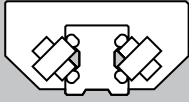


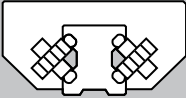
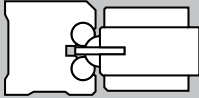
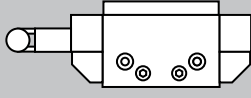
Linear Systems

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Linear Systems at a Glance

| Roller Guide Franke Dynamic | | | | | |
|--|---|--|--|---|--|
| Type | FDA Standard | FDB Low cost | FDC Non-corrosive | FDD Non-magnetic | FDE Lubricant-free |
| |  | | | | |
| Components | <ul style="list-style-type: none"> Aluminium body material for cassettes, roller shoes and guide raceways Plastic wiper with felt insert on both front sides of the cassettes or roller shoes Steel raceways Needle bearing rollers | <ul style="list-style-type: none"> Steel raceways Ball bearing rollers | <ul style="list-style-type: none"> Non-corrosive raceways Needle bearing non-corrosive rollers | <ul style="list-style-type: none"> Non-magnetic raceways Needle bearing rollers | <ul style="list-style-type: none"> Steel raceways Lubricant-free rollers |
| Options | <ul style="list-style-type: none"> Special guide profiles Surface coating of the raceways and cassettes Customer-specific connection borings Metal wipers Bellow covers Extended cassettes and roller shoes for higher loads Connections for central lubrication Individual design of the cassettes (e. g. with spindle acceptance or connection of measuring systems) High-load raceways for use with linear motors | | | | |
| Advantages | <ul style="list-style-type: none"> Easier and quieter running thanks to large-size rollers Fast response behaviour No stick-slip effect Slide resistance can be adjusted up and down Aluminium body materials harmonise perfectly with aluminium carrier profiles and facilitate design of lighter constructions | | | | |
| | <ul style="list-style-type: none"> High precision High load capacity | <ul style="list-style-type: none"> Reasonable price | <ul style="list-style-type: none"> Corrosion-resistant | <ul style="list-style-type: none"> Non-magnetic materials | <ul style="list-style-type: none"> Lubricant-free and clean |
| Use | <ul style="list-style-type: none"> For high loads in all applications | <ul style="list-style-type: none"> For low loads in all applications | <ul style="list-style-type: none"> For medium loads in moist or aggressive environment | <ul style="list-style-type: none"> For light loads in magnetic fields or radiation rooms | <ul style="list-style-type: none"> For medium loads under extremely hygienic conditions |
| Sizes (mm) Standard Special | 12 – 45 | 12 – 45 | 15 – 45 | 25 | 12 – 45 |
| | <ul style="list-style-type: none"> Sizes and special shapes for series production at customer's request | | | | |
| Travelling speed Vmax (m/s) Acceleration (m/s ²) | 10 40 | 10 40 | 10 40 | 2 10 | 1 10 |
| Rail length (mm) one-piece | 4000 | 4000 | 4000 | 4000 | 4000 |
| | <ul style="list-style-type: none"> Can be continuously coupled for longer stroke | | | | |
| More on page | 78 – 79 | 80 – 81 | 82 – 83 | 84 – 85 | 86 – 87 |

| | | Recirculating Rollers Franke Power | Recirculating Ball Guide Franke Robust | Systems |
|--|---|---|--|---|
| FDG Non-corrosive low cost | FDH High dynamic | FPA Standard  | FRA Standard  | FTB, FTC, FTD, FTH  NEW |
| <ul style="list-style-type: none"> Non-corrosive raceways Ball bearing non-corrosive rollers | <ul style="list-style-type: none"> Steel raceways 2-row bearing rollers | <ul style="list-style-type: none"> Aluminium body material Steel raceways 2 rows of recirculating rollers, arranged at 90° angles Plastic wiper Lubricating nipple | <ul style="list-style-type: none"> Aluminium body material Steel raceways 1 row of recirculating balls, balls with dividers Felt wiper | <ul style="list-style-type: none"> Linear tables/modules with spindle, belt or linear motor drive, motors, CNC controls Integrated Franke Linear Systems |
| | | <ul style="list-style-type: none"> Slide resistance set ex works Cassette prefitted on raceway | <ul style="list-style-type: none"> Non-corrosive or non-magnetic raceways Bore shape to specifications | <ul style="list-style-type: none"> Complete multi-axe systems Mounting angle Measuring systems Special sizing and bore shapes available for series production Niro version |
| <ul style="list-style-type: none"> Corrosion-resistant Reasonable price | <ul style="list-style-type: none"> Fast response behaviour | <ul style="list-style-type: none"> High stiffness High load capacity High moment load rating All-round sealing Relubrication possible via funnel-type lubricating nipple Lubrication connection possible on 4 sides | <ul style="list-style-type: none"> High load rating High lifetime Robust also under severe conditions Shock and impact-resistant High stiffness | <ul style="list-style-type: none"> Free choice of motorisation Highest dynamic Compact dimensions Linear motor module with wear-free drive |
| <ul style="list-style-type: none"> For low loads in moist or aggressive environment | <ul style="list-style-type: none"> For high loads and high accelerations | <ul style="list-style-type: none"> For high loads and moment loading in heavy load operation | <ul style="list-style-type: none"> For applications with the highest loads in harsh environments | <ul style="list-style-type: none"> For automation, measuring and testing applications, recirculating, processing, mounting |
| 12 – 45 | 25 – 45 | 25 | 06 – 13 | 15 – 35 |
| 10 40 | 10 40 | 3 40 | 3 30 | 10 100 |
| 4000 | 4000 | 4000 continuously coupled | 4000 continuously coupled | 7000 – |
| 88 – 89 | 90 – 91 | 92 – 93 | 94 – 95 | 96 – 105 |

Linear Systems in Practice

The Franke principle of the guided roller guarantees easy and silent running, even at high speeds. These factors are essential for smooth production in many industries. Therefore, Franke Linear Systems are also used in the most diverse industrial sectors – for example in medical technology, the food industry, for machine and plant engineering or in the handling sector.

In Medical Technology: Dental X-Ray Equipment



Precise x-rays need the movement of the light unit to be completely vibration-free. Therefore, the roller guide used must have smooth and silent running. The Franke Dynamic Aluminium Roller Guide fulfils this demand perfectly.

The Features:

- The Franke Dynamic Aluminium Roller Guide has lifetime lubrication.
- Sealed rollers prevent the lubricant escaping.
- The guide's running is silent, smooth and even.
- Preloading the cassette ensures vibration-free movement of the secondary light.

In the Packing Industry: Bakery Machinery



A fast, clean and maintenance-free linear system is required in a packing machine for baking mixes. Two retractable axles must be able to run simultaneously on the longitudinal module. The high dynamic of the guide results in correspondingly high cycle times when packing.

The Features:

- The system of embedded raceways facilitates the use of light-weight, extruded aluminium profiles for the guide rails, the magnets of the stator are directly integrated; the motor rests in an aluminum housing.
- The direct drive facilitates fast positioning that is free from clearance.
- The guide achieves movement speeds of 6 m/s and acceleration of up to 100 m/s².
- Sealed rollers prevent the lubricant escaping.

In the Food Industry: Cheese Production

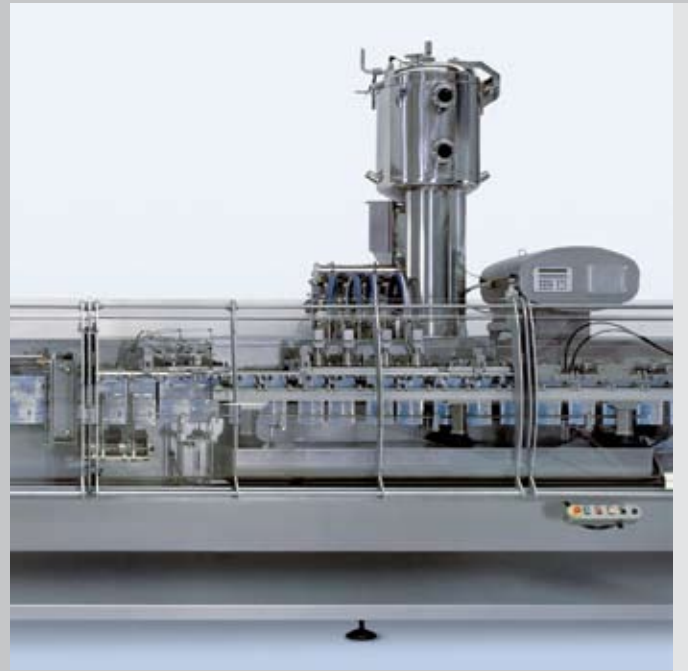


In cheese production the food-safe Franke Dynamic Aluminium Roller Guide provides the vertical movement of a gripper for wheels of cheese. In this application it is important that the roller guide is insensitive to whey and aggressive cleaning agents.

The Features:

- The guide is insensitive to moisture.
- Its running is easy and silent, the drive power is low.
- No maintenance and lubrication for the whole lifetime are guaranteed.
- An integrated wiper fulfils the specific hygiene requirements for food production.
- The product is available in a lubricant-free version on request.

In the Packing Industry: Bag Former/Filler



A bag forming, filling and sealing machine works at high speeds. It has stroke lengths of 1500 to 2100 mm, the average service performance is 30000 kilometers a year. The Franke Dynamic Aluminium Roller Guide used must be resistant to the aggressive environmental conditions, such as salt, sugar and splash water.

The Features:

- The Franke Dynamic Aluminium Roller Guide is in a position to realise speeds up to 10 m/s.
- Several guides can be coupled for any length of stroke desired.
- A good lifetime and service performance are achieved through central lubrication of the cassette.

Linear Systems in Practice

In Plant Engineering: Packaging Machines



The Franke Dynamic Aluminium Roller Guide is also used on packaging machinery for mattresses. In addition to cleanliness, the mobile function of the guide unit must be ensured, to avoid soiling the mattresses.

The Features:

- The Franke Dynamic Aluminium Roller Guide is maintenance-free and requires no relubrication.
- No lubricant can escape from the encapsulated rollers.
- The guide is available in a completely lubricant-free design on request.

In the Handling Sector: High Speed Camera Guiding



The Franke Dynamic Aluminium Roller Guide moves the high speed camera for a film printing machine. A results check is performed during the printing process by camera or video. As films of different widths are printed, the camera must be easy to position.

The Features:

- The Franke Dynamic Aluminium Roller Guide has smooth, even running.
- It weighs very little as the body material of the rail is aluminium.
- Special borings guarantee connection to the path measuring system.

In Machinery: Ring and Drum Coilers



The Franke Power Aluminium Recirculating Roller Guide is used for machines that process and pack coiled goods. It ensures that cables, hoses or steel ropes are coiled on rings or empty spools, measured to length and cut.

The Features:

- The Franke Power Aluminium Roller Guide has high load-capacity and stiffness.
- The cassettes are completely sealed and are also suitable for harsh conditions.
- Integrated metal wipers keep the raceways clean.

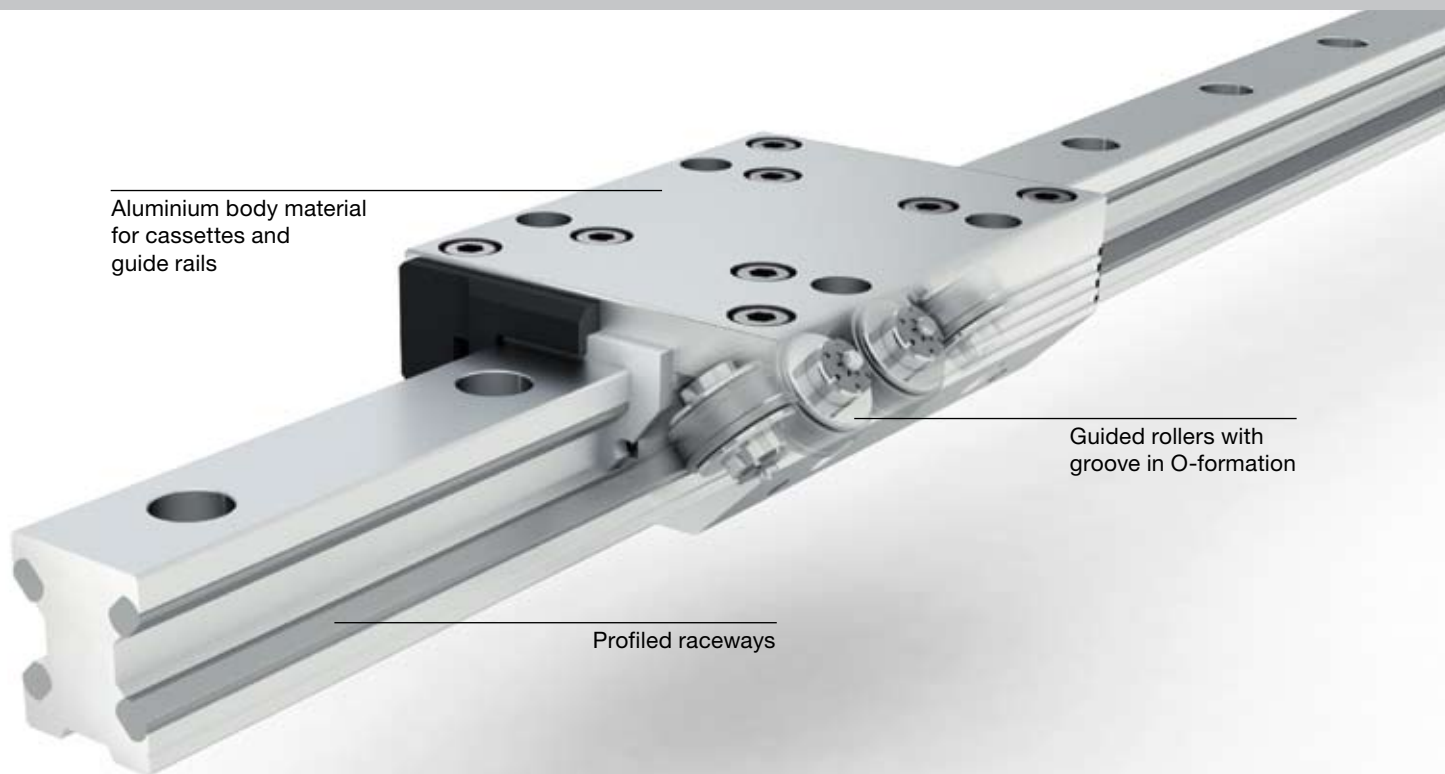
In Machinery: Handling System



Different processing centres are coupled together in this machine through large portals. Workpieces are processed with high acceleration. The Franke Robust Aluminium Recirculating Ball Guide is used in the transfer line. The recirculating ball system of type FRA10 and FRA13 harmonises perfectly with the substructure of aluminium profiles.

The Features:

- Transfer speeds of up to 3 m/s and accelerations of up to 30 m/s² are achieved.
- The Franke Robust Aluminium Recirculating Ball Guides used have a high lifetime, even in harsh and very dirty conditions.
- Tolerances and unevenness in the substructure can be equalised to a certain extent.



The Characteristics:

Cassettes and Roller Shoes

The cassette of the Franke Dynamic Aluminium Roller Guide has aluminium body material with needle or ball bearing rollers of steel or stainless steel. Special cover discs on the roller seal the bearing to the outside.

Eight rollers in O-formation guarantee an equally high load capacity from all directions. The rollers are equipped with a groove, which is adjusted to the profile of the raceway. Thanks to this patented system of guided rollers, the rollers are guided laterally and equally smooth and silent running is guaranteed.

The cassette plate has mounting holes in accordance with international standards. The slide resistance can be adjusted up and down individually using a setting screw on the side. Five standard sizes are available from size 12 to 45.

In the pair of single rails with roller shoes version there is no cassette plate. As a result, the guide width can be selected freely. The roller shoes are screwed directly to the mating structure and facilitate extremely compact assemblies.

Thread pieces for one-sided adjustability of the slide resistance are supplied and can be integrated.

The Advantages:

- Low weight thanks to aluminium body material
- Silent and easy running thanks to the patented **Guided Roller®**
- Maintenance-free and clean
- O-formation for equal loads from all directions
- High traverse speed and acceleration
- Numerous variations for almost any application
- Customer-specific solutions if series needed



Wipers

The bearings of the rollers are sealed and have lifetime lubrication. Thanks to the standard felt wiper, lasting protection of the guide system from soiling is guaranteed.

Metal wipers are included as accessories, which are particularly recommended for coarse dirt such as chippings or sawdust and keep the raceway clean (see accessories page 106).

Lubricant-free cassettes and roller shoes are available as type FDE. They are also suitable for hygienically sensitive sectors, for example the food industry or medical technology.

Guide Rails

The raceways of spring steel, non-corrosive or non-magnetic steel are integrated in the aluminium profile. The O-formation guarantees high load capacity from all directions. The profile of the rollers is adjusted to the raceway and guarantees permanently precise and smooth running.

The guide rails are available in one piece up to a length of four meters. They can be continuously coupled for longer strokes. we can supply rail profiles specially tailored to your design on request.

Franke precision raceways of spring steel, non-corrosive or non-magnetic steel can be integrated into a variety of aluminium profiles. We can supply your chosen profile complete with integrated raceways in series production.

We also offer specially hardened raceways for the heaviest loads.

Franke Dynamic

Aluminium Roller Guide – Numerous Possibilities

The Different Types:

| | |
|-----------------|-------------------------------|
| Type FDA | Standard |
| Type FDB | Low cost |
| Type FDC | Non-corrosive |
| Type FDD | Non-magnetic |
| Type FDE | Lubricant-free |
| Type FDG | Non-corrosive low cost |
| Type FDH | High dynamic |

We can also supply special cassettes in specific dimensions, heat-resistant versions and vacuum-fit for series production. Please call us.

Further Possibilities:

Design

For series production it is possible to adjust the shape and design of the cassettes, roller shoes and guide profiles to your individual application. You will get the perfect solution tailored to your requirements.

Adjustment options are:

- Shortened or extended roller shoes/cassettes
- Special shapes, e.g. for integration of drives
- Special profiles of guide rails according to your needs
- Individual bore shapes on the guide rails
- Fixing from underneath

Vacuum/High Temperature

We also offer special cassettes and roller shoes for applications in vacuums. They are designed with free borings and equipped with lubricants suited to high vacuums on request.

You can choose from a selection of special, heat-resistant cassettes and roller shoes for applications with radiant heat in the vicinity of heat sources.

Temperature ranges up to 200 °C are possible.





Complete Systems

The Franke Dynamic Aluminium Roller Guides are also used in our complete systems of linear axis, drive, motorisation and control. Franke Linear Modules and Linear Tables use the assets of Linear Systems to build-up complete moving units.

Toothed belt gear Linear Modules are available up to a stroke length of 7000 mm. The integrated Franke Dynamic Aluminium Roller Guide provides high dynamic movements and easy and silent running.

Clean Room

The Franke Dynamic Aluminium Roller Guide was appraised and evaluated at the Institut für Produktionstechnik und Automatisierung (IPA) at the Fraunhofer Gesellschaft (FhG) in Stuttgart with regard to its operation in rooms with high air purity rates.

It is extremely suitable for the listed loading conditions. The trends of the results (e.g. particle emissions on increase of the moved mass) allow us to state that a suitability for "Class 1000" is also achieved for higher loads.

The result: the Franke Dynamic Aluminium Roller Guide of type FDA is suitable for clean room-typical movement speeds for use in clean rooms with air purity classes "Class 1000".



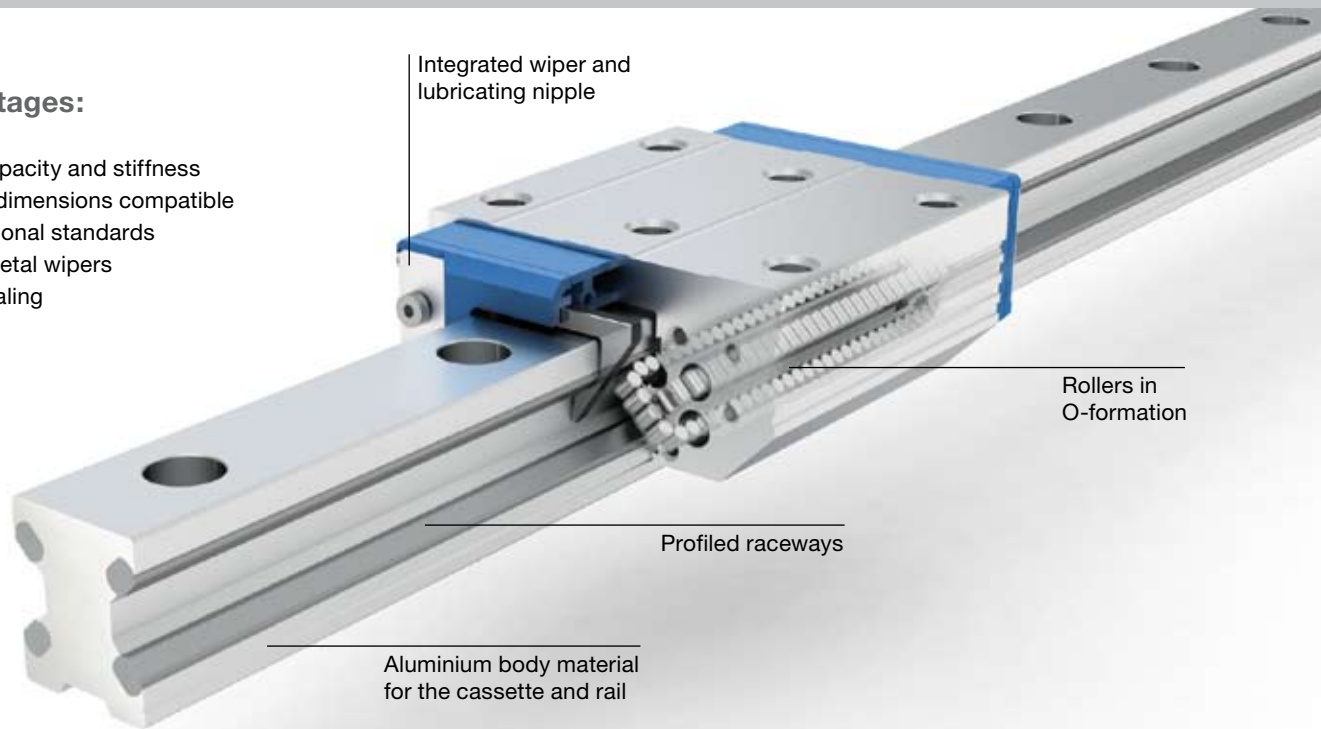
Franke Power

Aluminium Recirculating Roller Guide

Type FPA

The Advantages:

- High load capacity and stiffness
- Connecting dimensions compatible with international standards
- Integrated metal wipers
- All-round sealing



The Characteristics:

Cassette

The cassette of the Franke Power Aluminium Recirculating Roller Guide is made from special aluminium with fixing bores in accordance with international standards and, therefore, is interchangeable with products from many manufacturers. Wear-resistant plastic seals provide all-round sealing for the cassette. The additional frontal metal wipers are adjusted to the rail contour and protect the guide system from coarse impurities.

The recirculating rollers in 90°-formation guarantee even, high load capacity and loading from every direction. Each cassette has a lubrication nipple, which can be attached to one of the four front ends. A defined slide resistance ensures alignment on the guide rails. It is supplied with a preload class with light preload. The guides can be mounted on unprocessed surfaces without impairing the lifetime. The inner elasticity of the Recirculating Roller Guide is ensured by a system patented by Franke.

Guide Rails

Raceways of spring steel, non-corrosive or non-magnetic steel are integrated in the aluminium profile. High load capacity from all directions is guaranteed by the O-formation. The profile of the rollers is adjusted to the raceway and ensures precise and easy running permanently.

The guide rails can be supplied as one piece up to a length of four meters and can be coupled together endlessly for longer strokes. We can supply bore shapes specially tailored to your design on request.

FTH Drive

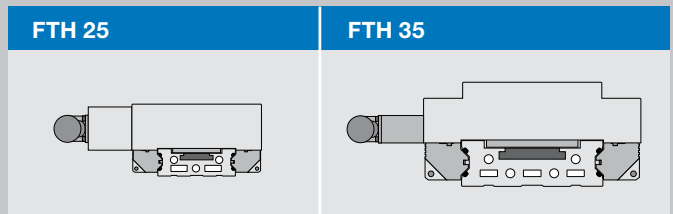
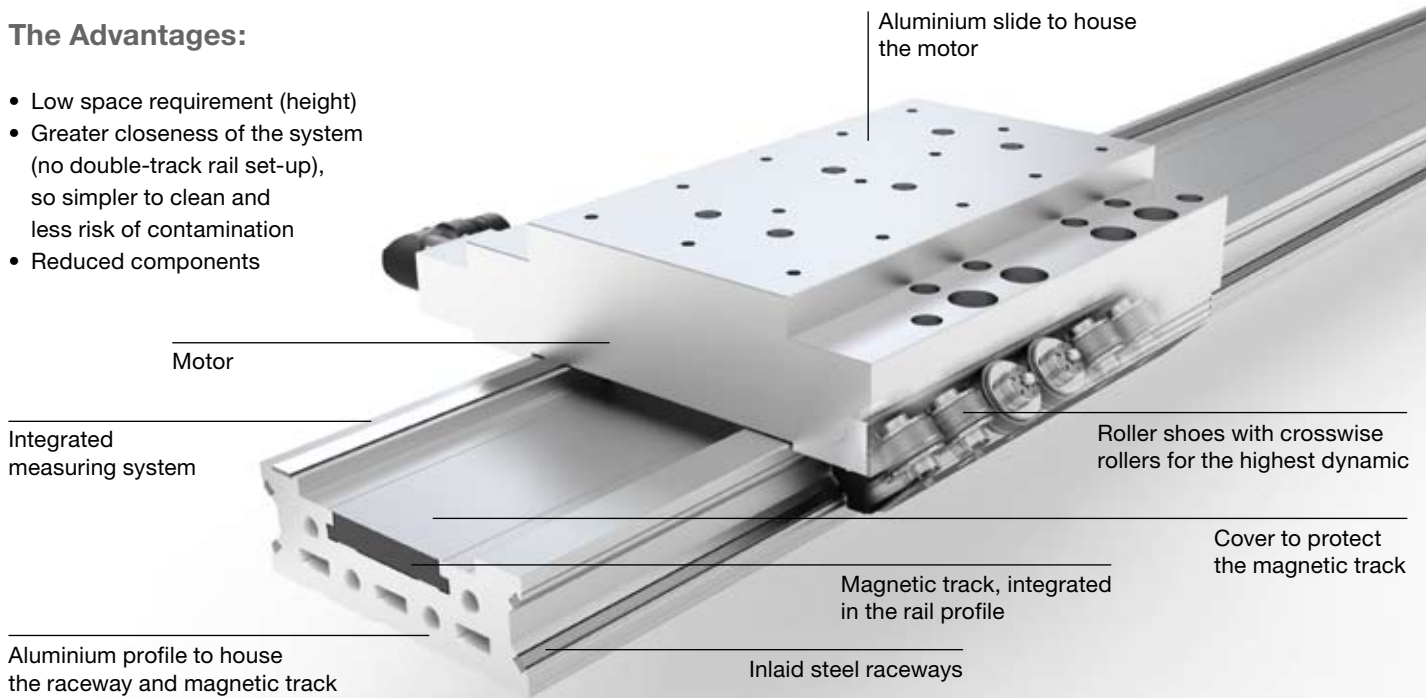
Aluminium Linear Motor Module

Type FTH



The Advantages:

- Low space requirement (height)
- Greater closeness of the system (no double-track rail set-up), so simpler to clean and less risk of contamination
- Reduced components



The Characteristics:

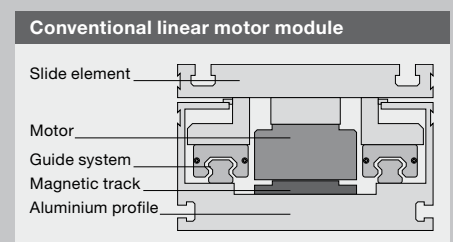
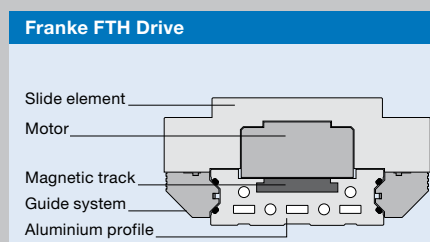
Roller Shoes and Guide Rails

Building on the proven Franke Aluminium Roller Guide, the Linear Motor Module FTH impresses with its low weight and compact dimensions. The roller shoes have been specially designed for high loads. The rail profile was designed so that the stator could be integrated. This saves height and weight. The modular design of the system enables numerous adjustments according to the individual use.

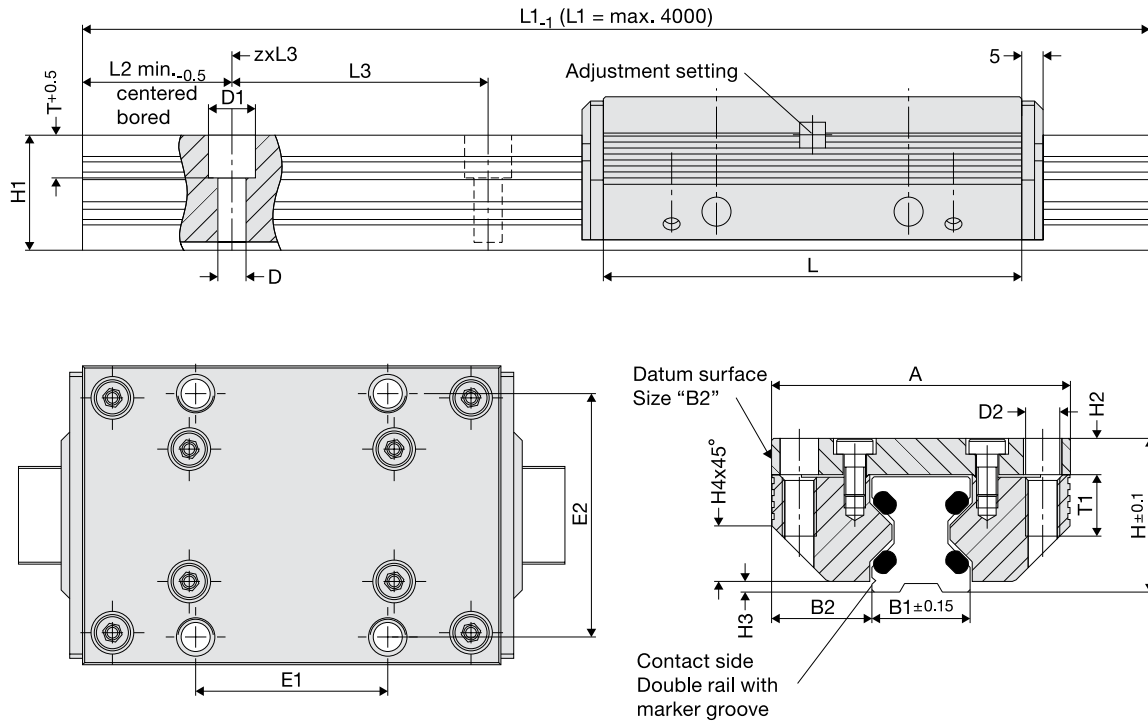
Multi-Module Systems

In addition to customer-specific mating and profile dimensions, several slides can be moved independently of one another per module. Complete multi-module systems using angles and adapter plates is also possible. We can supply the Linear Motor Module with all wiring and tailored to your desired control mode on request.

The Franke FTH Drive in comparison to conventional products



Cassette + double rail



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|-----|----|------|-------|------|----|-----|----|-----|------|------|-----|------|----|-----|------|----|
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 12 | 37 | 64 | 19 | 12.0 | 12.50 | 3.4 | 6 | M 4 | 25 | 30 | 14.7 | 4.0 | 1.4 | 5.5 | 10 | 40 | 5.5 | 8 |
| 15 | 47 | 78 | 24 | 15.5 | 15.75 | 4.5 | 8 | M 5 | 30 | 38 | 18.7 | 5.0 | 2.0 | 8.0 | 10 | 60 | 6.0 | 10 |
| 20 | 63 | 92 | 30 | 21.0 | 21.00 | 5.5 | 10 | M 6 | 40 | 53 | 22.6 | 7.0 | 2.0 | 11.0 | 10 | 60 | 8.0 | 12 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |
| 35 | 100 | 135 | 48 | 32.0 | 34.00 | 9.0 | 15 | M10 | 62 | 82 | 37.0 | 10.5 | 3.5 | 20.0 | 12 | 80 | 11.5 | 20 |
| 45 | 120 | 165 | 60 | 45.0 | 37.50 | 11.0 | 18 | M12 | 80 | 100 | 46.0 | 13.5 | 4.0 | 22.0 | 16 | 105 | 14.5 | 24 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|-------|-------------------------------|-----|-----------|---------|----------|-----------|
| | N | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | kg rail/m |
| 12 | 2800 | 3000 | 27 | 25 | 43 | 40 | 0.1 | 0.4 |
| 15 | 4200 | 3400 | 37 | 45 | 58 | 72 | 0.2 | 0.8 |
| 20 | 5400 | 5400 | 76 | 76 | 111 | 111 | 0.4 | 0.9 |
| 25 | 9000 | 10100 | 158 | 142 | 222 | 198 | 0.5 | 1.8 |
| 35 | 12500 | 18000 | 423 | 294 | 559 | 388 | 1.4 | 3.2 |
| 45 | 21200 | 25900 | 827 | 678 | 983 | 806 | 2.5 | 5.5 |

Order numbers

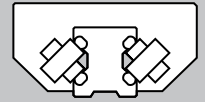
| Order no. | Order key |
|-----------|----------------------------|
| Cassette | Double rail |
| 84494A | e.g. FDA25D1500 |
| 84396A | |
| 84441A | |
| 84363A | |
| 84364A | |
| 84365A | Size |

*There is more information on moment load ratings on page 110/111.

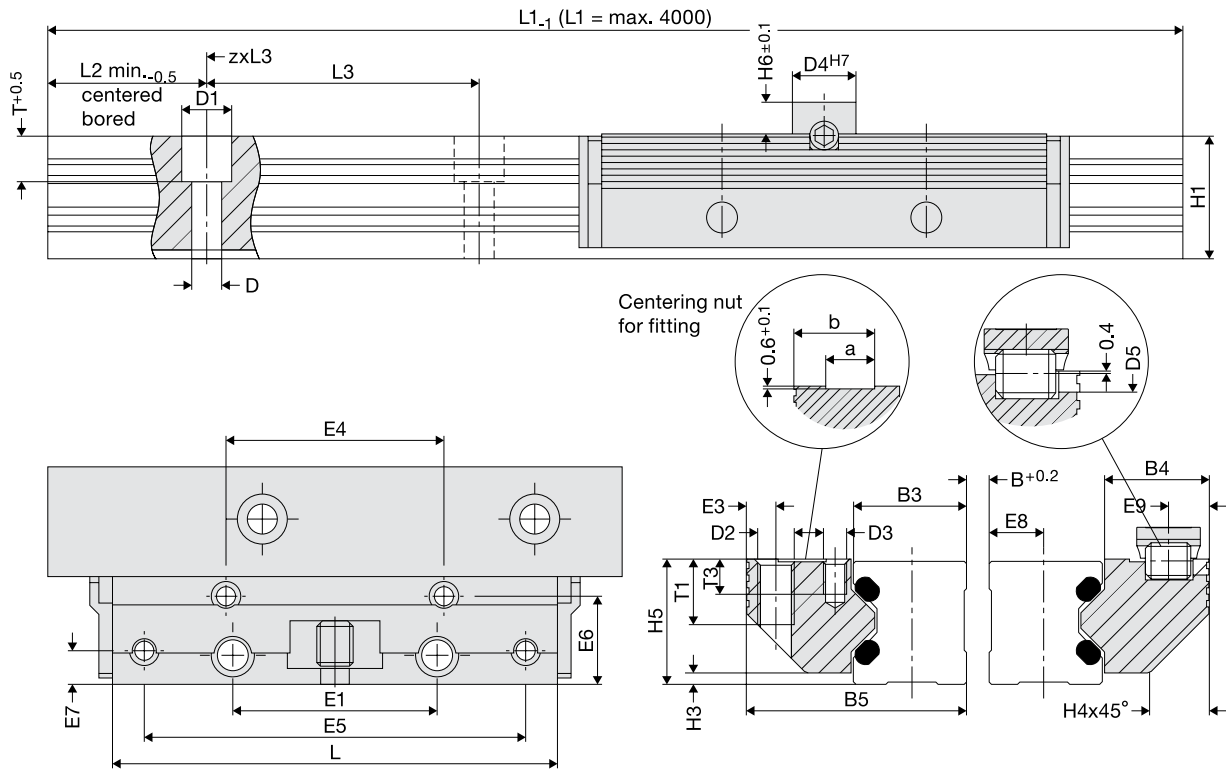
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|-----|------|-----|------|-----|----|-----|------|------|--|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b | |
| 12 | 24.4 | 15.0 | 12.00 | 11.9 | M3 | 8 | 3 | 3.4 | 29 | 57 | 9.7 | 3.4 | 5.5 | 4.9 | 4 | 6.0 | 4.5 | 9.5 | |
| 15 | 30.9 | 19.0 | 15.25 | 15.2 | M4 | 10 | 4 | 4.4 | 34 | 68 | 12.4 | 4.9 | 7.0 | 5.9 | 5 | 7.5 | 5.0 | 12.5 | |
| 20 | 40.9 | 23.0 | 20.00 | 20.4 | M5 | 10 | 4 | 4.9 | 42 | 80 | 16.9 | 5.9 | 9.5 | 5.9 | 5 | 8.0 | 7.5 | 16.0 | |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 | |
| 35 | 68.9 | 37.5 | 35.00 | 32.9 | M6 | 14 | 6 | 8.9 | 67 | 117 | 28.4 | 8.9 | 17.0 | 8.9 | 7 | 7.5 | 12.5 | 26.0 | |
| 45 | 82.4 | 46.5 | 45.00 | 36.4 | M8 | 14 | 6 | 9.9 | 83 | 146 | 30.9 | 9.9 | 22.0 | 8.9 | 7 | 9.5 | 15.5 | 31.0 | |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | Weight | | |
|------|--------------|-------|--------------------------|---------------|-----------|---------|--------|------|-----|
| | N | Co | Nm | | kg | | rail/m | | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | RSP | | |
| 12 | 2800 | 3000 | 1.5(B+ 30.3) | 1.4(B+ 30.3) | | 43 | 40 | 0.07 | 0.4 |
| 15 | 4200 | 3400 | 1.7(B+ 36.5) | 2.1(B+ 36.5) | | 58 | 72 | 0.12 | 0.8 |
| 20 | 5400 | 5400 | 2.7(B+ 47.0) | 2.7(B+ 47.0) | | 111 | 111 | 0.23 | 1.0 |
| 25 | 9000 | 10100 | 5.0(B+ 58.4) | 4.5(B+ 58.4) | | 222 | 198 | 0.34 | 1.9 |
| 35 | 12500 | 18000 | 9.0(B+ 85.0) | 6.3(B+ 85.0) | | 559 | 388 | 0.99 | 3.5 |
| 45 | 21200 | 25900 | 12.9(B+109.0) | 10.6(B+109.0) | | 983 | 806 | 1.79 | 5.6 |

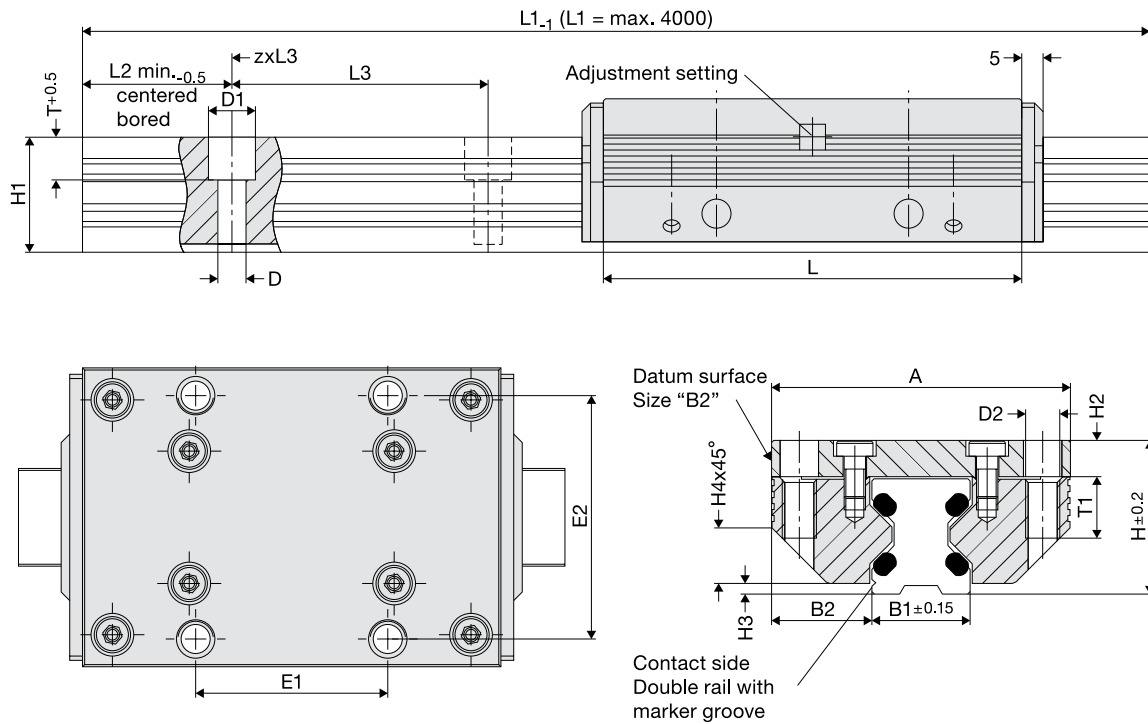
*There is more information on moment load ratings on page 110/111.

Order numbers

| Order no. | Order key |
|-----------|----------------------------|
| RSP | Single rail pair |
| 84495A | e.g. FDA25E1500 |
| 84395A | |
| 84442A | |
| 84367A | |
| 84368A | |
| 84369A | Single rail |

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Cassette + double rail



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|-----|----|------|-------|------|----|-----|----|-----|------|------|-----|------|----|-----|------|----|
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 12 | 37 | 64 | 19 | 12.0 | 12.50 | 3.4 | 6 | M 4 | 25 | 30 | 14.7 | 4.0 | 1.4 | 5.5 | 10 | 40 | 5.5 | 8 |
| 15 | 47 | 78 | 24 | 15.5 | 15.75 | 4.5 | 8 | M 5 | 30 | 38 | 18.7 | 5.0 | 2.0 | 8.0 | 10 | 60 | 6.0 | 10 |
| 20 | 63 | 92 | 30 | 21.0 | 21.00 | 5.5 | 10 | M 6 | 40 | 53 | 22.6 | 7.0 | 2.0 | 11.0 | 10 | 60 | 8.0 | 12 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |
| 35 | 100 | 135 | 48 | 32.0 | 34.00 | 9.0 | 15 | M10 | 62 | 82 | 37.0 | 10.5 | 3.5 | 20.0 | 12 | 80 | 11.5 | 20 |
| 45 | 120 | 165 | 60 | 45.0 | 37.50 | 11.0 | 18 | M12 | 80 | 100 | 46.0 | 13.5 | 4.0 | 22.0 | 16 | 105 | 14.5 | 24 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|------|-------------------------------|-------|-----------|---------|----------|--------|
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | rail/m |
| 12 | 620 | 170 | 1.6 | 5.7 | 2.4 | 8.9 | 0.1 | 0.4 |
| 15 | 700 | 230 | 2.5 | 7.5 | 4.0 | 12.0 | 0.2 | 0.8 |
| 20 | 940 | 300 | 4.0 | 13.0 | 6.0 | 19.0 | 0.4 | 0.9 |
| 25 | 1500 | 700 | 11.0 | 23.0 | 15.0 | 32.0 | 0.5 | 1.8 |
| 35 | 3100 | 1400 | 32.0 | 72.0 | 42.0 | 95.0 | 1.4 | 3.2 |
| 45 | 6300 | 2700 | 86.0 | 200.0 | 103.0 | 238.0 | 2.5 | 5.5 |

Order numbers

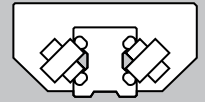
| Order no. | Order key |
|-----------|----------------------------|
| Cassette | Double rail |
| 84494L | e.g. FDA25D1500 |
| 84396L | |
| 84441L | |
| 84363L | |
| 84364L | |
| 84365L | Size |

*There is more information on moment load ratings on page 110/111.

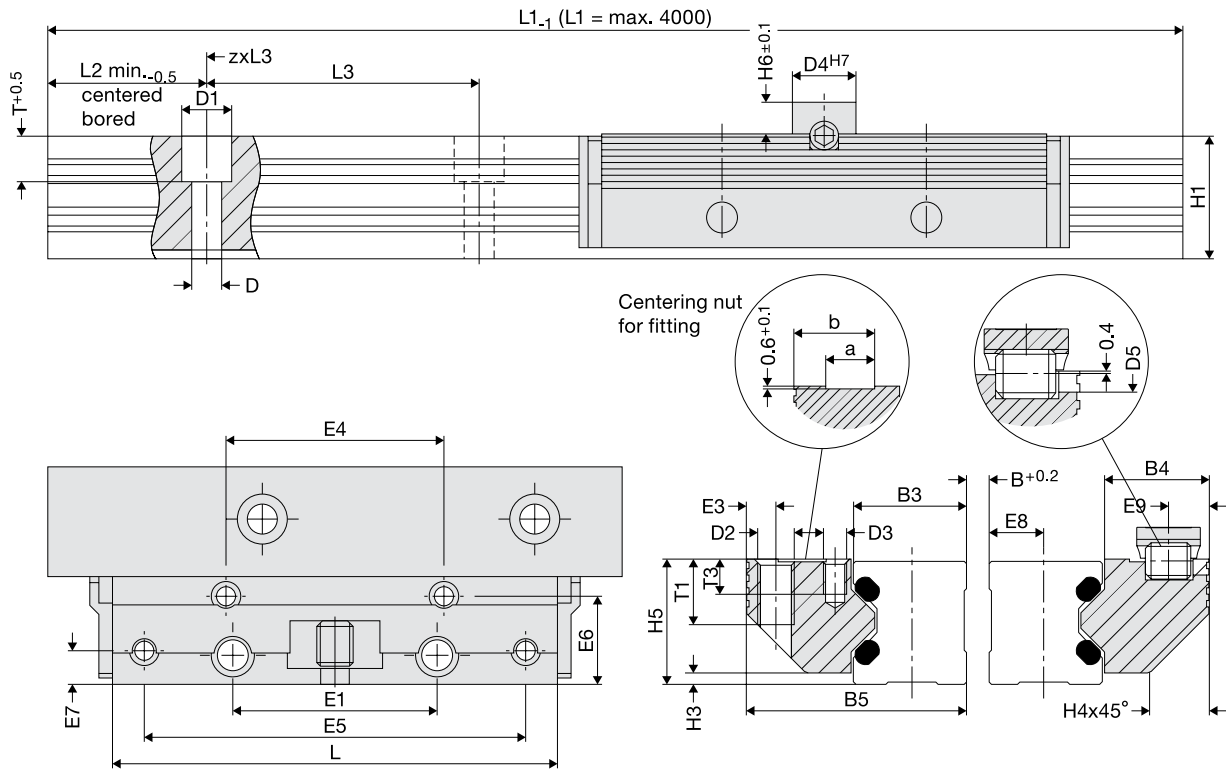
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|-----|------|-----|------|-----|----|-----|------|------|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b |
| 12 | 24.4 | 15.0 | 12.00 | 11.9 | M3 | 8 | 3 | 3.4 | 29 | 57 | 9.7 | 3.4 | 5.5 | 4.9 | 4 | 6.0 | 4.5 | 9.5 |
| 15 | 30.9 | 19.0 | 15.25 | 15.2 | M4 | 10 | 4 | 4.4 | 34 | 68 | 12.4 | 4.9 | 7.0 | 5.9 | 5 | 7.5 | 5.0 | 12.5 |
| 20 | 40.9 | 23.0 | 20.00 | 20.4 | M5 | 10 | 4 | 4.9 | 42 | 80 | 16.9 | 5.9 | 9.5 | 5.9 | 5 | 8.0 | 7.5 | 16.0 |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 |
| 35 | 68.9 | 37.5 | 35.00 | 32.9 | M6 | 14 | 6 | 8.9 | 67 | 117 | 28.4 | 8.9 | 17.0 | 8.9 | 7 | 7.5 | 12.5 | 26.0 |
| 45 | 82.4 | 46.5 | 45.00 | 36.4 | M8 | 14 | 6 | 9.9 | 83 | 146 | 30.9 | 9.9 | 22.0 | 8.9 | 7 | 9.5 | 15.5 | 31.0 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | Weight | | |
|------|--------------|------|--------------------------|---------------|-----------|---------|--------|--------|-----|
| | N | | Nm | | | | kg | | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | RSP | rail/m | |
| 12 | 620 | 170 | 0.08(B+ 30.3) | 0.30(B+ 30.3) | | 2.4 | 8.9 | 0.07 | 0.4 |
| 15 | 700 | 230 | 0.10(B+ 36.5) | 0.35(B+ 36.5) | | 4.0 | 12.0 | 0.12 | 0.8 |
| 20 | 940 | 300 | 0.15(B+ 47.0) | 0.50(B+ 47.0) | | 6.0 | 19.0 | 0.23 | 1.0 |
| 25 | 1500 | 700 | 0.35(B+ 58.4) | 0.70(B+ 58.4) | | 15.0 | 32.0 | 0.34 | 1.9 |
| 35 | 3100 | 1400 | 0.70(B+ 85.0) | 1.50(B+ 85.0) | | 42.0 | 95.0 | 0.99 | 3.5 |
| 45 | 6300 | 2700 | 1.40(B+109.0) | 3.10(B+109.0) | | 103.0 | 238.0 | 1.79 | 5.6 |

*There is more information on moment load ratings on page 110/111.

Order numbers

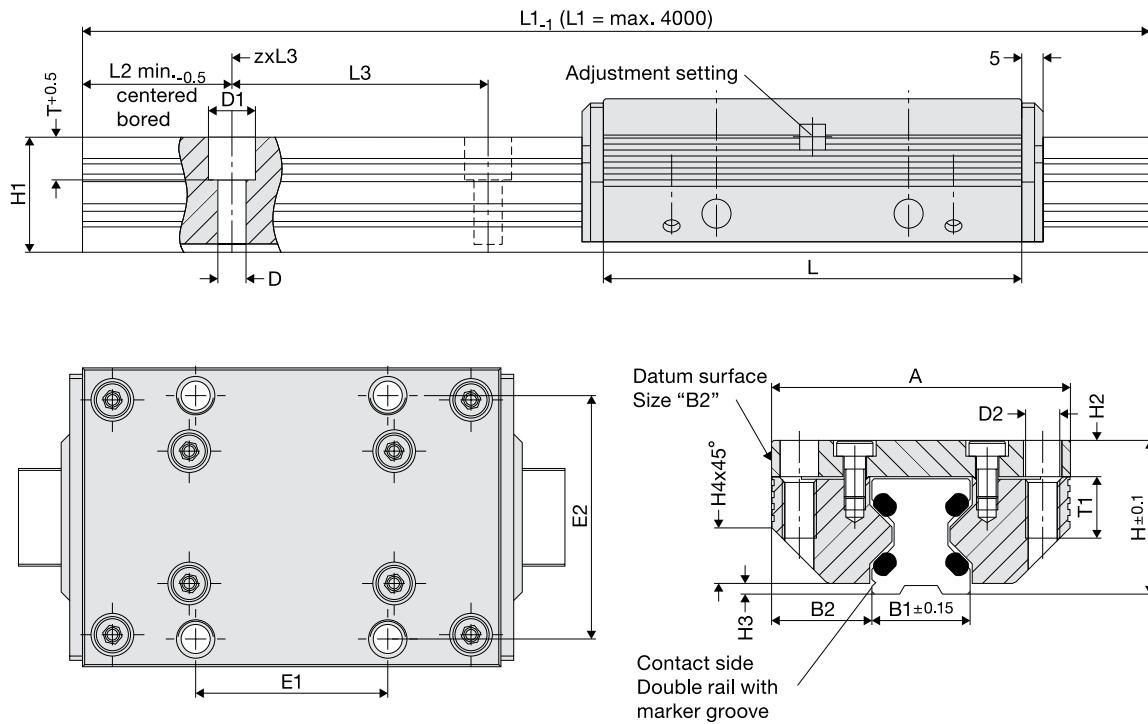
| Order no. | Order key |
|-----------|------------------|
| RSP | Single rail pair |

e.g. **FDA25E1500**

Single rail

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Cassette + double rail



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|-----|----|------|-------|------|----|-----|----|-----|------|------|-----|------|----|-----|------|----|
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 12 | 37 | 64 | 19 | 12.0 | 12.50 | 3.4 | 6 | M 4 | 25 | 30 | 14.7 | 4.0 | 1.4 | 5.5 | 10 | 40 | 5.5 | 8 |
| 15 | 47 | 78 | 24 | 15.5 | 15.75 | 4.5 | 8 | M 5 | 30 | 38 | 18.7 | 5.0 | 2.0 | 8.0 | 10 | 60 | 6.0 | 10 |
| 20 | 63 | 92 | 30 | 21.0 | 21.00 | 5.5 | 10 | M 6 | 40 | 53 | 22.6 | 7.0 | 2.0 | 11.0 | 10 | 60 | 8.0 | 12 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |
| 35 | 100 | 135 | 48 | 32.0 | 34.00 | 9.0 | 15 | M10 | 62 | 82 | 37.0 | 10.5 | 3.5 | 20.0 | 12 | 80 | 11.5 | 20 |
| 45 | 120 | 165 | 60 | 45.0 | 37.50 | 11.0 | 18 | M12 | 80 | 100 | 46.0 | 13.5 | 4.0 | 22.0 | 16 | 105 | 14.5 | 24 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|-------|-------------------------------|-----|-----------|---------|----------|-----------|
| | N | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | kg rail/m |
| 12 | 1100 | 1200 | 11 | 10 | 17 | 16 | 0.1 | 0.4 |
| 15 | 2700 | 3000 | 33 | 29 | 52 | 46 | 0.2 | 0.8 |
| 20 | 4300 | 5000 | 71 | 61 | 103 | 89 | 0.4 | 0.9 |
| 25 | 5800 | 8300 | 132 | 92 | 184 | 128 | 0.5 | 1.8 |
| 35 | 10000 | 14500 | 343 | 237 | 452 | 312 | 1.4 | 3.2 |
| 45 | 17000 | 20400 | 651 | 542 | 774 | 645 | 2.5 | 5.5 |

Order numbers

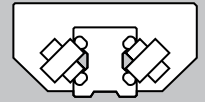
| Order no. | Order key |
|-----------|----------------------------|
| Cassette | Double rail |
| 84494AN | e.g. FDC25D1500 |
| 84396AN | |
| 84441AN | |
| 84363AN | |
| 84364AN | |
| 84365AN | |

*There is more information on moment load ratings on page 110/111.

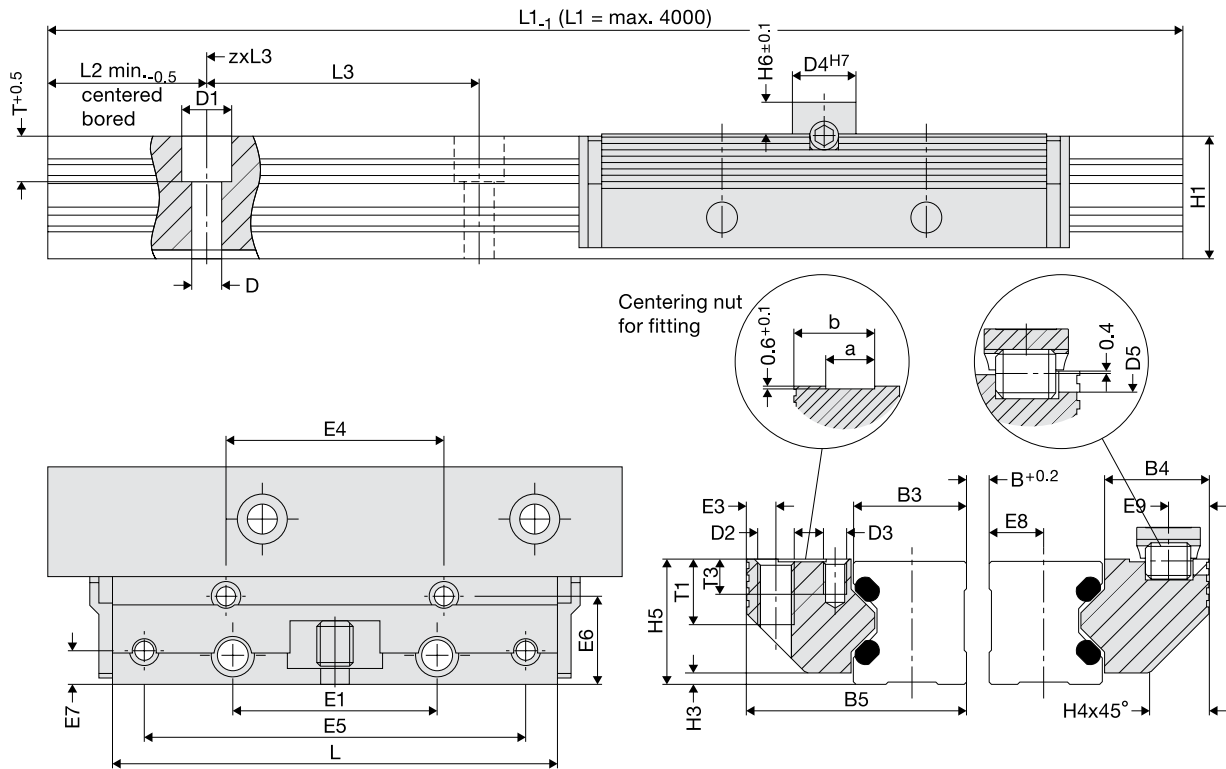
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|-----|------|-----|------|-----|----|-----|------|------|--|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b | |
| 12 | 24.4 | 15.0 | 12.00 | 11.9 | M3 | 8 | 3 | 3.4 | 29 | 57 | 9.7 | 3.4 | 5.5 | 4.9 | 4 | 6.0 | 4.5 | 9.5 | |
| 15 | 30.9 | 19.0 | 15.25 | 15.2 | M4 | 10 | 4 | 4.4 | 34 | 68 | 12.4 | 4.9 | 7.0 | 5.9 | 5 | 7.5 | 5.0 | 12.5 | |
| 20 | 40.9 | 23.0 | 20.00 | 20.4 | M5 | 10 | 4 | 4.9 | 42 | 80 | 16.9 | 5.9 | 9.5 | 5.9 | 5 | 8.0 | 7.5 | 16.0 | |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 | |
| 35 | 68.9 | 37.5 | 35.00 | 32.9 | M6 | 14 | 6 | 8.9 | 67 | 117 | 28.4 | 8.9 | 17.0 | 8.9 | 7 | 7.5 | 12.5 | 26.0 | |
| 45 | 82.4 | 46.5 | 45.00 | 36.4 | M8 | 14 | 6 | 9.9 | 83 | 146 | 30.9 | 9.9 | 22.0 | 8.9 | 7 | 9.5 | 15.5 | 31.0 | |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | Weight | |
|------|--------------|-------|--------------------------|--------------|-----------|---------|--------|--------|
| | N | Co | Nm | | Nm | | RSP | kg |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | RSP | rail/m |
| 12 | 1100 | 1200 | 0.6(B+ 30.3) | 0.6(B+ 30.3) | 17 | 16 | 0.07 | 0.4 |
| 15 | 2700 | 3000 | 1.5(B+ 36.5) | 1.4(B+ 36.5) | 52 | 46 | 0.12 | 0.8 |
| 20 | 4300 | 5000 | 2.5(B+ 47.0) | 2.2(B+ 47.0) | 103 | 89 | 0.23 | 1.0 |
| 25 | 5800 | 8300 | 4.2(B+ 58.4) | 2.9(B+ 58.4) | 184 | 128 | 0.34 | 1.9 |
| 35 | 10000 | 14500 | 7.3(B+ 85.0) | 5.0(B+ 85.0) | 452 | 312 | 0.99 | 3.5 |
| 45 | 17000 | 20400 | 10.2(B+109.0) | 8.5(B+109.0) | 774 | 645 | 1.79 | 5.6 |

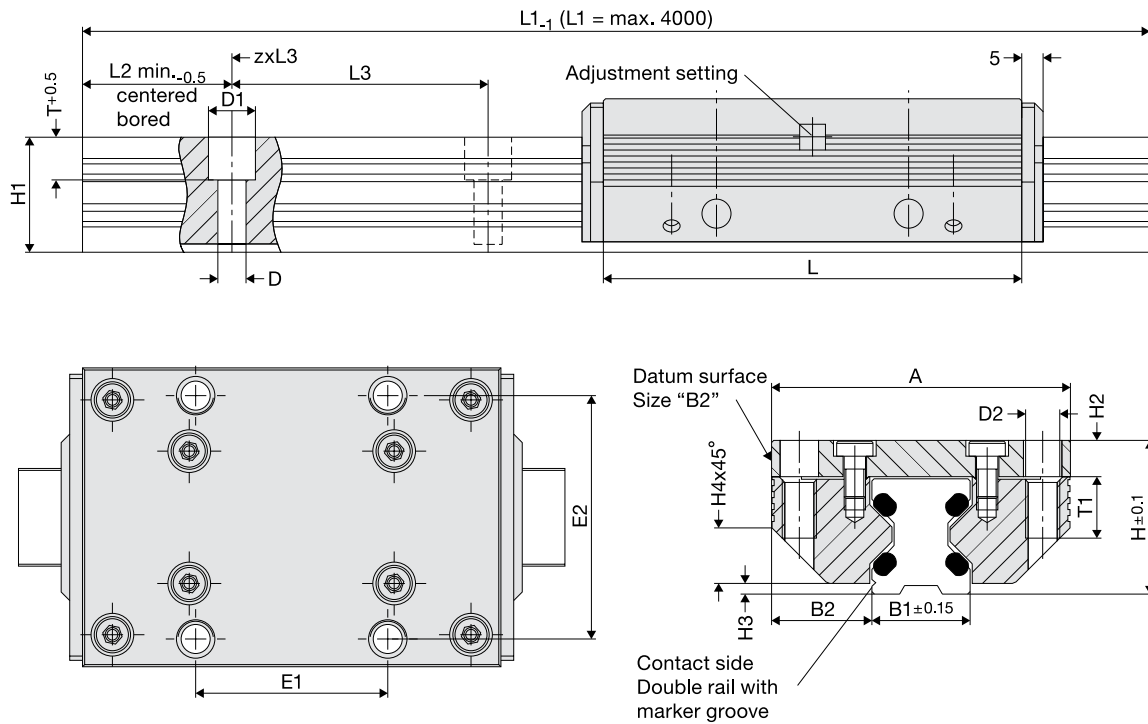
*There is more information on moment load ratings on page 110/111.

Order numbers

| Order no. | Order key |
|-----------|----------------------------|
| RSP | Single rail pair |
| 84495AN | e.g. FDC25E1500 |
| 84395AN | |
| 84442AN | |
| 84367AN | |
| 84368AN | |
| 84369AN | Size |

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Cassette + double rail



Dimensions

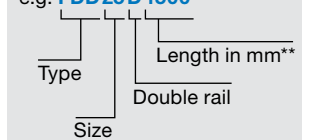
| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|----|----|------|-------|-----|----|-----|----|----|------|-----|-----|------|----|----|------|----|
| | mm | | | | | | | | | | | | | | | | | |
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|------|-------------------------------|-----|-----------|---------|----------|--------|
| | N | Co | Nm | | | | kg | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | rail/m |
| 25 | 1200 | 1600 | 25 | 18 | 35 | 25 | 0.5 | 1.8 |

Order numbers

| Order no. | Order key |
|---------------|------------------------|
| Cassette | Double rail |
| 84363P | e.g. FDD25D1500 |

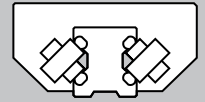


*There is more information on moment load ratings on page 110/111.

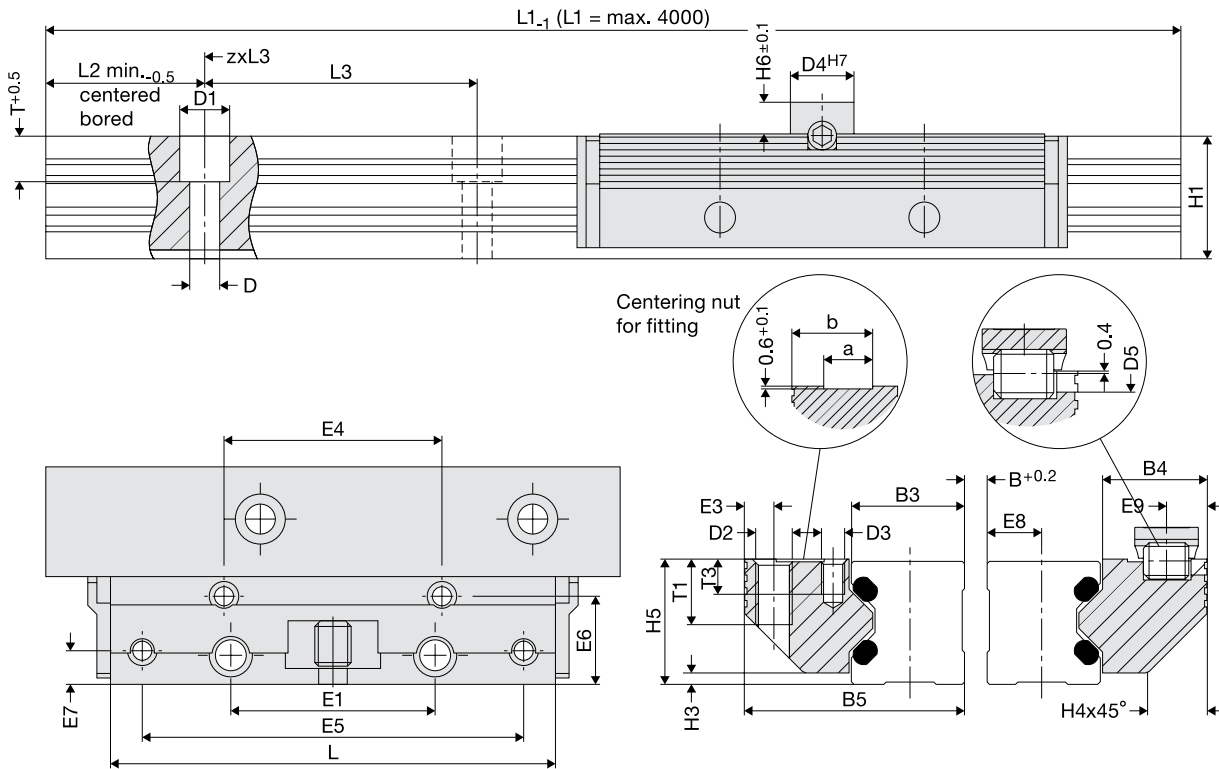
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

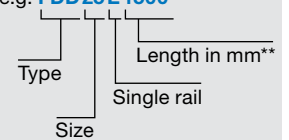
| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|----|------|-----|------|-----|----|-----|------|------|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | Weight | |
|------|--------------|------|--------------------------|-------------|-----------|---------|--------|--------|
| | N | Co | Nm | | Nm | | RSP | kg |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | RSP | rail/m |
| 25 | 1200 | 1600 | 0.8(B+58.4) | 0.6(B+58.4) | 35 | 25 | 0.34 | 1.9 |

Order numbers

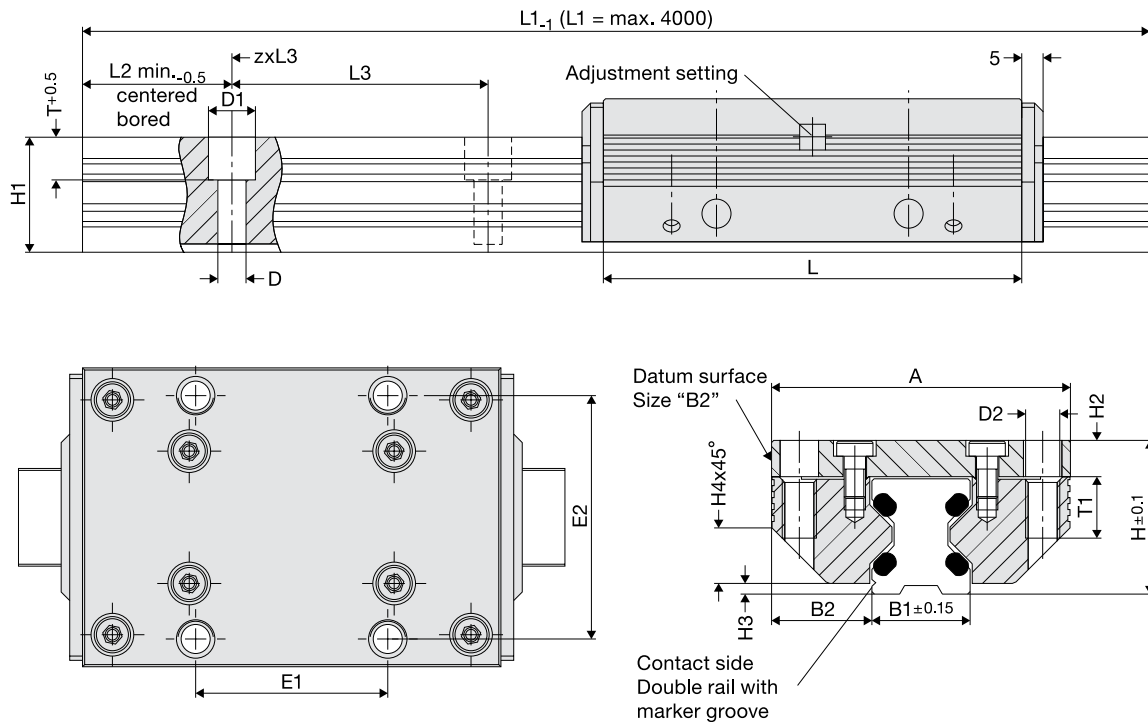
| Order no. | Order key |
|---------------|------------------------|
| RSP | Single rail pair |
| 84367P | e.g. FDD25E1500 |



*There is more information on moment load ratings on page 110/111.

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Cassette + double rail



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|-----|----|------|-------|------|----|-----|----|-----|------|------|-----|------|----|-----|------|----|
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 12 | 37 | 64 | 19 | 12.0 | 12.50 | 3.4 | 6 | M 4 | 25 | 30 | 14.7 | 4.0 | 1.4 | 5.5 | 10 | 40 | 5.5 | 8 |
| 15 | 47 | 78 | 24 | 15.5 | 15.75 | 4.5 | 8 | M 5 | 30 | 38 | 18.7 | 5.0 | 2.0 | 8.0 | 10 | 60 | 6.0 | 10 |
| 20 | 63 | 92 | 30 | 21.0 | 21.00 | 5.5 | 10 | M 6 | 40 | 53 | 22.6 | 7.0 | 2.0 | 11.0 | 10 | 60 | 8.0 | 12 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |
| 35 | 100 | 135 | 48 | 32.0 | 34.00 | 9.0 | 15 | M10 | 62 | 82 | 37.0 | 10.5 | 3.5 | 20.0 | 12 | 80 | 11.5 | 20 |
| 45 | 120 | 165 | 60 | 45.0 | 37.50 | 11.0 | 18 | M12 | 80 | 100 | 46.0 | 13.5 | 4.0 | 22.0 | 16 | 105 | 14.5 | 24 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|------|-------------------------------|-----|-----------|---------|----------|--------|
| | N | N | Nm | | | | kg | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | rail/m |
| 12 | 350 | 400 | 4 | 3 | 6 | 5 | 0.1 | 0.4 |
| 15 | 600 | 700 | 8 | 6 | 12 | 10 | 0.2 | 0.8 |
| 20 | 700 | 900 | 12 | 9 | 17 | 14 | 0.4 | 0.9 |
| 25 | 1200 | 1600 | 25 | 18 | 35 | 25 | 0.5 | 1.8 |
| 35 | 2000 | 2500 | 58 | 44 | 76 | 58 | 1.4 | 3.2 |
| 45 | 4400 | 5500 | 180 | 140 | 210 | 170 | 2.5 | 5.5 |

Order numbers

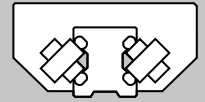
| Order no. | Order key |
|-----------|----------------------------|
| Cassette | Double rail |
| 84494T | e.g. FDA25D1500 |
| 84396T | |
| 84441T | |
| 84363T | |
| 84364T | |
| 84365T | Size |

*There is more information on moment load ratings on page 110/111.

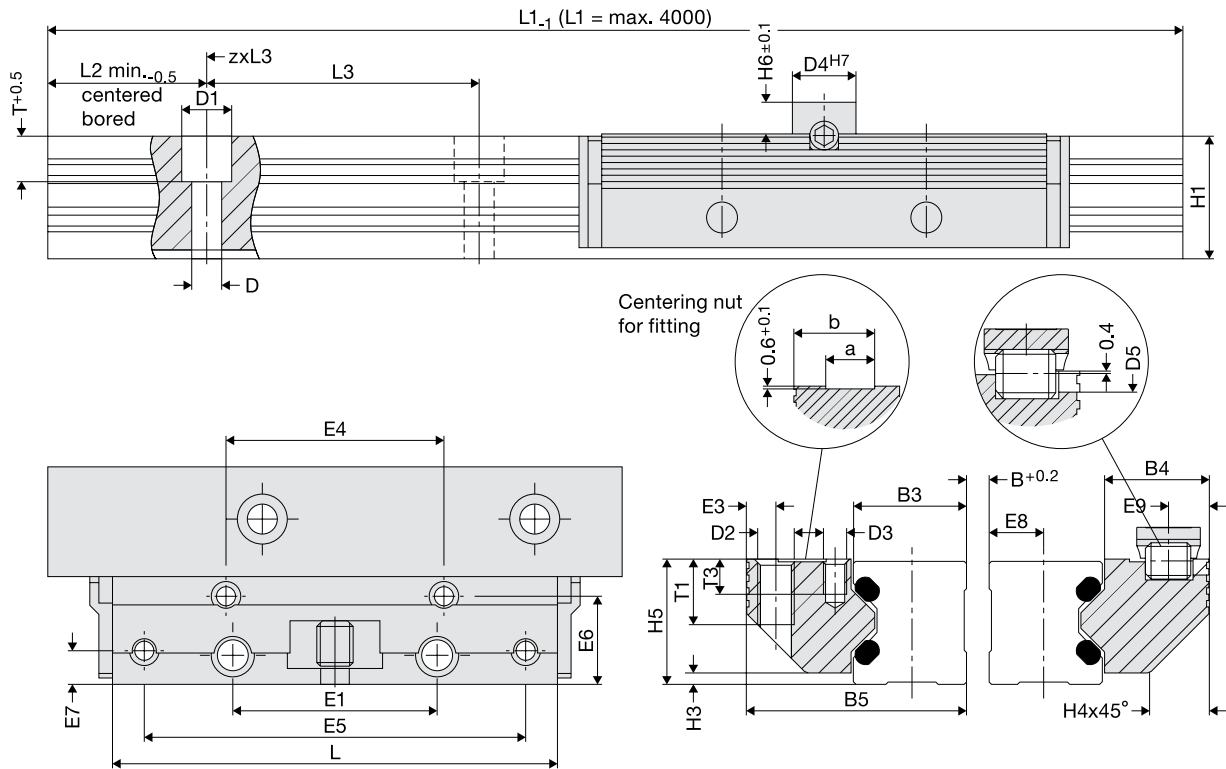
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|-----|------|-----|------|-----|----|-----|------|------|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b |
| 12 | 24.4 | 15.0 | 12.00 | 11.9 | M3 | 8 | 3 | 3.4 | 29 | 57 | 9.7 | 3.4 | 5.5 | 4.9 | 4 | 6.0 | 4.5 | 9.5 |
| 15 | 30.9 | 19.0 | 15.25 | 15.2 | M4 | 10 | 4 | 4.4 | 34 | 68 | 12.4 | 4.9 | 7.0 | 5.9 | 5 | 7.5 | 5.0 | 12.5 |
| 20 | 40.9 | 23.0 | 20.00 | 20.4 | M5 | 10 | 4 | 4.9 | 42 | 80 | 16.9 | 5.9 | 9.5 | 5.9 | 5 | 8.0 | 7.5 | 16.0 |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 |
| 35 | 68.9 | 37.5 | 35.00 | 32.9 | M6 | 14 | 6 | 8.9 | 67 | 117 | 28.4 | 8.9 | 17.0 | 8.9 | 7 | 7.5 | 12.5 | 26.0 |
| 45 | 82.4 | 46.5 | 45.00 | 36.4 | M8 | 14 | 6 | 9.9 | 83 | 146 | 30.9 | 9.9 | 22.0 | 8.9 | 7 | 9.5 | 15.5 | 31.0 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | Weight | |
|------|--------------|------|--------------------------|---------------|-----------|---------|--------|--------|
| | N | Co | Nm | | RSP | | kg | |
| | C | Co | Mocx | Mcx | Mocy/Mocx | Mcy/Mcz | RSP | rail/m |
| 12 | 350 | 400 | 0.20(B+ 30.3) | 0.20(B+ 30.3) | 6 | 5 | 0.07 | 0.4 |
| 15 | 600 | 700 | 0.35(B+ 36.5) | 0.30(B+ 36.5) | 12 | 10 | 0.12 | 0.8 |
| 20 | 700 | 900 | 0.40(B+ 47.0) | 0.33(B+ 47.0) | 17 | 14 | 0.23 | 1.0 |
| 25 | 1200 | 1600 | 0.80(B+ 58.4) | 0.60(B+ 58.4) | 35 | 25 | 0.34 | 1.9 |
| 35 | 2000 | 2500 | 1.20(B+ 85.0) | 0.90(B+ 85.0) | 76 | 58 | 0.99 | 3.5 |
| 45 | 4400 | 5500 | 2.70(B+109.0) | 2.20(B+109.0) | 210 | 170 | 1.79 | 5.6 |

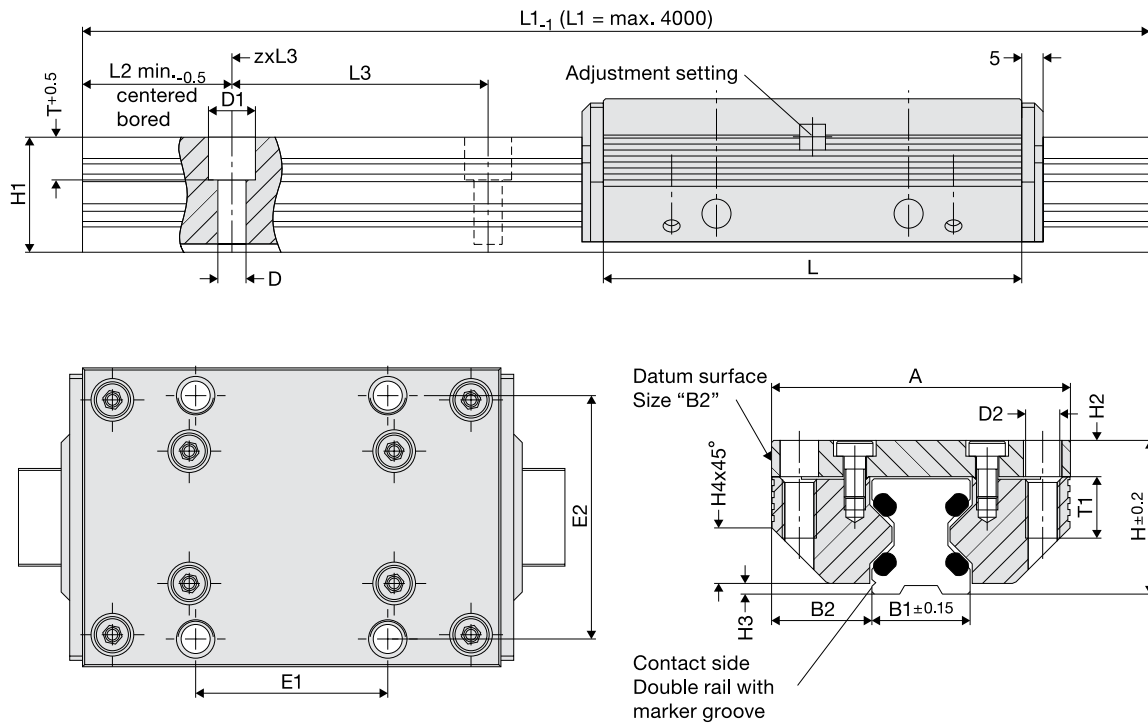
*There is more information on moment load ratings on page 110/111.

Order numbers

| Order no. | Order key |
|-----------|----------------------------|
| RSP | Single rail pair |
| 84495T | e.g. FDA25E1500 |
| 84395T | |
| 84442T | |
| 84367T | |
| 84368T | |
| 84369T | |

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Cassette + double rail



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|-----|----|------|-------|------|----|-----|----|-----|------|------|-----|------|----|-----|------|----|
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 12 | 37 | 64 | 19 | 12.0 | 12.50 | 3.4 | 6 | M 4 | 25 | 30 | 14.7 | 4.0 | 1.4 | 5.5 | 10 | 40 | 5.5 | 8 |
| 15 | 47 | 78 | 24 | 15.5 | 15.75 | 4.5 | 8 | M 5 | 30 | 38 | 18.7 | 5.0 | 2.0 | 8.0 | 10 | 60 | 6.0 | 10 |
| 20 | 63 | 92 | 30 | 21.0 | 21.00 | 5.5 | 10 | M 6 | 40 | 53 | 22.6 | 7.0 | 2.0 | 11.0 | 10 | 60 | 8.0 | 12 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |
| 35 | 100 | 135 | 48 | 32.0 | 34.00 | 9.0 | 15 | M10 | 62 | 82 | 37.0 | 10.5 | 3.5 | 20.0 | 12 | 80 | 11.5 | 20 |
| 45 | 120 | 165 | 60 | 45.0 | 37.50 | 11.0 | 18 | M12 | 80 | 100 | 46.0 | 13.5 | 4.0 | 22.0 | 16 | 105 | 14.5 | 24 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|------|-------------------------------|-------|-----------|---------|----------|--------|
| | N | N | Nm | | | | kg | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | rail/m |
| 12 | 620 | 170 | 1.6 | 5.7 | 2.4 | 8.9 | 0.1 | 0.4 |
| 15 | 700 | 230 | 2.5 | 7.5 | 4.0 | 12.0 | 0.2 | 0.8 |
| 20 | 940 | 300 | 4.0 | 13.0 | 6.0 | 19.0 | 0.4 | 0.9 |
| 25 | 1500 | 700 | 11.0 | 23.0 | 15.0 | 32.0 | 0.5 | 1.8 |
| 35 | 3100 | 1400 | 32.0 | 72.0 | 42.0 | 95.0 | 1.4 | 3.2 |
| 45 | 6300 | 2700 | 86.0 | 200.0 | 103.0 | 238.0 | 2.5 | 5.5 |

Order numbers

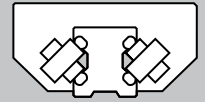
| Order no. | Order key |
|-----------|----------------------------|
| Cassette | Double rail |
| 84494LN | e.g. FDC25D1500 |
| 84396LN | |
| 84441LN | |
| 84363LN | |
| 84364LN | |
| 84365LN | Size |

*There is more information on moment load ratings on page 110/111.

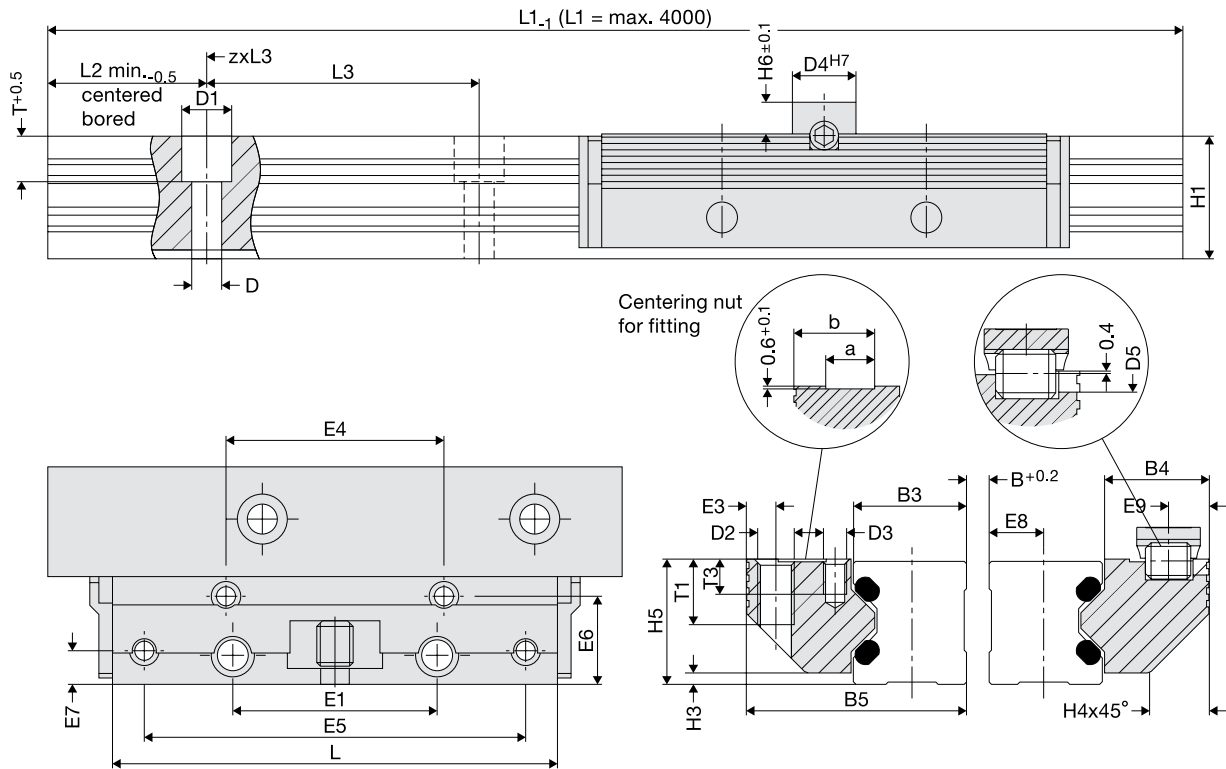
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|-----|------|-----|------|-----|----|-----|------|------|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b |
| 12 | 24.4 | 15.0 | 12.00 | 11.9 | M3 | 8 | 3 | 3.4 | 29 | 57 | 9.7 | 3.4 | 5.5 | 4.9 | 4 | 6.0 | 4.5 | 9.5 |
| 15 | 30.9 | 19.0 | 15.25 | 15.2 | M4 | 10 | 4 | 4.4 | 34 | 68 | 12.4 | 4.9 | 7.0 | 5.9 | 5 | 7.5 | 5.0 | 12.5 |
| 20 | 40.9 | 23.0 | 20.00 | 20.4 | M5 | 10 | 4 | 4.9 | 42 | 80 | 16.9 | 5.9 | 9.5 | 5.9 | 5 | 8.0 | 7.5 | 16.0 |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 |
| 35 | 68.9 | 37.5 | 35.00 | 32.9 | M6 | 14 | 6 | 8.9 | 67 | 117 | 28.4 | 8.9 | 17.0 | 8.9 | 7 | 7.5 | 12.5 | 26.0 |
| 45 | 82.4 | 46.5 | 45.00 | 36.4 | M8 | 14 | 6 | 9.9 | 83 | 146 | 30.9 | 9.9 | 22.0 | 8.9 | 7 | 9.5 | 15.5 | 31.0 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | | Weight | |
|------|--------------|------|--------------------------|---------------|-----------|---------|------|--------|--|
| | N | Co | Nm | | Nm | | RSP | kg | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | RSP | rail/m | |
| 12 | 620 | 170 | 0.08(B+ 30.3) | 0.30(B+ 30.3) | 2.4 | 8.9 | 0.07 | 0.4 | |
| 15 | 700 | 230 | 0.10(B+ 36.5) | 0.35(B+ 36.5) | 4.0 | 12.0 | 0.12 | 0.8 | |
| 20 | 940 | 300 | 0.15(B+ 47.0) | 0.50(B+ 47.0) | 6.0 | 19.0 | 0.23 | 1.0 | |
| 25 | 1500 | 700 | 0.35(B+ 58.4) | 0.70(B+ 58.4) | 15.0 | 32.0 | 0.34 | 1.9 | |
| 35 | 3100 | 1400 | 0.70(B+ 85.0) | 1.50(B+ 85.0) | 42.0 | 95.0 | 0.99 | 3.5 | |
| 45 | 6300 | 2700 | 1.40(B+109.0) | 3.10(B+109.0) | 103.0 | 238.0 | 1.79 | 5.6 | |

*There is more information on moment load ratings on page 110/111.

Order numbers

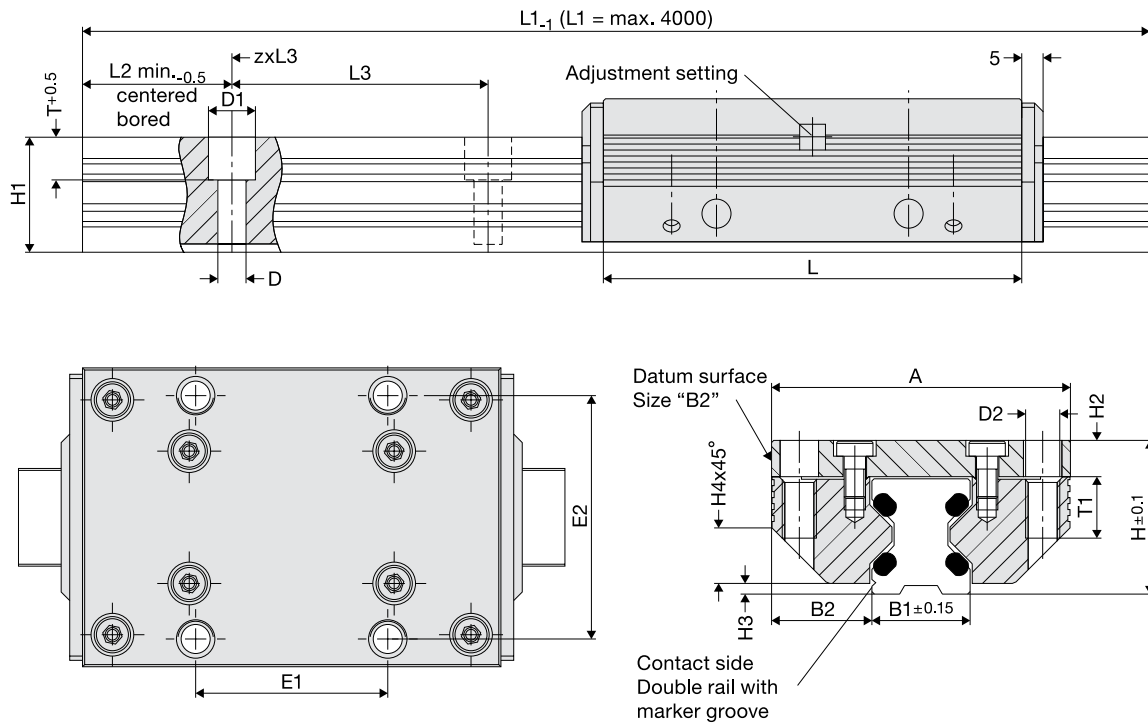
| Order no. | Order key |
|-----------|------------------|
| RSP | Single rail pair |

e.g. **FDC25E1500**

84495LN
84395LN
84442LN
84367LN
84368LN
84369LN

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Cassette + double rail



Dimensions

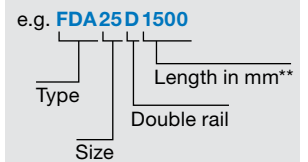
| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|-----|----|------|-------|------|----|-----|----|-----|------|------|-----|------|----|-----|------|----|
| | A | L | H | B1 | B2 | D | D1 | D2 | E1 | E2 | H1 | H2 | H3 | H4 | L2 | L3 | T | T1 |
| 25 | 70 | 98 | 36 | 23.0 | 23.50 | 6.6 | 11 | M 8 | 45 | 57 | 27.0 | 8.5 | 2.5 | 13.0 | 10 | 60 | 10.0 | 16 |
| 35 | 100 | 135 | 48 | 32.0 | 34.00 | 9.0 | 15 | M10 | 62 | 82 | 37.0 | 10.5 | 3.5 | 20.0 | 12 | 80 | 11.5 | 20 |
| 45 | 120 | 165 | 60 | 45.0 | 37.50 | 11.0 | 18 | M12 | 80 | 100 | 46.0 | 13.5 | 4.0 | 22.0 | 16 | 105 | 14.5 | 24 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | | |
|------|--------------|-------|-------------------------------|-----|-----------|---------|----------|-----|-----|
| | N | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | kg | |
| 25 | 7500 | 3700 | 58 | 118 | | 81 | 165 | 0.5 | 1.8 |
| 35 | 13400 | 8100 | 189 | 315 | | 250 | 416 | 1.4 | 3.2 |
| 45 | 24300 | 14400 | 461 | 777 | | 548 | 924 | 2.5 | 5.5 |

Order numbers

| Order no. | Order key |
|-----------|-------------|
| 84363S | Cassette |
| 84364S | Double rail |
| 84365S | Double rail |

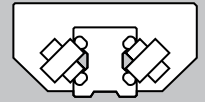


*There is more information on moment load ratings on page 110/111.

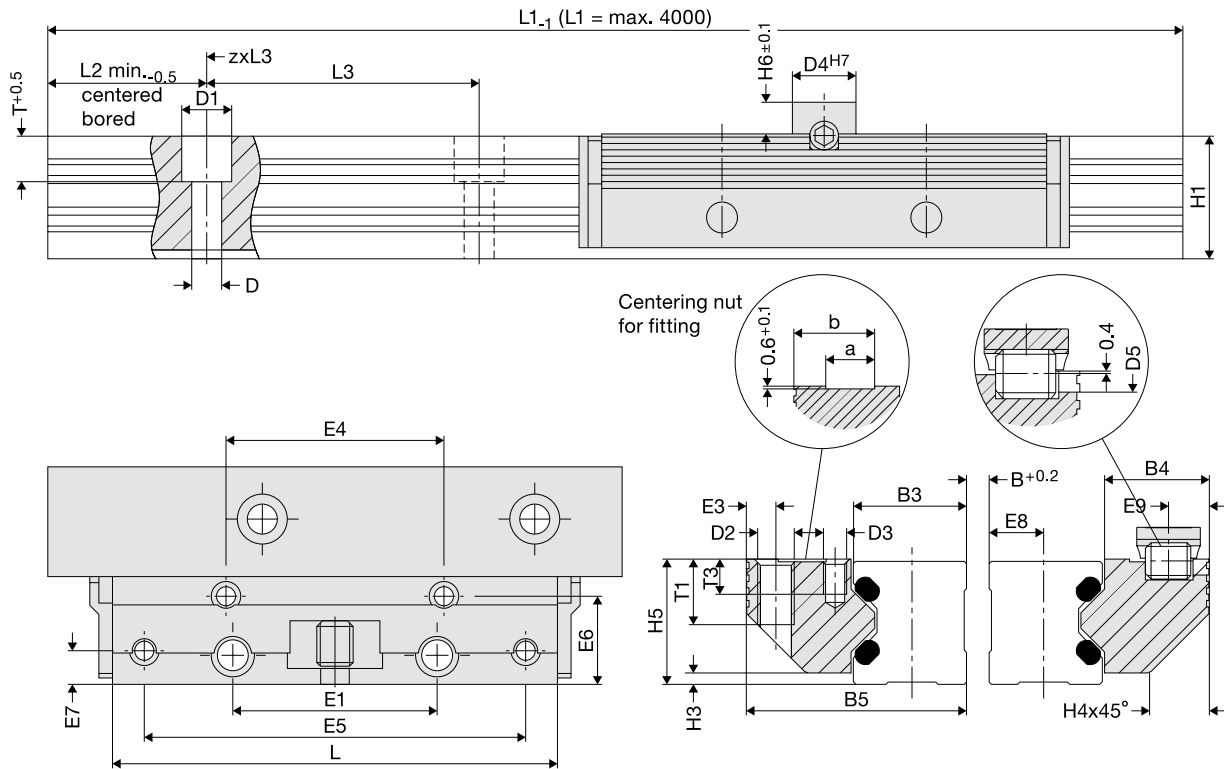
**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with felt wiper |



Pair of roller shoes + single rail pairs



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | |
|------|------------|------|-------|------|----|----|----|-----|----|-----|------|-----|------|-----|----|-----|------|------|
| | B5 | H5 | B3 | B4 | D3 | D4 | D5 | E3 | E4 | E5 | E6 | E7 | E8 | E9 | H6 | T3 | a | b |
| 25 | 48.4 | 27.5 | 25.00 | 22.9 | M5 | 14 | 6 | 6.4 | 48 | 84 | 19.4 | 7.4 | 12.0 | 8.9 | 7 | 5.0 | 10.5 | 17.5 |
| 35 | 68.9 | 37.5 | 35.00 | 32.9 | M6 | 14 | 6 | 8.9 | 67 | 117 | 28.4 | 8.9 | 17.0 | 8.9 | 7 | 7.5 | 12.5 | 26.0 |
| 45 | 82.4 | 46.5 | 45.00 | 36.4 | M8 | 14 | 6 | 9.9 | 83 | 146 | 30.9 | 9.9 | 22.0 | 8.9 | 7 | 9.5 | 15.5 | 31.0 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* RSP | | | | Weight | | | |
|------|--------------|-------|--------------------------|---------------|-----------|---------|--------|-----------|------|-----|
| | N | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | RSP | kg rail/m | | |
| 25 | 7500 | 3700 | 1.8(B+ 58.4) | 3.7(B+ 58.4) | | | 81 | 165 | 0.34 | 1.9 |
| 35 | 13400 | 8100 | 4.0(B+ 85.0) | 6.7(B+ 85.0) | | | 250 | 416 | 0.99 | 3.5 |
| 45 | 24300 | 14400 | 7.2(B+109.0) | 12.2(B+109.0) | | | 548 | 924 | 1.79 | 5.6 |

Order numbers

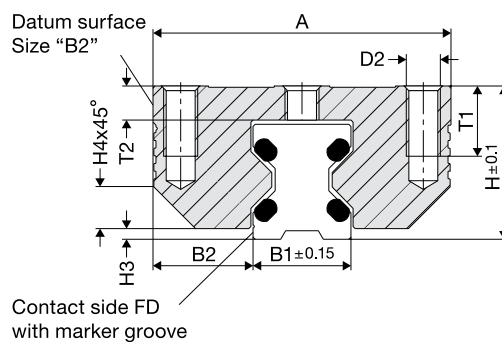
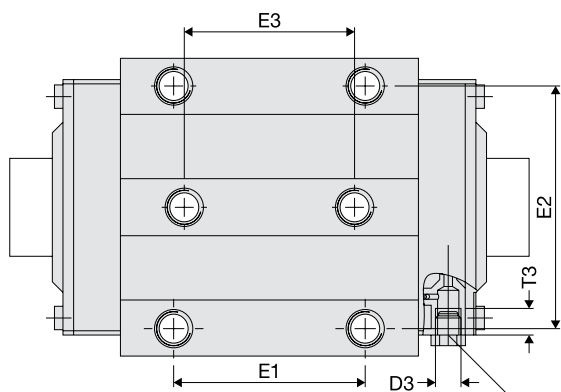
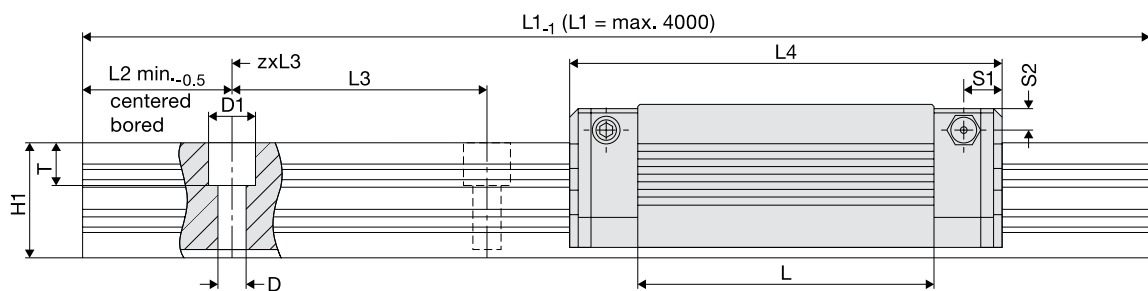
| Order no. | Order key |
|-----------|------------------|
| RSP | Single rail pair |

e.g. **FDA25E1500**

*There is more information on moment load ratings on page 110/111.

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

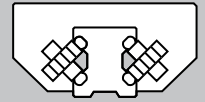
Cassette + double rail



1x Funnel-type lubricating nipple
DIN 3405-D1-M6x1

Materials

| | Body material | Rollers | Wipers |
|-----------------|-----------------------------------|----------------------------|--------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel | Plastic plate with TEEE wipers |



Dimensions

| Size | Dimensions | | | | | | | | | | | | | | | | | | | | | | | |
|------|------------|----|----|----|------|-----|----|----|----|----|----|----|----|-----|----|----|----|-----|----|----|----|----|----|----|
| | mm | | | | | | | | | | | | | | | | | | | | | | | |
| | A | L | H | B1 | B2 | D | D1 | D2 | D3 | E1 | E2 | E3 | H1 | H3 | H4 | L2 | L3 | L4 | T | T1 | T2 | T3 | S1 | S2 |
| 25 | 70 | 70 | 36 | 23 | 23.5 | 6.6 | 11 | M8 | M6 | 45 | 57 | 40 | 27 | 2.5 | 10 | 10 | 60 | 102 | 10 | 16 | 8 | 6 | 9 | 6 |

Load ratings, weight

| Size | Load ratings | | Moment load ratings* cassette | | | | Weight | |
|------|--------------|-------|-------------------------------|-----|-----------|---------|----------|--------|
| | N | | Nm | | | | kg | |
| | C | Co | Mocx | Mcx | Mocy/Mocz | Mcy/Mcz | Cassette | rail/m |
| 25 | 23400 | 25000 | 392 | 368 | 245 | 230 | 0.39 | 1.8 |

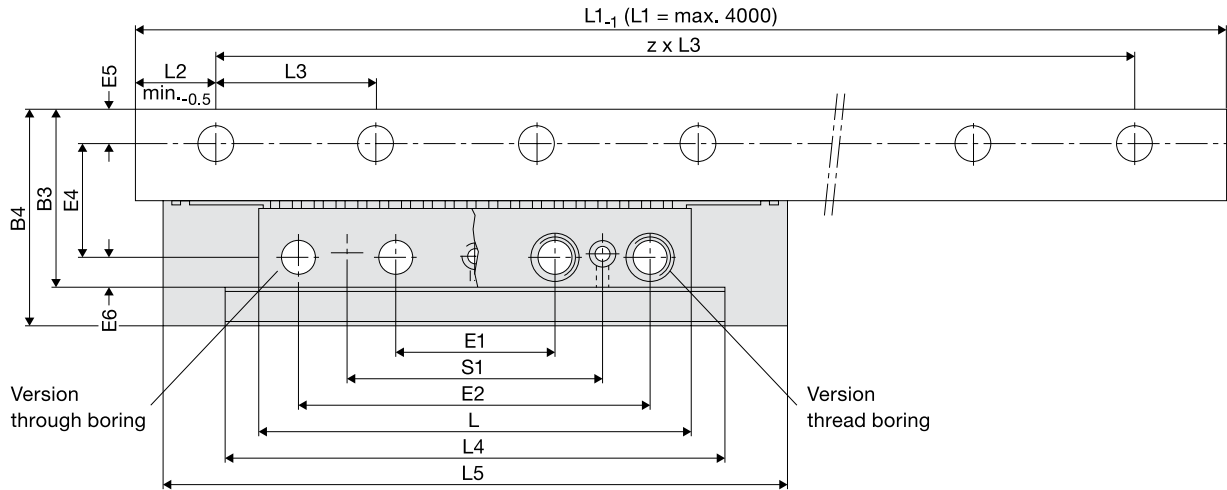
Order numbers

| Order no. | Order key |
|---------------|------------------------|
| Cassette | Double rail |
| 84042A | e.g. FDA25D1500 |

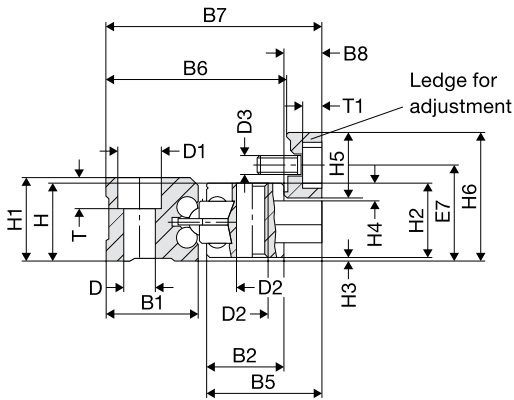
*There is more information on moment load ratings on page 110/111.

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

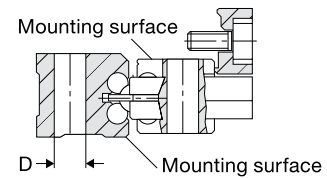
Recirculating element + single rail



Type FRA06E / FRA08E

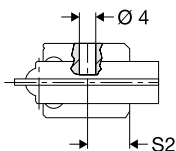


Type FRA10E / FRA13E

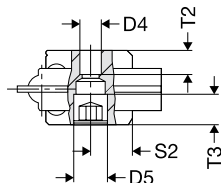


Lubrication borings

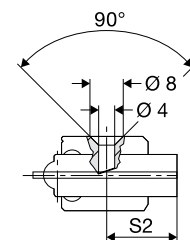
FRA06U / FRA08U
with through boring



FRA10U / FRA13U
with through boring

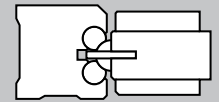


FRA06U / FRA13U
with thread boring



Materials

| | Body material | Balls | Wipers |
|-----------------|---|----------------------------|-----------------------|
| Standard | High-strength, anodized aluminium Steel Zinc diecasting | Antifriction bearing steel | Integrated felt wiper |



Dimensions single rail

| Size | Dimensions | | | | | | | | | | | | | | | | |
|--------|------------|------|------|------|------|------|------|----|------|------|------|------|-----|------|----|-----|-----|
| | mm | | | | | | | | | | | | | | | | |
| | H | B1 | B3 | B4 | B6 | B7 | D | D1 | E4 | E5 | E7 | H1 | H3 | H6 | L2 | L3 | T |
| FRA06E | 16.0 | 20.0 | 36.5 | 44.5 | 38.0 | 44.5 | 5.5 | 10 | 24.5 | 7.0 | 20.7 | 16.7 | 1.0 | 27.7 | 25 | 50 | 7.0 |
| FRA08E | 21.0 | 26.3 | 47.3 | 57.3 | 48.8 | 57.3 | 6.6 | 11 | 31.8 | 8.5 | 26.0 | 22.2 | 1.0 | 32.5 | 50 | 100 | 8.5 |
| FRA10E | 23.8 | 24.4 | 51.4 | 63.0 | 51.4 | 62.9 | 9.0 | - | 31.4 | 10.0 | 29.4 | 25.0 | 1.0 | 39.4 | 50 | 100 | - |
| FRA13E | 31.2 | 31.6 | 65.1 | 89.5 | 65.1 | 80.1 | 12.0 | - | 41.1 | 12.0 | 37.2 | 33.0 | 1.2 | 48.7 | 50 | 100 | - |

Dimensions recirculating element

| Size | Dimensions | | | | | | | | | | | | | | | | | | | | |
|---------|------------|------|------|------|-----|-----|------|----|-----|----|------|-----|------|-------|-----|-----|-----|------|-----|-----|------|
| | mm | | | | | | | | | | | | | | | | | | | | |
| | B2 | B5 | B8 | D2 | D3 | D4 | D5 | E1 | E2 | E6 | H2 | H4 | H5 | L | L4 | L5 | S1 | S2 | T1 | T2 | T3 |
| FRA06UD | 15.0 | 23.1 | 8.0 | 6.0 | M05 | - | - | 25 | 70 | 5 | 15.0 | 3.0 | 14.0 | 82.0 | 82 | 124 | - | 5.0 | 4.0 | - | - |
| FRA06UM | 15.0 | 23.1 | 8.0 | M06 | M05 | - | - | 25 | 70 | 5 | 15.0 | 3.0 | 14.0 | 82.0 | 82 | 124 | 50 | 7.0 | 4.0 | - | - |
| FRA08UD | 19.5 | 29.5 | 10.0 | 6.6 | M06 | - | - | 32 | 84 | 7 | 20.0 | 5.0 | 15.5 | 100.0 | 104 | 153 | - | 7.0 | 4.8 | - | - |
| FRA08UM | 19.5 | 29.5 | 10.0 | M08 | M06 | - | - | 32 | 84 | 7 | 20.0 | 5.0 | 15.5 | 100.0 | 104 | 153 | 58 | 9.5 | 4.8 | - | - |
| FRA10UD | 24.4 | 36.0 | 11.5 | 9.0 | M06 | M06 | M06 | 50 | 110 | 10 | 22.8 | 5.4 | 20.0 | 134.2 | 155 | 194 | - | 10.0 | 6.0 | 9.0 | 9.0 |
| FRA10UM | 24.4 | 36.0 | 11.5 | M10 | M06 | - | - | 50 | 110 | 10 | 22.8 | 5.4 | 20.0 | 134.2 | 155 | 194 | 80 | 11.0 | 6.0 | - | - |
| FRA13UD | 31.6 | 56.0 | 15.0 | 11.0 | M08 | M05 | G1/8 | 60 | 140 | 12 | 30.0 | 7.6 | 23.0 | 169.0 | 178 | 242 | - | 12.0 | 8.0 | 8.0 | 12.0 |
| FRA13UM | 31.6 | 56.0 | 15.0 | M12 | M08 | - | - | 60 | 140 | 12 | 30.0 | 7.6 | 23.0 | 169.0 | 178 | 242 | 100 | 15.0 | 8.0 | - | - |

Load ratings, weight

| Size | Load ratings | | Weight | | |
|---------|--------------|--------|----------------------------|--------|---------------------|
| | N | Co | kg | | |
| | C | Co | Recirculating element/unit | rail/m | |
| FRA06UD | 24200 | 37300 | 0.2 | 0.7 | with through boring |
| FRA06UM | 24200 | 37300 | 0.2 | 0.7 | with thread boring |
| FRA08UD | 38200 | 58300 | 0.4 | 1.2 | with through boring |
| FRA08UM | 38200 | 58300 | 0.4 | 1.2 | with thread boring |
| FRA10UD | 62000 | 85400 | 0.8 | 1.9 | with through boring |
| FRA10UM | 62000 | 85400 | 0.8 | 1.9 | with thread boring |
| FRA13UD | 103100 | 137700 | 1.7 | 2.9 | with through boring |
| FRA13UM | 103100 | 137700 | 1.7 | 2.9 | with thread boring |

Order numbers

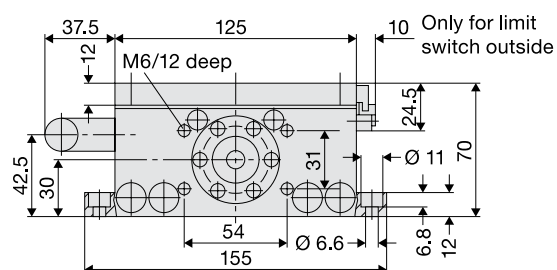
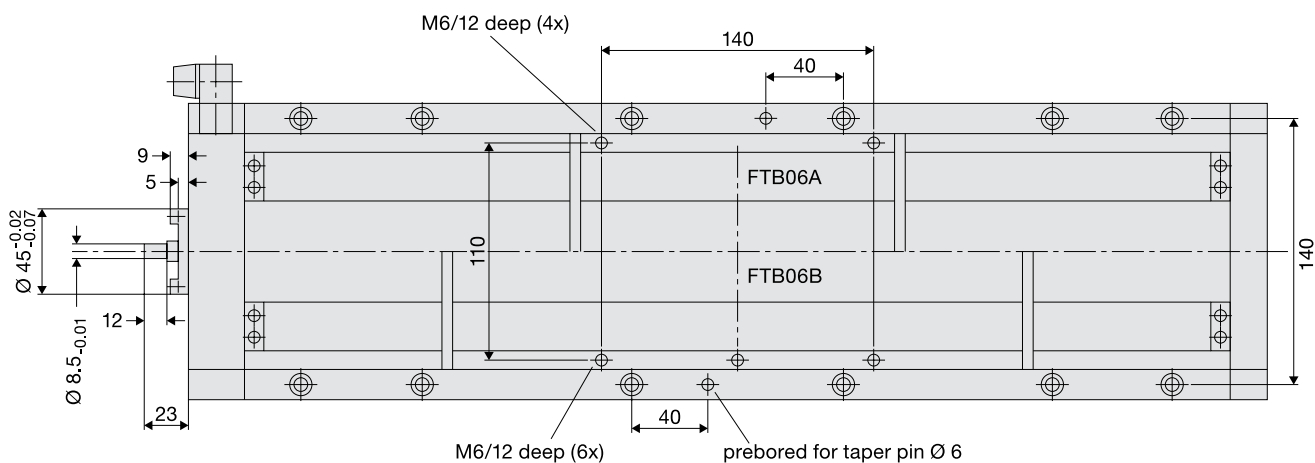
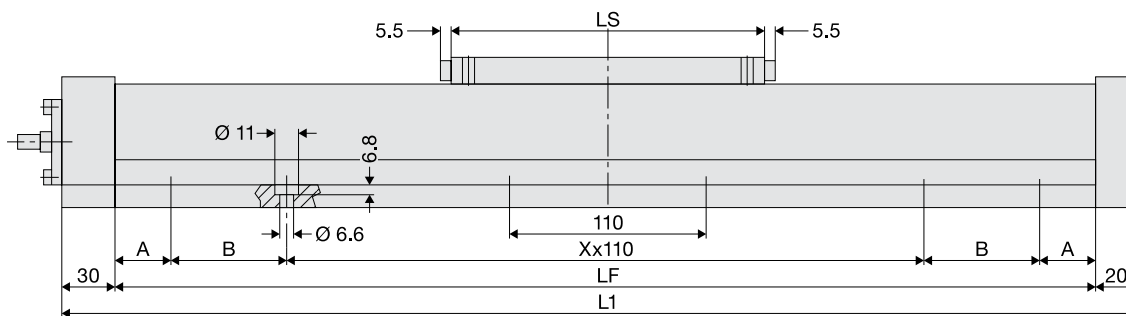
| Order no. | Order key |
|------------------|---|
| Recircl. element | Single rail |
| 80587A | <p>e.g. FRA06E1500</p> <p>Type: FRA06E Size: 1500 Length in mm**: 1500</p> |
| 80545A | |
| 80588A | |
| 80546A | |
| 80589A | |
| 80547A | |
| 80590A | |
| 80548A | |

**Guide rails up to 4000 mm on one piece. Longer strokes are coupled.

Linear Tables

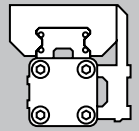
Type FTB

FTB06A / FTB06B



Materials

| | Body material | Balls | Wipers |
|-----------------|-----------------------------------|-----------------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel 100Cr6 | Plastic plate with felt wiper |
| Special | | Non-corrosive steel X12CrNi177 | |



Dimensions

| Stroke | Load rating N C | Torque | | Dimensions | | | | | | Spindle | | Traverse speed | | Spindle rotary speed | | Fixing screws Number x size | Weight kg | Order no. | |
|---------------|-----------------------|--------|----------|------------|------|-----|------|------|----------|---------|-------|----------------|------|----------------------|------|--------------------------------|--------------|------------------------|--|
| | | Mcx | Mcy, Mcz | A | B | LS | LF | L1 | X x 110 | Ø | pitch | Stand. | Max. | Stand. | Max. | | | | |
| FTB06A | | | | | | | | | | | | | | | | | | | |
| 100 | 15000 | 670 | 220 | 30.0 | 72.5 | 165 | 315 | 365 | 1 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 8xM6 | 6.4 | 92621A | |
| 200 | 15000 | 670 | 220 | 42.5 | | 165 | 415 | 465 | 3 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 8xM6 | 7.5 | 92622A | |
| 300 | 15000 | 670 | 220 | 92.5 | | 165 | 515 | 565 | 3 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 8xM6 | 8.6 | 92623A | |
| 400 | 15000 | 670 | 220 | 32.5 | | 165 | 615 | 665 | 5 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 12xM6 | 9.7 | 92624A | |
| 500 | 15000 | 670 | 220 | 82.5 | | 165 | 715 | 765 | 5 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 12xM6 | 10.8 | 92625A | |
| 700 | 15000 | 670 | 220 | 72.5 | | 165 | 915 | 965 | 7 x 110 | 16 | 5 | 6 | 14 | 1200 | 2800 | 16xM6 | 13.0 | 92626A | |
| 1000 | 15000 | 670 | 220 | 30.0 | 82.5 | 165 | 1215 | 1265 | 9 x 110 | 16 | 10 | 12 | 25 | 1200 | 2500 | 24xM6 | 16.3 | 92627A | |
| 1200 | 15000 | 670 | 220 | 30.0 | 72.5 | 165 | 1415 | 1465 | 11 x 110 | 16 | 10 | 8 | 12 | 800 | 1200 | 28xM6 | 18.5 | 92628A | |
| 1500 | 15000 | 670 | 220 | 32.5 | | 165 | 1715 | 1765 | 15 x 110 | 16 | 10 | 6 | 8 | 600 | 800 | 32xM6 | 21.8 | 92629A | |

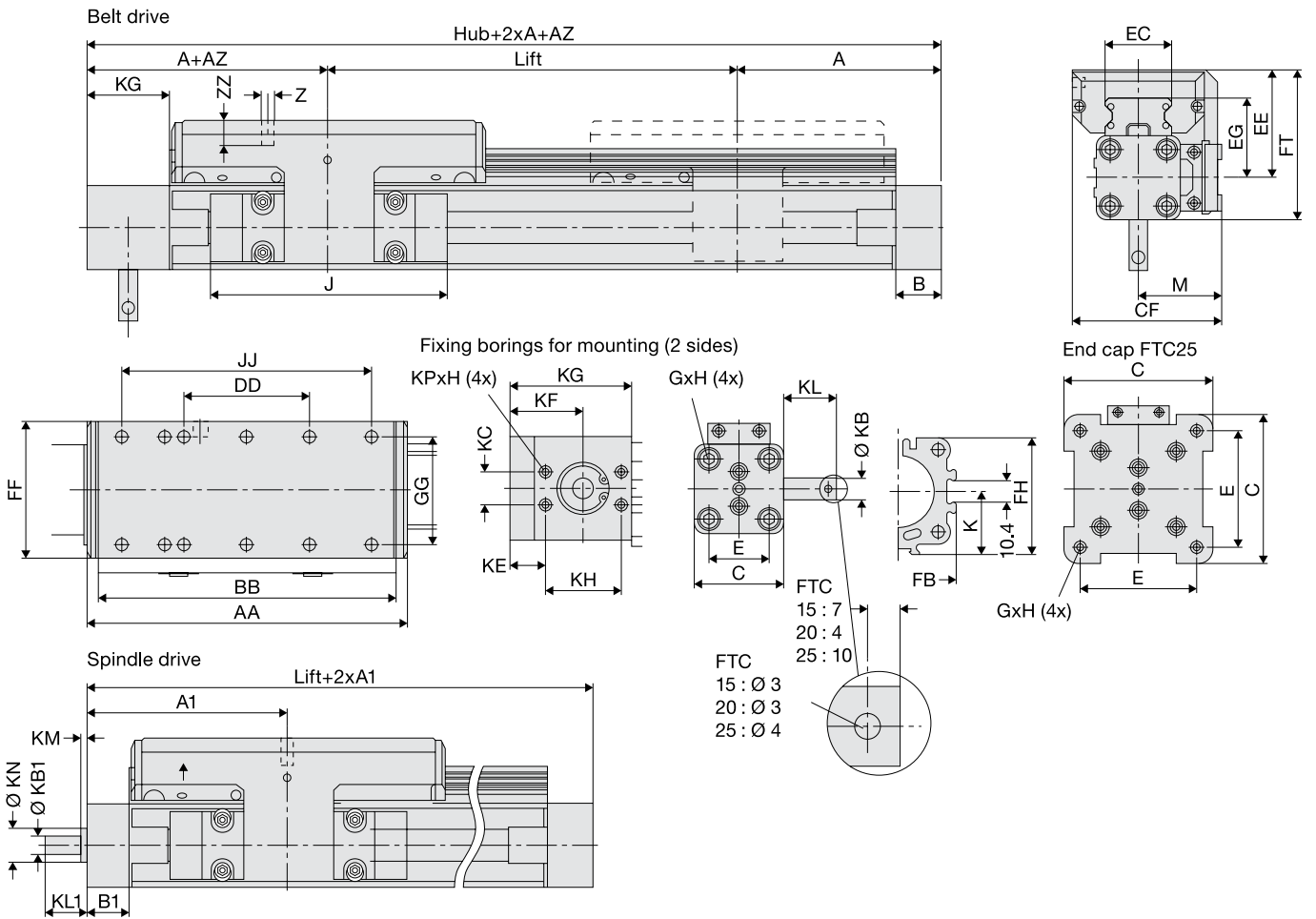
FTB06B

| | | | | | | | | | | | | | | | | | | |
|------|-------|------|------|-----|--|-----|------|------|----------|----|----|----|----|------|------|-------|------|------------------------|
| 100 | 30000 | 1380 | 1930 | 50 | | 280 | 430 | 480 | 3 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 8xM6 | 7.5 | 92630A |
| 200 | 30000 | 1380 | 1930 | 100 | | 280 | 530 | 580 | 3 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 8xM6 | 8.6 | 92631A |
| 300 | 30000 | 1380 | 1930 | 40 | | 280 | 630 | 680 | 5 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 12xM6 | 9.7 | 92632A |
| 400 | 30000 | 1380 | 1930 | 90 | | 280 | 730 | 780 | 5 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 12xM6 | 10.8 | 92633A |
| 500 | 30000 | 1380 | 1930 | 30 | | 280 | 830 | 880 | 7 x 110 | 16 | 5 | 8 | 15 | 1600 | 3000 | 16xM6 | 11.9 | 92634A |
| 700 | 30000 | 1380 | 1930 | 20 | | 280 | 1030 | 1080 | 9 x 110 | 16 | 5 | 6 | 14 | 1200 | 2800 | 20xM6 | 14.1 | 92635A |
| 1000 | 30000 | 1380 | 1930 | 60 | | 280 | 1330 | 1380 | 11 x 110 | 16 | 10 | 12 | 25 | 1200 | 2500 | 24xM6 | 17.4 | 92636A |
| 1200 | 30000 | 1380 | 1930 | 50 | | 280 | 1530 | 1580 | 13 x 110 | 16 | 10 | 8 | 12 | 800 | 1200 | 28xM6 | 19.6 | 92637A |
| 1500 | 30000 | 1380 | 1930 | 30 | | 280 | 1830 | 1880 | 15 x 110 | 16 | 10 | 6 | 8 | 600 | 800 | 32xM6 | 22.9 | 92638A |

Linear Modules

Type FTC

FTC 15-25



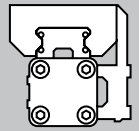
Dimensions

| Size | Dimensions | | | | | | | | | | | | |
|------|------------|-----|----|------|----|----|----|----|-----|------|------|----|--|
| | A | A1 | B | B1 | C | E | G | H | J | K | M | Z | |
| 15 | 125 | 100 | 22 | 22.0 | 41 | 27 | M5 | 10 | 117 | 21.5 | 40.5 | M6 | |
| 20 | 150 | 125 | 25 | 25.5 | 52 | 36 | M6 | 12 | 152 | 28.5 | 49.0 | M6 | |
| 25 | 200 | 175 | 25 | 33.0 | 87 | 70 | M6 | 12 | 200 | 43.0 | 62.0 | M6 | |

| Size | Dimensions | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|------------|----|-----|-----|-------|------|----|----|----|-----|------|-------|----|-----|------|-----|----|------|------|----|----|----|-----|----|----|----|----|
| | AA | AZ | BB | DD | CF | EC | EE | EG | FB | FF | FH | FT | GG | JJ | KB | KB1 | KC | KE | KF | KG | KH | KL | KL1 | KM | KN | KP | ZZ |
| 15 | 154 | 10 | 144 | 60 | 72.5 | 32.5 | 53 | 39 | 40 | 64 | 39.5 | 73.5 | 50 | 120 | 10j6 | 6 | 15 | 22.0 | 37.0 | 57 | 30 | 24 | 17 | 2 | 13 | M5 | 12 |
| 20 | 197 | 11 | 187 | 80 | 91.0 | 42.0 | 62 | 48 | 52 | 84 | 51.7 | 88.0 | 64 | 160 | 10j6 | 10 | 18 | 17.5 | 36.5 | 61 | 38 | 26 | 31 | 2 | 20 | M6 | 12 |
| 25 | 276 | 24 | 266 | 120 | 117.0 | 63.0 | 75 | 57 | 76 | 110 | 77.0 | 118.5 | 90 | 240 | 16j6 | 15 | 32 | 23.5 | 48.5 | 85 | 50 | 34 | 43 | 3 | 28 | M8 | 16 |

Materials

| | Body material | Balls | Wipers |
|-----------------|-----------------------------------|-----------------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel 100Cr6 | Plastic plate with felt wiper |
| Special | | Non-corrosive steel X12CrNi177 | |



| Stroke mm | Order no. | | | | | |
|--------------|--------------------|---------|--------------|---------|--------------|---------|
| | FTC 15 | | FTC 20 | | FTC 25 | |
| | with: Toothed belt | Spindle | Toothed belt | Spindle | Toothed belt | Spindle |
| 100 | 92700A | 92700S | 92734A | 92734S | 92768A | 92768S |
| 200 | 92701A | 92701S | 92735A | 92735S | 92769A | 92769S |
| 300 | 92702A | 92702S | 92736A | 92736S | 92770A | 92770S |
| 400 | 92703A | 92703S | 92737A | 92737S | 92771A | 92771S |
| 500 | 92704A | 92704S | 92738A | 92738S | 92772A | 92772S |
| 600 | 92705A | 92705S | 92739A | 92739S | 92773A | 92773S |
| 700 | 92706A | 92706S | 92740A | 92740S | 92774A | 92774S |
| 800 | 92707A | 92707S | 92741A | 92741S | 92775A | 92775S |
| 900 | 92708A | 92708S | 92742A | 92742S | 92776A | 92776S |
| 1000 | 92709A | 92709S | 92743A | 92743S | 92777A | 92777S |
| 1100 | 92710A | 92710S | 92744A | 92744S | 92778A | 92778S |
| 1200 | 92711A | | 92745A | 92745S | 92779A | 92779S |
| 1300 | 92712A | | 92746A | 92746S | 92780A | 92780S |
| 1400 | 92713A | | 92747A | 92747S | 92781A | 92781S |
| 1500 | 92714A | | 92748A | 92748S | 92782A | 92782S |
| 1600 | 92715A | | 92749A | 92749S | 92783A | 92783S |
| 1700 | 92716A | | 92750A | 92750S | 92784A | 92784S |
| 1800 | 92717A | | 92751A | 92751S | 92785A | 92785S |
| 1900 | 92718A | | 92752A | 92752S | 92786A | 92786S |
| 2000 | 92719A | | 92753A | 92753S | 92787A | 92787S |
| 2200 | 92721A | | 92755A | | 92789A | 92789S |
| 2400 | 92723A | | 92757A | | 92791A | 92791S |
| 2600 | 92725A | | 92759A | | 92793A | 92793S |
| 2800 | 92727A | | 92761A | | 92795A | 92795S |
| 3000 | 92729A | | 92763A | | 92797A | 92797S |
| 3200 | 92731A | | 92765A | | 92799A | 92799S |
| 3400 | 92733A | | 92767A | | | |

Performance overview

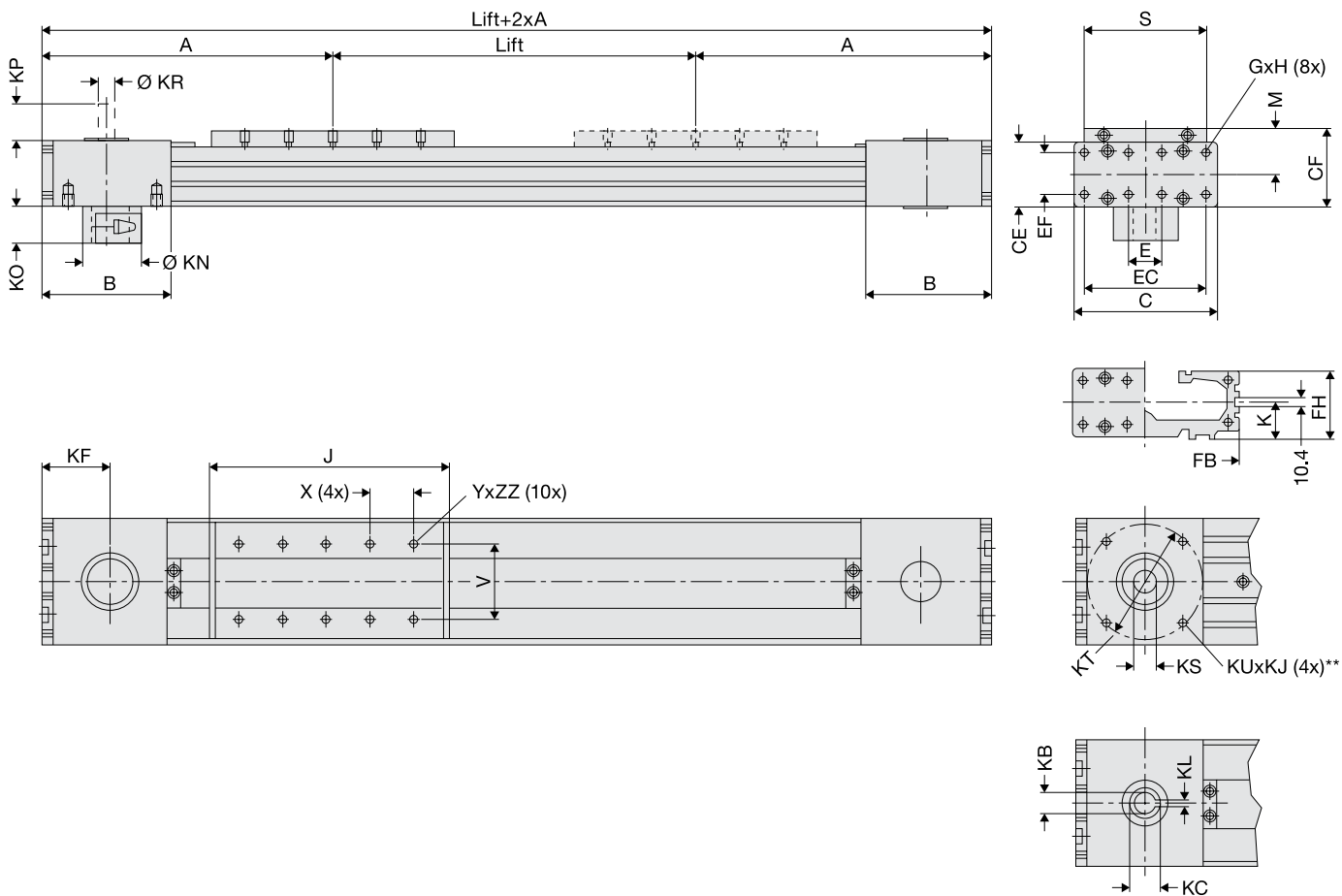
| | | | | | | | |
|---------------------------------------|-------------------|---------------|---------------|--------------|---------------|--------------|-------------------|
| Load rating: stat. / dyn. Co / C | N | 3400/4200 | | 5400/5400 | | 15100/13500 | |
| Max. torque (MCX / MCY, MCZ) | Nm | 81/190 | | 133/338 | | 483/922 | |
| Max. speed | m/s | 2 | 0.25 | 3 | 0.25/0.5 | 5 | 0.25/0.5/1.25/2.5 |
| Linear route per motor revolution | mm | 60 | 5 | 60 | 5/10 | 100 | 5/10/25 |
| Mass: basic weight/per m stroke/moved | kg | 1.8/0.43/0.75 | 1.9/0.36/0.75 | 3.7/0.7/1.18 | 3.6/0.59/1.18 | 8.2/1.32/2.5 | 8.8/1.01/2.5 |
| Max. rotary speed of the drive axle | min ⁻¹ | 2000 | | 3000 | | 3000 | |
| Max. effective power FX < 1 m/s | N | 55 | 250 | 150 | 600 | 425 | 1500 |
| at speed 1-2 m/s | N | 50 | 250 | 120 | 600 | 375 | 1500 |
| at speed > 2 m/s | N | | | 100 | | 300 | |
| Basic torque (without load) | Nm | 0.4 | 0.2 | 0.2 | 0.2/0.3 | 0.6 | 0.3/0.4/0.5 |
| Max. permissible drive torque < 1 m/s | Nm | 0.9 | | 2.3 | 1.5/2.8 | 10 | 4.2/7.5/20 |
| at speed 1-2 m/s | Nm | 0.9 | 0.6 | 2 | | 9.5 | |
| at speed > 2 m/s | Nm | | | 1.8 | | 7.5 | |
| Max. acceleration/deceleration | m/s ² | 10 | 10 | 10 | 10 | 10 | 10 |
| Repeat accuracy | mm/m | ±0.05 | | ±0.05 | | ±0.05 | |
| Positioning accuracy* | mm/m | ±0.15 | | ±0.15 | | ±0.15 | |
| Run accuracy | mm | ±0.03/300 | | ±0.03/300 | | ±0.03/300 | |

*depends on various factors

Linear Modules

Type FTD

FTD 15-35



Optional: Sleeve shaft with feather key groove

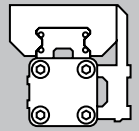
Dimensions

| Size | Dimensions | | | | | | | | | | | | |
|------|------------|-----|-----|----|----|----|-----|------|----|-----|----|----|----|
| | mm | | | | | | | | | | | | |
| | A | B | C | E | G | H | J | K | M | S | V | X | Y |
| 15 | 218 | 88 | 93 | 25 | M5 | 10 | 178 | 21.5 | 31 | 85 | 64 | 40 | M6 |
| 20 | 262 | 112 | 116 | 28 | M6 | 12 | 218 | 28.5 | 38 | 100 | 64 | 40 | M6 |
| 35 | 347 | 147 | 175 | 18 | M6 | 12 | 263 | 43.0 | 49 | 124 | 90 | 60 | M6 |

| Size | Dimensions | | | | | | | | | | | | | | | | | | |
|------|------------|------|-----|----|-----|------|------|------------------|------|----|----|----|------|----|------------------|------------------|-----|-----|----|
| | mm | | | | | | | | | | | | | | | | | | |
| | CE | CF | EC | EF | FB | FH | KF | KB* | KC | KL | KJ | KN | KO | KP | KR | KS* | KT | KU | ZZ |
| 15 | 42 | 52.5 | 79 | 27 | 92 | 39.5 | 49.0 | 16 ^{H7} | 18.3 | 5 | 8 | 34 | 21.7 | 30 | 16 ^{H7} | 16 ^{H7} | 82 | M 8 | 8 |
| 20 | 56 | 66.5 | 100 | 36 | 116 | 51.7 | 62.0 | 22 ^{H7} | 24.8 | 6 | 12 | 53 | 30.0 | 30 | 22 ^{H7} | 22 ^{H7} | 106 | M10 | 10 |
| 35 | 87 | 92.5 | 158 | 70 | 164 | 77.0 | 79.5 | 32 ^{H7} | 35.3 | 10 | 19 | 75 | 41.0 | 35 | 32 ^{H7} | 32 ^{H7} | 144 | M12 | 10 |

Materials

| | Body material | Balls | Wipers |
|-----------------|-----------------------------------|-----------------------------------|-------------------------------|
| Standard | High-strength, anodized aluminium | Antifriction bearing steel 100Cr6 | Plastic plate with felt wiper |
| Special | | Non-corrosive steel X12CrNi177 | |



| Stroke mm | Order no. | | |
|--------------|--------------------------------|--------------------------------|--------------------------------|
| | FTD 15 without motorisation | FTD 20 without motorisation | FTD 35 without motorisation |
| 100 | 92900A | 92925A | 92950A |
| 200 | 92901A | 92926A | 92951A |
| 300 | 92902A | 92927A | 92952A |
| 400 | 92903A | 92928A | 92953A |
| 500 | 92904A | 92929A | 92954A |
| 600 | 92905A | 92930A | 92955A |
| 700 | 92906A | 92931A | 92956A |
| 800 | 92907A | 92932A | 92957A |
| 900 | 92908A | 92933A | 92958A |
| 1000 | 92909A | 92934A | 92959A |
| 1200 | 92910A | 92935A | 92960A |
| 1400 | 92911A | 92936A | 92961A |
| 1600 | 92912A | 92937A | 92962A |
| 1800 | 92913A | 92938A | 92963A |
| 2000 | 92914A | 92939A | 92964A |
| 2500 | 92915A | 92940A | 92965A |
| 3000 | 92916A | 92941A | 92966A |
| 3500 | 92917A | 92942A | 92967A |
| 4000 | 92918A | 92943A | 92968A |
| 4500 | 92919A | 92944A | 92969A |
| 5000 | 92920A | 92945A | 92970A |
| 5500 | 92921A | 92946A | 92971A |
| 6000 | 92922A | 92947A | 92972A |
| 6500 | 92923A | 92948A | 92973A |
| 7000 | 92924A | 92949A | 92974A |

Performance overview

| | | | | |
|---------------------------------------|-------------------|-------------|-------------|---------------|
| Load rating: stat. / dyn. Co / C | N | 3400/4200 | 5400/5400 | 18000/12500 |
| Max. torque (MCX / MCY, MCZ) | Nm | 45/274 | 76/460 | 294/1233 |
| Max. speed | m/s | 10 | 10 | 10 |
| Max. acceleration/deceleration | m/s ² | 40 | 40 | 40 |
| Max. effective power FX < 1 m/s | N | 1070 | 1870 | 3120 |
| at speed 1-3 m/s | N | 890 | 1560 | 2660 |
| at speed > 3 m/s | N | 550 | 1030 | 1940 |
| Basic torque (without load) | Nm | 1.2 | 2.2 | 3.2 |
| Mass: basic weight/per m stroke/moved | kg | 3.8/4.3/1.0 | 7.7/6.7/1.9 | 22.6/15.2/4.7 |
| Max. permissible drive torque < 1 m/s | Nm | 31 | 71 | 174 |
| at speed 1-3 m/s | Nm | 25 | 60 | 148 |
| at speed > 3 m/s | Nm | 16 | 39 | 108 |
| Linear route per motor revolution | mm | 180 | 240 | 350 |
| Max. rotary speed of the drive axle | min ⁻¹ | 3000 | 2500 | 1700 |
| Repeat accuracy | mm/m | +/-0.05 | +/-0.05 | +/-0.05 |
| Positioning accuracy* | mm/m | +/-0.15 | +/-0.15 | +/-0.15 |
| Run accuracy | mm | +/-0.03/300 | +/-0.03/300 | +/-0.03/300 |

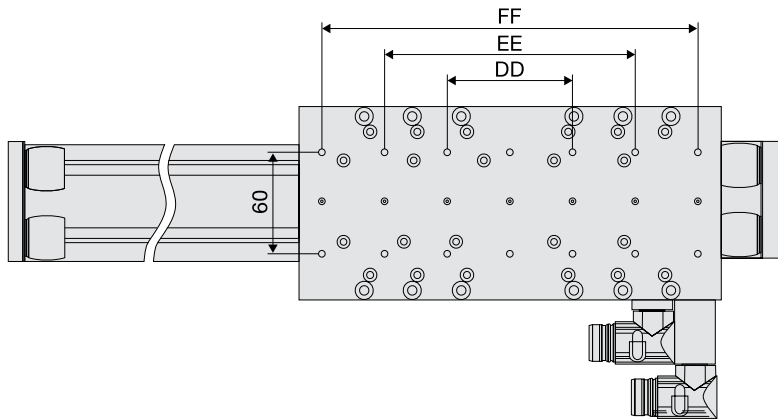
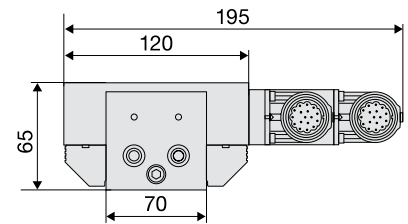
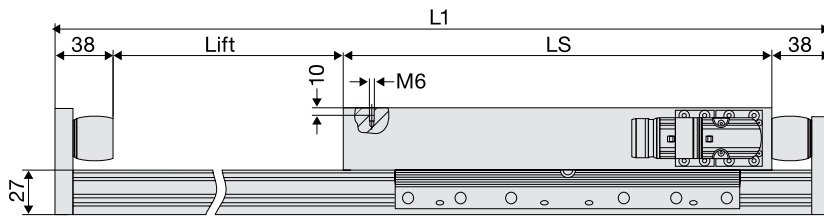
*depends on various factors

Linear Motor Modules

Type FTH



FTH25A / FTH25B

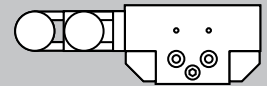


Performance overview / designs

| | | FTH25A | FTH25B | Optional |
|------------------------------------|--------------------------------------|--|--------|----------------------------------|
| Max. speed | m/s | 9 | 4.5 | |
| Max. acceleration | m/s ² | 100 | 100 | |
| Max. traverse path | mm | 3625 | 3530 | longer traverse paths on request |
| Weight rail | kg/m | 6 | 6 | |
| Weight slide bed | kg | 3 | 5 | second slide bed |
| Power continuous | N | 61 | 115 | |
| Power peak | N | 162 | 323 | |
| Positioning accuracy* | mm/m | 0.02 | 0.02 | |
| Run accuracy | mm/m | 0.04 | 0.04 | |
| Repeat accuracy (resolution) | mm | 0.02 | 0.02 | |
| Input voltage U _{dc} | V | 310 | 310 | |
| Continuous current I _{nc} | A | 2.1 | 2.1 | |
| Peak current I _{peak} | A | 6 | 6 | |
| Coil resistance R _{u-v} | | 3.8 | 7.6 | |
| Coil inductance L _{u-v} | mH | 20.4 | 40.7 | |
| Width of pole pair | mm | 24 | 24 | |
| Temperature sensor | KTY81 (2000 Ohm/25 °C) | | | |
| Measuring system | 1 Vpp (Auflösung 1 µm, Teilung 1 mm) | | | |
| End switch | - | 2 end positions / 1 reference (PNP-Ö, PNP-S) | | |
| Brakes | - | pneumatic | | |
| Cover | - | bellows | | |
| Cable drag chain | - | plastic / metal | | |

Special designs (e. g. water cooling, extended slide beds for greater loads, 2 slide beds etc.) on request.

Materials



| | Body material | Balls | Wipers | Cable |
|-----------------|---|-----------------------------------|-------------------------------|---|
| Standard | High-strength, anodized aluminium, steel raceways | Antifriction bearing steel 100Cr6 | Plastic plate with felt wiper | |
| Special | Corrosion-resistant raceways | Corrosion-resistant rollers | | Servoflex, drag chain-suitable up to 100 m/s ² , highly flexible |

Dimensions

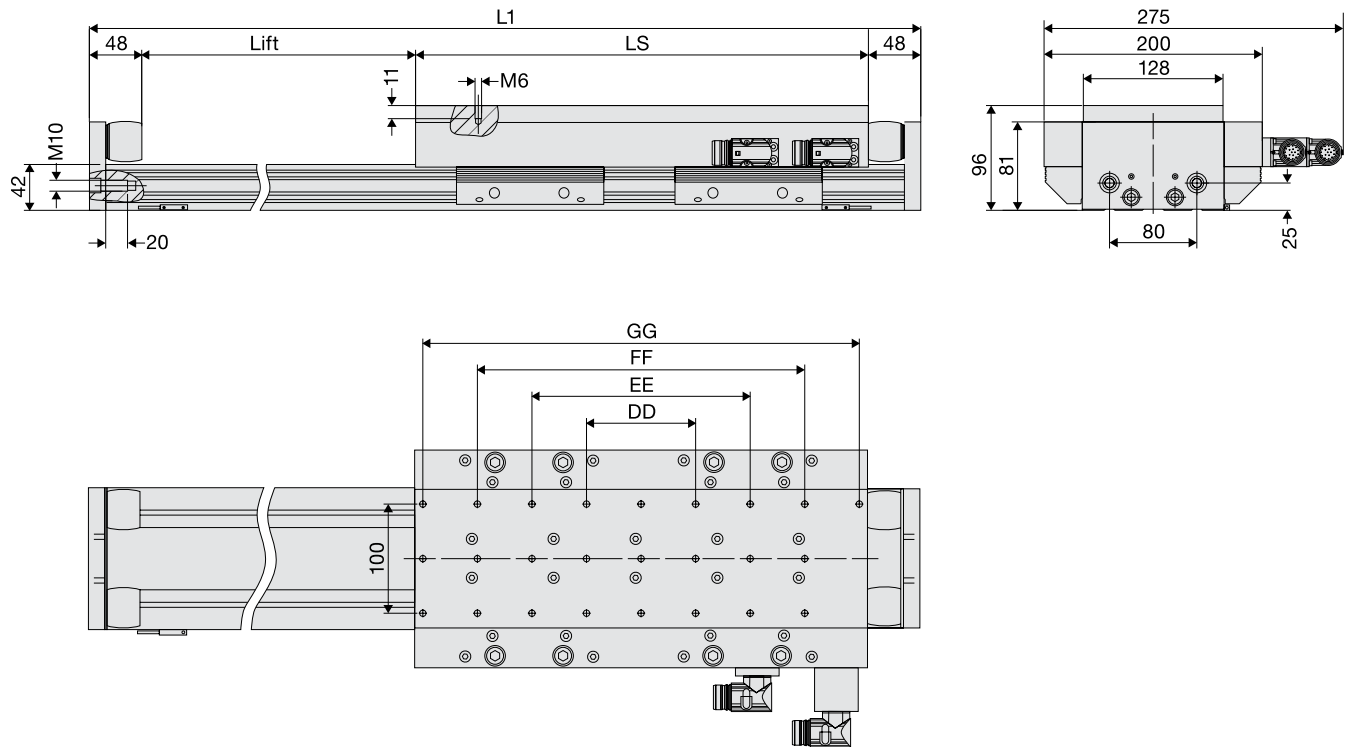
| Stroke | Load ratings | | Torque | | | | Dimensions | | | | Order no. | |
|---------------|--------------|------|--------|----------|-----|----------|------------|-----|----|-----|-----------|--------|
| | N | | Nm | | mm | | mm | | | | | |
| | C | Co | Mcx | Mcy, Mcz | Mox | Moy, Moz | L1 | LS | DD | EE | FF | |
| FTH25A | | | | | | | | | | | | |
| 265 | 7500 | 3700 | 293 | 165 | 145 | 82 | 506 | 165 | 75 | 150 | - | 93220A |
| 505 | 7500 | 3700 | 293 | 165 | 145 | 82 | 746 | 165 | 75 | 150 | - | 93221A |
| 745 | 7500 | 3700 | 293 | 165 | 145 | 82 | 986 | 165 | 75 | 150 | - | 93222A |
| 985 | 7500 | 3700 | 293 | 165 | 145 | 82 | 1226 | 165 | 75 | 150 | - | 93223A |
| 1225 | 7500 | 3700 | 293 | 165 | 145 | 82 | 1466 | 165 | 75 | 150 | - | 93224A |
| 1465 | 7500 | 3700 | 293 | 165 | 145 | 82 | 1706 | 165 | 75 | 150 | - | 93225A |
| 1705 | 7500 | 3700 | 293 | 165 | 145 | 82 | 1946 | 165 | 75 | 150 | - | 93226A |
| 1945 | 7500 | 3700 | 293 | 165 | 145 | 82 | 2186 | 165 | 75 | 150 | - | 93227A |
| 2185 | 7500 | 3700 | 293 | 165 | 145 | 82 | 2426 | 165 | 75 | 150 | - | 93228A |
| 2425 | 7500 | 3700 | 293 | 165 | 145 | 82 | 2666 | 165 | 75 | 150 | - | 93229A |
| 2665 | 7500 | 3700 | 293 | 165 | 145 | 82 | 2906 | 165 | 75 | 150 | - | 93230A |
| 2905 | 7500 | 3700 | 293 | 165 | 145 | 82 | 3146 | 165 | 75 | 150 | - | 93231A |
| 3145 | 7500 | 3700 | 293 | 165 | 145 | 82 | 3386 | 165 | 75 | 150 | - | 93232A |
| 3385 | 7500 | 3700 | 293 | 165 | 145 | 82 | 3626 | 165 | 75 | 150 | - | 93233A |
| 3625 | 7500 | 3700 | 293 | 165 | 145 | 82 | 3866 | 165 | 75 | 150 | - | 93234A |
| FTH25B | | | | | | | | | | | | |
| 170 | 15000 | 7400 | 293 | 461 | 145 | 228 | 506 | 260 | 75 | 150 | 225 | 93235A |
| 410 | 15000 | 7400 | 293 | 461 | 145 | 228 | 746 | 260 | 75 | 150 | 225 | 93236A |
| 650 | 15000 | 7400 | 293 | 461 | 145 | 228 | 986 | 260 | 75 | 150 | 225 | 93237A |
| 890 | 15000 | 7400 | 293 | 461 | 145 | 228 | 1226 | 260 | 75 | 150 | 225 | 93238A |
| 1130 | 15000 | 7400 | 293 | 461 | 145 | 228 | 1466 | 260 | 75 | 150 | 225 | 93239A |
| 1370 | 15000 | 7400 | 293 | 461 | 145 | 228 | 1706 | 260 | 75 | 150 | 225 | 93240A |
| 1610 | 15000 | 7400 | 293 | 461 | 145 | 228 | 1946 | 260 | 75 | 150 | 225 | 93241A |
| 1850 | 15000 | 7400 | 293 | 461 | 145 | 228 | 2186 | 260 | 75 | 150 | 225 | 93242A |
| 2090 | 15000 | 7400 | 293 | 461 | 145 | 228 | 2426 | 260 | 75 | 150 | 225 | 93243A |
| 2330 | 15000 | 7400 | 293 | 461 | 145 | 228 | 2666 | 260 | 75 | 150 | 225 | 93244A |
| 2570 | 15000 | 7400 | 293 | 461 | 145 | 228 | 2906 | 260 | 75 | 150 | 225 | 93245A |
| 2810 | 15000 | 7400 | 293 | 461 | 145 | 228 | 3146 | 260 | 75 | 150 | 225 | 93246A |
| 3050 | 15000 | 7400 | 293 | 461 | 145 | 228 | 3386 | 260 | 75 | 150 | 225 | 93247A |
| 3290 | 15000 | 7400 | 293 | 461 | 145 | 228 | 3626 | 260 | 75 | 150 | 225 | 93248A |
| 3530 | 15000 | 7400 | 293 | 461 | 145 | 228 | 3866 | 260 | 75 | 150 | 225 | 93249A |

Linear Motor Modules

Type FTH



FTH35A / FTH35B



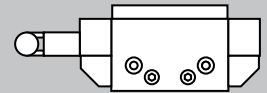
Performance overview / designs

| | | FTH35A | FTH35B | Optional |
|------------------------------------|-------------------------------------|--------|--|----------------------------------|
| Max. speed | m/s | 6 | 6 | |
| Max. acceleration | m/s ² | 100 | 100 | |
| Max. traverse path | mm | 3536 | 3361 | longer traverse paths on request |
| Weight rail | kg/m | 10 | 10 | |
| Weight slide bed | kg | 9 | 16 | second slide bed |
| Power continuous | N | 280 | 560 | |
| Power peak | N | 650 | 1300 | |
| Positioning accuracy* | mm/m | 0.02 | 0.02 | |
| Run accuracy | mm/m | 0.04 | 0.04 | |
| Repeat accuracy (resolution) | mm | 0.02 | 0.02 | |
| Input voltage U _{dc} | V | 560 | 560 | |
| Continuous current I _{nc} | A | 2.8 | 5.7 | |
| Peak current I _{peak} | A | 8.0 | 16.0 | |
| Coil resistance R _{u-v} | Ω | 7.4 | 3.7 | |
| Coil inductance L _{u-v} | mH | 55 | 27 | |
| Width of pole pair | mm | 32 | 32 | |
| Temperature sensor | KTY81 (2,000 Ohm/25 °C) | | | |
| Measuring system | 1 Vpp (Resolution 1 μm, pitch 1 mm) | | absolute measuring system | |
| End switch | - | | 2 end positions/1 reference (PNP-Ö, PNP-S) | |
| Brakes | - | | pneumatic | |
| Cover | - | | bellows | |
| Cable drag chain | - | | plastic/metal | |

Special designs (e. g. water cooling, extended slide beds for greater loads, 2 slide beds etc.) on request.

Materials

| | Body material | Balls | Wipers | Cable |
|-----------------|---|-----------------------------------|-------------------------------|---|
| Standard | High-strength, anodized aluminium, steel raceways | Antifriction bearing steel 100Cr6 | Plastic plate with felt wiper | |
| Special | Corrosion-resistant raceways | Corrosion-resistant rollers | | Servoflex, drag chain-suitable up to 100 m/s ² , highly flexible |



Dimensions

| Stroke | Load ratings | | Torque | | | | Dimensions | | | | | | Order no. |
|---------------|--------------|-------|--------|----------|------|----------|------------|-----|-----|-----|-----|-----|-----------|
| | N | | Nm | | | | mm | | | | | | |
| | C | Co | Mcx | Mcy, Mcz | Mox | Moy, Moz | L1 | LS | DD | EE | FF | GG | |
| FTH35A | | | | | | | | | | | | | |
| 208 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 544 | 240 | 100 | 200 | - | - | 92870A |
| 464 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 800 | 240 | 100 | 200 | - | - | 92871A |
| 720 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 1056 | 240 | 100 | 200 | - | - | 92872A |
| 976 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 1312 | 240 | 100 | 200 | - | - | 92873A |
| 1232 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 1568 | 240 | 100 | 200 | - | - | 92874A |
| 1488 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 1824 | 240 | 100 | 200 | - | - | 92875A |
| 1744 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 2080 | 240 | 100 | 200 | - | - | 92876A |
| 2000 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 2336 | 240 | 100 | 200 | - | - | 92877A |
| 2256 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 2592 | 240 | 100 | 200 | - | - | 92878A |
| 2512 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 2848 | 240 | 100 | 200 | - | - | 92879A |
| 2768 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 3104 | 240 | 100 | 200 | - | - | 92880A |
| 3024 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 3360 | 240 | 100 | 200 | - | - | 92881A |
| 3280 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 3616 | 240 | 100 | 200 | - | - | 92882A |
| 3536 | 29900 | 34500 | 1100 | 1000 | 1250 | 1150 | 3872 | 240 | 100 | 200 | - | - | 92883A |
| FTH35B | | | | | | | | | | | | | |
| 289 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 800 | 415 | 100 | 200 | 300 | 400 | 92884A |
| 545 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 1056 | 415 | 100 | 200 | 300 | 400 | 92885A |
| 801 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 1312 | 415 | 100 | 200 | 300 | 400 | 92886A |
| 1057 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 1568 | 415 | 100 | 200 | 300 | 400 | 92887A |
| 1313 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 1824 | 415 | 100 | 200 | 300 | 400 | 92888A |
| 1569 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 2080 | 415 | 100 | 200 | 300 | 400 | 92889A |
| 1825 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 2336 | 415 | 100 | 200 | 300 | 400 | 92890A |
| 2081 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 2592 | 415 | 100 | 200 | 300 | 400 | 92891A |
| 2337 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 2848 | 415 | 100 | 200 | 300 | 400 | 92892A |
| 2593 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 3104 | 415 | 100 | 200 | 300 | 400 | 92893A |
| 2849 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 3360 | 415 | 100 | 200 | 300 | 400 | 92894A |
| 3105 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 3616 | 415 | 100 | 200 | 300 | 400 | 92895A |
| 3361 | 29900 | 34500 | 2150 | 3000 | 2500 | 3450 | 3872 | 415 | 100 | 200 | 300 | 400 | 92896A |

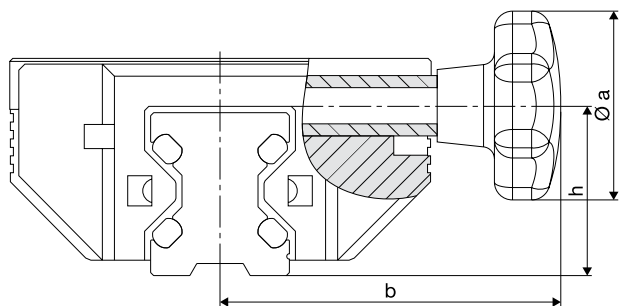
FTH35B is also available as a heavy duty version with double load rating.

Clamping

Cassette with star grip or clamping lever for fixing to any position on the guide section. The clamping does not apply any force to the

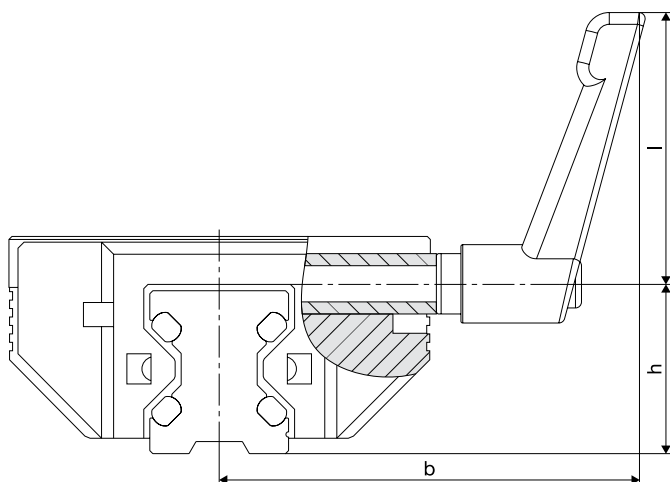
guide system. It is used for manual devices, clamping and holding stops, instead of tools and machining parts. Let us advise you.

with star grip



| Size | Dimensions | | | | Order no. | |
|------|------------|-----|------|-----|-------------------------|-------------------------|
| | Ø a | b | h | N | Standard | Non-corrosive |
| 15 | 25 | 41 | 19.0 | 200 | 84396AK | 84396NK |
| 20 | 25 | 49 | 23.0 | 250 | 84441AK | 84441NK |
| 25 | 32 | 56 | 28.0 | 250 | 84363AK | 84363NK |
| 35 | 50 | 83 | 38.5 | 350 | 84364AK | 84364NK |
| 45 | 63 | 101 | 48.0 | 750 | 84365AK | 84365NK |

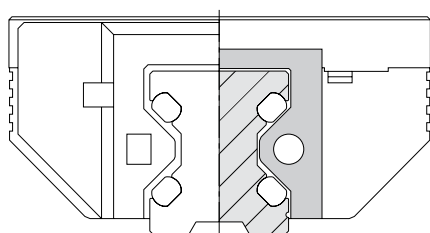
with clamping lever



| Size | Dimensions | | | | | Order no. | |
|------|------------|-----|-------|-------|-----|-------------------------|-------------------------|
| | l | Wt. | b | h | N | Standard | Non-corrosive |
| 15 | 45 | M 5 | 59.5 | 64.0 | 200 | 84396AH | 84396NH |
| 20 | 45 | M 5 | 67.5 | 68.0 | 250 | 84441AH | 84441NH |
| 25 | 45 | M 6 | 71.0 | 73.0 | 250 | 84363AH | 84363NH |
| 35 | 63 | M 8 | 96.0 | 101.5 | 350 | 84364AH | 84364NH |
| 45 | 78 | M10 | 116.0 | 126.0 | 750 | 84365AH | 84365NH |

Metal Wipers

The metal wipers are inserted in the wiper plate in addition to the felt wipers and clipped. They assist removal of coarse dirt, such as metal chips, welding chips or sawdust.

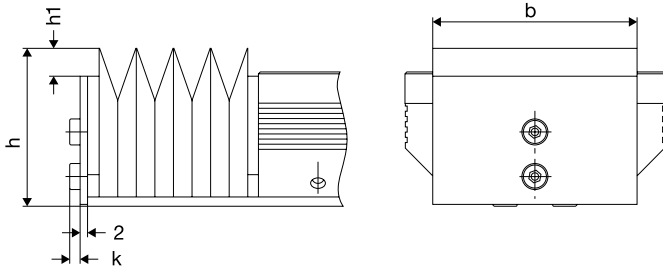


| Size | Order no. |
|------|------------------------|
| 12 | 69126A |
| 15 | 69127A |
| 20 | 69128A |
| 25 | 69129A |
| 35 | 69130A |
| 45 | 69131A |

Bellows

The bellows for Aluminium Roller Guides protect the guide system from coarse dirt. They are available in any length. Fixing to the cassette and end plate is effected using glued Velcro®. The

cassette wipers are not needed. Material: synthetic cloth with one-sided polyurethane coating, temperature: contact heat +80 °C, radiant heat +120 °C.

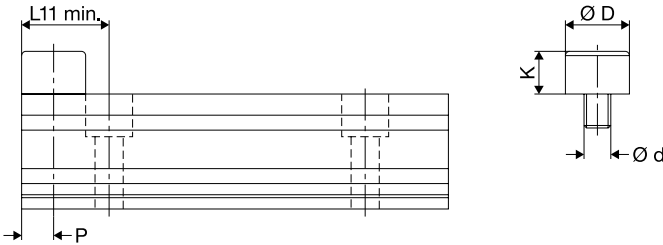


| Size | Dimensions mm | | | | Order no. |
|------|------------------|------|-----|-----|------------|
| | b | h | h1 | k | |
| 15 | 42 | 31.0 | 7.0 | 2.8 | on request |
| 20 | 47 | 35.0 | 5.0 | 2.8 | |
| 25 | 55 | 42.5 | 6.5 | 2.8 | |
| 35 | 68 | 55.0 | 7.0 | 3.5 | |
| 45 | 87 | 67.0 | 7.0 | 3.5 | |

Stop Screws

The stop screws are screwed to the guide rails in thread (option). A fitted rubber cap cushions impact. The bore shape is delivered

offset by a half bore jump for rail lengths with initial bore dimensions less than L11 min. Material: Chloroprene rubber (Cr), colour black.

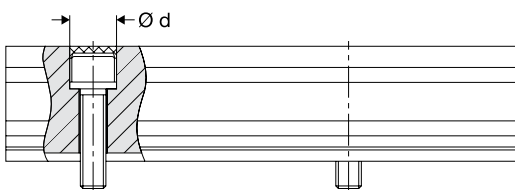


| Size | Dimensions mm | | | | | Order no. |
|------|------------------|----|----|----------|------|-----------|
| | d | D | K | L11 min. | P | |
| 12 | M 5 | 12 | 8 | 15.0 | 6.0 | 63504A |
| 15 | M 5 | 12 | 8 | 16.0 | 6.0 | 63504A |
| 20 | M 5 | 12 | 8 | 17.0 | 6.0 | 63504A |
| 25 | M 6 | 15 | 10 | 20.5 | 7.5 | 63505A |
| 35 | M 8 | 19 | 13 | 26.5 | 9.5 | 63506A |
| 45 | M10 | 24 | 16 | 33.0 | 12.0 | 63507A |

Caps

The borings of the guide rails should be closed with plastic caps for best function of the wipers. These caps are included in every

delivery. They can also be ordered separately as replacements. Material: POM wear-resistant plastic, oil and ageing-resistant.

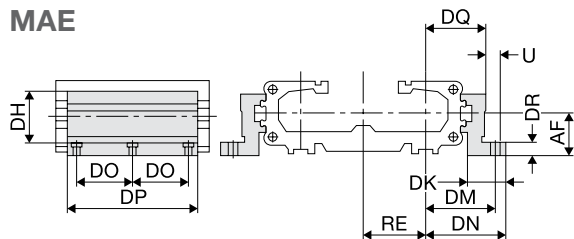


| Size | Dimensions mm | | Order no. |
|------|-----------------------|----|-----------|
| | Cylinder screw DIN912 | D | |
| 12 | M 3 | 6 | 87752A |
| 15 | M 4 | 8 | 87753A |
| 20 | M 5 | 10 | 87754A |
| 25 | M 6 | 11 | 87755A |
| 35 | M 8 | 15 | 87756A |
| 45 | M10 | 18 | 87757A |

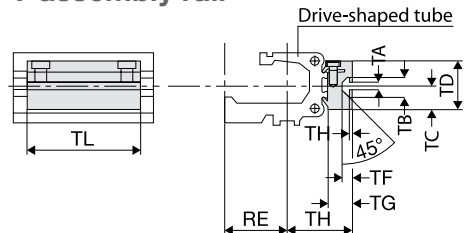
Linear Modules Type FTC/FTD

Profile Fixings

MAE



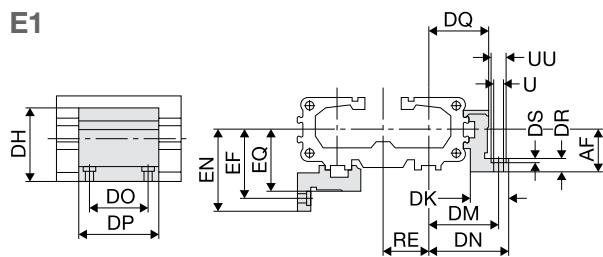
T-assembly rail



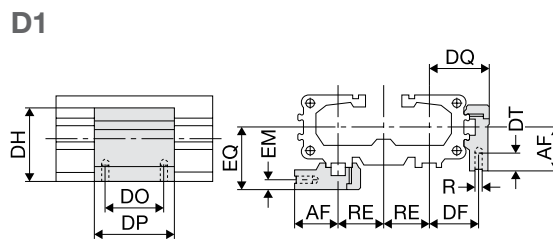
| Size | Dimensions | | | | | | | | | | | | | | | | | | Order no. |
|--------|------------|-----|----|----|----|----|----|------|----|-----|------|----|----|------|------|----|----|----|-----------|
| | R | U | AF | DF | DH | DK | DM | DN | DO | DP | DQ | DR | DT | EF | EM | EN | EQ | RE | |
| MAE 15 | M5 | 5.5 | 22 | 27 | 38 | 26 | 40 | 47.5 | 40 | 92 | 34.5 | 8 | 10 | 41.5 | 28.5 | 49 | 36 | 26 | 92981A |
| 20 | M5 | 5.5 | 30 | 33 | 46 | 27 | 46 | 54.5 | 40 | 92 | 40.5 | 10 | 10 | 48.5 | 35.5 | 57 | 43 | 32 | 92982A |
| 25/35 | M6 | 7.0 | 48 | 40 | 71 | 34 | 59 | 67.0 | 45 | 112 | 52.0 | 10 | 11 | 64.0 | 45.0 | 72 | 57 | 44 | 92983A |

| Size | Dimensions | | | | | | | | | | | Order no. |
|-------|------------|-----|------|----|----|-----|------|------|------|----|--------|-----------|
| | RE | TA | TB | TC | TD | TE | TF | TG | TH | TL | | |
| T 15 | 26 | 5.0 | 11.5 | 16 | 32 | 1.8 | 6.4 | 14.5 | 34.5 | 50 | 92835A | |
| 20 | 32 | 5.0 | 11.5 | 16 | 32 | 1.8 | 6.4 | 14.5 | 40.5 | 50 | 92836A | |
| 25/35 | 44 | 8.2 | 20.0 | 20 | 43 | 4.5 | 12.3 | 20.0 | 58.0 | 80 | 92837A | |

E1



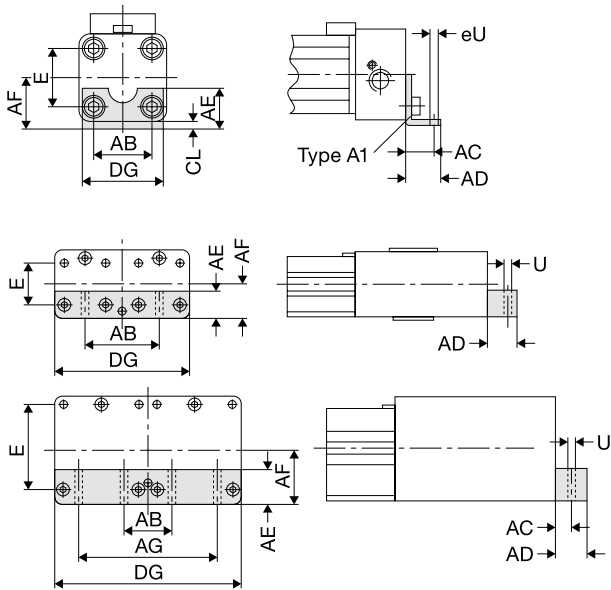
D1



| Size | Dimensions | | | | | | | | | | | | | | | | | | | Order no. | |
|-------|------------|-----|----|----|----|----|----|----|------|----|----|------|----|-----|----|------|------|----|----|-----------|--------|
| | R | U | UU | AF | DF | DH | DK | DM | DN | DO | DP | DQ | DR | DS | DT | EF | EM | EN | EQ | | RE |
| E1 15 | M5 | 5.5 | 10 | 22 | 27 | 38 | 26 | 40 | 47.5 | 36 | 50 | 34.5 | 8 | 5.7 | 10 | 41.5 | 28.5 | 49 | 36 | 26 | 92821A |
| 20 | M5 | 5.5 | 10 | 30 | 33 | 46 | 27 | 46 | 54.5 | 36 | 50 | 40.5 | 10 | 5.7 | 10 | 48.5 | 35.5 | 57 | 43 | 32 | 92826A |
| 25/35 | M6 | 7.0 | - | 48 | 40 | 71 | 34 | 59 | 67.0 | 45 | 60 | 52.0 | 10 | - | 11 | 64.0 | 45.0 | 72 | 57 | 44 | 92831A |

| | | | | | | | | | | | | | | | | | | | | | |
|-------|----|-----|----|----|----|----|----|----|------|----|----|------|----|-----|----|------|------|----|----|----|--------|
| D1 15 | M5 | 5.5 | 10 | 22 | 27 | 38 | 26 | 40 | 47.5 | 36 | 50 | 34.5 | 8 | 5.7 | 10 | 41.5 | 28.5 | 49 | 36 | 26 | 92820A |
| 20 | M5 | 5.5 | 10 | 30 | 33 | 46 | 27 | 46 | 54.5 | 36 | 50 | 40.5 | 10 | 5.7 | 10 | 48.5 | 35.5 | 57 | 43 | 32 | 92825A |
| 25/35 | M6 | 7.0 | - | 48 | 40 | 71 | 34 | 59 | 67.0 | 45 | 60 | 52.0 | 10 | - | 11 | 64.0 | 45.0 | 72 | 57 | 44 | 92830A |

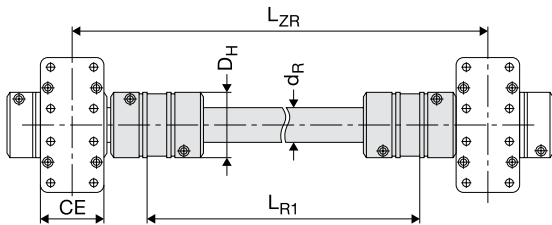
Cover Fixings



| Size | Dimensions | | | | | | | | Order no. |
|------|------------|-----|----|----|----|----|----|----|-----------|
| | E | Ø U | AB | AC | AD | AE | AF | DG | |
| A1 | 27 | 5.8 | 27 | 16 | 22 | 18 | 22 | 39 | 92810A |
| 20 | 36 | 6.6 | 36 | 18 | 26 | 20 | 30 | 50 | 92813A |

| Size | Dimensions | | | | | | | | | Order no. |
|-------|------------|-----|----|------|----|----|----|-----|-----|-----------|
| | E | Ø U | AB | AC | AD | AE | AF | AG | DG | |
| 15 | 27 | 6.6 | 52 | 16.0 | 25 | 25 | 22 | - | 91 | 92978A |
| 20 | 36 | 9.0 | 64 | 18.0 | 25 | 25 | 30 | - | 114 | 92979A |
| 25/35 | 70 | 9.0 | 48 | 12.5 | 30 | 30 | 48 | 128 | 174 | 92980A |

Intermediate Drive Shaft



| Size | Max. torque Nm | Dimensions | | | | | | Order no. |
|------|----------------|------------|-------------------|----|-----------------|----------------------|----------------|-----------|
| | | DH | Kb _{max} | LD | L _{r1} | L _{ZR} | d _R | |
| 15 | 60 | 55 | 16 _{h7} | 5 | <3000 | L _{r1} +112 | 30x4.0 | 92997A |
| 20 | 60 | 55 | 22 _{h7} | 5 | <3000 | L _{r1} +126 | 30x4.0 | 92998A |
| 35 | 160 | 65 | 32 _{h7} | 5 | <3000 | L _{r1} +167 | 35x4.0 | 92999A |

End Switch

| RS | RS | ES | ES |
|---|-------------|------------|------------|
| Reed closer | Reed opener | PNP closer | NPN closer |
| Type: | Type: | Type: | Type: |
| RS-K | RS-K | ES-S | ES-S |
| 92841A | 92842A | 92844A | 92845A |
| RS-S | RS-S | | |
| 92847A | 92843A | | |
| Connection cable 5 m with coupling and open end | | | |
| Signal transmitter type ES-S/RS-S | | | |
| | | | 92846A |

Type FD – Franke Dynamic

1 Designs and System Description

Aluminium Roller Guides from Franke are available as double rails with cassette or as a pair of single rails with a pair of roller shoes:

Double rail with cassette:

The double rail with cassette design is a Linear Guide ready-aligned as standard. Cassette and rail have standard connection borings.

Pair of single rails with pair of roller shoes (illustration 1):

Single rails with roller shoes are part of the construction with the advantage of a variable guide width. The mating plate is specified by the customer.



Illustration 1: Pair of Single Rails with Pair of Roller Shoes

The cassette or the pair of roller shoes of standard type FDA run on 4 crosswise needle bearing rollers on rails of tough spring steel. Other types are available for individual cases with special requirements, e.g. non-corrosive rails or also customer-specific special designs.

The Aluminium Roller Guides have lifetime lubrication. Traverse speeds of 10 m/s and accelerations of 40 m/s² can be realised. The operating temperature of the guides lies between -20 °C and +100 °C. Franke is happy to advise when solutions are requested that are suitable for temperatures outside of this range.

Cassettes mounted on rails are adjusted ex works free from clearance. It is possible to adjust the Aluminium Roller Guides to the individual load situation retrospectively using an integrated adjusting screw. The adjustment setting is best determined by measuring the slide resistance in the unloaded state (see illustration 2).



Illustration 2: Measuring Slide Resistance

The screwing of the cassette plate to the adjusting side is loosened slightly to adjust. Afterwards, the headless pin integrated in the cassette long side is readjusted. Turning the headless pin moves the roller shoe and, thus, increases or reduces the preload.

The adjustment values for the individual types are shown in table 3.6 Slide Resistances. Further details on fitting and adjusting the guide are given in the instruction manual for the Aluminium Roller Guides.

2 Dimensioning the Guides

The following parameters are needed for correct dimensioning of the guide:

- Selection of formation
- All invasive or emerging forces / torques (dynamic / static), (see illustration 3)
- Type of load (stationary, swelling, changing)
- Environmental influences (e.g. temperature, moisture) or special operation conditions (e.g. clean room, vacuum)
- Traverse speed and acceleration
- Stroke length
- Target lifetime in km

All forces and torques must be within the permissible limits. The relevant data are on the pages for the types.

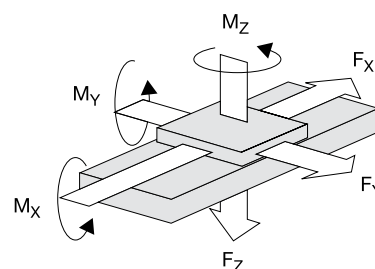


Illustration 3: Arrangement of forces and moments

Recommended safeties (for screw quality 8.8):

- Pressure load: $s > 1.2$
- Tension load: $s > 2.5$
- Moment load: $s > 4.0$

3 Notes for Mating Structure

3.1 Mating Plate for Type FD

A mating plate (bridging the roller shoes) must also be used when using single rails and roller shoes. The roller shoes and the mating plate together form the carriage.

Note on layout of the mating plate of the carriage: the roller shoes have centering grooves for better alignment during assembly. You apply a centering bar to the mating plate for this purpose (illustration 4). The dimensions for producing the centering bar are in table 1. All other dimensions, tolerances and accuracies for the guides are given on the relevant pages of the catalogue.

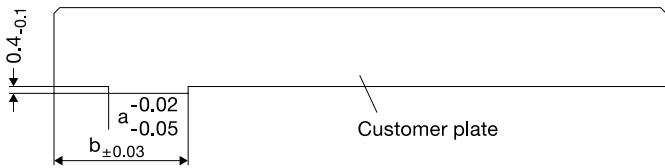


Illustration 4: Centering Shoulder

| Size | a mm | b mm |
|------|------|------|
| 12 | 4.5 | 9.6 |
| 15 | 5.0 | 12.6 |
| 20 | 7.5 | 16.1 |
| 25 | 10.5 | 17.6 |
| 35 | 12.5 | 26.1 |
| 45 | 15.5 | 31.1 |

Table 1: Dimensions Centering Bar

3.2 Multi-Track Formations

It is recommended to define a fixed and movable bearing site on the carriage plate for multi-track formations. This is the best way to equalise tolerances between the rails.

For example, the movable bearing side can be designed with a carrier and a stroke safety. The fixed bearing side takes on the guide function, the movable bearing side equalises parallelism and height tolerances. It is recommended to locate the drive in direct proximity to the guide side, as the drive torque is taken from this.

3.3 Mounting Surfaces

Contact and support surfaces essentially determine the function and precision of the guide. Inaccuracies can be added for running accuracy of the guide system. For example, double-track formations require precise parallelism and height alignment. The accuracies for the mounting and contact surfaces of the guides from table 2 must be maintained to guarantee running accuracy of the guide:

| Size | 12–20 mm | 25–45 mm |
|--------------------------------|----------|----------|
| Max. tolerance for parallelism | 0.03 | 0.05 |
| Max. evenness mounting surface | 0.10 | 0.20 |

Table 2: Accuracies Contact and Support Surfaces

3.4 Fixing the Rails

Depending on the type of load the guide rails should either:

1. be screwed
2. be screwed and dowelled
3. be laid against a contact shoulder and screwed (illustration 5).

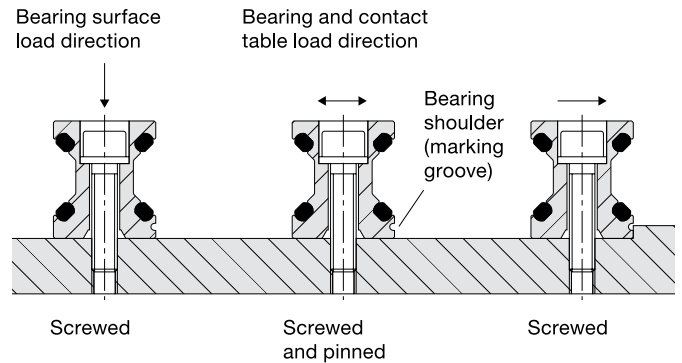


Illustration 5: Fixing Rails

The load capacity of the rails is influenced by the connections between the guide elements and the mating structure. Fixing to the mating structure is effected using screws of quality 8.8 with plain washers DIN 433.

3.5 Fitting Instructions Coupled Rails

Rails over a length of 4000 mm are coupled according to Franke standards. Butt jointing according to Franke standards guarantees a universally even bore shape and optimum usage of the rail length. Divisions are also possible to customer specifications.

Coupled rails are specially aligned with one another. Therefore, the rails have sequential numbering for the right fitting (e.g. A/1-1/1-2/2-2/E).



Illustration 6: Coupled Rails / Auxiliary Cylinders

The rails are also marked with a groove on the rail underside, which must always be on the same side. The rails must be arranged free of play. The corresponding auxiliary cylinders (illustration 6) are used for this. The dimensions for the design of the auxiliary cylinders are in table 3. The cylinders are inserted at the joints of the rails in the raceway and preloaded using a device.

| Size | Auxiliary Cylinder mm |
|------|--------------------------|
| 12 | 11 |
| 15 | 11 |
| 20 | 14 |
| 25 | 16 |
| 35 | 27 |
| 45 | 35 |

Table 3: Dimensions Auxiliary Cylinder

The relevant tightening torques for the individual screws are given in table 4.

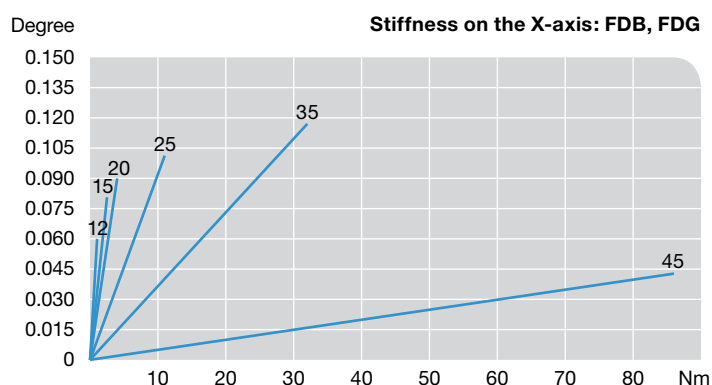
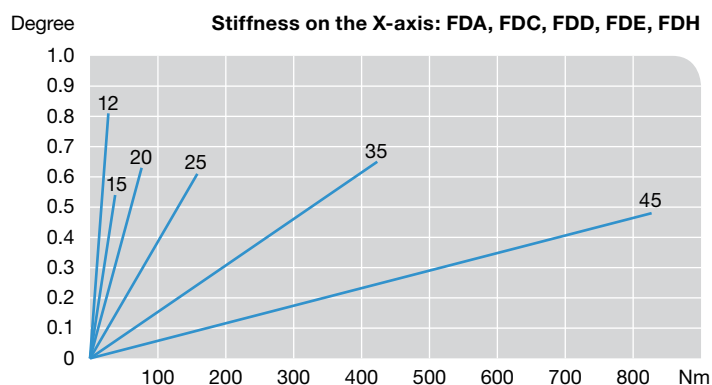
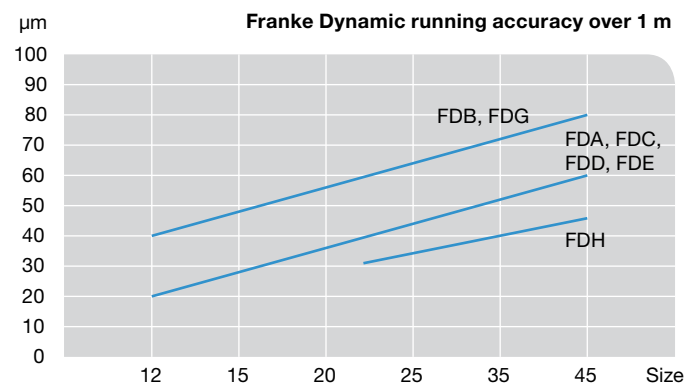
| Screws | Tightening Torque |
|--------|-------------------|
| M 3 | 1.1 |
| M 4 | 2.5 |
| M 5 | 5.0 |
| M 6 | 8.5 |
| M 8 | 21.0 |
| M10 | 41.0 |
| M12 | 71.0 |

Table 4: Tightening Torques Screws

3.6 Slide Resistances

| Size | Slide Resistance N | | | | | | | |
|------|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| | FDA | FDB | FDC | FDD | FDE | FDG | FDH | |
| 12 | Min. | 0.2 | 0.2 | 0.5 | - | 0.5 | 0.6 | - |
| | Max. | 0.4 | 0.4 | 1.0 | - | 3.0 | 0.9 | - |
| 15 | Min. | 0.5 | 0.5 | 0.5 | - | 1.0 | 0.5 | - |
| | Max. | 2.0 | 1.0 | 2.0 | - | 3.0 | 1.5 | - |
| 20 | Min. | 1.0 | 0.5 | 1.0 | - | 1.0 | 1.0 | - |
| | Max. | 2.5 | 1.5 | 2.5 | - | 3.0 | 3.0 | - |
| 25 | Min. | 1.5 | 0.5 | 1.5 | 1.5 | 1.5 | 0.5 | 2.5 |
| | Max. | 3.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 5.0 |
| 35 | Min. | 2.0 | 1.0 | 2.0 | - | 2.0 | 1.0 | 4.0 |
| | Max. | 4.0 | 2.5 | 4.0 | - | 4.0 | 2.5 | 7.0 |
| 45 | Min. | 2.5 | 2.0 | 2.5 | - | 2.5 | 2.0 | 5.0 |
| | Max. | 5.0 | 4.0 | 5.0 | - | 5.0 | 4.0 | 8.0 |

3.7 Running Accuracy and Stiffness



Type FP – Franke Power

1 Designs and System Description

Franke Linear Guides of the type FPA comprise double rails with cassette. The cassette has integrated recirculating rollers for high load ratings and stiffness. The rails of the type FPA are interchangeable with the rails of the Franke Aluminium Roller Guide.

Franke Recirculating Roller Guides are available in one preload class. Traverse speeds of 3 m/s and accelerations of 30 m/s² are possible. The operating temperature of the guides lies between -20 °C and +80 °C.

2 Dimensioning the Guides

The following parameters are needed for correct dimensioning of the guide:

- Selection of formation
- All invasive or emerging forces / torques (dynamic / static), (see illustration 1)
- Type of load (stationary, swelling, changing)
- Environmental influences (e.g. temperature, moisture) or special operating conditions (e.g. clean room, vacuum)
- Traverse speed and acceleration
- Stroke length
- Target lifetime in km

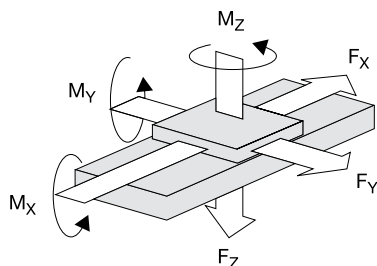


Illustration 1: Arrangement of forces and moments

All forces and torques must be within the permissible limits. The relevant data are on the pages for the individual types.

Recommended safeties (for screw quality 8.8):

- Pressure load: $s > 1.2$
- Tension load: $s > 2.5$
- Moment load: $s > 4.0$

Calculations can be performed by Franke.

3 Notes for Mating Structure

3.1 Multi-Track Formations

It is recommended to define a fixed and movable bearing site on the carriage plate for multi-track formations. This is the best way to equalise tolerances between the rails.

For example, the movable bearing side can be designed with a carrier and a stroke safety. The fixed bearing side takes on the guide function, the movable bearing side equalises parallelism and height tolerances. It is recommended to locate the drive in direct proximity to the guide side, as the drive torque is taken from this.

3.2 Mounting Surfaces

Contact and support surfaces essentially determine the function and precision of the guide. Inaccuracies can be added for running accuracy of the guide system. For example, double-track formations require precise parallelism and height alignment. The accuracies for the mounting and contact surfaces of the guides from table 1 must be maintained to guarantee running accuracy of the guide:

| Size | 25 mm |
|--------------------------------|----------|
| Max. tolerance for parallelism | 0.05 |
| Max. evenness mounting surface | 0.20 |

Table 1: Accuracies Bearing and Contact Surfaces

All other dimensions, tolerances and accuracies for the guides are given on the relevant pages of the catalogue.

3.3 Fixing the Rails

Depending on the type of load the guide rails should either:

1. be screwed
2. be screwed and dowelled
3. be laid against a contact shoulder and screwed (illustration 2).

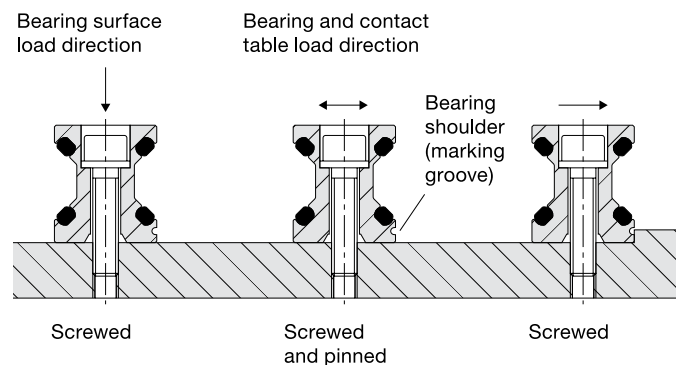


Illustration 2: Fixing Rails

The load capacity of the rails is influenced by the connections between the guide elements and the mating structure. Fixing to the mating structure is effected using screws of quality 8.8 with plain washers DIN 433.

3.4 Fitting Instructions Coupled Rails

Rails over a length of 4000 mm are coupled according to Franke standards. Butt jointing according to Franke standards guarantees a universally even bore shape and optimum usage of the rail length. Divisions are also possible to customer specifications.

Coupled rails are specially aligned with one another. Therefore, the rails have sequential production numbering for the right fitting (e.g. A/1-1/1-2/2-2/E).

The rails are also marked with a groove on the rail underside, which must always be on the same side. The rails must be arranged free of play. The corresponding auxiliary cylinders (illustration 3) are used for this. The dimensions for the design of the auxiliary cylinders are in table 2. The cylinders are inserted at the joints of the rails in the raceway and preloaded using a device.



Illustration 3: Coupled Rails/Auxiliary Cylinders

| Size | Auxiliary Cylinder mm |
|------|--------------------------|
| 25 | 16 |

Table 2: Dimensions Auxiliary Cylinder

The relevant tightening torques for the individual screws are given in table 3.

| Screws | Tightening Torque |
|--------|-------------------|
| M6 | 8.5 |
| M8 | 21.0 |

Table 3: Tightening Torques Screws

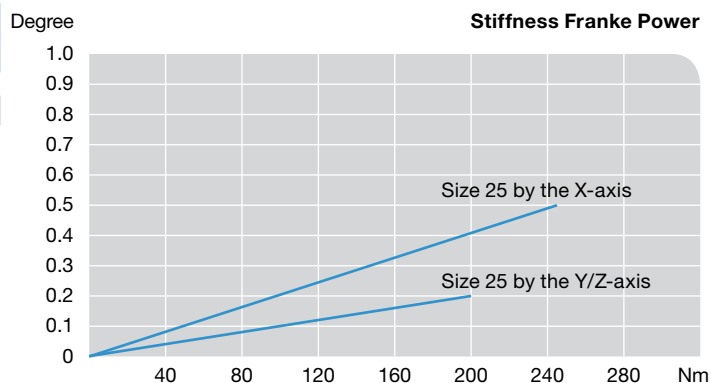
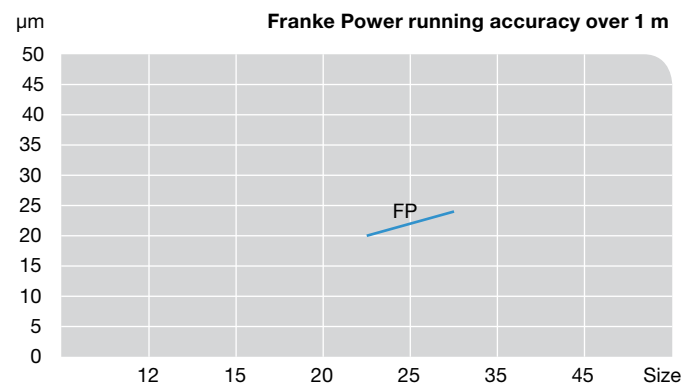
4 Lubrication

The Recirculating Roller Guides are initially lubricated ex works. After approx. 2000 km of running performance, the guides must be relubricated with 1 to 2 grams of lubricant.

5 Slide Resistances

| Size | Slide resistance N | |
|------|-----------------------|------|
| | | FP |
| 25 | Min. | 17.5 |
| | Max. | 30.0 |

6 Running Accuracy and Stiffness



Type FR – Franke Robust

1 Designs and System Description

Aluminium Recirculating Ball Guides of type FRA comprise two individual rails and recirculating elements. The recirculating elements are mounted on the mating plate and together form the carriage. The construction of the mating plate is specified by the customer.

Guides of the type FRA are particularly robust and have high load capacity. The max. traverse speed is 3 m/s, the max. acceleration is 30 m/s². Use is possible in a temperature range of -10 °C to +80 °C.

The slide resistance can be adjusted for Linear Guides of the type FRA. The fixing screws on the slider plate on the adjustment side must be loosened. Using an optional tool the recirculating element can be moved towards the carriage plate and the adjustment is altered. The adjustment setting is best determined by measuring the slide resistance in the unloaded state.

The adjustment values are shown in table 5 Slide Resistances. Further details on fitting and adjusting the guide are given in the instruction manual for the Aluminium Recirculating Ball Guides.

2 Dimensioning the Guides

The following parameters are needed for correct dimensioning of the guide:

- Selection of formation
- All invasive or emerging forces / torques (dynamic / static), (see illustration 1)
- Type of load (stationary, swelling, changing)
- Environmental influences (e.g. temperature, moisture) or special operating conditions (e.g. clean room, vacuum)
- Traverse speed and acceleration
- Stroke length
- Target lifetime in km

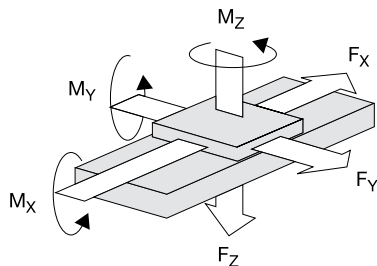


Illustration 1: Arrangement of forces and moments

All forces and torques must be within the permissible limits. The relevant data are on the pages for the individual types.

Recommended safeties (for screw quality 8.8):

- Pressure load: $s > 1.2$
- Tension load: $s > 2.5$
- Moment load: $s > 4.0$

Calculations can be performed by Franke.

3 Notes for Mating Structure

3.1 Mounting Surfaces

Contact and support surfaces essentially determine the function and precision of the guide. Inaccuracies can be added for running accuracy of the guide system. Therefore, the linearity and parallelism of the mating structure must be considered. The maximum permissible deviation across the whole stroke is 0.04 mm.

3.2 Fixing the Rails

The rails are fixed against a bearing shoulder and screwed (see illustration 2). The two guide rails must be fitted parallel to one another. This is how you control the linearity and parallelism of the rails. The maximum total error must be less than 0.06 mm.

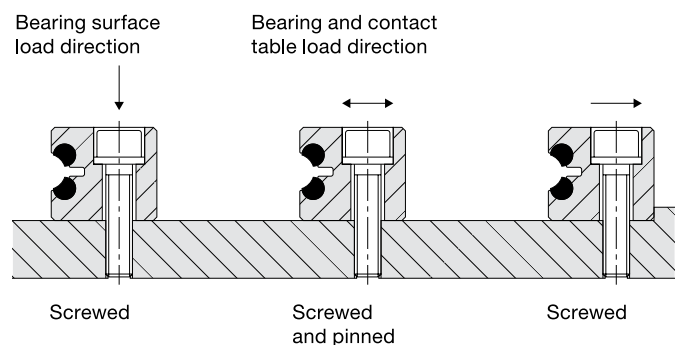


Illustration 2: Fixing Rails

The load capacity of the rails is influenced by the connections between the guide elements and the mating structure. Fixing to the mating structure is effected using screws of quality 8.8 with plain washers DIN 433.

Note: the raceways of the type FRA 08-13 can be exchanged in the event of wear. A rail's raceways must always be completely exchanged. The new raceways are ordered according to the original order or the item number of the rail.

3.3 Fitting Instructions Coupled Rails

Rails over a length of 4000 mm are coupled according to Franke standards. Butt jointing according to Franke standards guarantees a universally even bore shape and optimum usage of the rail length. Divisions are also possible to customer specifications.

Coupled rails are specially aligned with one another. Therefore, the rails have sequential production numbering for the right fitting (e.g. A/1-1/1-2/2-2/E). The top side of the rails is consistently marked with a bevel.

The rails must be evenly aligned during fitting. There must be a fitting gap between the rails. The rails should be fitted at a temperature of approx. 20 °C. The screw tightening torques from table 1 apply in this instance:

| Screw | Tightening Torque |
|-------|-------------------|
| M 5 | 6.0 |
| M 6 | 10.0 |
| M 8 | 25.0 |
| M 10 | 49.0 |

Table 1: Tightening Torques Screws FRA

There are more detailed instructions on fitting the rails in the instruction manual for Franke Linear Guides with Recirculating Balls.

4 Lubrication

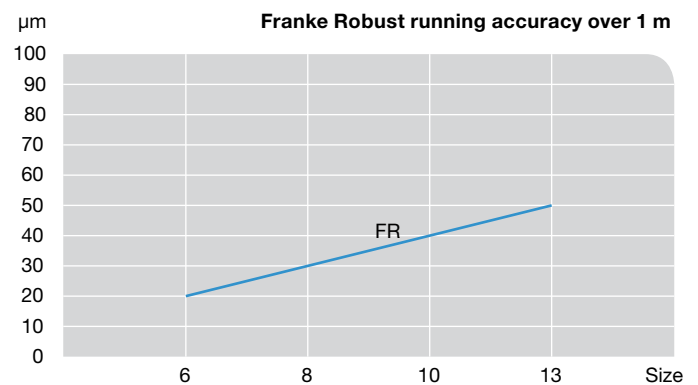
The Aluminium Recirculating Ball Guides must always be coated with a film of lubricant. The system needs to be lubricated every 500 to 700 operating hours or 1 to 2 times a year.

Recirculating elements are connected to central lubrication as standard. This provides relubrication via the boring on the mounting surface.

5 Slide Resistances

| Size | Slide Resistance per Pair of Recirculating Elements | |
|------|---|-----|
| | N | FR |
| 6 | 35– | 45 |
| 8 | 60– | 80 |
| 10 | 90– | 120 |
| 13 | 150– | 200 |

6 Running Accuracy



Linear Tables/Modules

1 Design

Franke Linear Systems are suitable for example for automation tasks in measuring and testing processes or for rationalisation in the handling and fitting sector. The selection ranges from strokes from 100 mm to 7000 mm, drive is effected via a spindle or belt drive. The light aluminium construction combined with the integrated Franke guide system allows high load ratings and torque loads. Precise technical details are on the relevant pages in the catalogue.

2 Area of Use

We recommend use of Franke Linear Systems with safety $s \geq 3$ for simple loads or acceleration and moment loads. A safety of $s \geq 6$ should be used for dynamic torques. You can choose any installation position. We recommend a bedstop or a brake for vertical operation.

The position accuracy of the type FTB Linear Systems is $\pm 0.025/300\text{mm}$ (IT7) in accordance with the spindle stiffness accuracy. Other accuracies are possible on request. The repeat accuracy is $\leq 0.01\text{mm}$. The run accuracy of the FTB Linear Tables is $0.02/300\text{ mm}$. Franke Linear Tables can be used in a temperature range of $-20\text{ }^\circ\text{C}$ to $+80\text{ }^\circ\text{C}$. The FTD 15 – 35 Linear Systems are suitable for permanent operation at temperatures of $-30\text{ }^\circ\text{C}$ to $+80\text{ }^\circ\text{C}$. Please contact us concerning use in other temperature ranges.

3 End Switches and Reference Switches

- Reference switches: Franke Linear Systems of type FTB have inductive proximity switches, which are set to the final stroke position. A further proximity switch can be provided as a reference switch if desired. With the type FTC and FTD Linear Modules there is the possibility of attaching a freely adjustable end switch to the outside. Franke Linear Systems are equipped with inductive end and reference switches PNP-nc 10-30VDC as standard. PNP-no, NPN-no and NPN-nc switches are available on request. The addition or integration of a length measuring system with sinus or square wave signal is possible on request. Shaft encoders can be mounted on the motor.
- Multi axis units: Franke Linear Systems can be combined to form multi-axle units. The necessary angles and adaptor plates are selected according to your needs. We supply completely fitted units, ready cabled and aligned, with other accessories on request.
- Motorisation: An array of step or servo motors can be connected to the Linear Systems. Connection flanges and couplings are modified accordingly. The customer's own motors can also be considered.

- Motor Redirection, Gears: the motor is mounted in the extension of the stroke axle as standard. For special applications, e.g. in limited space, a motor redirection can be integrated on request using a toothed belt or reversing gears.

Please call us.

4 Maintenance and Lubrication

Franke Linear Systems are low-maintenance and have lifetime lubrication ex works. No relubrication is required up to the ball screw. In the event of grease escaping through the spindle, relubrication – depending on the individual case – is required. We recommend relubrication at intervals of approx. 700 working hours with approx. 1–2 g grease. If necessary clean the inner areas and the guide tracks and coat these with grease.

Fully synthetic lubricants are preferred for long-term lubrication. Franke uses the fully synthetic special lubricant ISOFLEX TOPAS NCA52 at the factory (manuf. Klüber). We recommend high-quality lithium-saponificate grease based on mineral oil. When mixing lubricants, the compatibility of the variants must be considered with regard to type of base oil, thickening agent, base oil viscosity and NLGI class. For extreme conditions or extraordinary operating conditions (vacuum, radiation, high temperature), you should speak to us or the lubricant manufacturer.

5 Definitions

- The running accuracy is the greatest possible deviation of any one place on the moved table surface from the ideal straight lines when the entire stroke track passes (subject to the unevenness of the subconstruction).
- The position accuracy is the greatest possible deviation from the achievement of a preselected point, which is passed from a predefined point of origin.
- The repeat accuracy is the greatest possible deviation from the multiple achievement of a preselected point. The measuring system used is crucial for the level of accuracy.
- The resolution is the smallest possible traverse path. It depends on the spindle pitch, the ratio, the step angle and the classification of the measuring system. Errors in the positioning or repeat can be neutralised using the resolution. Therefore, it should always be greater than the deviation from the permissible position accuracy.

Please follow assembly and maintenance instructions. They are included with every delivery.

Type FTH

1 Design

Franke Linear Motor Modules FTH Drive are suitable for example for tasks in measuring and testing processes as well as in the handling and fitting sector. Strokes from 200 mm to 5,300 mm are available. Drive is effected via an integrated linear motor. The light aluminum construction of the integrated Franke guide system allows high load ratings and torque loads.

2 Area of Use

We recommend use with safety $S \geq 3$ for simple loads or acceleration and moment loads. A safety of $S \geq 6$ should be used for dynamic torques. You can choose any installation position. We recommend a bedstop or a brake for vertical operation.

Franke Linear Motor Modules FTH Drive can be used in a temperature range of -20 °C to $+80\text{ °C}$. Please speak to us about use in other temperature ranges.

3 Accuracy

The positioning accuracy is $\pm 0.01\text{ mm/m}$ and depends on the measuring system used. Other accuracies and measuring systems are possible. The repeat accuracy is $\leq 0.02\text{ mm}$. The running accuracy is 0.04 mm/m .

4 Dynamic

The performance given in the diagrams (page 119) can be realized with Franke Linear Motor Modules FTH Drive. These are guide values that relate to the horizontal feed motion in the trapeze and triangle positioning. We are happy to design the perfect linear motor for your application.

5 Motorization

The Linear Motor Modules FTH Drive are powered by linear servomotors without mechanical drive components. The linear motor consists of a slide element and guide element. The slide element houses the coils, the position acquisition and temperature monitoring. The drive magnets are located in the guide element.

The linear motors used are characterized by extremely high power density (highest dynamic with smallest size), thus, facilitating acceleration up to 100 m/s^2 and movement speeds up to 9 m/s .

6 Control



| Dimensions | | |
|----------------------|----|---------------------|
| mm | | |
| h (incl. ventilator) | w | d (incl. connector) |
| 345 | 70 | 243 |

We recommend the S700 amplifier from Kollmorgen to power the Linear Motor Modules FTH Drive. The S700 offers many special features, e. g. the free graphic Windows® software to operate the amplifier. The Auto-Tuning function also simplifies operation. A Safe Torque Off is included as standard. The S700 can memorize many different return systems and can evaluate up to three lots of position information in parallel.

You can get more information from our service team or in the internet at www.kollmorgen.com.

7 Measuring System and End and Reference Switches

Franke Linear Motor Modules are equipped with an integrated, magnetic length measuring system as standard. The positioning accuracy is $\pm 10\text{ }\mu\text{m}$ with a resolution of $\pm 1\text{ }\mu\text{m}$. Absolute measuring systems can also be fitted.

Inductive proximity switches are available to record end or reference positions, which can be freely positioned in the guide profile.

8 Multi-Module Units

Linear Motor Modules of type FTH Drive can be combined into multi-module units. The necessary angles and adaptor plates are selected according to your needs. We supply completely fitted units, ready cabled and aligned, with other accessories on request.

Please follow assembly and maintenance instructions. They are included with every delivery.

