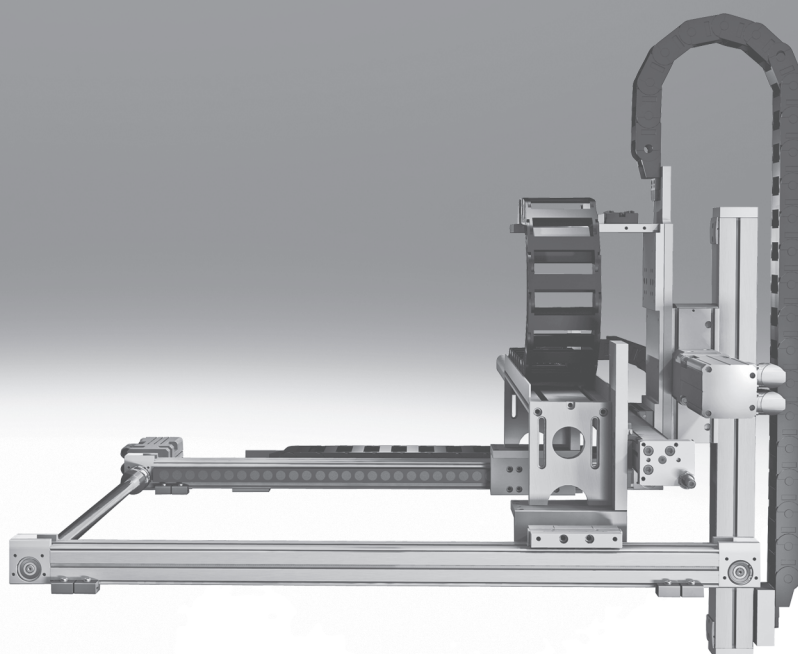


## Toothed belt axes DGE

**FESTO**



# Toothed belt axes DGE

Key features

FESTO

## At a glance

- Precision, rigid guide
- Highly adaptable, thanks to wide choice of mounting and attachment options
- Wide range of options for attaching drive units
- Comprehensive range of mounting accessories for multi-axis combinations
- Optimally adapted motor controller combinations

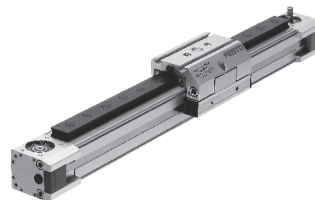
## Basic version DGE-ZR

- Stroke lengths from 1 ... 4500 mm
- Without guide
- Low characteristic load values



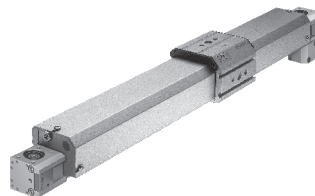
## With recirculating ball bearing guide DGE-ZR-KF

- Stroke lengths from 1 ... 4500 mm
- Standard slide or extended slide
- Medium to high characteristic load values



## With protected version DGE-ZR-KF-GA

- Stroke lengths from 1 ... 1800 mm
- Standard slide
- Guide and slide are fitted with a cover to protect against the ingress of particles from above and the side



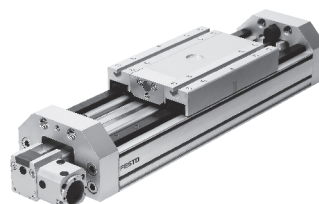
## With roller guide DGE-ZR-RF

- Stroke lengths from 1 ... 5000 mm
- Standard slide or extended slide
- Internal, protected roller guide
- Medium characteristic load values
- High speeds possible



## With heavy-duty guide DGE-ZR-HD

- Stroke lengths from 1 ... 2000 mm
- High guide precision
- Sturdy construction
- High characteristic load values



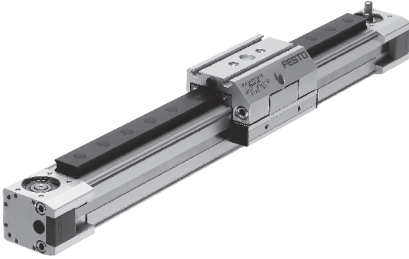
# Toothed belt axes DGE

Key features

**FESTO**

## System selection for electromechanical drives

### Toothed belt axis



Note

For the toothed-belt axes and the motors there are matching complete solutions.

## Motor kit

### Axial kit

→72

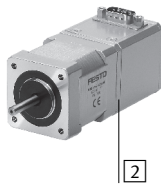
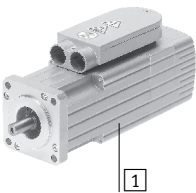


Axial kit consisting of:

- Motor flange
- Coupling housing
- Coupling
- Screws

## Motor

→72



- 1 Servo motor EMMS-AS
- 2 Stepper motor EMMS-ST

## Motor controller

Technical data → Internet: motor controller



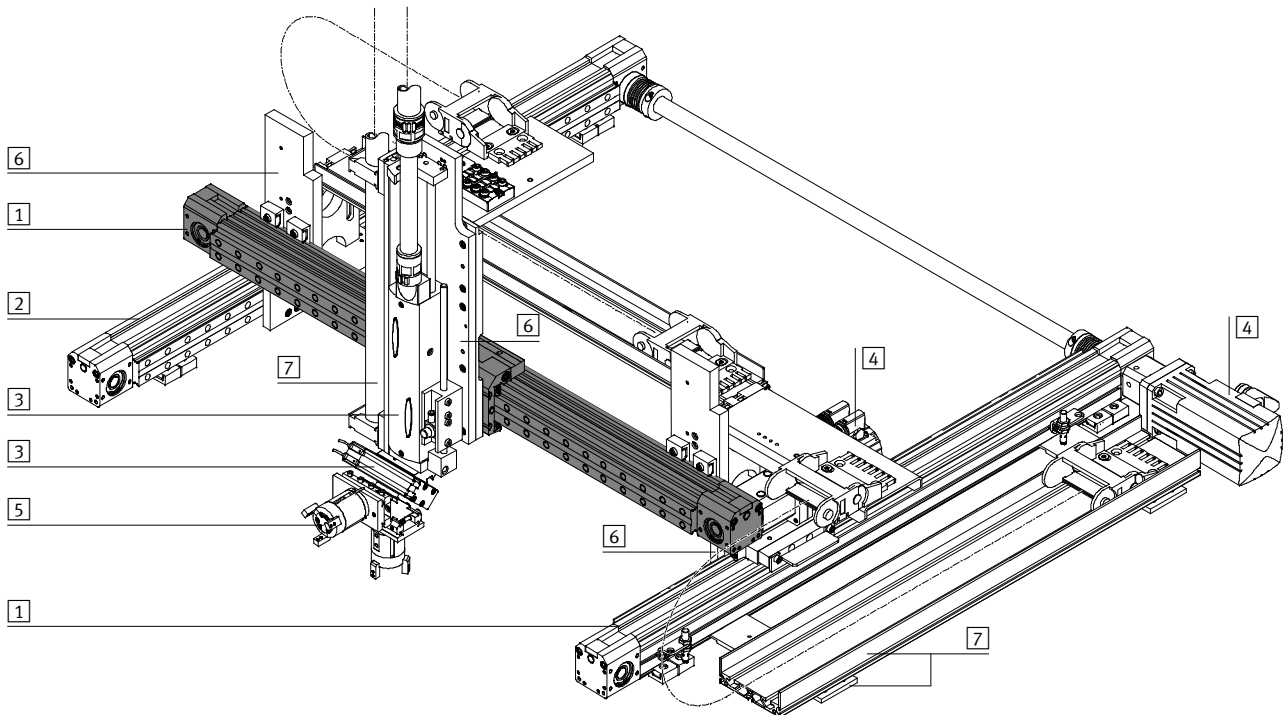
- 1 Servo motor ontroller CMMP-AS, CMMS-AS
- 2 Stepper motor controller CMMS-ST

# Toothed belt axes DGE

System example

FESTO

System product for handling and assembly technology



| System components and accessories |                                                                           |                        |
|-----------------------------------|---------------------------------------------------------------------------|------------------------|
| Type                              | Brief description                                                         | → Page/Internet        |
| 1 Axes                            | Wide range of combination options within handling and assembly technology | axes                   |
| 2 Passive guide axes              | Diverse possible combinations in handling and assembly technology         | guide axes             |
| 3 Drives                          | Wide range of combination options within handling and assembly technology | drive                  |
| 4 Motors                          | Servo and stepper motors, with or without gearing                         | motor                  |
| 5 Grippers                        | Wide range of combination options within handling and assembly technology | gripper                |
| 6 Adapters                        | For combining drives with drives and drives with grippers                 | adapter kit            |
| 7 Installation components         | For achieving a clear-cut, safe layout for electrical cables and tubing   | installation component |

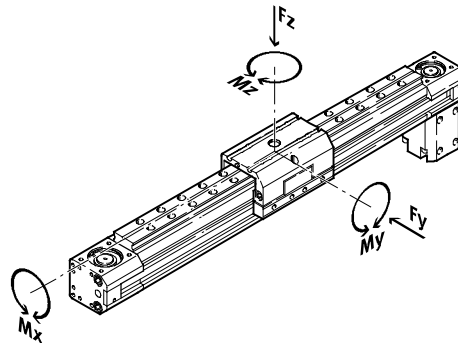
# Toothed belt axes DGE

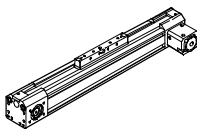
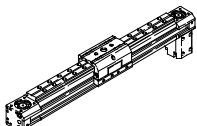
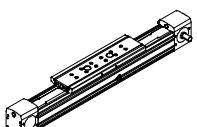
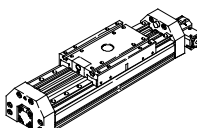
Selection aid

FESTO

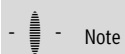
## Guide characteristics

The data in the table are maximum values. The precise values for each variant can be found in the corresponding data sheet included in the catalogue.



| Version                                                                             | Size | Working stroke <sup>1)</sup> | Speed | Repeti-<br>tion<br>accuracy | Feed<br>force | Forces and torques |       |      |      |      | → Page/Internet |
|-------------------------------------------------------------------------------------|------|------------------------------|-------|-----------------------------|---------------|--------------------|-------|------|------|------|-----------------|
|                                                                                     |      |                              |       |                             |               | Fy                 | Fz    | Mx   | My   | Mz   |                 |
|                                                                                     |      | [mm]                         |       |                             |               | [N]                | [N]   | [Nm] | [Nm] | [Nm] |                 |
| Basic version without guide ZR                                                      |      |                              |       |                             |               |                    |       |      |      |      |                 |
|   | 8    | 1 ... 650                    | 1     | ±0.08                       | 15            | –                  | 38    | 0.15 | 2    | 0.3  | 6               |
|                                                                                     | 12   | 1 ... 1000                   | 1.5   | ±0.08                       | 30            | –                  | 59    | 0.3  | 4    | 0.5  |                 |
|                                                                                     | 18   | 1 ... 1000                   | 2     | ±0.08                       | 60            | –                  | 120   | 0.5  | 11   | 1    |                 |
|                                                                                     | 25   | 1 ... 3000                   | 5     | ±0.1                        | 260           | –                  | 330   | 1    | 20   | 3    |                 |
|                                                                                     | 40   | 1 ... 4000                   | 5     | ±0.1                        | 610           | –                  | 800   | 4    | 60   | 8    |                 |
|                                                                                     | 63   | 1 ... 4500                   | 5     | ±0.1                        | 1500          | –                  | 1600  | 8    | 120  | 24   |                 |
| With recirculating ball bearing guide ZR-KF                                         |      |                              |       |                             |               |                    |       |      |      |      |                 |
|  | 8    | 1 ... 650                    | 1     | ±0.08                       | 15            | 255                | 255   | 1    | 3.5  | 3.5  | 22              |
|                                                                                     | 12   | 1 ... 1000                   | 1.5   | ±0.08                       | 30            | 565                | 565   | 3    | 9    | 9    |                 |
|                                                                                     | 18   | 1 ... 1000                   | 2     | ±0.08                       | 60            | 930                | 930   | 7    | 45   | 45   |                 |
|                                                                                     | 25   | 1 ... 3000                   | 3     | ±0.1                        | 260           | 3080               | 3080  | 45   | 170  | 170  |                 |
|                                                                                     | 40   | 1 ... 4000                   | 3     | ±0.1                        | 610           | 7300               | 7300  | 170  | 660  | 660  |                 |
|                                                                                     | 63   | 1 ... 4500                   | 3     | ±0.1                        | 1500          | 14050              | 14050 | 580  | 1820 | 1820 |                 |
| With roller guide ZR-RF                                                             |      |                              |       |                             |               |                    |       |      |      |      |                 |
|  | 25   | 1 ... 5000                   | 10    | ±0.1                        | 260           | 260                | 150   | 7    | 30   | 30   | 44              |
|                                                                                     | 40   | 1 ... 5000                   | 10    | ±0.1                        | 610           | 610                | 300   | 18   | 120  | 180  |                 |
|                                                                                     | 63   | 1 ... 5000                   | 10    | ±0.1                        | 1500          | 1500               | 600   | 65   | 340  | 600  |                 |
| With heavy-duty guide ZR-HD                                                         |      |                              |       |                             |               |                    |       |      |      |      |                 |
|  | 18   | 1 ... 1000                   | 3     | ±0.08                       | 60            | 1820               | 1820  | 70   | 115  | 112  | 58              |
|                                                                                     | 25   | 1 ... 1000                   | 3     | ±0.1                        | 260           | 5400               | 5600  | 260  | 415  | 400  |                 |
|                                                                                     | 40   | 1 ... 1000                   | 3     | ±0.1                        | 610           | 5400               | 5600  | 375  | 560  | 540  |                 |

1) Special lengths on request



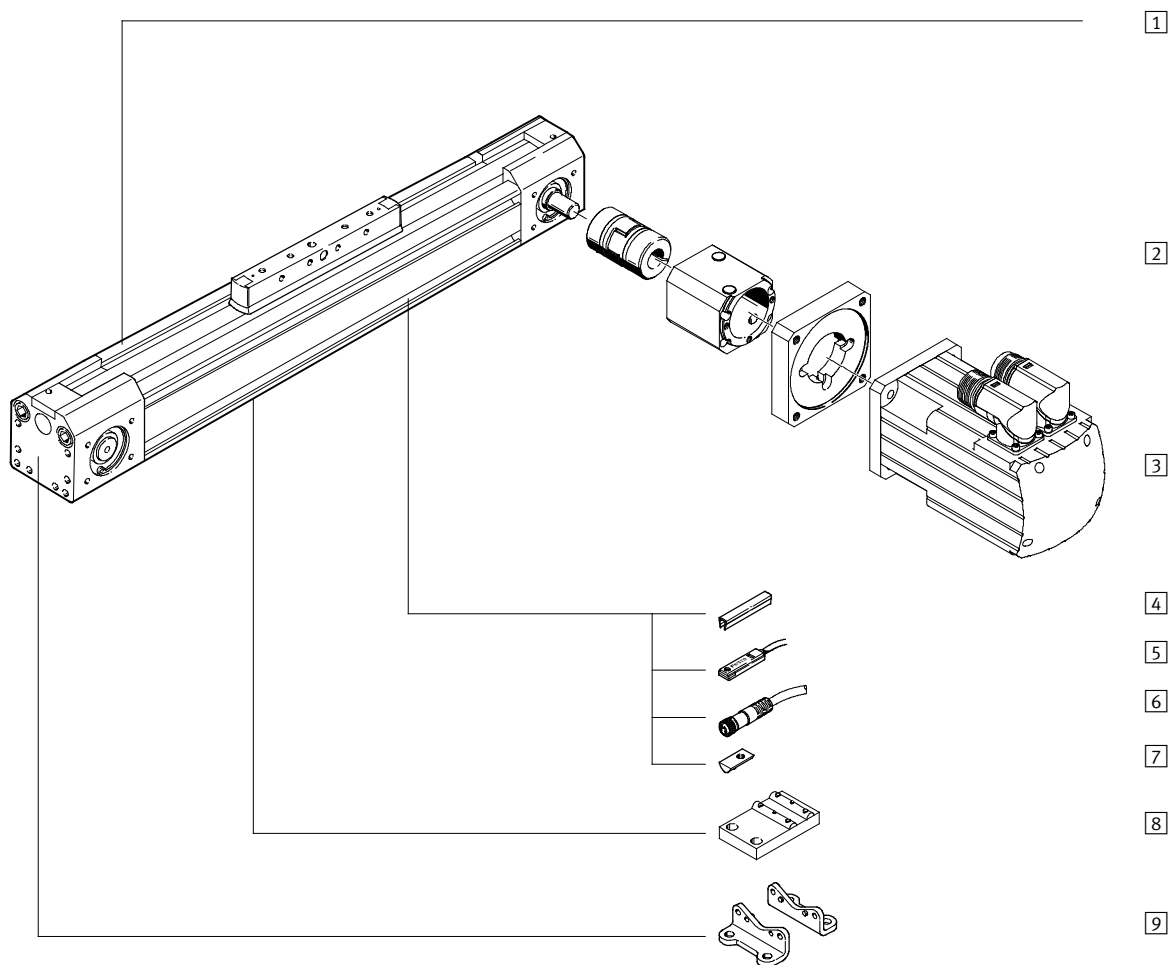
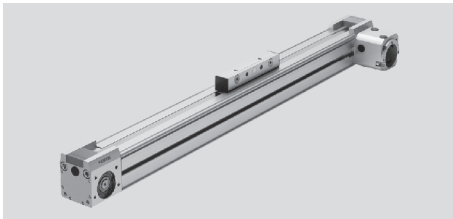
Note

Sizing software  
PositioningDrives  
→ [www.festo.com](http://www.festo.com)

# Toothed belt axes DGE-ZR

Peripherals overview

FESTO



## Toothed belt axes DGE-ZR

Peripherals overview

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| Variants and accessories          |                                                                                                   |                 |
|-----------------------------------|---------------------------------------------------------------------------------------------------|-----------------|
| Type                              | Brief description                                                                                 | → Page/Internet |
| 1 Toothed belt axis<br>DGE-ZR     | Electromechanical axis without guide                                                              | 8               |
| 2 Axial kit<br>EAMM-A             | For axial motor attachment<br>(consisting of: coupling housing, clamping component, motor flange) | 72              |
| 3 Motor<br>EMMS                   | Motors specially matched to the axis, with or without gearing, with or without brake              | 72              |
| 4 Slot cover<br>B/S               | For protecting against the ingress of dirt                                                        | 84              |
| 5 Proximity sensor<br>G/H/I/J/N   | For use as a proximity signal and safety monitoring                                               | 85              |
| 6 Cable with socket<br>V          | For proximity sensors                                                                             | 85              |
| 7 Slot nut for mounting slot<br>Y | For mounting attachments                                                                          | 84              |
| 8 Central support<br>M            | For mounting the axis                                                                             | 77              |
| 9 Foot mounting<br>F              | For mounting the axis                                                                             | 76              |

## Toothed belt axes DGE-ZR

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Type code

|                             |                                      |     |   |    |   |     |   |    |   |    |   |    |
|-----------------------------|--------------------------------------|-----|---|----|---|-----|---|----|---|----|---|----|
|                             |                                      | DGE | - | 25 | - | 500 | - | ZR | - | LK | - | RV |
| <b>Type</b>                 |                                      |     |   |    |   |     |   |    |   |    |   |    |
| DGE                         | Toothed belt drive                   |     |   |    |   |     |   |    |   |    |   |    |
| <b>Size</b>                 |                                      |     |   |    |   |     |   |    |   |    |   |    |
| <b>Stroke [mm]</b>          |                                      |     |   |    |   |     |   |    |   |    |   |    |
| <b>Drive function</b>       |                                      |     |   |    |   |     |   |    |   |    |   |    |
| ZR                          | Toothed belt                         |     |   |    |   |     |   |    |   |    |   |    |
| <b>Drive shaft on left</b>  |                                      |     |   |    |   |     |   |    |   |    |   |    |
| LK                          | No drive shaft on left               |     |   |    |   |     |   |    |   |    |   |    |
| LV                          | Drive shaft on left, front           |     |   |    |   |     |   |    |   |    |   |    |
| LH                          | Drive shaft on left, rear            |     |   |    |   |     |   |    |   |    |   |    |
| LB                          | Drive shaft on left, front and rear  |     |   |    |   |     |   |    |   |    |   |    |
| <b>Drive shaft on right</b> |                                      |     |   |    |   |     |   |    |   |    |   |    |
| RK                          | No drive shaft on right              |     |   |    |   |     |   |    |   |    |   |    |
| RV                          | Drive shaft on right, front          |     |   |    |   |     |   |    |   |    |   |    |
| RH                          | Drive shaft on right, rear           |     |   |    |   |     |   |    |   |    |   |    |
| RB                          | Drive shaft on right, front and rear |     |   |    |   |     |   |    |   |    |   |    |

# Toothed belt axes DGE-ZR

Type code

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+ ZUB

-

F

2G

## Accessories

ZUB Accessories supplied loose

## Slot cover

...S Sensor slot

...B Mounting slot

## Slot nut

...Y For mounting slot

## Central support

...M Central support

## Foot mounting

...F Foot mounting

## Proximity sensor

...G With cable, 2.5 m

...H With plug

...I Contactless, with cable, 2.5 m

...J Contactless, plug

...N NC contact with cable, 2.5 m

## Cable with socket

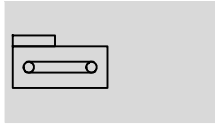
...V 2.5 m

# Toothed belt axes DGE-ZR

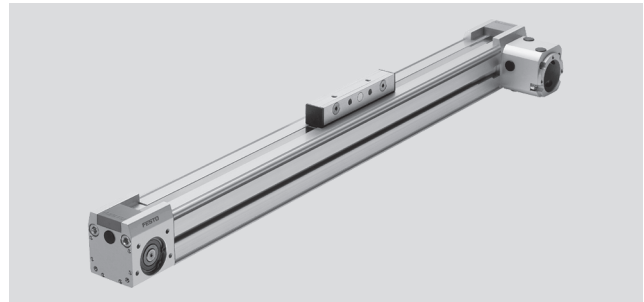
Technical data

FESTO

Function



www.festo.com



- Ø - Size  
8 ... 63
- | - Stroke length  
1 ... 4500 mm

| General technical data                    |                     |                                          |            |            |                          |                          |                          |
|-------------------------------------------|---------------------|------------------------------------------|------------|------------|--------------------------|--------------------------|--------------------------|
| Size                                      |                     | 8                                        | 12         | 18         | 25                       | 40                       | 63                       |
| Constructional design                     |                     | Electromechanical axis with toothed belt |            |            |                          |                          |                          |
| Guide                                     |                     | –                                        |            |            |                          |                          |                          |
| Mounting position                         |                     | Any                                      |            |            |                          |                          |                          |
| Max. working stroke <sup>1)</sup>         | [mm]                | 1 ... 650                                | 1 ... 1000 | 1 ... 1000 | 1 ... 3000 <sup>2)</sup> | 1 ... 4000 <sup>2)</sup> | 1 ... 4500 <sup>2)</sup> |
| Max. feed force F <sub>x</sub>            | [N]                 | 15                                       | 30         | 60         | 260                      | 610                      | 1500                     |
| Max. radial force <sup>3)</sup>           | [N]                 | 103                                      | 77         | 290        | 307                      | 984                      | 2600                     |
| Radial force <sup>4)</sup>                | [N]                 | 56                                       | 96         | 117        | 235                      | 370                      | 840                      |
| Radial force <sup>5)</sup>                | [N]                 | 40                                       | 70         | 80         | 140                      | 170                      | 400                      |
| Max. driving torque                       | [Nm]                | 0.08                                     | 0.18       | 0.5        | 2.6                      | 9.7                      | 42                       |
| Max. no-load driving torque <sup>6)</sup> | [Nm]                | 0.05                                     | 0.08       | 0.2        | 0.5                      | 1.0                      | 4.5                      |
| Max. speed                                | [m/s]               | 1                                        | 1.5        | 2          | 5                        | 5                        | 5                        |
| Max. acceleration                         | [m/s <sup>2</sup> ] | 15                                       | 20         | 20         | 50                       | 50                       | 50                       |
| Repetition accuracy                       | [mm]                | ±0.08                                    |            |            | ±0.1                     |                          |                          |

- 1) Total stroke = working stroke + 2x stroke reserve
- 2) Special lengths on request
- 3) On the drive shaft
- 4) On the drive shaft, with a service life of 5,000 km
- 5) On the drive shaft, with a service life of 10,000 km
- 6) Measured at a speed of 0.2m/s

| Operating and environmental conditions |      |             |    |    |    |    |    |
|----------------------------------------|------|-------------|----|----|----|----|----|
| Size                                   |      | 8           | 12 | 18 | 25 | 40 | 63 |
| Ambient temperature                    | [°C] | -10 ... +40 |    |    |    |    |    |
| Protection class                       |      | IP40        |    |    |    |    |    |

| Weights [kg]                                |       |      |       |      |      |      |
|---------------------------------------------|-------|------|-------|------|------|------|
| Size                                        | 8     | 12   | 18    | 25   | 40   | 63   |
| Basic weight with 0 mm stroke <sup>1)</sup> | 0.237 | 0.31 | 0.862 | 1.89 | 6.05 | 23.2 |
| Additional weight per 100 mm stroke         | 0.05  | 0.08 | 0.16  | 0.32 | 0.51 | 1.8  |
| Moving load                                 | 0,012 | 0,02 | 0,055 | 0,28 | 0,60 | 1,80 |

- 1) Including coupling housing

| Mass moment of inertia             |                          |       |       |       |       |      |      |
|------------------------------------|--------------------------|-------|-------|-------|-------|------|------|
| Size                               |                          | 8     | 12    | 18    | 25    | 40   | 63   |
| J <sub>0</sub>                     | [kg cm <sup>2</sup> ]    | 0.006 | 0.015 | 0.064 | 0.38  | 2.34 | 25.6 |
| J <sub>H</sub> per metre stroke    | [kg cm <sup>2</sup> /m]  | 0.003 | 0.009 | 0.021 | 0.078 | 0.45 | 3.6  |
| J <sub>L</sub> per kg working load | [kg cm <sup>2</sup> /kg] | 0.259 | 0.365 | 0.685 | 1     | 2.53 | 7.85 |

The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{working load [kg]}}$$

# Toothed belt axes DGE-ZR

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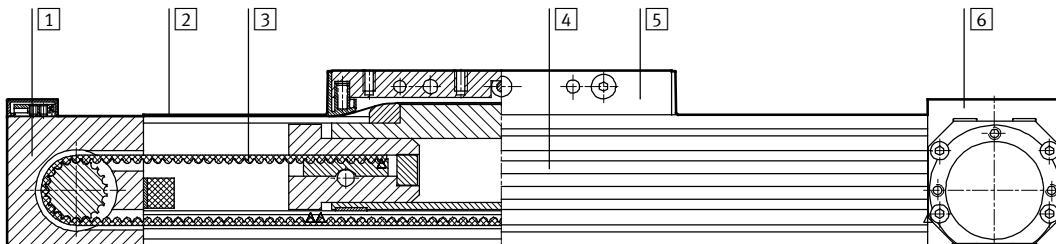
Technical data

| Toothed belt                 |           |       |       |       |       |       |       |
|------------------------------|-----------|-------|-------|-------|-------|-------|-------|
| Size                         |           | 8     | 12    | 18    | 25    | 40    | 63    |
| Tensile stress <sup>1)</sup> | [%]       | 0.04  | 0.1   | 0.2   | 0.11  | 0.1   | 0.15  |
| Pitch                        | [mm]      | 2     | 2     | 2     | 3     | 5     | 8     |
| Effective diameter           | [mm]      | 10.18 | 12.09 | 16.55 | 20.05 | 31.83 | 56.02 |
| Feed constant                | [mm/rev.] | 32    | 38    | 52    | 63    | 100   | 176   |

1) At max. feed force

## Materials

### Sectional view



| Axis |                       |                                                 |
|------|-----------------------|-------------------------------------------------|
| 1    | Return pulley housing | Anodised aluminium                              |
| 2    | Cover strip           | Corrosion resistant steel                       |
| 3    | Toothed belt          | Polychloroprene with Glascord and nylon coating |
| 4    | Profile               | Anodised aluminium                              |
| 5    | Slide                 | Anodised aluminium                              |
| 6    | Drive housing         | Anodised aluminium                              |

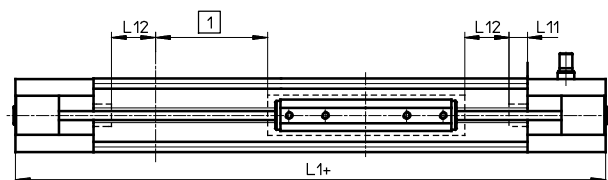
## Stroke reserve

L1+ Overall length of axis  
L11 Internal mechanical stop

1 The working stroke is the effective usable work range. Please quote this in your order.

L12 Stroke reserve:  
Safety distance to mechanical stop, present at both ends of the axis in addition to the stroke

Example:  
Type DGE-25-500-ZR  
Working stroke = 500 mm  
Stroke reserve = (2x 63 mm)  
= 126 mm  
Total stroke:  
626 mm = 500 mm + 126 mm



| Size                 |      | 8    | 12   | 18   | 25 | 40  | 63  |
|----------------------|------|------|------|------|----|-----|-----|
| L12 per end position | [mm] | 27.5 | 36.5 | 46.5 | 63 | 100 | 172 |

# Toothed belt axes DGE-ZR

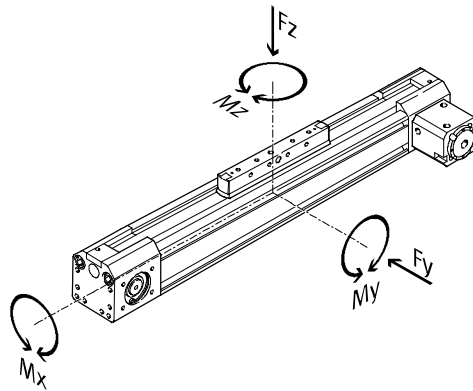
Technical data

FESTO

## Characteristic load values

The indicated forces and torques refer to the centre line of the internal diameter of the profile.

They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.



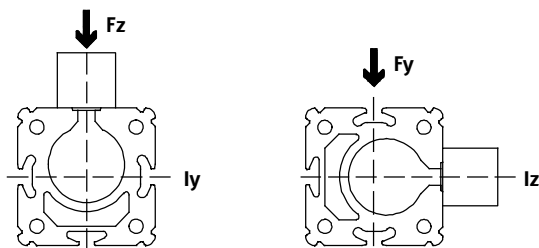
If the drive is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads.

$$0.4 \times \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + 0.2 \times \frac{M_z}{M_{z_{\max}}} \leq 1$$

$$\frac{F_z}{F_{z_{\max}}} \leq 1 \quad \frac{M_z}{M_{z_{\max}}} \leq 1$$

| Permissible forces and torques      |      |     |     |     |     |      |
|-------------------------------------|------|-----|-----|-----|-----|------|
| Size                                | 8    | 12  | 18  | 25  | 40  | 63   |
| F <sub>y</sub> <sub>max.</sub> [N]  | –    | –   | –   | –   | –   | –    |
| F <sub>z</sub> <sub>max.</sub> [N]  | 38   | 59  | 120 | 330 | 800 | 1600 |
| M <sub>x</sub> <sub>max.</sub> [Nm] | 0.15 | 0.3 | 0.5 | 1   | 4   | 8    |
| M <sub>y</sub> <sub>max.</sub> [Nm] | 2    | 4   | 11  | 20  | 60  | 120  |
| M <sub>z</sub> <sub>max.</sub> [Nm] | 0.3  | 0.5 | 1   | 3   | 8   | 24   |

## 2nd moment of area



| Size                  | 8                   | 12                   | 18                   | 25                  | 40                  | 63                   |
|-----------------------|---------------------|----------------------|----------------------|---------------------|---------------------|----------------------|
| ly [mm <sup>4</sup> ] | 6.6x10 <sup>3</sup> | 19.7x10 <sup>3</sup> | 69.8x10 <sup>3</sup> | 224x10 <sup>3</sup> | 673x10 <sup>3</sup> | 5688x10 <sup>3</sup> |
| Lz [mm <sup>4</sup> ] | 6.7x10 <sup>3</sup> | 19.1x10 <sup>3</sup> | 72.3x10 <sup>3</sup> | 240x10 <sup>3</sup> | 748x10 <sup>3</sup> | 6031x10 <sup>3</sup> |

-  - Note

Sizing software  
PositioningDrives

→ [www.festo.com](http://www.festo.com)

# Toothed belt axes DGE-ZR

Technical data

FESTO

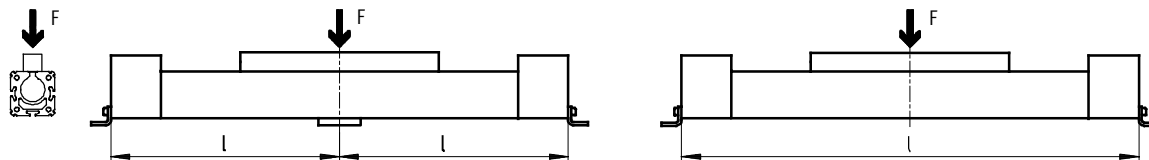
## Maximum permissible support span $l$ as a function of the force $F$

The drive may need to be supported with central supports MUP in order to restrict deflection with long stroke

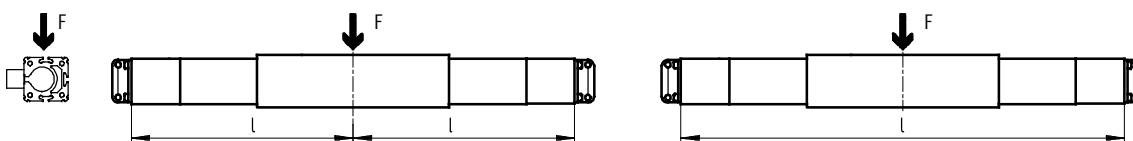
lengths. The following diagrams serve to determine the maximum permissible support span  $l$  as a

function of the force acting upon the drive  $F$ .

### 1 Force on the surface of the slide

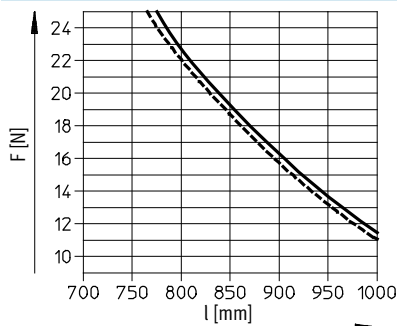


### 2 Force on the front of the slide

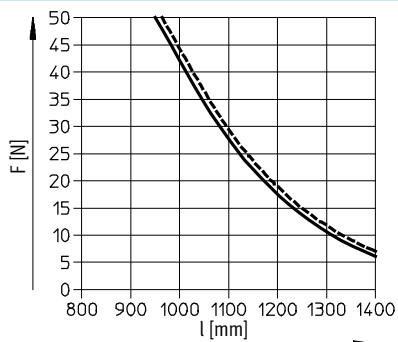


## Maximum permissible support span $l$ (without central support) as a function of the force $F$

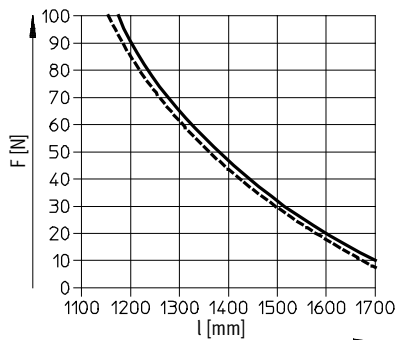
DGE-8



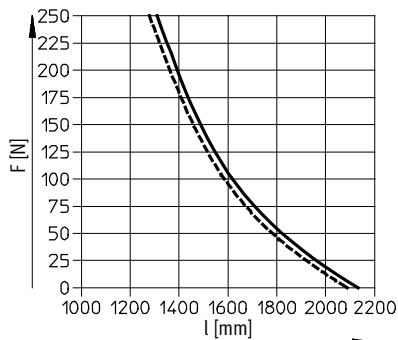
DGE-12



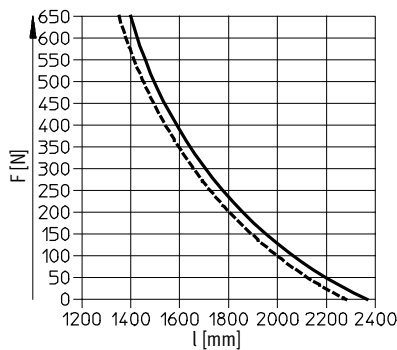
DGE-18



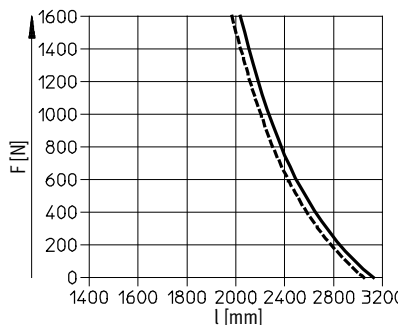
DGE-25



DGE-40



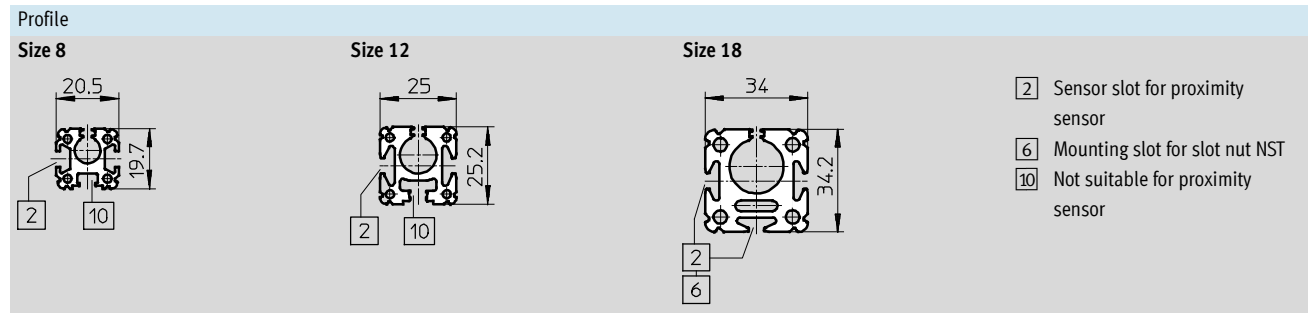
DGE-63



— 1  
- - - 2

## Technical data

Size 8 ... 18



# Toothed belt axes DGE-ZR

Technical data

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| Size | B1<br>+0.2 | B3<br>±0.1 | B4 | B5 | B6   | B11 | B12 | B13  | B14  | D1<br>∅<br>g6 | D2<br>∅ | D3<br>∅<br>H11 | D4<br>∅<br>H7 | D5<br>∅ | D6 | D7 |
|------|------------|------------|----|----|------|-----|-----|------|------|---------------|---------|----------------|---------------|---------|----|----|
| 8    | 20.5       | 8          | 16 | 4  | 13   | 7.3 | 5   | –    | 12   | 4             | 2       | 3.4            | 4             | 12      | M3 | M3 |
| 12   | 25         | 8          | 21 | 6  | 18.6 | 8.7 | 6.5 | 22.7 | 16.2 | 4             | 2       | 3.4            | 4             | 16      | M3 | M3 |
| 18   | 34         | 12         | 28 | 7  | 24   | 7.7 | 5.5 | 31.1 | 22   | 6             | 3       | 5.4            | 6             | 19      | M5 | M4 |

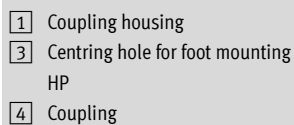
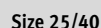
| Size | D8<br>∅ | D9<br>∅<br>g7 | D10 | D12 | H1   | H2   | H3   | H4   | H5   | H6   | H8   | H9   | H11  | J2  | L1  | L2  |
|------|---------|---------------|-----|-----|------|------|------|------|------|------|------|------|------|-----|-----|-----|
| 8    | 16      | 28.7          | 3.4 | 6   | 30   | 26.5 | 23.1 | 8    | 9.8  | 8.1  | 11   | 0    | 11   | 1.7 | 180 | 90  |
| 12   | 16      | 30            | 3.4 | 6   | 35.5 | 32   | 28.6 | 10.5 | 12.5 | 11.8 | 11   | 13.1 | 11   | 0.7 | 216 | 108 |
| 18   | 21      | 44            | 5.5 | 10  | 49.8 | 43.8 | 37.6 | 14   | 17   | 16.4 | 15.5 | 21.8 | 15.5 | 0.6 | 282 | 141 |

| Size | L3 | L4<br>±0.1 | L5   | L6<br>+4 | L7<br>±0.1 | L11<br>±0.1 | L12  | L13  | L14 | L15  | L16 | T1 | T2  | T3  | T6  | T7   |
|------|----|------------|------|----------|------------|-------------|------|------|-----|------|-----|----|-----|-----|-----|------|
| 8    | 30 | 21         | 15.5 | 52       | 15         | 4           | 27.5 | 27.5 | 5   | 9.7  | 3.2 | 7  | 1.1 | 3.4 | 0.7 | 18.8 |
| 12   | 33 | 24         | 17   | 64       | 15         | 4           | 36.5 | 29   | 5   | 11.3 | 4.8 | 7  | 1.1 | 3.4 | 0.8 | 29   |
| 18   | 46 | 32         | 23.5 | 85       | 30         | 4           | 46.5 | 31.5 | 5   | 12.8 | 5.3 | 11 | 1.6 | 5.7 | 1.5 | 19   |

## Technical data

Download CAD data → [www.festo.com](http://www.festo.com)

## Size 25 ... 63

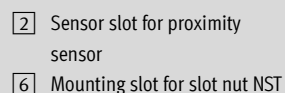


- 8 Driver in end position of working stroke (stroke reserve up to mechanical stop still present)

- 9 Stroke reserve → 11
- + = plus stroke length

## Profile

## Size 25



# Toothed belt axes DGE-ZR

Technical data

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| Size | B1  | B3<br>+0.2 | B4   | B5 | B6   | B11  | B12  | B13 | B14  | D1<br>Ø<br>h6 | D2<br>Ø | D3<br>Ø<br>+0.2 | D4 |
|------|-----|------------|------|----|------|------|------|-----|------|---------------|---------|-----------------|----|
| 25   | 45  | 19         | 39.1 | 18 | 32.5 | 15.5 | 11   | 38  | 29.8 | 8             | 3.3     | 5.2             | M5 |
| 40   | 64  | 21         | 53   | 28 | 49   | 30   | 24.5 | 56  | 43.5 | 15            | 4.3     | 6.5             | M6 |
| 63   | 106 | 24         | 89   | 44 | 83   | 41   | 35   | –   | 77.7 | 25            | 6.3     | 8.5             | M8 |

| Size | D5<br>Ø<br>H7 | D6 | D7 | D8<br>Ø | D9<br>Ø<br>g7 | D12<br>Ø | H1  | H2  | H3   | H4   | H5   | H6   | H8   |
|------|---------------|----|----|---------|---------------|----------|-----|-----|------|------|------|------|------|
| 25   | 30            | M4 | M4 | 32      | 44            | 10       | 63  | 57  | 52.8 | 19.6 | 22.5 | 7    | 21.6 |
| 40   | 40            | M5 | M6 | 48      | 64            | 17       | 86  | 78  | 71.8 | 26.5 | 32   | 11.5 | 31   |
| 63   | 62            | M8 | M8 | 78      | –             | 31       | 131 | 122 | 115  | 44.5 | 53   | 21.5 | 49   |

| Size | H9<br>±0.1 | J2  | L1  | L2    | L3  | L4 | L5 | L6  | L7<br>±0.1 | L8<br>±0.1 | L9<br>±0.1 | L10 |
|------|------------|-----|-----|-------|-----|----|----|-----|------------|------------|------------|-----|
| 25   | 19         | 4.1 | 372 | 186   | 48  | 38 | 24 | 109 | 30         | –          | 50         | 33  |
| 40   | 28         | 5   | 569 | 284.5 | 67  | 54 | 34 | 171 | 70         | 130        | 40         | 54  |
| 63   | 35         | 6.5 | 882 | 441   | 106 | 84 | 55 | 234 | 110        | 190        | 70         | 84  |

| Size | L11 | L12 | L13 | L14 | L15  | L16 <sup>1)</sup> | T1 | T2 | T3   | T5  | T6 | T7 |
|------|-----|-----|-----|-----|------|-------------------|----|----|------|-----|----|----|
| 25   | 11  | 63  | 40  | 3.2 | 14.6 | 3.6               | 10 | 2  | 7.5  | 1.4 | 8  | 10 |
| 40   | 15  | 100 | 65  | 4   | 22.8 | –2.2              | 12 | 3  | 10.5 | 1.9 | 10 | 13 |
| 63   | 15  | 172 | 91  | 5   | 35   | 0                 | 21 | 4  | 12.5 | 4.5 | 15 | 16 |

1) Negative dimension: Protrudes above coupling housing

# Toothed belt axes DGE-ZR

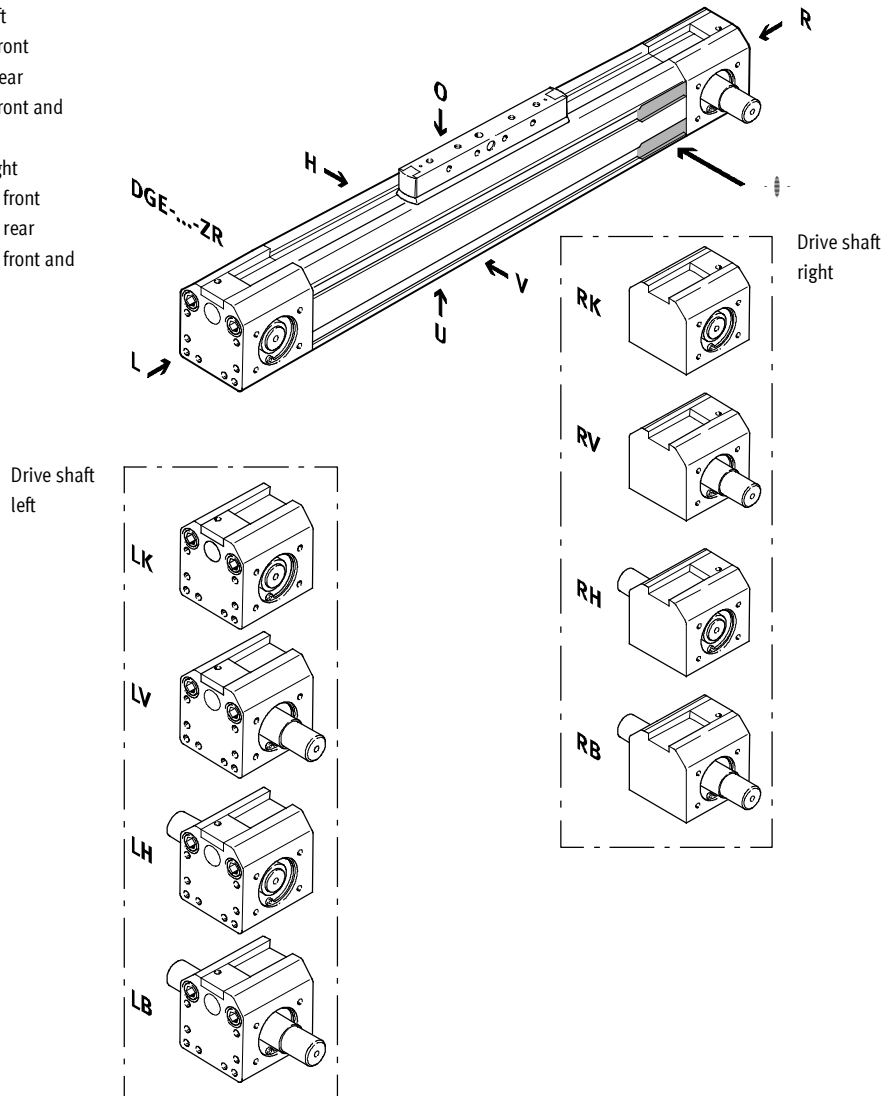
Ordering data – Modular products

FESTO

## Order code

### Mandatory data

- LK No drive shaft on left
- LV Drive shaft on left, front
- LH Drive shaft on left, rear
- LB Drive shaft on left, front and rear
- RK No drive shaft on right
- RV Drive shaft on right, front
- RH Drive shaft on right, rear
- RB Drive shaft on right, front and rear



-  - Note

The insertion point for the proximity sensor is located on the right side of the toothed belt axis DGE-ZR

- O top
- U underneath
- R right
- L left
- V front
- H rear

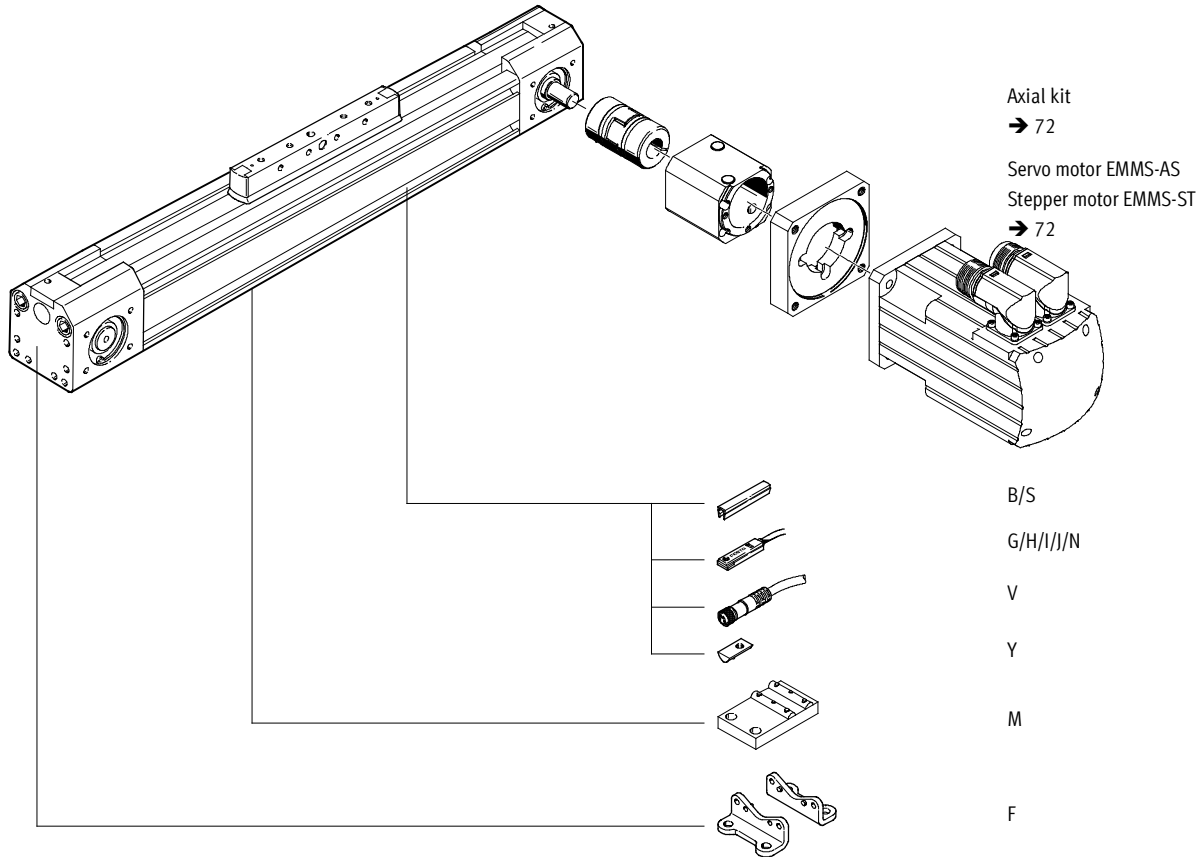
# Toothed belt axes DGE-ZR

Ordering data – Modular products

FESTO

## Order code

Options



# Toothed belt axes DGE-ZR

FESTO

Ordering data – Modular products

## M Mandatory data →

| Module No.              | Design | Size | Stroke      | Drive function | Drive shaft on left | Drive shaft on right |
|-------------------------|--------|------|-------------|----------------|---------------------|----------------------|
| 193 739                 | DGE    | 8    | 1 ... 4 500 | ZR             | LK                  | RK                   |
| 193 740                 |        | 12   |             |                | LV                  | RV                   |
| 193 741                 |        | 18   |             |                | LH                  | RH                   |
| 193 742                 |        | 25   |             |                | LB                  | RB                   |
| 193 743                 |        | 40   |             |                |                     |                      |
| 193 744                 |        | 63   |             |                |                     |                      |
| <b>Ordering example</b> |        |      |             |                |                     |                      |
| 193 742                 | DGE    | 25   | 500         | ZR             | LK                  | RV                   |

| Ordering table       |                                           |            |         |            |            |            |                 |      |               |
|----------------------|-------------------------------------------|------------|---------|------------|------------|------------|-----------------|------|---------------|
| Size                 | 8                                         | 12         | 18      | 25         | 40         | 63         | Condi-<br>tions | Code | Enter<br>code |
| M Module No.         | 193 739                                   | 193 740    | 193 741 | 193 742    | 193 743    | 193 744    |                 |      |               |
| Design               | Electromechanical linear axis             |            |         |            |            |            |                 | DGE  | DGE           |
| Size                 | 8                                         | 12         | 18      | 25         | 40         | 63         |                 | -... |               |
| Stroke [mm]          | 1 ... 650                                 | 1 ... 1000 |         | 1 ... 3000 | 1 ... 4000 | 1 ... 4500 | 1               | -... |               |
| Drive function       | Electromechanical drive with toothed belt |            |         |            |            |            |                 | -ZR  | -ZR           |
| Drive shaft on left  | No drive shaft on left                    |            |         |            |            |            | 2               | -LK  |               |
|                      | Drive shaft on left, front                |            |         |            |            |            |                 | -LV  |               |
|                      | Drive shaft on left, rear                 |            |         |            |            |            |                 | -LH  |               |
|                      | Drive shaft on left, front and rear       |            |         |            |            |            |                 | -LB  |               |
| Drive shaft on right | No drive shaft on right                   |            |         |            |            |            | 3               | -RK  |               |
|                      | Drive shaft on right, front               |            |         |            |            |            |                 | -RV  |               |
|                      | Drive shaft on right, rear                |            |         |            |            |            |                 | -RH  |               |
|                      | Drive shaft on right, front and rear      |            |         |            |            |            |                 | -RB  |               |

1 **Stroke** Special stroke lengths:  
 Module No. 8: 1000 mm  
 Module No. 12: 1400 mm  
 Module No. 18: 1700 mm  
 Module No. 25: 5100 mm  
 Module No. 40: 4900 mm  
 Module No. 63: 4700 mm

2 **LK** Not with drive shaft on right RK.  
 3 **RK** Not with drive shaft on left LK.

Transfer order code

|  |     |   |  |   |  |   |    |   |  |   |  |
|--|-----|---|--|---|--|---|----|---|--|---|--|
|  | DGE | - |  | - |  | - | ZR | - |  | - |  |
|--|-----|---|--|---|--|---|----|---|--|---|--|

# Toothed belt axes DGE-ZR

Ordering data – Modular products

**FESTO**

## Options

| Accessories | Slot cover   | Slot nut   | Central support | Foot mounting | Proximity sensor                     | Plug socket |
|-------------|--------------|------------|-----------------|---------------|--------------------------------------|-------------|
| ZUB         | ...S<br>...B | ...Y       | ...M            | ...F          | ...G<br>...H<br>...I<br>...J<br>...N | ...V        |
| <b>ZUB</b>  | <b>- 2S</b>  | <b>10Y</b> |                 | <b>F</b>      | <b>2G</b>                            | <b>2V</b>   |

## Ordering table

| Size                     |                     | 8                            | 12                  | 18 | 25       | 40 | 63       | Condi-<br>tions | Code | Enter<br>code |
|--------------------------|---------------------|------------------------------|---------------------|----|----------|----|----------|-----------------|------|---------------|
| ↓                        | Accessories         |                              | Supplied separately |    |          |    |          |                 | ZUB- | ZUB-          |
| 0                        | Slot cover          | Sensor slot                  | 1 ... 10            |    |          |    |          |                 | ...S |               |
|                          |                     | Mounting slot                | –                   | –  | –        | –  | 1 ... 10 |                 | ...B |               |
|                          | Slot nut            | for mounting slot            | –                   | –  | 1 ... 10 |    |          |                 | ...Y |               |
|                          | Central support     |                              | 1 ... 10            |    |          |    |          |                 | ...M |               |
|                          | Foot mounting (kit) |                              | 1 ... 10            |    |          |    |          |                 | ...F |               |
|                          | Proximity sensor    | with cable 2.5 m             | 1 ... 10            |    |          |    |          |                 | ...G |               |
|                          |                     | with plug                    | 1 ... 10            |    |          |    |          |                 | ...H |               |
|                          |                     | contactless with cable 2.5 m | 1 ... 10            |    |          |    |          |                 | ...I |               |
|                          |                     | contactless, plug            | 1 ... 10            |    |          |    |          |                 | ...J |               |
|                          |                     | NC contact with cable 2.5 m  | 1 ... 10            |    |          |    |          |                 | ...N |               |
| Cable with socket, 2.5 m |                     | 1 ... 10                     |                     |    |          |    |          | ...V            |      |               |

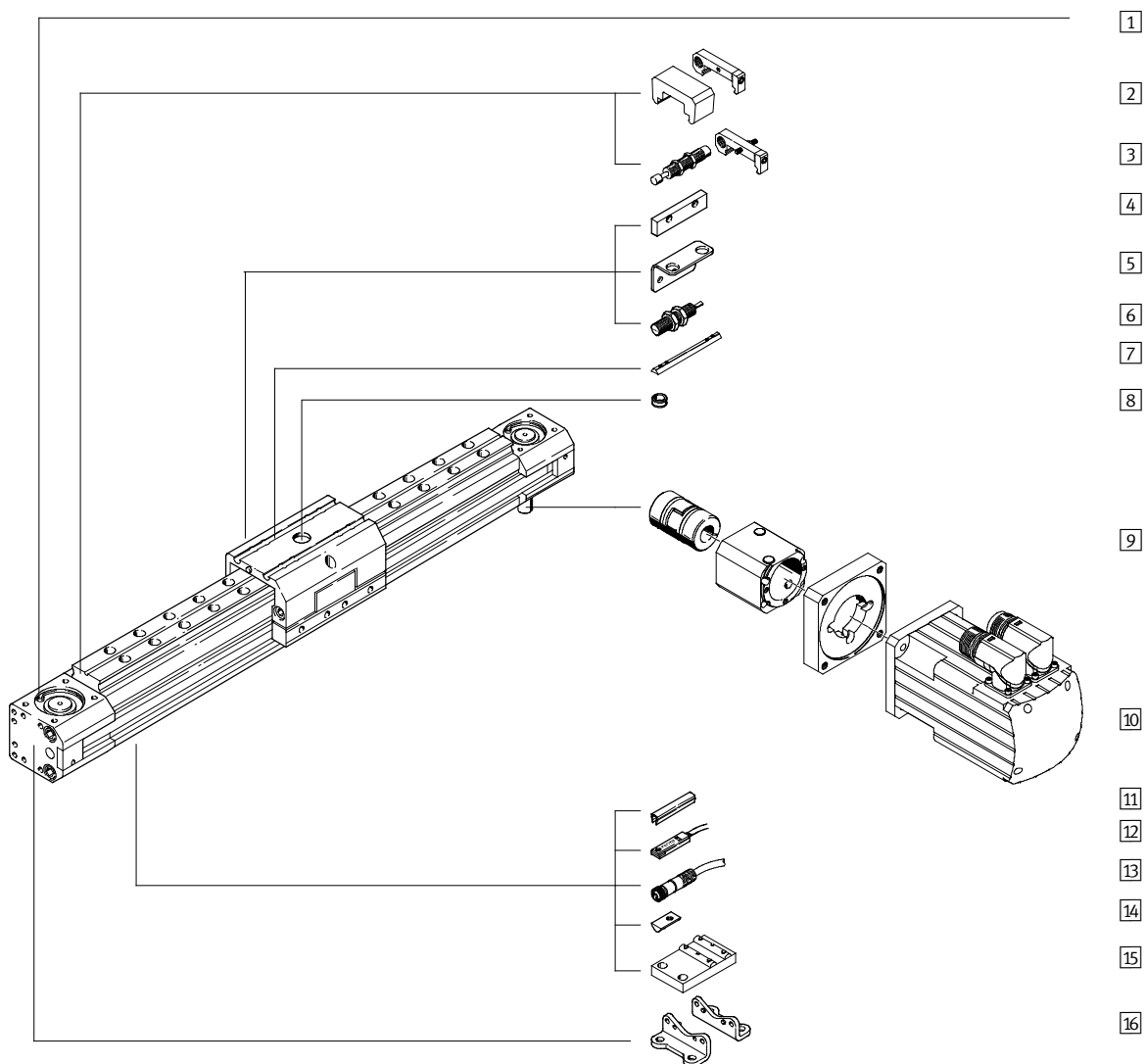
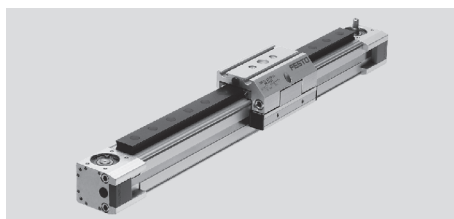
## Transfer order code

|            |   |  |  |  |  |  |  |
|------------|---|--|--|--|--|--|--|
| <b>ZUB</b> | - |  |  |  |  |  |  |
|------------|---|--|--|--|--|--|--|

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

Peripherals overview

FESTO



# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

Peripherals overview

| Variants and accessories                         |                                                                                                |       |    |                 |  |
|--------------------------------------------------|------------------------------------------------------------------------------------------------|-------|----|-----------------|--|
| Type                                             | Brief description                                                                              | GK/GV | GA | → Page/Internet |  |
| 1 Toothed belt axis DGE-ZR-KF                    | Electromechanical axis with toothed belt and recirculating ball bearing guide                  | ■     | ■  | 24              |  |
| 2 Emergency buffer with retainer <sup>1)</sup> A | For avoiding damage at the end stop in the event of malfunction                                | ■     | ■  | 80              |  |
| 3 Shock absorber kits C                          | For avoiding damage at the end stop in the event of malfunction                                | ■     | –  | 79              |  |
| 3 Shock absorber kits E                          | For avoiding damage at the end stop in the event of malfunction                                | –     | ■  | 80              |  |
| 4 Switching lug L                                | For sensing the slide position                                                                 | ■     | –  | 82              |  |
| 5 Sensor bracket T                               | Adapter for mounting the inductive proximity sensors on the axis                               | ■     | –  | 82              |  |
| 6 Inductive proximity sensor O/P/R/W             | For use as a proximity signal and safety monitoring                                            | ■     | –  | 85              |  |
| 7 Slot nut for slide X                           | For mounting loads and attachments on the slide                                                | ■     | ■  | 84              |  |
| 8 Centring pins/sleeves Z                        | For centring loads and attachments on the slide                                                | ■     | ■  | 84              |  |
| 9 Axial kit EAMM-A                               | For axial motor attachment (consisting of: coupling housing, clamping component, motor flange) | ■     | ■  | 72              |  |
| 10 Motor EMMS                                    | Motors specially matched to the axis, with or without gearing, with or without brake           | ■     | ■  | 72              |  |
| 11 Slot cover B/S                                | For protecting against the ingress of dirt                                                     | ■     | ■  | 84              |  |
| 12 Proximity sensor G/H/I/J/N                    | For use as a proximity signal and safety monitoring                                            | ■     | ■  | 85              |  |
| 13 Cable with socket V                           | For proximity sensors                                                                          | ■     | ■  | 85              |  |
| 14 Slot nut for mounting slot Y                  | For mounting attachments                                                                       | ■     | ■  | 84              |  |
| 15 Central support M                             | For mounting the axis                                                                          | ■     | ■  | 77              |  |
| 16 Foot mounting F                               | For mounting the axis                                                                          | ■     | ■  | 76              |  |

1) Fitted as standard for GV and GA

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Type code

|                             |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
|-----------------------------|--------------------------------------|---|----|---|-----|---|----|---|----|---|----|---|----|---|----|---|----|
|                             | DGE                                  | - | 25 | - | 500 | - | ZR | - | LK | - | RV | - | KF | - | GK | - | KL |
| <b>Type</b>                 |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| DGE                         | Toothed belt drive                   |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Size</b>                 |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Stroke [mm]</b>          |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Drive function</b>       |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| ZR                          | Toothed belt                         |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Drive shaft on left</b>  |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| LK                          | No drive shaft on left               |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| LV                          | Drive shaft on left, front           |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| LH                          | Drive shaft on left, rear            |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| LB                          | Drive shaft on left, front and rear  |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Drive shaft on right</b> |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| RK                          | No drive shaft on right              |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| RV                          | Drive shaft on right, front          |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| RH                          | Drive shaft on right, rear           |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| RB                          | Drive shaft on right, front and rear |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Guide</b>                |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| KF                          | Recirculating ball bearing guide     |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Slide</b>                |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| GK                          | Standard slide                       |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| GV                          | Extended slide                       |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| GA                          | Protected version                    |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| <b>Additional slide</b>     |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| KL                          | Left                                 |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |
| KR                          | Right                                |   |    |   |     |   |    |   |    |   |    |   |    |   |    |   |    |

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Type code

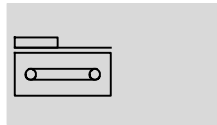
|                                   |                                 | + ZUB | - | 2S | - |  | - | M | - | F |  |  |  | Z | 2H | 2V |  |  |  |
|-----------------------------------|---------------------------------|-------|---|----|---|--|---|---|---|---|--|--|--|---|----|----|--|--|--|
| <b>Accessories</b>                |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ZUB                               | Accessories supplied loose      |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Slot cover</b>                 |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...S                              | Sensor slot                     |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...B                              | Mounting slot                   |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Slot nut</b>                   |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...Y                              | For mounting slot               |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...X                              | For slide                       |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Central support</b>            |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...M                              | Central support                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Foot mounting</b>              |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...F                              | Foot mounting                   |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Emergency buffer</b>           |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...A                              | Emergency buffer with retainer  |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Shock absorber kit</b>         |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...C                              | Plus retainer for GK/GV         |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...E                              | For GA                          |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Centring sleeve</b>            |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...Z                              | For slide                       |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Proximity sensor</b>           |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...G                              | With cable, 2.5 m               |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...H                              | With plug                       |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...I                              | Contactless, with cable, 2.5 m  |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...J                              | Contactless, plug               |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...N                              | NC contact with cable, 2.5 m    |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Cable with socket</b>          |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...V                              | 2.5 m                           |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Sensor bracket</b>             |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...T                              | For inductive proximity sensors |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Switching lug</b>              |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| L                                 | Switching lug                   |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| <b>Inductive proximity sensor</b> |                                 |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...O                              | NO contact, cable               |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...P                              | NC contact, cable               |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...W                              | NO contact, plug                |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |
| ...R                              | NC contact, plug                |       |   |    |   |  |   |   |   |   |  |  |  |   |    |    |  |  |  |

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

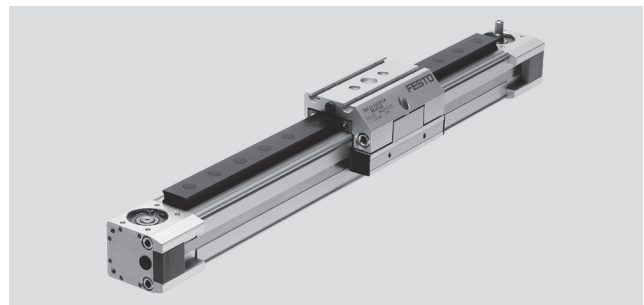
FESTO

Technical data

Function



www.festo.com



-  Size  
8 ... 63
-  Stroke length  
1 ... 4500 mm

| General technical data                    |                     |                                                                               |            |            |                          |                          |                          |
|-------------------------------------------|---------------------|-------------------------------------------------------------------------------|------------|------------|--------------------------|--------------------------|--------------------------|
| Size                                      |                     | 8                                                                             | 12         | 18         | 25                       | 40                       | 63                       |
| Constructional design                     |                     | Electromechanical axis with toothed belt and recirculating ball bearing guide |            |            |                          |                          |                          |
| Guide                                     |                     | Recirculating ball bearing guide                                              |            |            |                          |                          |                          |
| Mounting position                         |                     | Any                                                                           |            |            |                          |                          |                          |
| Max. working stroke <sup>1)</sup>         | GK [mm]             | 1 ... 650                                                                     | 1 ... 1000 | 1 ... 1000 | 1 ... 3000 <sup>2)</sup> | 1 ... 4000 <sup>2)</sup> | 1 ... 4500 <sup>2)</sup> |
|                                           | GV [mm]             | –                                                                             | –          | 1 ... 920  | 1 ... 2900               | 1 ... 3830               | 1 ... 4250               |
|                                           | GA [mm]             | –                                                                             | –          | –          | 1 ... 1800               | 1 ... 1800               | –                        |
| Max. working load                         | [kg]                | 1.5                                                                           | 3          | 6          | 20                       | 50                       | 120                      |
| Max. feed force $F_x$                     | [N]                 | 15                                                                            | 30         | 60         | 260                      | 610                      | 1500                     |
| Max. radial force <sup>3)</sup>           | [N]                 | 103                                                                           | 77         | 290        | 307                      | 984                      | 2600                     |
| Radial force <sup>4)</sup>                | [N]                 | 56                                                                            | 96         | 117        | 235                      | 370                      | 840                      |
| Radial force <sup>5)</sup>                | [N]                 | 40                                                                            | 70         | 80         | 140                      | 170                      | 400                      |
| Max. driving torque                       | [Nm]                | 0.08                                                                          | 0.18       | 0.5        | 2.6                      | 9.7                      | 42                       |
| Max. no-load driving torque <sup>6)</sup> | [Nm]                | 0.05                                                                          | 0.08       | 0.2        | 0.5                      | 1.0                      | 4.5                      |
| Max. speed                                | [m/s]               | 1                                                                             | 1.5        | 2          | 3                        | 3                        | 3                        |
| Max. acceleration                         | [m/s <sup>2</sup> ] | 15                                                                            | 20         | 20         | 50                       | 50                       | 50                       |
| Repetition accuracy                       | [mm]                | ±0.08                                                                         |            |            | ±0.1                     |                          |                          |

- 1) Total stroke = working stroke + 2x stroke reserve
- 2) Special lengths on request
- 3) On the drive shaft
- 4) On the drive shaft, with a service life of 5,000 km
- 5) On the drive shaft, with a service life of 10,000 km
- 6) Measured at a speed of 0.2 m/s

| Operating and environmental conditions |      |             |    |    |    |    |    |
|----------------------------------------|------|-------------|----|----|----|----|----|
| Size                                   |      | 8           | 12 | 18 | 25 | 40 | 63 |
| Ambient temperature                    | [°C] | –10 ... +40 |    |    |    |    |    |
| Protection class                       |      | IP40        |    |    |    |    |    |

| Weights [kg]                                |       |       |      |      |      |      |      |
|---------------------------------------------|-------|-------|------|------|------|------|------|
| Size                                        |       | 8     | 12   | 18   | 25   | 40   | 63   |
| Basic weight with 0 mm stroke <sup>1)</sup> | GK    | 0.32  | 0.66 | 1.16 | 2.6  | 7.6  | 30.3 |
|                                             | GV    | –     | –    | 1.62 | 3.52 | 9.52 | 40.2 |
|                                             | GA    | –     | –    | –    | 3.51 | 9.67 | –    |
| Additional weight per 100 mm stroke         | GK/GV | 0.095 | 0.14 | 0.26 | 0.47 | 0.94 | 2.6  |
|                                             | GA    | –     | –    | –    | 0.56 | 1.06 | –    |
| Moving load                                 | GK    | 0,085 | 0,14 | 0,32 | 0,71 | 1,8  | 5    |
|                                             | GV    | –     | –    | 0,48 | 0,97 | 2,52 | 7,46 |
|                                             | GA    | –     | –    | –    | 1,27 | 3,17 | –    |
| Additional slide                            | KL/KR | –     | –    | 0.25 | 0.38 | 1.06 | 3.1  |

- 1) Including coupling housing and slide

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Technical data

| Mass moment of inertia    |    |                          | 8     | 12    | 18    | 25    | 40   | 63   |
|---------------------------|----|--------------------------|-------|-------|-------|-------|------|------|
| Size                      |    |                          |       |       |       |       |      |      |
| $J_0$                     | GK | [kg cm <sup>2</sup> ]    | 0.025 | 0.058 | 0.247 | 0.81  | 5.25 | 50.7 |
|                           | GV | [kg cm <sup>2</sup> ]    | –     | –     | 0.355 | 1.08  | 7.14 | 70.9 |
|                           | GA | [kg cm <sup>2</sup> ]    | –     | –     | –     | 1.37  | 8.71 | –    |
| $J_H$ per metre stroke    |    | [kg cm <sup>2</sup> /m]  | 0.003 | 0.009 | 0.021 | 0.078 | 0.45 | 3.6  |
| $J_L$ per kg working load |    | [kg cm <sup>2</sup> /kg] | 0.259 | 0.365 | 0.685 | 1     | 2.53 | 7.85 |

The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

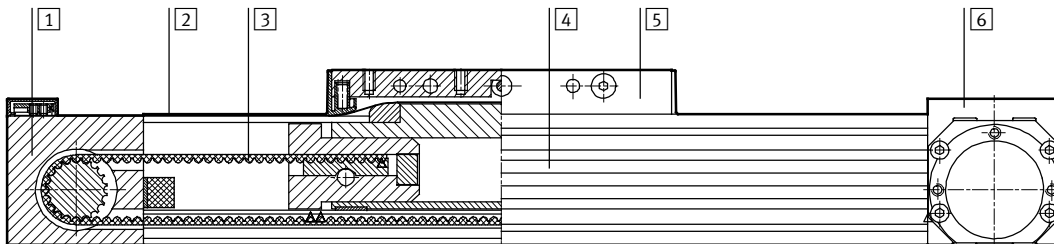
$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{working load [kg]}}$$

| Toothed belt                 |           |       |       |       |       |       |       |
|------------------------------|-----------|-------|-------|-------|-------|-------|-------|
| Size                         |           | 8     | 12    | 18    | 25    | 40    | 63    |
| Tensile stress <sup>1)</sup> | [%]       | 0.04  | 0.1   | 0.2   | 0.11  | 0.1   | 0.15  |
| Pitch                        | [mm]      | 2     | 2     | 2     | 3     | 5     | 8     |
| Effective diameter           | [mm]      | 10.18 | 12.09 | 16.55 | 20.05 | 31.83 | 56.02 |
| Feed constant                | [mm/rev.] | 32    | 38    | 52    | 63    | 100   | 176   |

1) At max. feed force

## Materials

Sectional view



| Axis |                       |                                                 |
|------|-----------------------|-------------------------------------------------|
| 1    | Return pulley housing | Anodised aluminium                              |
| 2    | Cover strip           | Corrosion resistant steel                       |
| 3    | Toothed belt          | Polychloroprene with Glascord and nylon coating |
| 4    | Profile               | Anodised aluminium                              |
| 5    | Slide                 | Anodised aluminium                              |
| 6    | Drive housing         | Anodised aluminium                              |

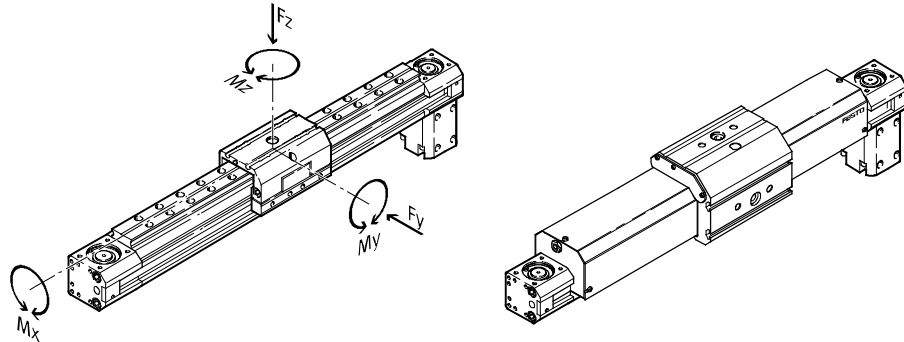
# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Technical data

## Characteristic load values for axis with standard slide GK or protected version GA

The indicated forces and torques refer to the centre of the guide rail. They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.

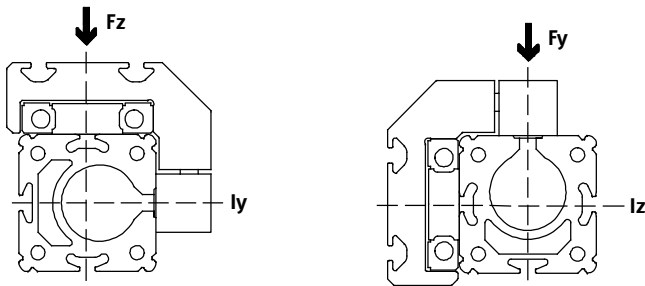


If the axis is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads.

$$\frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$

| Permissible forces and torques |      |     |     |     |      |      |       |
|--------------------------------|------|-----|-----|-----|------|------|-------|
| Size                           |      | 8   | 12  | 18  | 25   | 40   | 63    |
| F <sub>y</sub> max.            | [N]  | 255 | 565 | 930 | 3080 | 7300 | 14050 |
| F <sub>z</sub> max.            | [N]  | 255 | 565 | 930 | 3080 | 7300 | 14050 |
|                                |      |     |     |     |      |      |       |
| M <sub>x</sub> max.            | [Nm] | 1   | 3   | 7   | 45   | 170  | 580   |
| M <sub>y</sub> max.            | [Nm] | 3.5 | 9   | 23  | 85   | 330  | 910   |
| M <sub>z</sub> max.            | [Nm] | 3.5 | 9   | 23  | 85   | 330  | 910   |

## 2nd moment of area



| Size           |                    | 8                    | 12                 | 18                   | 25                  | 40                   | 63                    |
|----------------|--------------------|----------------------|--------------------|----------------------|---------------------|----------------------|-----------------------|
| I <sub>y</sub> | [mm <sup>4</sup> ] | 16.9x10 <sup>3</sup> | 46x10 <sup>3</sup> | 172x10 <sup>3</sup>  | 551x10 <sup>3</sup> | 1908x10 <sup>3</sup> | 13677x10 <sup>3</sup> |
| I <sub>z</sub> | [mm <sup>4</sup> ] | 7x10 <sup>3</sup>    | 21x10 <sup>3</sup> | 73.7x10 <sup>3</sup> | 250x10 <sup>3</sup> | 875x10 <sup>3</sup>  | 6987x10 <sup>3</sup>  |

-  Note  
Sizing software  
PositioningDrives  
→ [www.festo.com](http://www.festo.com)

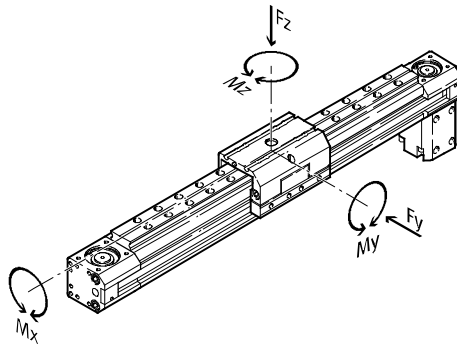
# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Technical data

## Characteristic load values for axis with extended slide GV

The indicated forces and torques refer to the centre of the guide rail. They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.

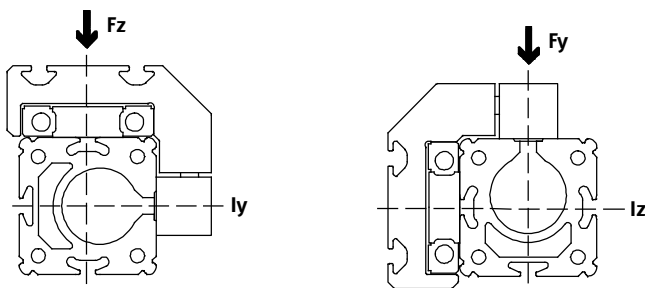


If the axis is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads.

$$\frac{F_y}{F_{y_{\max.}}} + \frac{F_z}{F_{z_{\max.}}} + \frac{M_x}{M_{x_{\max.}}} + \frac{M_y}{M_{y_{\max.}}} + \frac{M_z}{M_{z_{\max.}}} \leq 1$$

| Permissible forces and torques |      |     |     |     |      |      |       |
|--------------------------------|------|-----|-----|-----|------|------|-------|
| Size                           |      | 8   | 12  | 18  | 25   | 40   | 63    |
| F <sub>y</sub> <sub>max.</sub> | [N]  | 255 | 565 | 930 | 3080 | 7300 | 14050 |
| F <sub>z</sub> <sub>max.</sub> | [N]  | 255 | 565 | 930 | 3080 | 7300 | 14050 |
|                                |      |     |     |     |      |      |       |
| M <sub>x</sub> <sub>max.</sub> | [Nm] | 1   | 3   | 7   | 45   | 170  | 580   |
| M <sub>y</sub> <sub>max.</sub> | [Nm] | –   | –   | 45  | 170  | 660  | 1820  |
| M <sub>z</sub> <sub>max.</sub> | [Nm] | –   | –   | 45  | 170  | 660  | 1820  |

## 2nd moment of area



| Size           |                    | 8                    | 12                 | 18                   | 25                  | 40                   | 63                    |
|----------------|--------------------|----------------------|--------------------|----------------------|---------------------|----------------------|-----------------------|
| I <sub>y</sub> | [mm <sup>4</sup> ] | 16.9x10 <sup>3</sup> | 46x10 <sup>3</sup> | 172x10 <sup>3</sup>  | 551x10 <sup>3</sup> | 1908x10 <sup>3</sup> | 13677x10 <sup>3</sup> |
| I <sub>z</sub> | [mm <sup>4</sup> ] | 7x10 <sup>3</sup>    | 21x10 <sup>3</sup> | 73.7x10 <sup>3</sup> | 250x10 <sup>3</sup> | 875x10 <sup>3</sup>  | 6987x10 <sup>3</sup>  |

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Technical data

## Stroke reserve

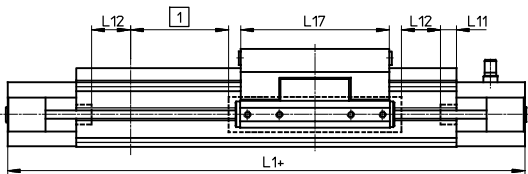
- L1+ Overall length of axis
- L11 Internal mechanical stop
- L17 Slide length
- [3] Emergency buffer
- [4] Shock absorber retainer

[1] The working stroke is the effective usable work range. Please quote this in your order.

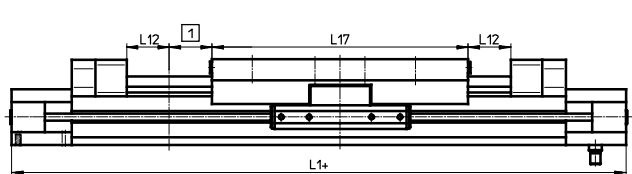
L12 Stroke reserve:  
Safety distance to mechanical stop, present at both ends of the axis in addition to the stroke.

Example:  
Type DGE-25-500-ZR  
Working stroke = 500 mm  
Stroke reserve = (2x 63 mm)  
= 126 mm  
Total stroke:  
626 mm = 500 mm + 126 mm

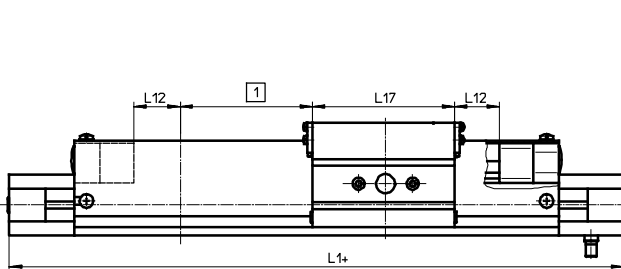
## for standard slide GK



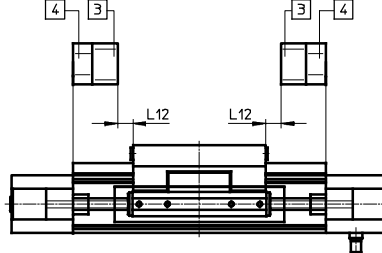
## for extended slide GV



## for protected version GA



## for standard slide GK with optional emergency buffer

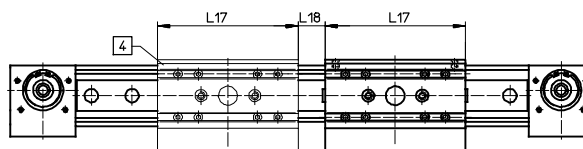


## Stroke reserve L12 [mm] per end position

| Size                                             | 8    | 12   | 18   | 25   | 40  | 63  |
|--------------------------------------------------|------|------|------|------|-----|-----|
| Variant                                          |      |      |      |      |     |     |
| Standard slide GK                                | 27.5 | 36.5 | 46.5 | 63   | 100 | 172 |
| Standard slide GK with optional emergency buffer | –    | –    | 23.5 | 41.5 | 62  | 116 |
| Extended slide GV                                | –    | –    | 23.5 | 41.5 | 62  | 116 |
| Protected version GA                             | –    | –    | –    | 41.5 | 62  | –   |

## Working stroke reduction with standard slide GK or extended slide GV and additional slide KL/KR

- L17 = Slide/additional slide length
- L18 = Distance between both slides
- [4] Additional slide



For a toothed belt axis with additional slide, the working stroke is reduced by the length of the additional slide and the distance between both slides.

Example:  
Type DGE-25-500-ZR-...-KF-GK-KL  
Working stroke without additional slide = 500 mm  
L18 = 20 mm  
L17 = 105 mm  
Working stroke with additional slide = 375 mm  
(500 mm – 20 mm – 105 mm)

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

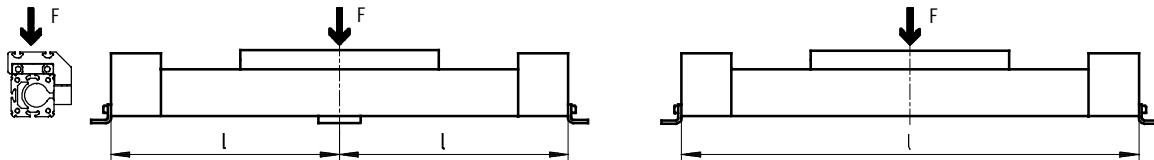
FESTO

Technical data

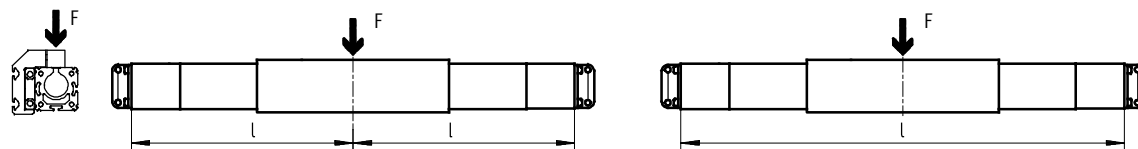
## Maximum permissible support span $l$ as a function of the force $F$

The axis may need to be supported with central supports MUP in order to restrict deflection with long stroke lengths. The following diagrams serve to determine the maximum permissible support span  $l$  as a function of the force acting upon the axis  $F$ .

### 1 Force on the surface of the slide

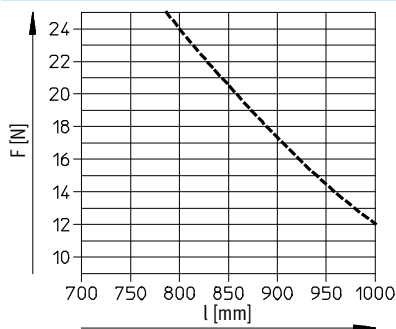


### 2 Force on the front of the slide

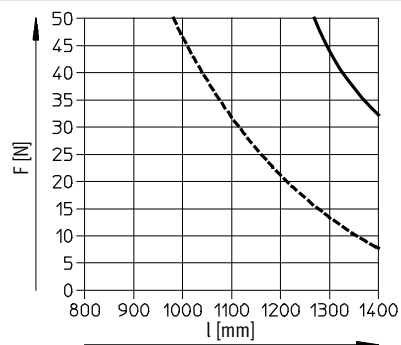


## Maximum support span $l$ (without central support) as a function of the force $F$

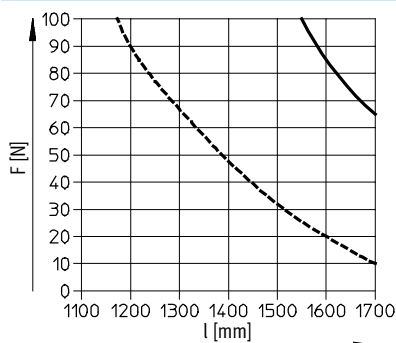
DGE-8



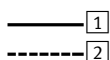
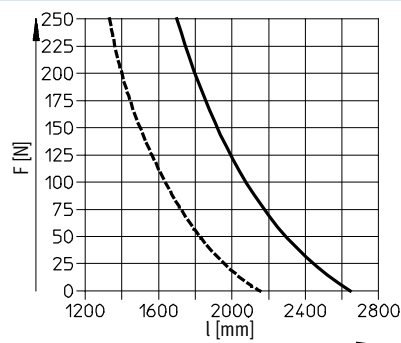
DGE-12



DGE-18



DGE-25



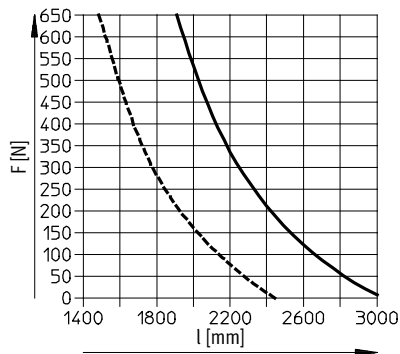
# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

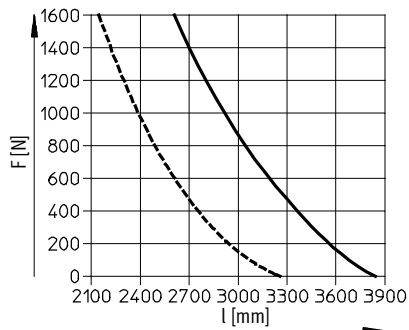
Technical data

Maximum support span  $l$  (without central support) as a function of the force  $F$

DGE-40



DGE-63



— 1  
- - - 2

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

Technical data

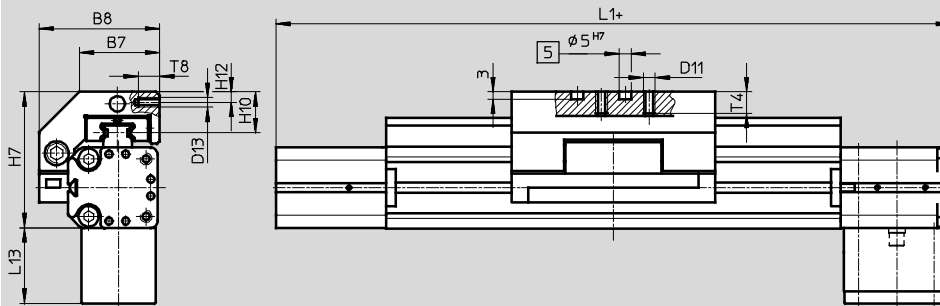
**FESTO**

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Standard slide GK

Size 8 ... 18



- [5] Hole for centring pin ZBS-5  
+ = plus stroke length

Basic dimensions

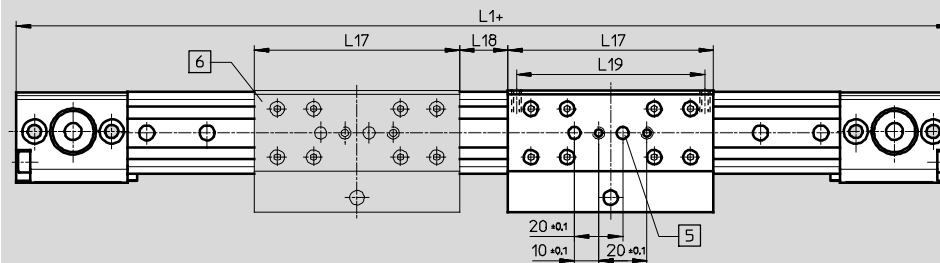
→ 14

Stroke reserve

→ 30

Additional slide KL/KR

Size 18



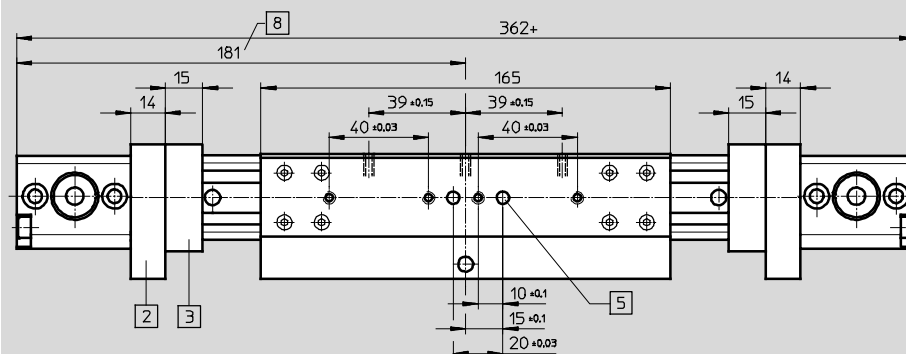
- [5] Hole for centring pin ZBS-5  
[6] Additional slide  
+ = plus stroke length

Reduction of working stroke

→ 30

Extended slide GV

Size 18



- [2] Shock absorber retainer KYP  
[3] Emergency buffer NPE  
[5] Hole for centring pin ZBS-5  
[8] Driver in end position of working stroke (stroke reserve up to mechanical stop still present)

+ = plus stroke length

Stroke reserve

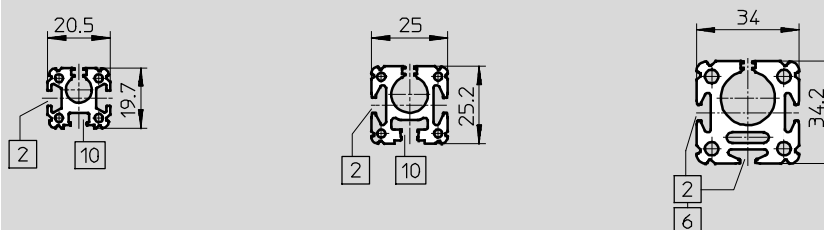
→ 30

Profile

Size 8

Size 12

Size 18



- [2] Sensor slot for proximity sensor  
[6] Mounting slot for slot nut NST  
[10] Not suitable for proximity sensor

| Size | B7   | B8   | D11 | D13 | H7   | H10 | H12 | L1  | L13  | L17 | L18 | L19 | T4  | T8 |
|------|------|------|-----|-----|------|-----|-----|-----|------|-----|-----|-----|-----|----|
| 8    | 21.5 | 32   | M4  | –   | 35.5 | 12  | –   | 180 | 27.5 | 52  | –   | –   | 7   | –  |
| 12   | 22   | 36.5 | M4  | –   | 43.5 | 14  | –   | 216 | 29   | 64  | –   | –   | 8.5 | –  |
| 18   | 32   | 50.5 | M5  | M4  | 57   | 17  | 4.3 | 282 | 31.5 | 85  | 20  | 78  | 10  | 9  |

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

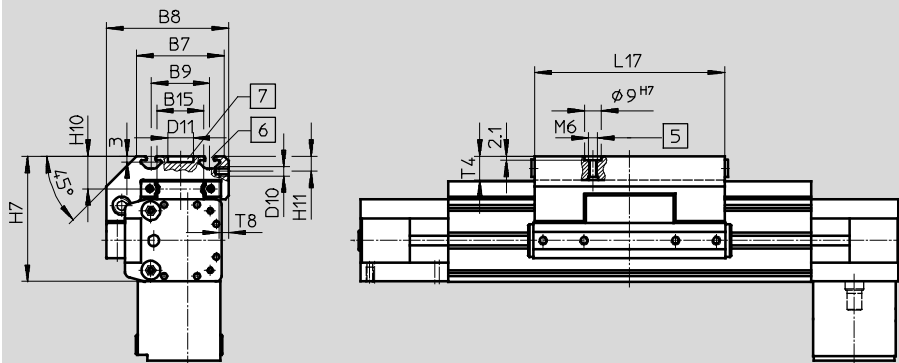
Technical data

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Standard slide GK

Size 25 ... 63



- 5 Hole for centring sleeve ZBH-9
- 6 Mounting slot for slot nut NSTL
- 7 Hole for central mounting SLZZ

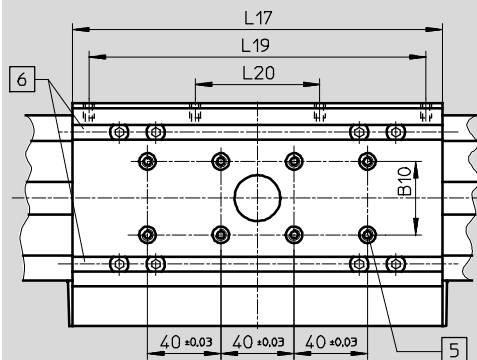
Basic dimensions

→ 16

Stroke reserve

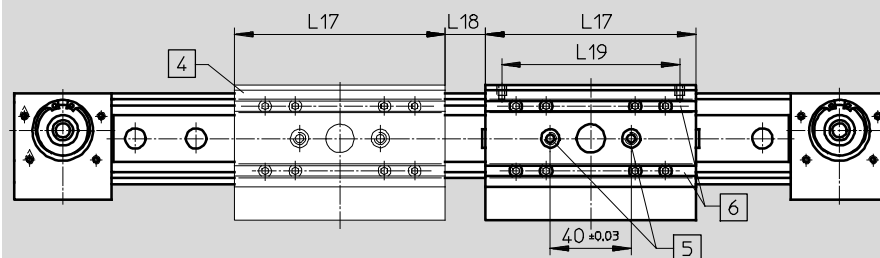
→ 30

Size 40/63



- 5 Hole for centring sleeve ZBH-9
- 6 Mounting slot for slot nut NSTL

Size 25 ... 63



- 4 Additional slide DGE-...-KL/KR
- 5 Hole for centring sleeve ZBH-9
- 6 Mounting slot for slot nut NSTL

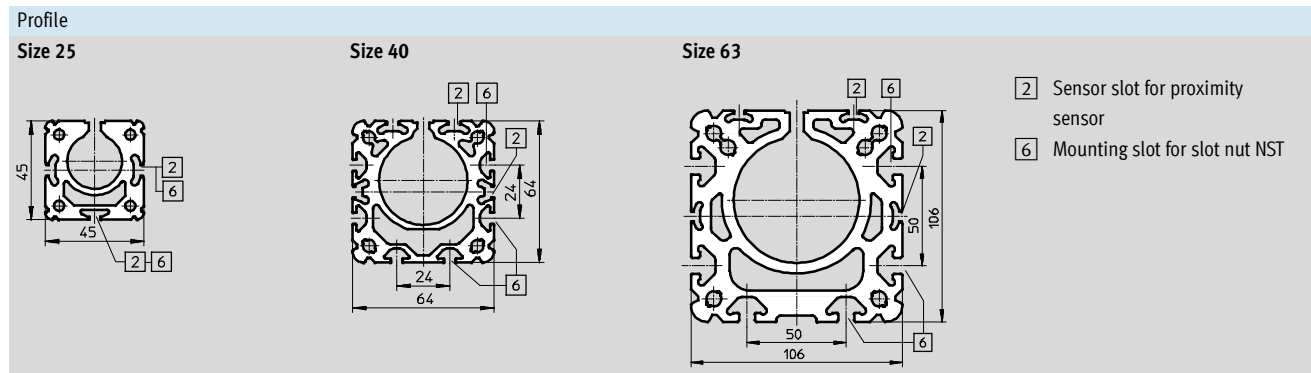
Reduction of working stroke

→ 30

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Technical data



| Size | B7   | B8   | B9<br>±0.2 | B10 | B15  | D10 | D11<br>∅<br>G7 | H7    |
|------|------|------|------------|-----|------|-----|----------------|-------|
| 25   | 48   | 67   | 32         | –   | 23.5 | M5  | 14             | 68.5  |
| 40   | 78.5 | 96.5 | 55         | 20  | 42   | M5  | 25             | 90.5  |
| 63   | 121  | 142  | 90         | 40  | 71   | M8  | 25             | 144.5 |

| Size | H10  | H11  | L17 | L18 <sup>1)</sup> | L19<br>±0.1 | L20<br>±0.1 | T4<br>max. | T8   |
|------|------|------|-----|-------------------|-------------|-------------|------------|------|
| 25   | 18.5 | 8.2  | 105 | 20                | 88          | –           | 12.5       | 8.5  |
| 40   | 20   | 7    | 167 | 20                | 150         | 58          | 12.5       | 8.5  |
| 63   | 30   | 12.5 | 230 | 27                | 200         | 72          | 20.5       | 10.5 |

1) Recommended minimum distance for access to lubrication nipple.

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

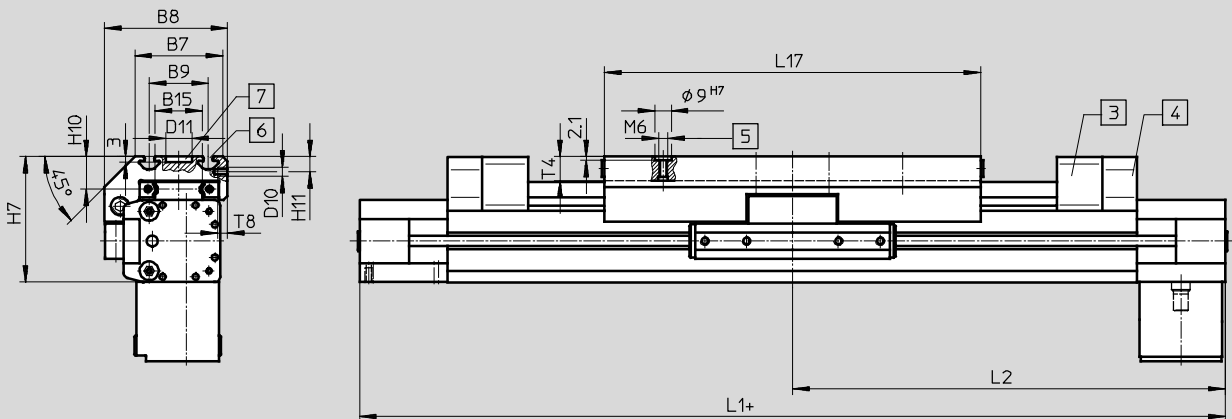
Technical data

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Extended slide GV

Size 25 ... 63



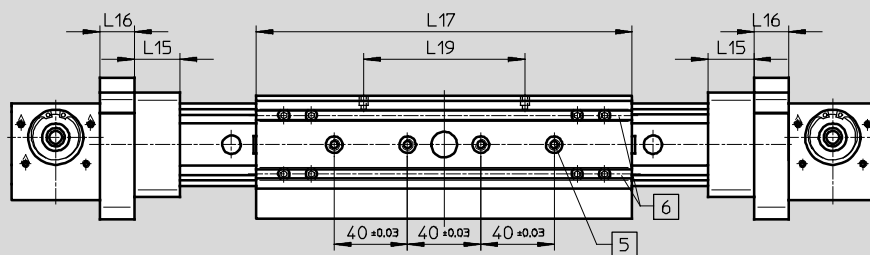
- 3 Emergency buffer NPE
- 4 Shock absorber retainer KYP

- 5 Hole for centring sleeve ZBH-9
- 6 Slot for slot nut NSTL

- 7 Hole for central mounting SLZZ
- + = plus stroke length

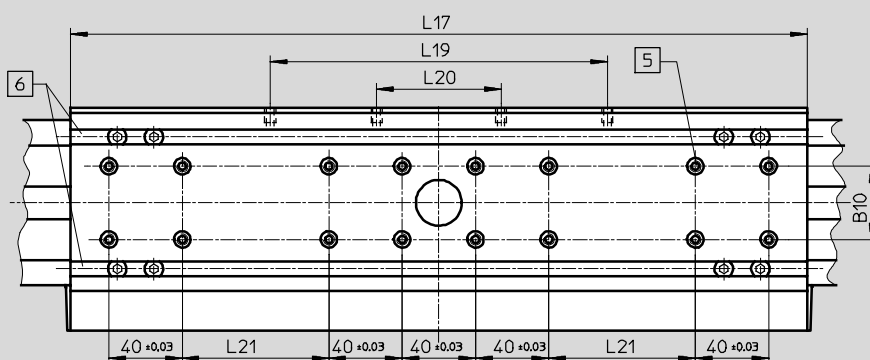
Basic dimensions  
→ 16  
Stroke reserve  
→ 30

Size 25



- 5 Hole for centring sleeve ZBH-9
- 6 Slot for slot nut NSTL

Size 40/63



- 5 Hole for centring sleeve ZBH-9
- 6 Slot for slot nut NSTL

## Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Technical data

| Size | B7   | B8   | B9<br>±0.2 | B15  | D10 | D11<br>Ø<br>G7 | H7    | H10  | H11  |
|------|------|------|------------|------|-----|----------------|-------|------|------|
| 25   | 48   | 67   | 32         | 23.5 | M5  | 14             | 68.5  | 18.5 | 8.2  |
| 40   | 78.5 | 96.5 | 55         | 42   | M5  | 25             | 90.5  | 20   | 7    |
| 63   | 121  | 142  | 90         | 71   | M8  | 25             | 144.5 | 30   | 12.5 |

| Size | L1   | L2    | L15 | L16 | L17<br>±0.2 | L19<br>±0.1 | L20<br>±0.1 | L21<br>±0.1 | T4<br>max. | T8   |
|------|------|-------|-----|-----|-------------|-------------|-------------|-------------|------------|------|
| 25   | 472  | 236   | 25  | 19  | 205         | 88          | –           | –           | 12.5       | 8.5  |
| 40   | 739  | 369.5 | 40  | 32  | 337         | 150         | 58          | 40          | 12.5       | 8.5  |
| 63   | 1132 | 566   | 60  | 44  | 480         | 200         | 72          | 120         | 20.5       | 10.5 |

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

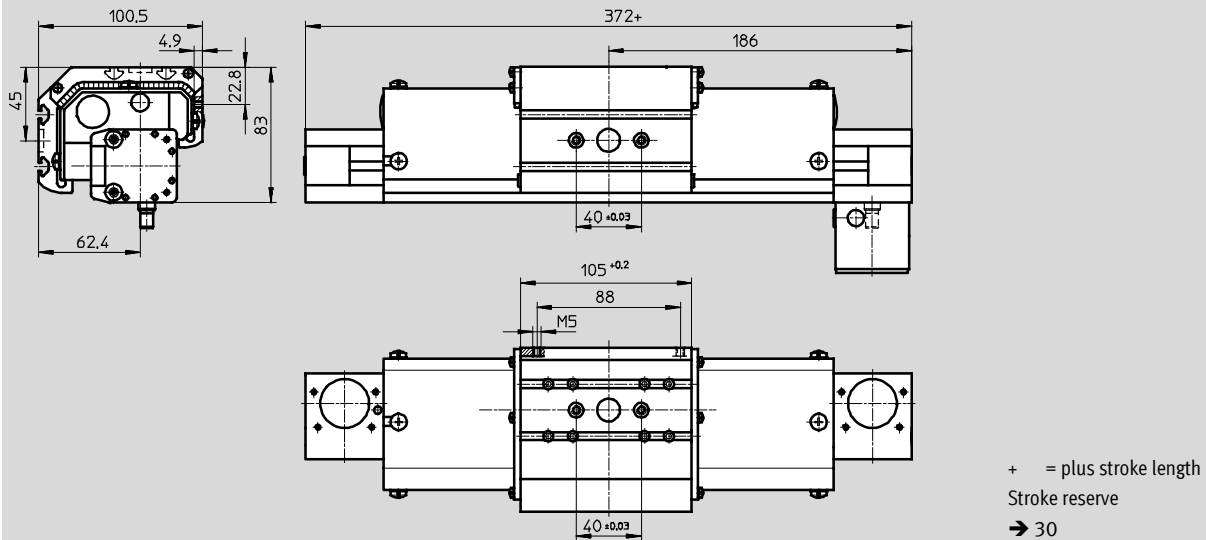
Technical data

## Dimensions

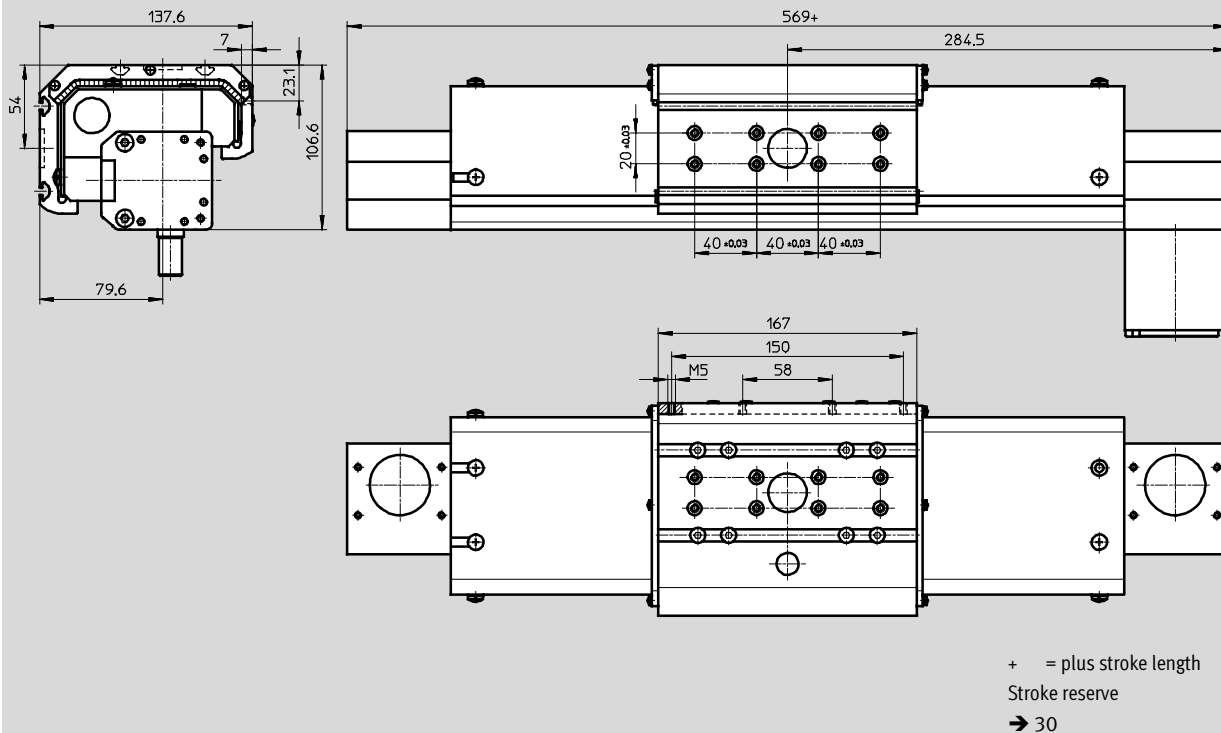
Download CAD data → [www.festo.com](http://www.festo.com)

Protected version GA

### Size 25



### Size 40



# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

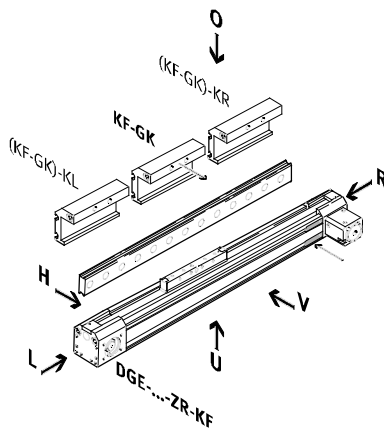
FESTO

Ordering data – Modular products

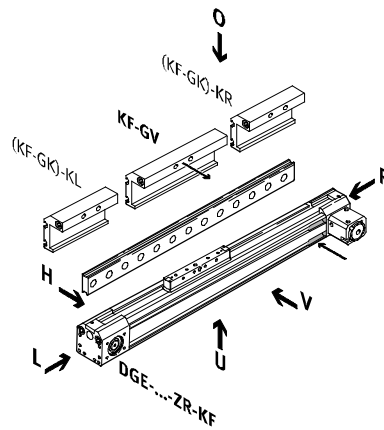
## Order code

### Mandatory data

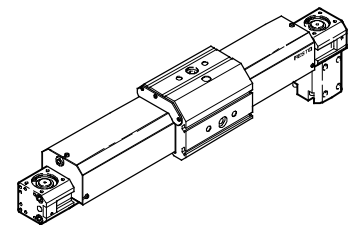
Standard slide GK



Extended slide GV

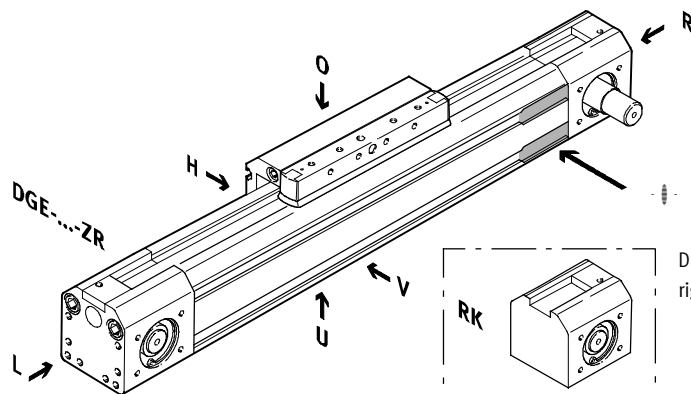


Protected version GA

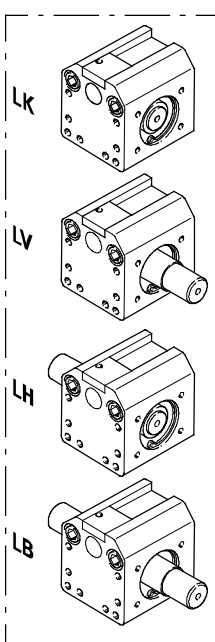


## Drive shaft

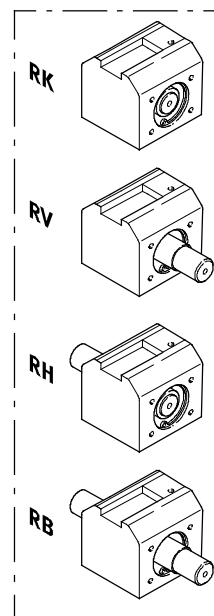
- LK No drive shaft on left
- LV Drive shaft on left, front
- LH Drive shaft on left, rear
- LB Drive shaft on left, front and rear
- RK No drive shaft on right
- RV Drive shaft on right, front
- RH Drive shaft on right, rear
- RB Drive shaft on right, front and rear



Drive shaft left



Drive shaft right



- Note

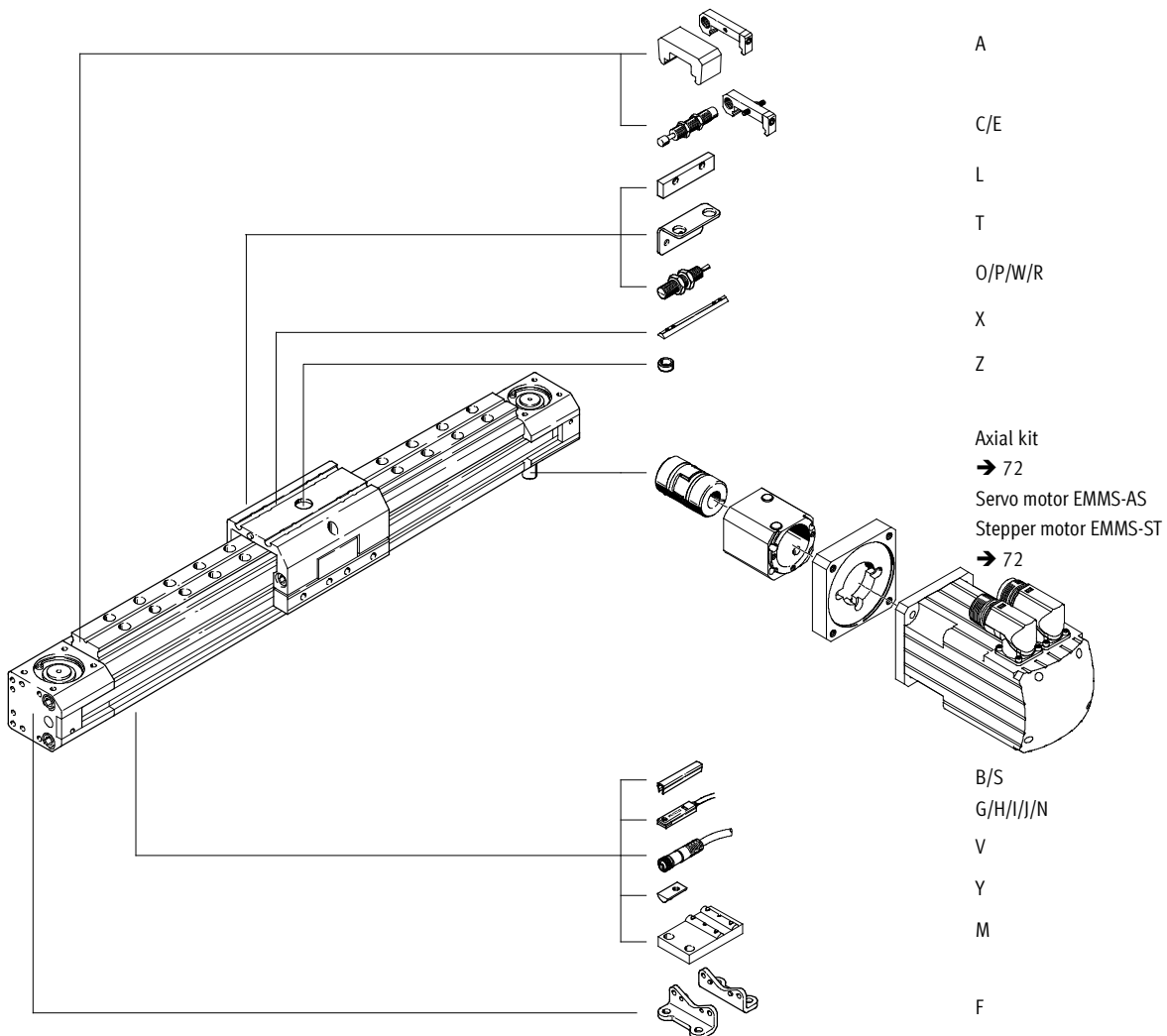
The insertion point for the proximity sensor is located on the right side of the toothed belt axis

- O top
- U underneath
- R right
- L left
- V front
- H rear

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

Ordering data – Modular products

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# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

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Ordering data – Modular products

| Mandatory data                                                 |        |                                 |            |                |                      |                      |
|----------------------------------------------------------------|--------|---------------------------------|------------|----------------|----------------------|----------------------|
| Module No.                                                     | Design | Size                            | Stroke     | Drive function | Drive shaft on left  | Drive shaft on right |
| 193 739<br>193 740<br>193 741<br>193 742<br>193 743<br>193 744 | DGE    | 8<br>12<br>18<br>25<br>40<br>63 | 1 ... 4500 | ZR             | LK<br>LV<br>LH<br>LB | RK<br>RV<br>RH<br>RB |
| Ordering example                                               |        |                                 |            |                |                      |                      |
| 193 743                                                        | DGE    | - 40                            | - 800      | - ZR           | - LK                 | - RV                 |

| Ordering table       |                                           |            |         |            |            |            |                 |      |               |
|----------------------|-------------------------------------------|------------|---------|------------|------------|------------|-----------------|------|---------------|
| Size                 | 8                                         | 12         | 18      | 25         | 40         | 63         | Condi-<br>tions | Code | Enter<br>code |
| M Module No.         | 193 739                                   | 193 740    | 193 741 | 193 742    | 193 743    | 193 744    |                 |      |               |
| Design               | Electromechanical linear axis             |            |         |            |            |            |                 | DGE  | DGE           |
| Size                 | 8                                         | 12         | 18      | 25         | 40         | 63         |                 | -... |               |
| Stroke [mm]          | 1 ... 650                                 | 1 ... 1000 |         | 1 ... 3000 | 1 ... 4000 | 1 ... 4500 | 1               | -... |               |
| Drive function       | Electromechanical drive with toothed belt |            |         |            |            |            |                 | -ZR  | -ZR           |
| Drive shaft on left  | No drive shaft on left                    |            |         |            |            |            | 2               | -LK  |               |
|                      | Drive shaft on left, front                |            |         |            |            |            |                 | -LV  |               |
|                      | Drive shaft on left, rear                 |            |         |            |            |            |                 | -LH  |               |
|                      | Drive shaft on left, front and rear       |            |         |            |            |            |                 | -LB  |               |
| Drive shaft on right | No drive shaft on right                   |            |         |            |            |            | 3               | -RK  |               |
|                      | Drive shaft on right, front               |            |         |            |            |            |                 | -RV  |               |
|                      | Drive shaft on right, rear                |            |         |            |            |            |                 | -RH  |               |
|                      | Drive shaft on right, front and rear      |            |         |            |            |            |                 | -RB  |               |

1 Stroke

Special stroke lengths:  
Module No. 8: 1000 mm  
Module No. 12: 1400 mm  
Module No. 18: 1700 mm  
Module No. 25: 5100 mm  
Module No. 40: 4900 mm  
Module No. 63: 4700 mm

2 LK

Not with drive shaft on right RK.

3 RK

Not with drive shaft on left LK.

Transfer order code

|  |     |   |  |   |  |   |    |   |  |   |  |
|--|-----|---|--|---|--|---|----|---|--|---|--|
|  | DGE | - |  | - |  | - | ZR | - |  | - |  |
|--|-----|---|--|---|--|---|----|---|--|---|--|

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Ordering data – Modular products

| 0 Options |                |                  |
|-----------|----------------|------------------|
| Guide     | Slide          | Additional slide |
| KF        | GK<br>GV<br>GA | KL<br>KR         |
| - KF      | - GK           | -                |

| Ordering table |                     |                                                             |                                  |    |                                 |                                  |            |            |                 |          |               |     |  |
|----------------|---------------------|-------------------------------------------------------------|----------------------------------|----|---------------------------------|----------------------------------|------------|------------|-----------------|----------|---------------|-----|--|
| Size           |                     |                                                             | 8                                | 12 | 18                              | 25                               | 40         | 63         | Condi-<br>tions | Code     | Enter<br>code |     |  |
| 0              | Guide               |                                                             | Recirculating ball bearing guide |    |                                 |                                  |            |            | 4               | -KF      |               | -KF |  |
|                | Slide               | Standard                                                    | Standard                         |    |                                 |                                  |            |            | 5               | -GK      |               |     |  |
|                |                     | Extended<br>(maximum stroke for<br>DGE-...-ZR-KF-GV)        | –                                | –  | Extended<br>(920 mm)            | (2 900 mm)                       | (3 830 mm) | (4 250 mm) | 6               | -GV      |               |     |  |
|                |                     | Dust protection<br>(maximum stroke for<br>DGE-...-ZR-KF-GA) | –                                | –  | –                               | Dust proof version<br>(1 800 mm) |            | (1 800 mm) | –               | 6        |               | -GA |  |
| ↓              | Additional<br>slide | Left<br>(effective stroke<br>reduction)                     | –                                | –  | Standard slide left<br>(85 mm)  |                                  |            | (105 mm)   | (167 mm)        | (230 mm) | 7             | -KL |  |
|                |                     | Right<br>(effective stroke<br>reduction)                    | –                                | –  | Standard slide right<br>(85 mm) |                                  |            | (105 mm)   | (167 mm)        | (230 mm) | 7             | -KR |  |

4 KF

Only with slide GK, GV, GA.

5 GK

Emergency buffer recommended → Accessory option "A".

6 GV,GA

Emergency buffer is scope of delivery

7 KL, KR

Only with slide GK or GV.

Emergency buffer recommended → Accessory option "A".

Transfer order code

|      |   |  |   |  |
|------|---|--|---|--|
| - KF | - |  | - |  |
|------|---|--|---|--|

# Toothed belt axes DGE-ZR-KF, with recirculating ball bearing guide

FESTO

Ordering data – Modular products

## Options

| Accessories | Slot cover   | Slot nut     | Central support | Foot mounting | Emergency buffer and retainer | Shock absorber | Centring sleeve | Proximity sensor                     | Plug socket | Sensor bracket | Switching lug | Inductive sensor             |
|-------------|--------------|--------------|-----------------|---------------|-------------------------------|----------------|-----------------|--------------------------------------|-------------|----------------|---------------|------------------------------|
| ZUB         | ...S<br>...B | ...Y<br>...X | ...M            | ...F          | ...A                          | ...C<br>...E   | ...Z            | ...G<br>...H<br>...I<br>...J<br>...N | ...V        | ...T           | ...L          | ...O<br>...P<br>...W<br>...R |
| ZUB         | 2S2B         | 10Y2X        |                 | F             |                               |                |                 | 2I                                   |             |                |               |                              |

## Ordering table

| Size                                          | 8                                  | 12 | 18 | 25 | 40 | 63 | Conditions | Code | Enter code |
|-----------------------------------------------|------------------------------------|----|----|----|----|----|------------|------|------------|
| Accessories                                   | Supplied separately                |    |    |    |    |    |            | ZUB- | ZUB-       |
| Slot cover                                    | 1 ... 10                           |    |    |    |    |    |            | ...S |            |
| Slot nut                                      | 1 ... 10                           |    |    |    |    |    |            | ...B |            |
| Central support                               | 1 ... 10                           |    |    |    |    |    |            | ...M |            |
| Foot mounting (kit)                           | 1 ... 10                           |    |    |    |    |    |            | ...F |            |
| Emergency buffer and retainer for KF          | 1 ... 2                            |    |    |    |    |    | [8]        | ...A |            |
| Shock absorber and retainer for KF-GK, KF-GV  | 1 ... 2                            |    |    |    |    |    | [9]        | ...C |            |
| Shock absorber for KF-GA                      | 1 ... 2                            |    |    |    |    |    | [10]       | ...E |            |
| Centring sleeve (pack of 10)                  | 10, 20, 30, 40, 50, 60, 70, 80, 90 |    |    |    |    |    |            | ...Z |            |
| Proximity sensor with cable 2.5 m             | 1 ... 10                           |    |    |    |    |    |            | ...G |            |
| Proximity sensor with plug                    | 1 ... 10                           |    |    |    |    |    |            | ...H |            |
| Proximity sensor contactless with cable 2.5 m | 1 ... 10                           |    |    |    |    |    |            | ...I |            |
| Proximity sensor contactless, plug            | 1 ... 10                           |    |    |    |    |    |            | ...J |            |
| Proximity sensor NC contact with cable 2.5 m  | 1 ... 10                           |    |    |    |    |    |            | ...N |            |
| Cable with socket 2.5 m                       | 1 ... 10                           |    |    |    |    |    |            | ...V |            |
| Sensor bracket for inductive sensors          | 1 ... 5                            |    |    |    |    |    | [9]        | ...T |            |
| Switching lug                                 | 1                                  |    |    |    |    |    | [9]        | L    |            |
| Inductive sensor NO contact, cable            | 1 ... 5                            |    |    |    |    |    | [9]        | ...O |            |
| Inductive sensor NC contact, cable            | 1 ... 5                            |    |    |    |    |    | [9]        | ...P |            |
| Inductive sensor NO contact, plug             | 1 ... 5                            |    |    |    |    |    | [9]        | ...W |            |
| Inductive sensor NC contact, plug             | 1 ... 5                            |    |    |    |    |    | [9]        | ...R |            |

[8] A Only with slide GK.  
Mounted as standard for slide GV, GA

[10] E Only with slide GA.

[9] C, T, L, O, P, W, R  
Not with slide GA.

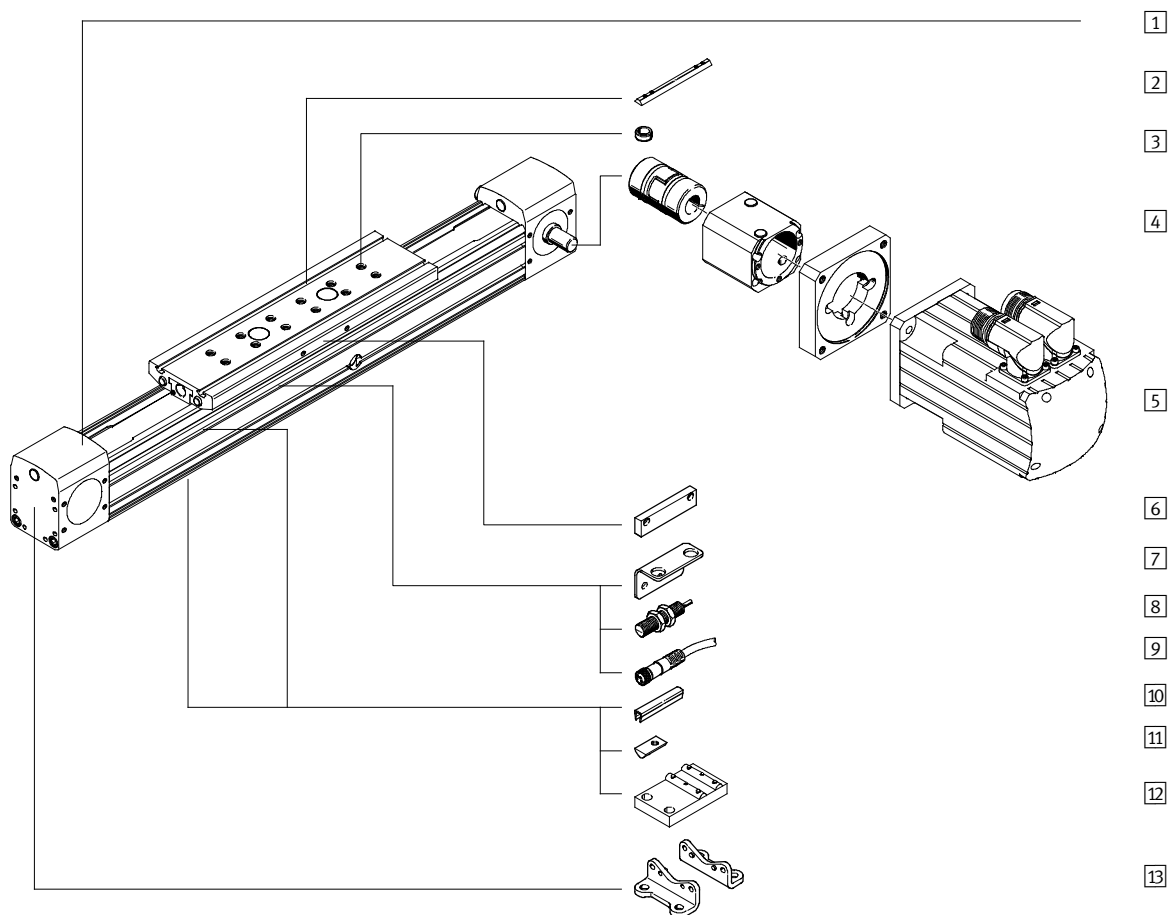
## Transfer order code

ZUB - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

# Toothed belt axes DGE-ZR-RF, with roller guide

Peripherals overview

FESTO



## Toothed belt axes DGE-ZR-RF, with roller guide

Peripherals overview

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| Variants and accessories                |                                                                                                   |                 |
|-----------------------------------------|---------------------------------------------------------------------------------------------------|-----------------|
| Type                                    | Brief description                                                                                 | → Page/Internet |
| 1 Toothed belt axis<br>DGE-RF           | Electromechanical axis with roller guide                                                          | 48              |
| 2 Slot nut for slide<br>X               | For mounting loads and attachments on the slide                                                   | 84              |
| 3 Centring sleeve<br>Z                  | For centring loads and attachments on the slide                                                   | 84              |
| 4 Axial kit<br>EAMM-A                   | For axial motor attachment<br>(consisting of: coupling housing, clamping component, motor flange) | 72              |
| 5 Motor<br>EMMS                         | Motors specially matched to the axis, with or without gearing, with or without brake              | 72              |
| 6 Switching lug<br>L                    | For sensing the slide position                                                                    | 82              |
| 7 Sensor bracket<br>T                   | Adapter for mounting the sensors on the axis                                                      | 82              |
| 8 Inductive proximity sensor<br>O/P/W/R | For use as a proximity signal and safety monitor                                                  | 85              |
| 9 Cable with socket<br>V                | For proximity sensors                                                                             | 85              |
| 10 Slot cover<br>B                      | For protecting against the ingress of dirt                                                        | 84              |
| 11 Slot nut for profile slot<br>Y       | For mounting attachments                                                                          | 84              |
| 12 Central support<br>M                 | For mounting the axis                                                                             | 77              |
| 13 Foot mounting<br>F                   | For mounting the axis                                                                             | 76              |

## Toothed belt axes DGE-ZR-RF, with roller guide

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Type code

|                             |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
|-----------------------------|--------------------------------------|---|----|---|-----|---|----|---|----|---|----|---|----|---|----|
|                             | DGE                                  | - | 25 | - | 500 | - | ZR | - | RF | - | LK | - | RV | - | GK |
| <b>Type</b>                 |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| DGE                         | Toothed belt drive                   |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Size</b>                 |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Stroke [mm]</b>          |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Drive function</b>       |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| ZR                          | Toothed belt                         |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Guide</b>                |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| RF                          | Roller guide                         |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Drive shaft on left</b>  |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| LK                          | No drive shaft on left               |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| LV                          | Drive shaft on left, front           |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| LH                          | Drive shaft on left, rear            |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| LB                          | Drive shaft on left, front and rear  |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Drive shaft on right</b> |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| RK                          | No drive shaft on right              |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| RV                          | Drive shaft on right, front          |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| RH                          | Drive shaft on right, rear           |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| RB                          | Drive shaft on right, front and rear |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| <b>Slide</b>                |                                      |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| GK                          | Standard slide                       |   |    |   |     |   |    |   |    |   |    |   |    |   |    |
| GV                          | Extended slide                       |   |    |   |     |   |    |   |    |   |    |   |    |   |    |

## Toothed belt axes DGE-ZR-RF, with roller guide

FESTO

Type code

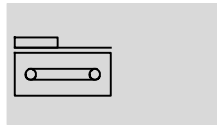
|                                   |                                 | + ZUB | - | - | - | - F | Z |  | 2T | 2L | 20 |
|-----------------------------------|---------------------------------|-------|---|---|---|-----|---|--|----|----|----|
| <b>Accessories</b>                |                                 |       |   |   |   |     |   |  |    |    |    |
| ZUB                               | Accessories supplied loose      |       |   |   |   |     |   |  |    |    |    |
| <b>Slot cover</b>                 |                                 |       |   |   |   |     |   |  |    |    |    |
| ...B                              | Mounting slot                   |       |   |   |   |     |   |  |    |    |    |
| <b>Slot nut</b>                   |                                 |       |   |   |   |     |   |  |    |    |    |
| ...Y                              | For profile slot                |       |   |   |   |     |   |  |    |    |    |
| ...X                              | For slide                       |       |   |   |   |     |   |  |    |    |    |
| <b>Central support</b>            |                                 |       |   |   |   |     |   |  |    |    |    |
| ...M                              | Central support                 |       |   |   |   |     |   |  |    |    |    |
| <b>Foot mounting</b>              |                                 |       |   |   |   |     |   |  |    |    |    |
| ...F                              | Foot mounting                   |       |   |   |   |     |   |  |    |    |    |
| <b>Centring sleeve</b>            |                                 |       |   |   |   |     |   |  |    |    |    |
| ...Z                              | For slide                       |       |   |   |   |     |   |  |    |    |    |
| <b>Cable with socket</b>          |                                 |       |   |   |   |     |   |  |    |    |    |
| ...V                              | 2.5 m                           |       |   |   |   |     |   |  |    |    |    |
| <b>Sensor bracket</b>             |                                 |       |   |   |   |     |   |  |    |    |    |
| ...T                              | For inductive proximity sensors |       |   |   |   |     |   |  |    |    |    |
| <b>Switching lug</b>              |                                 |       |   |   |   |     |   |  |    |    |    |
| L                                 | Switching lug                   |       |   |   |   |     |   |  |    |    |    |
| <b>Inductive proximity sensor</b> |                                 |       |   |   |   |     |   |  |    |    |    |
| ...O                              | NO contact, cable               |       |   |   |   |     |   |  |    |    |    |
| ...P                              | NC contact, cable               |       |   |   |   |     |   |  |    |    |    |
| ...W                              | NO contact, plug                |       |   |   |   |     |   |  |    |    |    |
| ...R                              | NC contact, plug                |       |   |   |   |     |   |  |    |    |    |

# Toothed belt axes DGE-ZR-RF, with roller guide

FESTO

Technical data

Function



-  Size  
25, 40 and 63
-  Stroke length  
1 ... 5000 mm



| General technical data            |                     |                                                                    |            |                          |
|-----------------------------------|---------------------|--------------------------------------------------------------------|------------|--------------------------|
| Size                              |                     | 25                                                                 | 40         | 63                       |
| Constructional design             |                     | Electromechanical axis with toothed belt and internal roller guide |            |                          |
| Guide                             |                     | Internal roller guide                                              |            |                          |
| Mounting position                 |                     | Any                                                                |            |                          |
| Max. working stroke <sup>1)</sup> | [mm]                | 1 ... 5000                                                         | 1 ... 5000 | 1 ... 5000 <sup>2)</sup> |
| Max. working load                 | [kg]                | 15                                                                 | 30         | 60                       |
| Max. feed force $F_x$             | [N]                 | 260                                                                | 610        | 1500                     |
| Max. radial force <sup>3)</sup>   | [N]                 | 260                                                                | 935        | 2490                     |
| Radial force <sup>4)</sup>        | [N]                 | 110                                                                | 100        | 1050                     |
| Max. driving torque               | [Nm]                | 3.7                                                                | 12.1       | 55.38                    |
| Max. no-load torque               | [Nm]                | 0.5                                                                | 1.0        | 4.5                      |
| Max. speed                        | [m/s]               | 10                                                                 |            |                          |
| Max. acceleration                 | [m/s <sup>2</sup> ] | 50                                                                 | 50         | 50                       |
| Repetition accuracy               | [mm]                | ±0.1                                                               |            |                          |

- 1) Total stroke = working stroke + 2x stroke reserve
- 2) In the case of the variant with extended slide (-GV), the maximum working stroke is 4,800 mm
- 3) On the drive shaft
- 4) On the drive shaft, with a service life of 10,000 km

| Operating and environmental conditions |      |           |    |    |
|----------------------------------------|------|-----------|----|----|
| Size                                   |      | 25        | 40 | 63 |
| Ambient temperature                    | [°C] | 0 ... +60 |    |    |
| Protection class                       |      | IP40      |    |    |

| Weights [kg]                        |      |      |      |      |       |       |
|-------------------------------------|------|------|------|------|-------|-------|
| Size                                | 25   |      | 40   |      | 63    |       |
| Slide design                        | GK   | GV   | GK   | GV   | GK    | GV    |
| Basic weight with 0 mm stroke       | 2.61 | 3.15 | 7.75 | 9.32 | 29.81 | 34.91 |
| Additional weight per 100 mm stroke | 0.30 |      | 0.61 |      | 1.44  |       |
| Moving load                         | 0,62 | 0,85 | 2,00 | 2,70 | 5,20  | 7,00  |

| Mass moment of inertia             |                          |       |      |       |       |        |        |
|------------------------------------|--------------------------|-------|------|-------|-------|--------|--------|
| Size                               | 25                       |       | 40   |       | 63    |        |        |
| Slide design                       | GK                       | GV    | GK   | GV    | GK    | GV     |        |
| J <sub>0</sub>                     | [kg cm <sup>2</sup> ]    | 1.75  | 2.75 | 9.89  | 15.37 | 108.11 | 156.71 |
| J <sub>H</sub> per metre stroke    | [kg cm <sup>2</sup> /m]  | 0.188 |      | 0.933 |       | 7.605  |        |
| J <sub>L</sub> per kg working load | [kg cm <sup>2</sup> /kg] | 2.052 |      | 3.958 |       | 13.634 |        |

The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{working load [kg]}}$$

# Toothed belt axes DGE-ZR-RF, with roller guide

FESTO

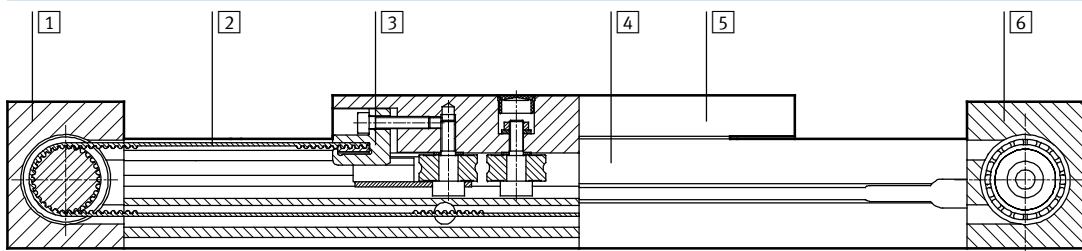
Technical data

| Toothed belt                 |      |       |       |
|------------------------------|------|-------|-------|
| Size                         | 25   | 40    | 63    |
| Tensile stress <sup>1)</sup> | [%]  | 0.16  | 0.11  |
| Pitch                        | [mm] | 3     | 5     |
| Effective diameter           | [mm] | 28.65 | 39.79 |
| Feed constant                | [mm] | 90    | 125   |
|                              |      |       | 232   |

1) At max. feed force

## Materials

### Sectional view



### Axis

|   |                       |                                                 |
|---|-----------------------|-------------------------------------------------|
| 1 | Return pulley housing | Anodised aluminium                              |
| 2 | Toothed belt          | Polychloroprene with Glascord and nylon coating |
| 3 | Clamping component    | Special steel casting                           |
| 4 | Profile               | Anodised aluminium                              |
| 5 | Slide                 | Anodised aluminium                              |
| 6 | Drive housing         | Anodised aluminium                              |

## Stroke reserve

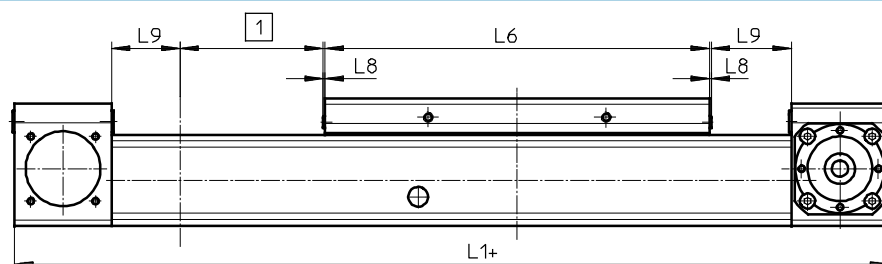
L9 Stroke reserve:  
Safety distance to mechanical stop, present at both ends of the axis in addition to the stroke.

L6 Slide length

L8 Stop element

L1+ Overall length of axis

1 Working stroke



Example:

Type DGE-25-500-ZR-RF

Working stroke = 500 mm

Stroke reserve = (2x 63 mm)

= 126 mm

Total stroke = 500 mm + 126 mm

= 626 mm

### Stroke reserve L9 [mm] per end position

| Size              | 25 | 40  | 63  |
|-------------------|----|-----|-----|
| Standard slide GK | 63 | 100 | 172 |
| Extended slide GV | 63 | 100 | 172 |

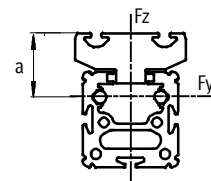
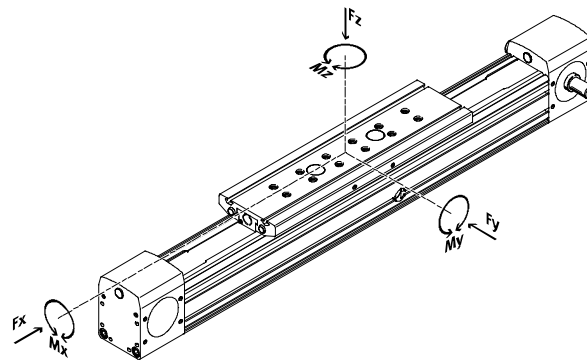
# Toothed belt axes DGE-ZR-RF, with roller guide

Technical data

FESTO

## Characteristic load values

The indicated forces and torques refer to the centre of the guide. They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.



Distance a with:  
DGE-25: 30 mm  
DGE-40: 37 mm  
DGE-63: 44.6 mm

If the drive is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads.

Calculating the load comparison factor:

$$f_v = \frac{|F_y|}{F_{y_{max}}} + \frac{|F_z|}{F_{z_{max}}} + \frac{|M_x|}{M_{x_{max}}} + \frac{|M_y|}{M_{y_{max}}} + \frac{|M_z|}{M_{z_{max}}} \leq 1$$

| Permissible forces and torques |              |     |    |     |     |      |     |
|--------------------------------|--------------|-----|----|-----|-----|------|-----|
| Size                           | Slide design | 25  |    | 40  |     | 63   |     |
|                                |              | GK  | GV | GK  | GV  | GK   | GV  |
| $F_{x_{max}}$                  | [N]          | 260 |    | 610 |     | 1500 |     |
| $F_{y_{max}}$                  | [N]          | 150 |    | 300 |     | 600  |     |
| $F_{z_{max}}$                  | [N]          | 150 |    | 300 |     | 600  |     |
| $M_{x_{max}}$                  | [Nm]         | 7   |    | 18  |     | 65   |     |
| $M_{y_{max}}$                  | [Nm]         | 15  | 30 | 60  | 120 | 170  | 340 |
| $M_{z_{max}}$                  | [Nm]         | 15  | 30 | 90  | 180 | 300  | 600 |

## Service life

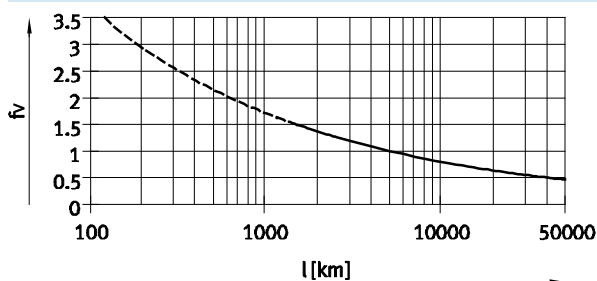
The service life of the guide depends on the load. To provide a rough indication of the service life of the guide, the

graph below plots the load comparison factor  $f_c$  against the service life.

This graph only shows theoretical values. Consultation with your local contact person at Festo is mandatory

for load comparison factors  $f_c$  greater than 1.5.

### Load comparison factor $f_c$ as a function of service life



Example:

A user wants to move an X kg load. Using the above calculation gives a value of 1.5 for the load comparison factor  $f_c$ . According to the graph, the guide would have a service life of

approx. 1,500 km. Reducing the acceleration reduces the  $M_z$  and  $M_y$  values. A load comparison factor of 1 now gives a service life of 5,000 km.

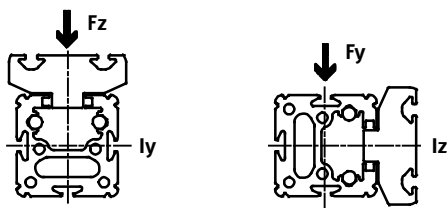
- Note  
Sizing software  
PositioningDrives  
→ [www.festo.com](http://www.festo.com)

# Toothed belt axes DGE-ZR-RF, with roller guide

FESTO

Technical data

## 2nd moment of area



| Size  |                    | 25                 | 40                  | 63                  |
|-------|--------------------|--------------------|---------------------|---------------------|
| $I_y$ | [mm <sup>4</sup> ] | $1.88 \times 10^5$ | $7.03 \times 10^5$  | $4.75 \times 10^6$  |
| $I_z$ | [mm <sup>4</sup> ] | $2.36 \times 10^5$ | $9.463 \times 10^5$ | $5.997 \times 10^6$ |

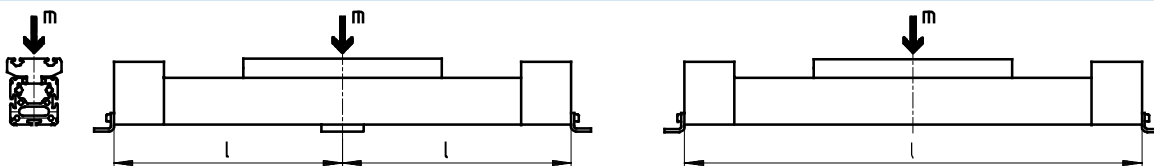
## Maximum permissible support span l as a function of the applied load m

The axis may need to be supported with central supports MUP in order to restrict deflection with long stroke lengths. The following diagrams serve

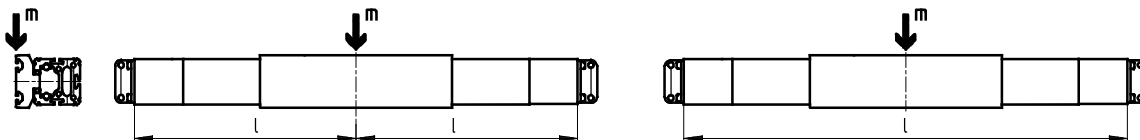
to determine the maximum permissible support span as a function of the applied load acting upon the axis.

A distinction is made here between forces acting upon the surface of the slide and forces acting upon the front of the slide.

### 1 Load on the surface of the slide

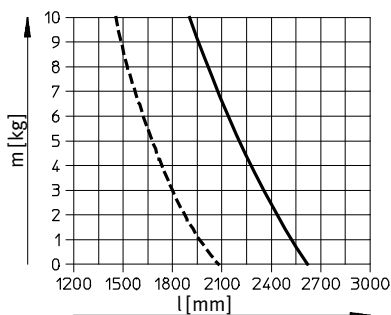


### 2 Load on the front of the slide

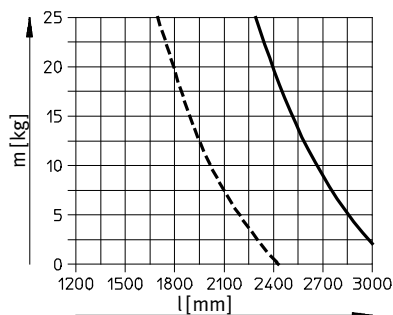


## Maximum support span l (without central support) as a function of the applied load m

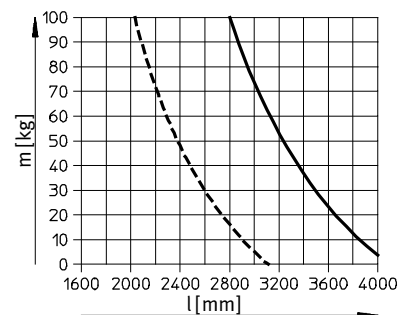
### DGE-25-RF



### DGE-40-RF



### DGE-63-RF



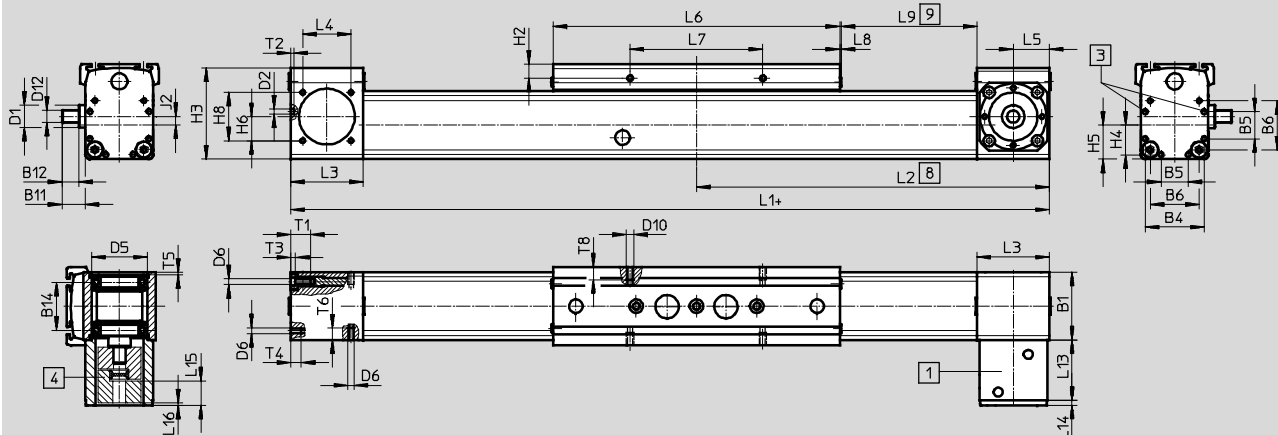
— 1  
- - - 2

## Technical data

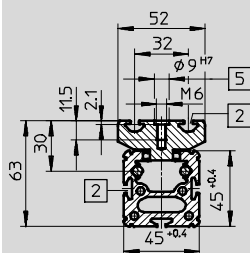
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

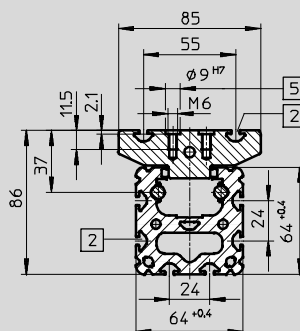
DGE-25/-40/-63



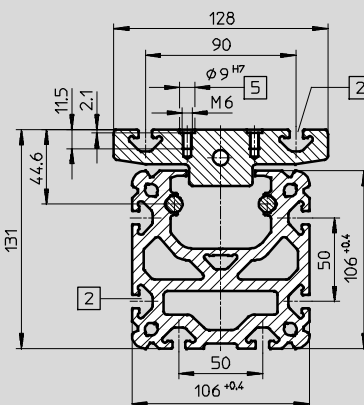
## DGE-25



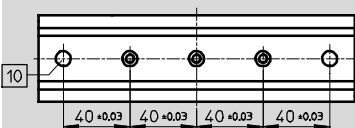
## DGE-40



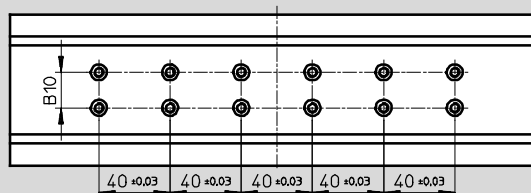
## DGE-63



## DGE-25-GK



## DGE-40-GK



- |                                          |                                                             |                                                                                                        |                                          |
|------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------|
| <b>1</b> Coupling housing                | <b>4</b> Coupling                                           | <b>8</b> Driver in end position of working stroke (stroke reserve up to mechanical stop still present) | <b>9</b> Stroke reserve → 49             |
| <b>2</b> Slot for slot nuts              | <b>5</b> Hole for centring sleeve ZBH-9 and mounting thread |                                                                                                        | <b>10</b> Hole for centring sleeve ZBH-9 |
| <b>3</b> Centring hole for foot mounting |                                                             |                                                                                                        | + = plus stroke length                   |

# Toothed belt axes DGE-ZR-RF, with roller guide

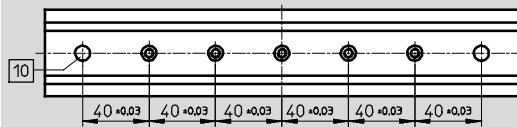
Technical data

FESTO

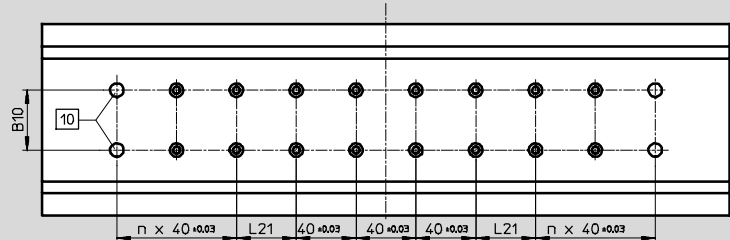
## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

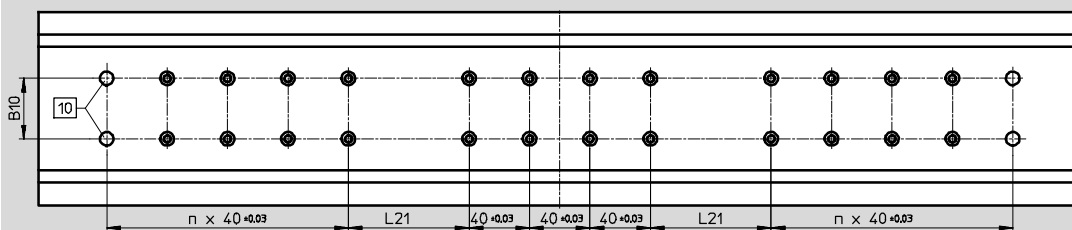
### DGE-25-GV



### DGE-40-GV, DGE-63-GK



### DGE-63-GV



10 Hole for centring sleeve ZBH-9

| Size |          | B1  | B4   | B5 | B6   | B10<br>±0.03 | B11  | B12  | B14  | D1<br>Ø | D2                  | D5<br>H7 | D6 | D10 | D12<br>Ø<br>h6 |
|------|----------|-----|------|----|------|--------------|------|------|------|---------|---------------------|----------|----|-----|----------------|
| 25   | GK<br>GV | 45  | 39.1 | 18 | 32.5 | –            | 15.6 | 11   | 31.8 | 15      | 3.3 <sub>+0.1</sub> | 37       | M4 | M5  | 8              |
| 40   | GK<br>GV | 64  | 53   | 28 | 49   | 20           | 29.6 | 24.5 | 45.5 | 20      | 4.4 <sub>H13</sub>  | 47       | M5 | M5  | 15             |
| 63   | GK<br>GV | 106 | 89   | 44 | 83   | 40           | 41.1 | 35.2 | 74.3 | 35      | 6.4 <sub>+0.1</sub> | 80       | M8 | M8  | 25             |

| Size |          | H2   | H3    | H4   | H5   | H6   | H8 | J2   | L1           | L2           | L3  | L4 | L5 | L6         | L7 |
|------|----------|------|-------|------|------|------|----|------|--------------|--------------|-----|----|----|------------|----|
| 25   | GK<br>GV | 9.3  | 60.4  | 19.6 | 22.5 | 16   | 32 | 5.8  | 414<br>509   | 207<br>254.5 | 48  | 32 | 24 | 190<br>285 | 88 |
| 40   | GK<br>GV | 9.5  | 83.8  | 26.5 | 32   | 19.5 | 30 | 8.8  | 638<br>778   | 319<br>389   | 67  | 54 | 34 | 300<br>440 | 58 |
| 63   | GK<br>GV | 10.5 | 129.3 | 44.5 | 52.8 | 27.5 | 49 | 10.1 | 1020<br>1250 | 510<br>625   | 106 | 84 | 55 | 460<br>690 | 72 |

| Size |          | L8 | L9  | L13 | L14 | L15  | L16  | L21<br>±0.03 | n      | T1   | T2 | T3  | T4 | T5    | T6 | T8  |
|------|----------|----|-----|-----|-----|------|------|--------------|--------|------|----|-----|----|-------|----|-----|
| 25   | GK<br>GV | 1  | 63  | 40  | 3,2 | 14,6 | 3,6  | –            | –      | 13   | 2  | 3   | 7  | < 1.6 | 8  | 8.5 |
| 40   | GK<br>GV | 2  | 100 | 65  | 4   | 22,8 | –2,2 | 40           | –<br>2 | 13.2 | 3  | 5   | 12 | < 2.9 | 12 | 8.5 |
| 63   | GK<br>GV | 2  | 172 | 91  | 5   | 35   | 0    | 40<br>80     | 2<br>4 | 21.2 | 4  | 6.5 | 22 | < 5.1 | 15 | 12  |

# Toothed belt axes DGE-ZR-RF, with roller guide

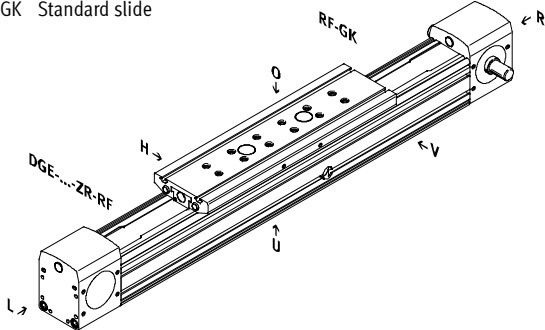
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Ordering data – Modular products

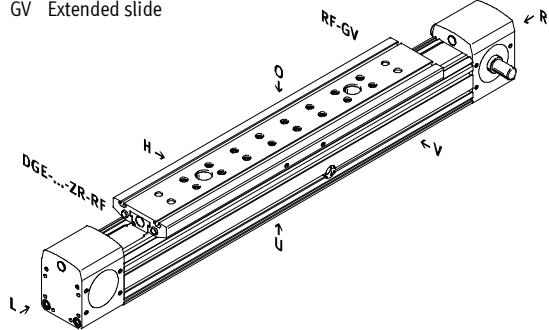
## Order code

### Mandatory data

GK Standard slide

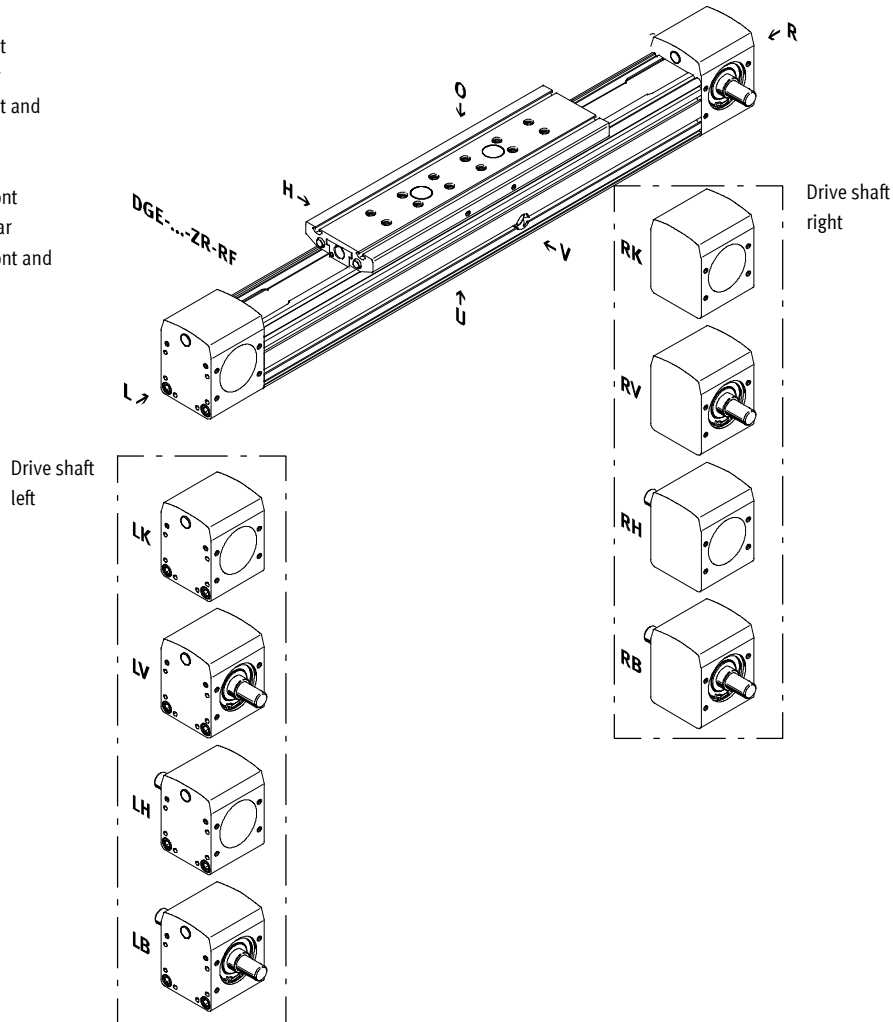


GV Extended slide



## Drive shaft

- LK No drive shaft on left
- LV Drive shaft on left, front
- LH Drive shaft on left, rear
- LB Drive shaft on left, front and rear
- RK No drive shaft on right
- RV Drive shaft on right, front
- RH Drive shaft on right, rear
- RB Drive shaft on right, front and rear



- O top
- U underneath
- R right
- L left
- V front
- H rear

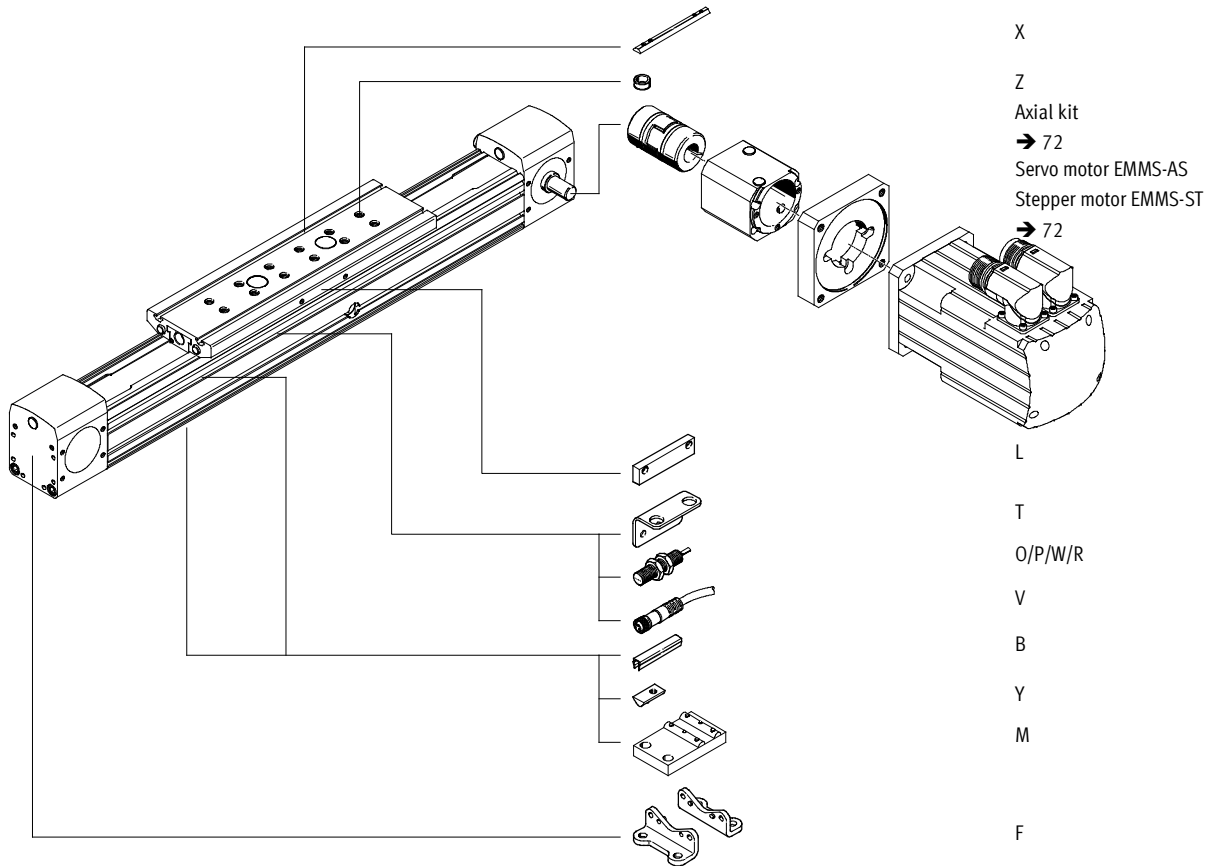
# Toothed belt axes DGE-ZR-RF, with roller guide

Ordering data – Modular products

**FESTO**

## Order code

## Options



# Toothed belt axes DGE-ZR-RF, with roller guide

FESTO

Ordering data – Modular products

## M Mandatory data →

| Module No.       | Design | Size | Stroke      | Drive function | Guide | Drive shaft on left | Drive shaft on right | Slide |
|------------------|--------|------|-------------|----------------|-------|---------------------|----------------------|-------|
| 534 391          | DGE    | 25   | 1 ... 5 000 | ZR             | RF    | LK                  | RK                   | GK    |
| 534 392          |        | 40   |             |                |       | LV                  | RV                   | GV    |
| 534 393          |        | 63   |             |                |       | LH                  | RH                   |       |
|                  |        |      |             |                |       | LB                  | RB                   |       |
| Ordering example |        |      |             |                |       |                     |                      |       |
| 534 391          | DGE    | 25   | 600         | ZR             | RF    | LK                  | RV                   | GK    |

| Ordering table       |                                           |            |            |                 |      |               |     |
|----------------------|-------------------------------------------|------------|------------|-----------------|------|---------------|-----|
| Size                 | 25                                        | 40         | 63         | Condi-<br>tions | Code | Enter<br>code |     |
| M Module No.         | 534 391                                   | 534 392    | 534 393    |                 |      |               |     |
| Design               | Electromechanical linear drive            |            |            |                 | DGE  |               | DGE |
| Size                 | 25                                        | 40         | 63         |                 | -... |               |     |
| Stroke [mm]          | 1 ... 5000                                | 1 ... 5000 | 1 ... 5000 |                 | -... |               |     |
| Drive function       | Electromechanical drive with toothed belt |            |            |                 | -ZR  |               | -ZR |
| Guide                | Roller guide                              |            |            |                 | -RF  |               | -RF |
| Drive shaft on left  | No drive shaft on left                    |            |            | 1               | -LK  |               |     |
|                      | Drive shaft on left, front                |            |            |                 | -LV  |               |     |
|                      | Drive shaft on left, rear                 |            |            |                 | -LH  |               |     |
|                      | Drive shaft on left, front and rear       |            |            |                 | -LB  |               |     |
| Drive shaft on right | No drive shaft on right                   |            |            | 2               | -RK  |               |     |
|                      | Drive shaft on right, front               |            |            |                 | -RV  |               |     |
|                      | Drive shaft on right, rear                |            |            |                 | -RH  |               |     |
|                      | Drive shaft on right, front and rear      |            |            |                 | -RB  |               |     |
| Slide                | Standard slide                            |            |            |                 | -GK  |               |     |
|                      | Extended slide                            |            |            | 3               | -GV  |               |     |

1 LK Not with drive shaft on right RK.

2 RK Not with drive shaft on left LK.

3 GV Maximum stroke: Size 63: 4800 mm

### Transfer order code

|  |     |   |  |   |  |   |    |   |    |   |  |   |  |   |  |
|--|-----|---|--|---|--|---|----|---|----|---|--|---|--|---|--|
|  | DGE | - |  | - |  | - | ZR | - | RF | - |  | - |  | - |  |
|--|-----|---|--|---|--|---|----|---|----|---|--|---|--|---|--|

# Toothed belt axes DGE-ZR-RF, with roller guide

Ordering data – Modular products

FESTO

| → 0 Options |            |              |                 |      |                       |      |                |   |                              |
|-------------|------------|--------------|-----------------|------|-----------------------|------|----------------|---|------------------------------|
| Accessories | Slot cover |              | Central support |      | Centring pins/sleeves |      | Sensor bracket |   | Inductive sensor             |
| ZUB         | Slot nut   |              | Foot mounting   |      | Plug socket           |      | Switching lug  |   | ...O<br>...P<br>...W<br>...R |
|             | ...B       | ...Y<br>...X | ...M            | ...F | ...Z                  | ...V | ...T           | L |                              |
| ZUB         | –          | 2X           |                 |      |                       |      | 2T             |   | 20 2P                        |

| Ordering table |                                      |                                    |    |    |                 |      |
|----------------|--------------------------------------|------------------------------------|----|----|-----------------|------|
| Size           |                                      | 25                                 | 40 | 63 | Condi-<br>tions | Code |
| 0              | Accessories                          | Supplied separately                |    |    |                 | ZUB- |
|                | Slot cover for mounting slot         | 1 ... 10                           |    |    |                 | ...B |
|                | Slot nut for profile slot            | 1 ... 10                           |    |    |                 | ...Y |
|                | Slot nut for slide                   | 1 ... 10                           |    |    |                 | ...X |
|                | Central support                      | 1 ... 10                           |    |    |                 | ...M |
|                | Foot mounting (kit)                  | 1 ... 10                           |    |    |                 | ...F |
|                | Centring sleeve (pack of 10)         | 10, 20, 30, 40, 50, 60, 70, 80, 90 |    |    |                 | ...Z |
|                | Cable with socket, 2.5 m             | 1 ... 10                           |    |    |                 | ...V |
|                | Sensor bracket for inductive sensors | 1 ... 5                            |    |    |                 | ...T |
|                | Switching lug                        | 1                                  |    |    |                 | L    |
|                | Inductive sensor                     | 1 ... 5                            |    |    |                 | ...O |
|                | proximity sensor                     | 1 ... 5                            |    |    |                 | ...P |
|                | NO contact with cable                | 1 ... 5                            |    |    |                 | ...W |
|                | NC contact with cable                | 1 ... 5                            |    |    |                 | ...R |
|                | NO contact with plug                 | 1 ... 5                            |    |    |                 |      |
|                | NC contact with plug                 | 1 ... 5                            |    |    |                 |      |

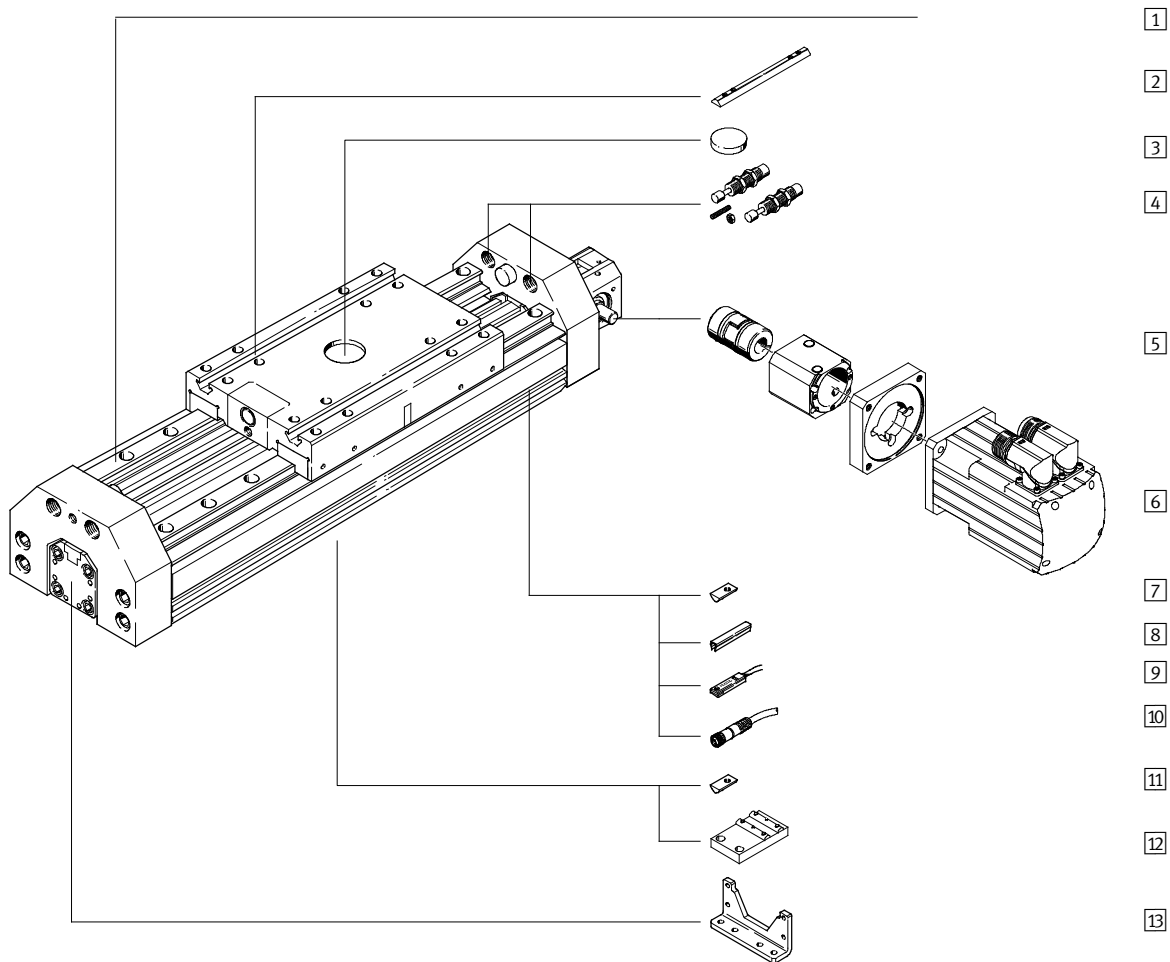
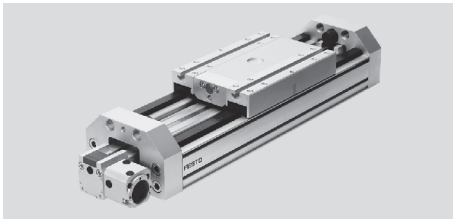
Transfer order code

ZUB –

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

Peripherals overview

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## Toothed belt axes DGE-ZR-HD, with heavy-duty guide

Peripherals overview

| Variants and accessories           |                                                                                                   |                 |
|------------------------------------|---------------------------------------------------------------------------------------------------|-----------------|
| Type                               | Brief description                                                                                 | → Page/Internet |
| 1 Toothed belt axis<br>DGE-ZR-HD   | Electromechanical axis with heavy-duty guide                                                      | 60              |
| 2 Slot nut for slide<br>X          | For mounting loads and attachments on the slide                                                   | 84              |
| 3 Central mounting<br>Q            | For centring loads and attachments on the slide                                                   | 84              |
| 4 Shock absorber kits<br>D         | For avoiding damage at the end stop in the event of malfunction                                   | 81              |
| 5 Axial kit<br>EAMM-A              | For axial motor attachment<br>(consisting of: coupling housing, clamping component, motor flange) | 72              |
| 6 Motor<br>EMMS                    | Motors specially matched to the axis, with or without gearing, with or without brake              | 72              |
| 7 Slot nut for profile slot<br>Y   | For mounting attachments                                                                          | 84              |
| 8 Slot cover<br>B/S                | For protecting against dirt                                                                       | 84              |
| 9 Proximity sensor<br>G/H/I/J/N    | For use as a signal or safety check                                                               | 85              |
| 10 Cable with socket<br>V          | For proximity sensors                                                                             | 85              |
| 11 Slot nut for HD underneath<br>U | For mounting attachments                                                                          | 84              |
| 12 Central support<br>M            | For mounting the axis                                                                             | 78              |
| 13 Foot mounting<br>F              | For mounting the axis                                                                             | 78              |

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

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Type code

|                             |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
|-----------------------------|--------------------------------------|---|----|---|-----|---|----|---|----|---|----|---|--|---|----|
|                             | DGE                                  | - | 25 | - | 500 | - | ZR | - | LK | - | RV | - |  | - | GK |
| <b>Type</b>                 |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| DGE                         | Toothed belt drive                   |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Size</b>                 |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Stroke [mm]</b>          |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Drive function</b>       |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| ZR                          | Toothed belt                         |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Drive shaft on left</b>  |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| LK                          | No drive shaft on left               |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| LV                          | Drive shaft on left, front           |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| LH                          | Drive shaft on left, rear            |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| LB                          | Drive shaft on left, front and rear  |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Drive shaft on right</b> |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| RK                          | No drive shaft on right              |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| RV                          | Drive shaft on right, front          |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| RH                          | Drive shaft on right, rear           |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| RB                          | Drive shaft on right, front and rear |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Guide</b>                |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| HD                          | Heavy-duty guide                     |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| <b>Slide</b>                |                                      |   |    |   |     |   |    |   |    |   |    |   |  |   |    |
| GK                          | Standard slide                       |   |    |   |     |   |    |   |    |   |    |   |  |   |    |

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

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Type code

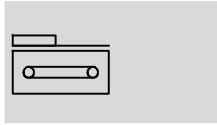
|                          |                                | + ZUB | - | 2S | - |  | - |  | - | F |  |  | Q |  | 2H |  | 2V |
|--------------------------|--------------------------------|-------|---|----|---|--|---|--|---|---|--|--|---|--|----|--|----|
| <b>Accessories</b>       |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ZUB                      | Accessories supplied loose     |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Slot cover</b>        |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...S                     | Sensor slot                    |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...B                     | Mounting slot                  |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Slot nut</b>          |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...Y                     | For profile slot               |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...X                     | For slide                      |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...U                     | For HD underneath              |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Central support</b>   |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...M                     | Central support                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Foot mounting</b>     |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...F                     | Foot mounting                  |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Shock absorber</b>    |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...D                     | Kit for HD                     |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Central mounting</b>  |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...Q                     | Central mounting               |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Proximity sensor</b>  |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...G                     | With cable, 2.5 m              |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...H                     | With plug                      |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...I                     | Contactless, with cable, 2.5 m |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...J                     | Contactless, plug              |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...N                     | NC contact with cable, 2.5 m   |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| <b>Cable with socket</b> |                                |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |
| ...V                     | 2.5 m                          |       |   |    |   |  |   |  |   |   |  |  |   |  |    |  |    |

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

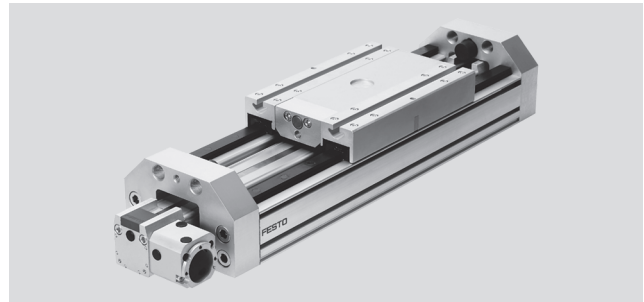
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Technical data

Function



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-  - Size  
18 ... 40
-  - Stroke length  
1 ... 2000 mm

| General technical data                    |       |                                              |            |            |            |
|-------------------------------------------|-------|----------------------------------------------|------------|------------|------------|
| Size                                      |       | 18-HD18                                      | 25-HD25    | 25-HD40    | 40-HD40    |
| Constructional design                     |       | Electromechanical axis with heavy-duty guide |            |            |            |
| Guide                                     |       | Recirculating ball bearing guide             |            |            |            |
| Mounting position                         |       | Any                                          |            |            |            |
| Max. working stroke                       | [mm]  | 1 ... 1000                                   | 1 ... 2000 | 1 ... 2000 | 1 ... 2000 |
| Max. working load                         | [kg]  | 4.2                                          | 18         | 16         | 48         |
| Max. feed force F <sub>x</sub>            | [N]   | 60                                           | 260        | 260        | 610        |
| Max. radial force <sup>1)</sup>           | [N]   | 290                                          | 307        | 307        | 984        |
| Radial force <sup>2)</sup>                | [N]   | 117                                          | 235        | 235        | 370        |
| Radial force <sup>3)</sup>                | [N]   | 80                                           | 140        | 140        | 170        |
| Max. driving torque                       | [Nm]  | 0.5                                          | 2.6        | 2.6        | 9.7        |
| Max. no-load driving torque <sup>4)</sup> | [Nm]  | 0.2                                          | 0.5        | 0.5        | 1          |
| Max. speed                                | [m/s] | 3                                            |            |            |            |
| Repetition accuracy                       | [mm]  | ±0.08                                        | ±0.1       |            |            |

- 1) On the drive shaft
- 2) On the drive shaft, with a service life of 5,000 km
- 3) On the drive shaft, with a service life of 10,000 km
- 4) Measured at a speed of 0.2 m/s

| Operating and environmental conditions |      |             |         |         |         |
|----------------------------------------|------|-------------|---------|---------|---------|
| Size                                   |      | 18-HD18     | 25-HD25 | 25-HD40 | 40-HD40 |
| Ambient temperature                    | [°C] | -10 ... +40 |         |         |         |
| Protection class                       |      | IP40        |         |         |         |

| Weights [kg]                                |         |         |         |         |
|---------------------------------------------|---------|---------|---------|---------|
| Size                                        | 18-HD18 | 25-HD25 | 25-HD40 | 40-HD40 |
| Basic weight with 0 mm stroke <sup>1)</sup> | 3.812   | 5.63    | 14.33   | 17.75   |
| Additional weight per 100 mm stroke         | 0.883   | 1.51    | 2.1     | 2.42    |

- 1) Including coupling housing and slide

| Mass moment of inertia             |                          |         |         |         |         |
|------------------------------------|--------------------------|---------|---------|---------|---------|
| Size                               |                          | 18-HD18 | 25-HD25 | 25-HD40 | 40-HD40 |
| J <sub>0</sub>                     | [kg cm <sup>2</sup> ]    | 0.372   | 2.32    | 4.23    | 12      |
| J <sub>H</sub> per metre stroke    | [kg cm <sup>2</sup> /m]  | 0.021   | 0.078   | 0.078   | 0.45    |
| J <sub>L</sub> per kg working load | [kg cm <sup>2</sup> /kg] | 0.685   | 1       | 1       | 2.53    |

The mass moment of inertia  $J_A$  of the entire axis is calculated as follows:

$$J_A = J_0 + J_H \times \text{working stroke [m]} + J_L \times m_{\text{working load [kg]}}$$

## Toothed belt axes DGE-ZR-HD, with heavy-duty guide

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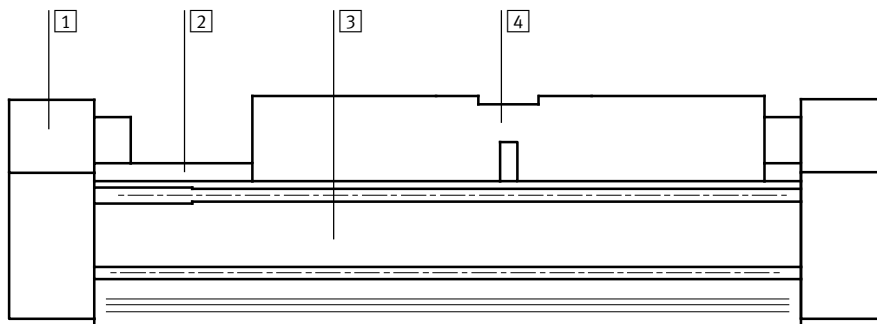
Technical data

| Toothed belt                            |      |         |         |         |         |
|-----------------------------------------|------|---------|---------|---------|---------|
| Size                                    |      | 18-HD18 | 25-HD25 | 25-HD40 | 40-HD40 |
| Tensile stress <sup>1)</sup>            | [%]  | 0.2     | 0.11    | 0.11    | 0.1     |
| Pitch                                   | [mm] | 2       | 3       | 3       | 5       |
| Effective radius;<br>effective diameter | [mm] | 16.55   | 20.05   | 20.05   | 31.83   |
| Feed constant                           | [mm] | 52      | 63      | 63      | 100     |

1) At max. feed force

### Materials

Sectional view



| Axis |         |                    |
|------|---------|--------------------|
| 1    | End cap | Anodised aluminium |
| 2    | Guide   | Rolled steel       |
| 3    | Profile | Anodised aluminium |
| 4    | Slide   | Anodised aluminium |

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

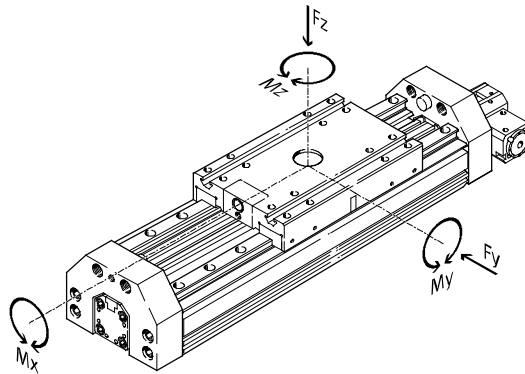
Technical data

FESTO

## Characteristic load values

The indicated forces and torques refer to the centre of the heavy-duty guide.

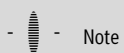
They must not be exceeded in the dynamic range. Special attention must be paid to the cushioning phase.



If the drive is subjected to more than two of the indicated forces and torques simultaneously, the following equations must be satisfied in addition to the indicated maximum loads.

$$\frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$

| Permissible forces and torques |      |         |         |         |         |
|--------------------------------|------|---------|---------|---------|---------|
| Size                           |      | 18-HD18 | 25-HD25 | 25-HD40 | 40-HD40 |
| F <sub>y</sub> max.            | [N]  | 1820    | 5400    | 5400    | 5400    |
| F <sub>z</sub> max.            | [N]  | 1820    | 5600    | 5600    | 5600    |
|                                |      |         |         |         |         |
| M <sub>x</sub> max.            | [Nm] | 70      | 260     | 375     | 375     |
| M <sub>y</sub> max.            | [Nm] | 115     | 415     | 560     | 560     |
| M <sub>z</sub> max.            | [Nm] | 112     | 400     | 540     | 540     |



Note

Sizing software  
PositioningDrives  
→ [www.festo.com](http://www.festo.com)

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

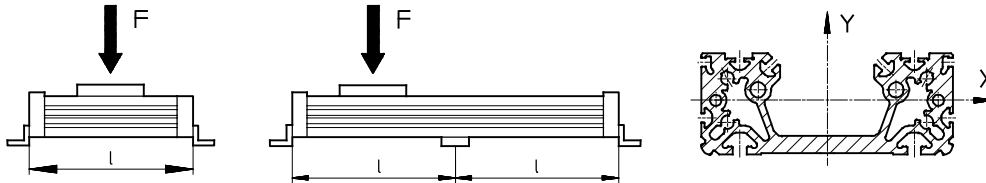
FESTO

Technical data

## Maximum permissible support span $l$ as a function of the force $F$

The axis may need to be supported with central supports MUP in order to restrict deflection with long stroke lengths. The following diagrams serve to determine the maximum permissible support span  $l$  as a function of the force acting upon the axis  $F$ .

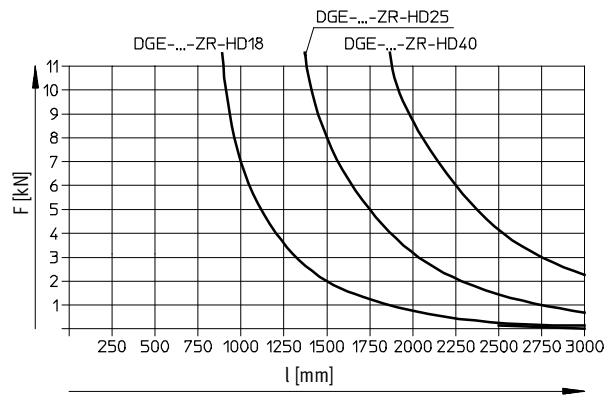
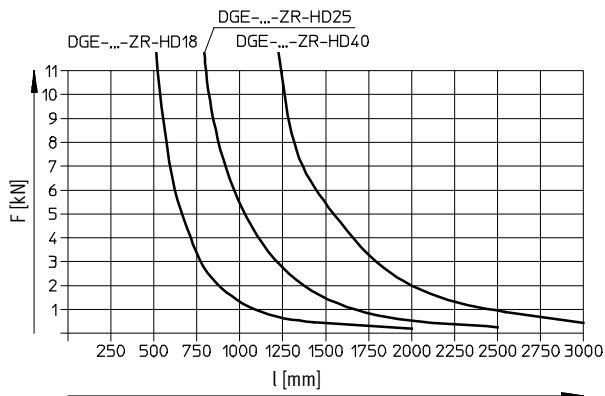
### Force on the surface of the slide



## Maximum permissible support span $l$ (without central support) as a function of the force $F$

Deflection around the X axis

Deflection around the Y axis



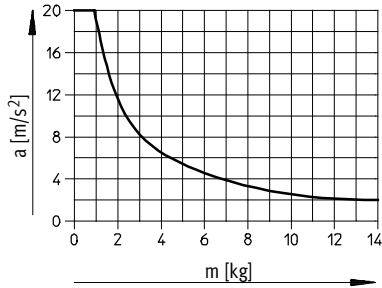
# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

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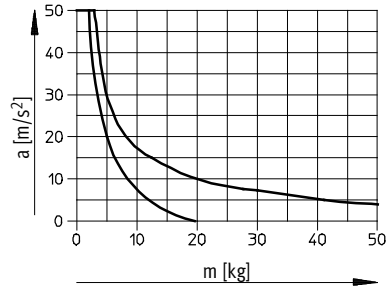
Technical data

## Maximum permissible acceleration $a$ as a function of the effective load $m$

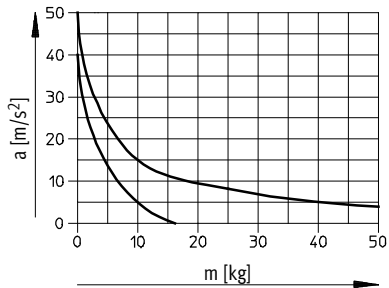
DGE-18-...-ZR-HD18



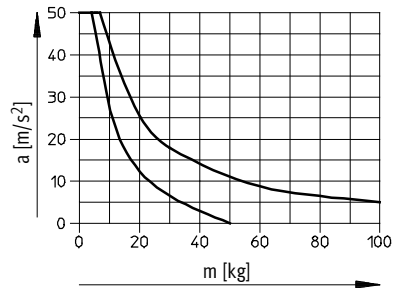
DGE-25-...-ZR-HD25



DGE-25-...-ZR-HD40



DGE-40-...-ZR-HD40



- - - vertical  
 — horizontal

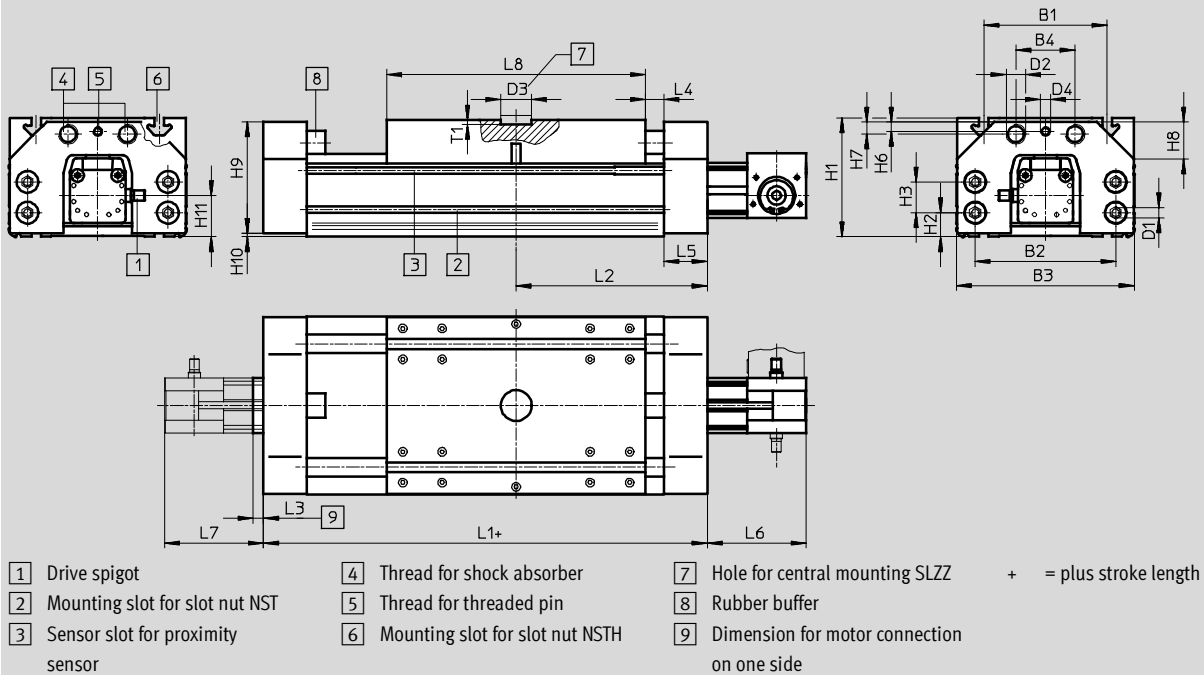
# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

Technical data

**FESTO**

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



## Profile



| Size     | B1  | B2  | B3   | B4 | D1 | D2      | D3      | D4 | H1    | H2   | H3       | H4 | H5   | H6  |
|----------|-----|-----|------|----|----|---------|---------|----|-------|------|----------|----|------|-----|
|          |     |     | ±0,2 |    |    |         | Ø<br>G7 |    |       |      |          |    |      |     |
| 18-HD-18 | 80  | 85  | 116  | 40 | M5 | M12x1   | 25      | M6 | 70    | 12.8 | 19.5±0,1 | 14 | 42.3 | 5.9 |
| 25-HD-25 | 100 | 114 | 144  | 48 | M8 | M16x1   | 25      | M8 | 93.5  | 18.5 | 25±0,2   | 21 | 52.8 | 9   |
| 25-HD-40 | 140 | 156 | 185  | 54 | M8 | M22x1.5 | 25      | M8 | 124.5 | 21   | 48±0,2   | 35 | 82.8 | 5.5 |
| 40-HD-40 | 140 | 156 | 185  | 54 | M8 | M22x1.5 | 25      | M8 | 124.5 | 21   | 48±0,2   | 35 | 82.8 | 5.5 |

| Size     | H7   | H8     | H9  | H10 | H11  | L1  | L2  | L3 | L4 | L5 | L6  | L7 | L8  | T1  |
|----------|------|--------|-----|-----|------|-----|-----|----|----|----|-----|----|-----|-----|
| 18-HD-18 | 8.7  | 20x45° | 68  | 0.8 | 24.9 | 240 | 120 | –  | 15 | 25 | 70  | 59 | 160 | 3.5 |
| 25-HD-25 | 9.8  | 30x45° | 90  | 2   | 28.9 | 310 | 155 | –  | 15 | 35 | 80  | 61 | 210 | 3.5 |
| 25-HD-40 | 15.5 | 35x45° | 120 | 2   | 54.9 | 354 | 177 | –  | 15 | 32 | 82  | 63 | 260 | 4   |
| 40-HD-40 | 15.5 | 35x45° | 120 | 2   | 42.5 | 354 | 177 | 15 | 15 | 32 | 109 | 82 | 260 | 4   |

# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

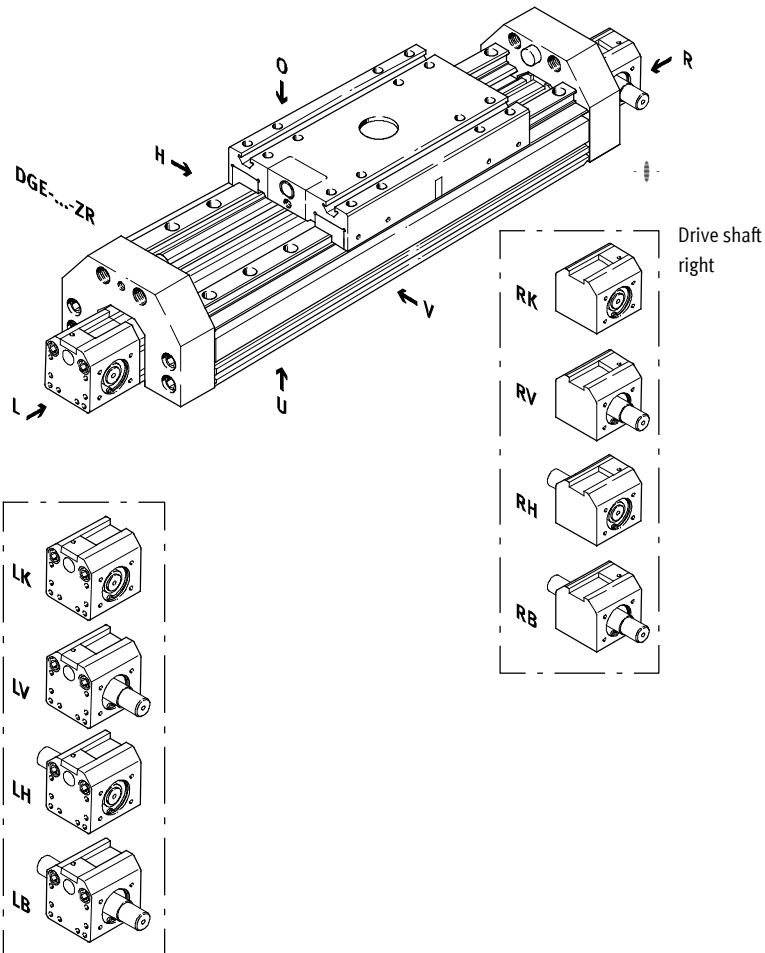
FESTO

Ordering data – Modular products

## Order code

### Mandatory data

- LK No drive shaft on left
- LV Drive shaft on left, front
- LH Drive shaft on left, rear
- LB Drive shaft on left, front and rear
- RK No drive shaft on right
- RV Drive shaft on right, front
- RH Drive shaft on right, rear
- RB Drive shaft on right, front and rear



- - Note

The insertion point for the proximity sensor is located on the right side of the heavy-duty guide.

- O top
- U underneath
- R right
- L left
- V front
- H rear

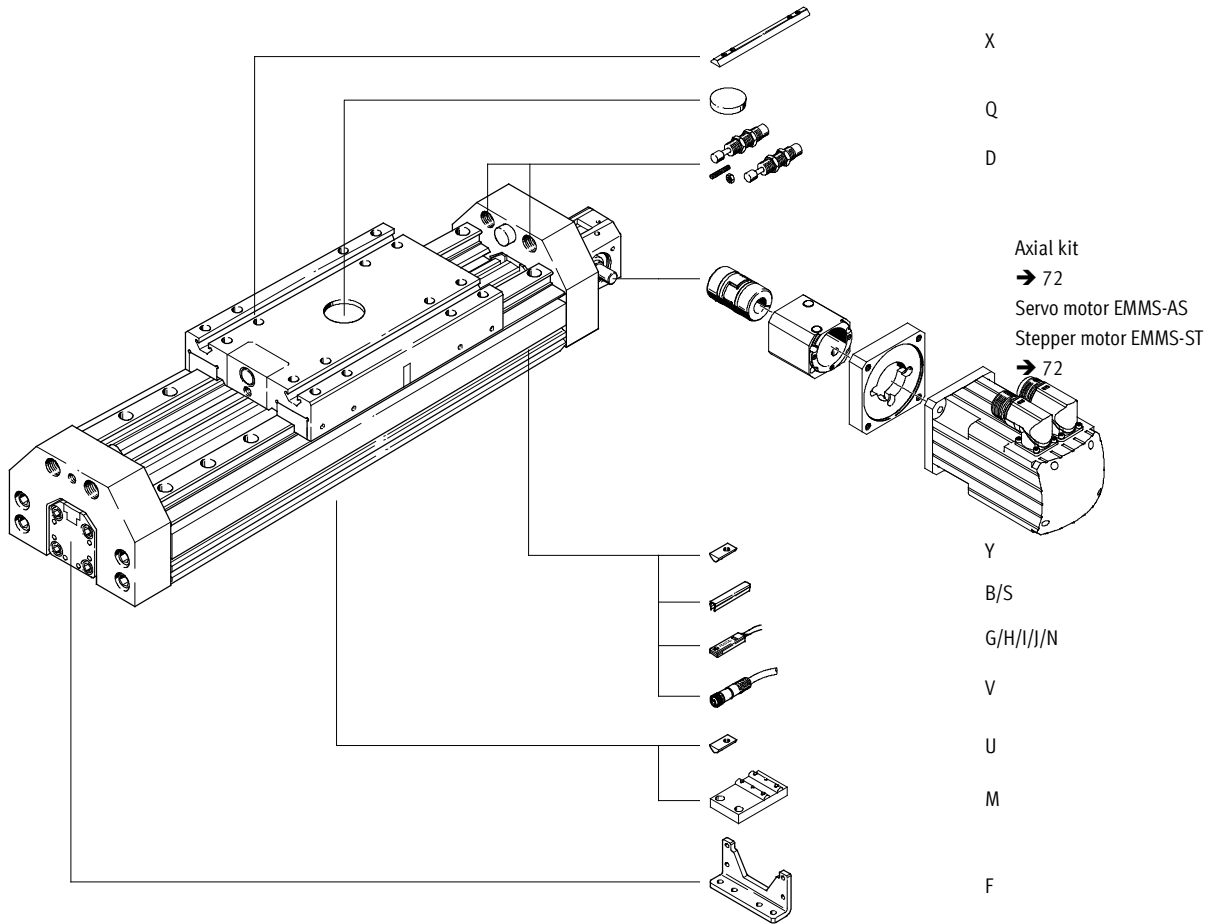
# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

Ordering data – Modular products

FESTO

## Order code

## Options



# Toothed belt axes DGE-ZR-HD, with heavy-duty guide

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Ordering data – Modular products

| M Mandatory data              |        |                |             |                |                      |                      | O Options →          |       |
|-------------------------------|--------|----------------|-------------|----------------|----------------------|----------------------|----------------------|-------|
| Module No.                    | Design | Size           | Stroke      | Drive function | Drive shaft on left  | Drive shaft on right | Guide                | Slide |
| 193 741<br>193 742<br>193 743 | DGE    | 18<br>25<br>40 | 1 ... 2 000 | ZR             | LK<br>LV<br>LH<br>LB | RK<br>RV<br>RH<br>RB | HD18<br>HD25<br>HD40 | GK    |
| <b>Ordering example</b>       |        |                |             |                |                      |                      |                      |       |
| 193 742                       | DGE    | - 25           | - 800       | - ZR           | - LK                 | - RV                 | - HD40               | - GK  |

| Ordering table |                      |                                           |                       |                       |                 |       |               |
|----------------|----------------------|-------------------------------------------|-----------------------|-----------------------|-----------------|-------|---------------|
| Size           |                      | 18                                        | 25                    | 40                    | Condi-<br>tions | Code  | Enter<br>code |
| M              | Module No.           | 193 741                                   | 193 742               | 193 743               |                 |       |               |
|                | Design               | Electromechanical linear axis             |                       |                       |                 | DGE   | DGE           |
|                | Size                 | 18                                        | 25                    | 40                    |                 | -...  |               |
|                | Stroke [mm]          | 1 ... 1000                                | 1 ... 2000            | 1 ... 2000            |                 | -...  |               |
|                | Drive function       | Electromechanical drive with toothed belt |                       |                       |                 | -ZR   | -ZR           |
|                | Drive shaft on left  | No drive shaft on left                    |                       |                       | 1               | -LK   |               |
|                |                      | Drive shaft on left, front                |                       |                       |                 | -LV   |               |
|                |                      | Drive shaft on left, rear                 |                       |                       |                 | -LH   |               |
|                |                      | Drive shaft on left, front and rear       |                       |                       |                 | -LB   |               |
|                | Drive shaft on right | No drive shaft on right                   |                       |                       | 2               | -RK   |               |
|                |                      | Drive shaft on right, front               |                       |                       |                 | -RV   |               |
|                |                      | Drive shaft on right, rear                |                       |                       |                 | -RH   |               |
|                |                      | Drive shaft on right, front and rear      |                       |                       |                 | -RB   |               |
| O              | Guide                | Heavy-duty guide HD18                     | -                     | -                     |                 | -HD18 | -HD...        |
|                |                      | -                                         | Heavy-duty guide HD25 | -                     |                 | -HD25 |               |
|                |                      | -                                         | Heavy-duty guide HD40 | Heavy-duty guide HD40 |                 | -HD40 |               |
| ↓              | Slide                | Standard                                  |                       |                       |                 | -GK   | -GK           |

1 LK Not with drive shaft on right RK.

2 RK Not with drive shaft on left LK.

\* Transfer order code

DGE -  -  - ZR -  -  - HD... - GK

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Ordering data – Modular products

| Options     |              |                      |                 |               |                |                  |                                      |             |
|-------------|--------------|----------------------|-----------------|---------------|----------------|------------------|--------------------------------------|-------------|
| Accessories | Slot cover   | Slot nut             | Central support | Foot mounting | Shock absorber | Central mounting | Proximity sensor                     | Plug socket |
| ZUB         | ...S<br>...B | ...Y<br>...X<br>...U | ...M            | ...F          | ...D           | ...Q             | ...G<br>...H<br>...I<br>...J<br>...N | ...V        |
| ZUB         | 2S2B         | 10U                  |                 | F             |                | 2Q               | 2H                                   | 2V          |

| Ordering table |                         |                              |          |    |                 |      |               |
|----------------|-------------------------|------------------------------|----------|----|-----------------|------|---------------|
| Size           |                         | 18                           | 25       | 40 | Condi-<br>tions | Code | Enter<br>code |
| ↓              | Accessories             | Supplied separately          |          |    |                 | ZUB- | ZUB-          |
| 0              | Slot cover              | Sensor slot                  | 1 ... 10 |    |                 | ...S |               |
|                |                         | Mounting slot                | 1 ... 10 |    |                 | ...B |               |
|                | Slot nut                | for mounting slot            | 1 ... 10 |    |                 | ...Y |               |
|                |                         | for slide                    | 1 ... 10 |    |                 | ...X |               |
|                |                         | for HD underneath            | 1 ... 10 |    |                 | ...U |               |
|                | Central support         |                              | 1 ... 10 |    |                 | ...M |               |
|                | Foot mounting (kit)     |                              | 1 ... 10 |    |                 | ...F |               |
|                | Shock absorber          | Kit for HD                   | 1 ... 2  |    |                 | ...D |               |
|                | Central mounting        |                              | 1 ... 10 |    |                 | ...Q |               |
|                | Proximity sensor        | with cable 2.5 m             | 1 ... 10 |    |                 | ...G |               |
|                |                         | with plug                    | 1 ... 10 |    |                 | ...H |               |
|                |                         | contactless with cable 2.5 m | 1 ... 10 |    |                 | ...I |               |
|                |                         | contactless, plug            | 1 ... 10 |    |                 | ...J |               |
|                |                         | NC contact with cable 2.5 m  | 1 ... 10 |    |                 | ...N |               |
|                | Cable with socket 2.5 m |                              | 1 ... 10 |    |                 | ...V |               |

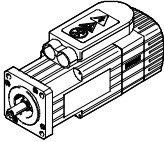
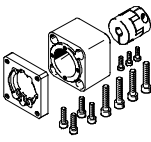
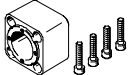
Transfer order code

ZUB -

# Toothed belt axes DGE

Accessories

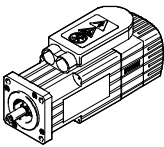
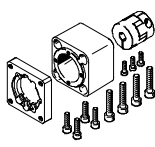
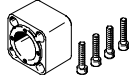
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| Permissible axis/motor combinations with axial kit – Without gear unit            |                                                                                   |                                                                                   |                                                                                     | Technical data → Internet: eamm-a                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Motor                                                                             | Axial kit                                                                         | Axial kit consisting of:                                                          |                                                                                     |                                                                                     |
|                                                                                   |                                                                                   | Motor flange                                                                      | Coupling                                                                            | Coupling housing                                                                    |
|  |  |  |  |  |
| Type                                                                              | Part No.<br>Type                                                                  | Part No.<br>Type                                                                  | Part No.<br>Type                                                                    | Part No.<br>Type                                                                    |
| <b>DGE-8-...-ZR</b>                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-40-...                                                                    | 550 921<br>EAMM-A-G13-40A                                                         | 540 301<br>EAMF-A-28A/30A-40A                                                     | 540 750<br>EAMC-15-22-4-6                                                           | 171 186<br>EAMK-A-G13-28A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-42-...                                                                    | 550 922<br>EAMM-A-G13-42A                                                         | 530 080<br>EAMF-A-28A-42A                                                         | 530 084<br>EAMC-15-22-4-5                                                           | 171 186<br>EAMK-A-G13-28A                                                           |
| <b>DGE-12-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-40-...                                                                    | 550 923<br>EAMM-A-G16-40A                                                         | 540 301<br>EAMF-A-28A/30A-40A                                                     | 540 750<br>EAMC-15-22-4-6                                                           | 171 185<br>EAMK-A-G16-30A                                                           |
| EMMS-AS-55-...                                                                    | 550 925<br>EAMM-A-G16-55A                                                         | 534 807<br>EAMF-A-30A-55A                                                         | 184 262<br>EAMC-15-22-4-9                                                           | 171 185<br>EAMK-A-G16-30A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-42-...                                                                    | 550 924<br>EAMM-A-G16-42A                                                         | 530 079<br>EAMF-A-30A-42A                                                         | 530 084<br>EAMC-15-22-4-5                                                           | 171 185<br>EAMK-A-G16-30A                                                           |
| <b>DGE-18-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-40-...                                                                    | 550 926<br>EAMM-A-G19-40A                                                         | 550 985<br>EAMF-A-44A/B-40A                                                       | 184 265<br>EAMC-19-24-6-6                                                           | 170 375<br>EAMK-A-G19-44B                                                           |
| EMMS-AS-55-...                                                                    | 550 927<br>EAMM-A-G19-55A                                                         | 529 942<br>EAMF-A-44A/B-55A                                                       | 184 263<br>EAMC-19-24-6-9                                                           | 170 375<br>EAMK-A-G19-44B                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-57-...                                                                    | 550 928<br>EAMM-A-G19-57A                                                         | 530 081<br>EAMF-A-44A/B-57A                                                       | 530 086<br>EAMC-19-24-6-6.35                                                        | 170 375<br>EAMK-A-G19-44B                                                           |
| <b>DGE-25-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-55-...                                                                    | 550 929<br>EAMM-A-F30-55A                                                         | 529 942<br>EAMF-A-44A/B-55A                                                       | 557 390<br>EAMC-30-35-8-9                                                           | 124 628<br>EAMK-A-F30-44A                                                           |
| EMMS-AS-70-...                                                                    | 550 932<br>EAMM-A-F30-70A                                                         | 529 943<br>EAMF-A-44A/B-70A                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 124 628<br>EAMK-A-F30-44A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-57-...                                                                    | 550 930<br>EAMM-A-F30-57A                                                         | 530 081<br>EAMF-A-44A/B-57A                                                       | 530 088<br>EAMC-30-35-6.35-8                                                        | 124 628<br>EAMK-A-F30-44A                                                           |
| EMMS-ST-87-...                                                                    | 550 933<br>EAMM-A-F30-87A                                                         | 530 082<br>EAMF-A-44A/B-87A                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 124 628<br>EAMK-A-F30-44A                                                           |

# Toothed belt axes DGE

Accessories

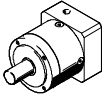
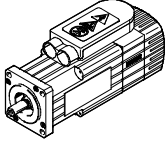
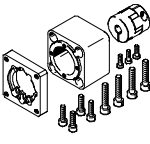
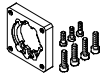
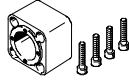
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| Permissible axis/motor combinations with axial kit – Without gear unit            |                                                                                   |                                                                                   |                                                                                     | Technical data → Internet: eamm-a                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Motor                                                                             | Axial kit                                                                         | Axial kit consisting of:                                                          |                                                                                     |                                                                                     |
|                                                                                   |                                                                                   | Motor flange                                                                      | Coupling                                                                            | Coupling housing                                                                    |
|  |  |  |  |  |
| Type                                                                              | Part No.<br>Type                                                                  | Part No.<br>Type                                                                  | Part No.<br>Type                                                                    | Part No.<br>Type                                                                    |
| <b>DGE-25-...-ZR-RF</b>                                                           |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-55-...                                                                    | 550 942<br>EAMM-A-F37-55A                                                         | 529 942<br>EAMF-A-44A/B-55A                                                       | 557 390<br>EAMC-30-35-8-9                                                           | 534 394<br>EAMK-A-F37-44A                                                           |
| EMMS-AS-70-...                                                                    | 550 945<br>EAMM-A-F37-70A                                                         | 529 943<br>EAMF-A-44A/B-70A                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 534 394<br>EAMK-A-F37-44A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-57-...                                                                    | 550 943<br>EAMM-A-F37-57A                                                         | 530 081<br>EAMF-A-44A/B-57A                                                       | 530 088<br>EAMC-30-35-6.35-8                                                        | 534 394<br>EAMK-A-F37-44A                                                           |
| EMMS-ST-87-...                                                                    | 550 946<br>EAMM-A-F37-87A                                                         | 530 082<br>EAMF-A-44A/B-87A                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 534 394<br>EAMK-A-F37-44A                                                           |
| <b>DGE-40-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-70-...                                                                    | 550 934<br>EAMM-A-F40-70A                                                         | 529 945<br>EAMF-A-64A/B-70A                                                       | 550 998<br>EAMC-40-66-11-15                                                         | 124 629<br>EAMK-A-F40-64A                                                           |
| EMMS-AS-100-...                                                                   | 550 937<br>EAMM-A-F40-100A                                                        | 529 947<br>EAMF-A-64A/C-100A                                                      | 123 844<br>EAMC-40-66-15-19                                                         | 124 629<br>EAMK-A-F40-64A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-87-...                                                                    | 550 936<br>EAMM-A-F40-87A                                                         | 533 140<br>EAMF-A-64A/B-87A                                                       | 550 998<br>EAMC-40-66-11-15                                                         | 124 629<br>EAMK-A-F40-64A                                                           |
| <b>DGE-40-...-ZR-RF</b>                                                           |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-100-...                                                                   | 550 949<br>EAMM-A-F47-100A                                                        | 529 947<br>EAMF-A-64A/C-100A                                                      | 123 844<br>EAMC-40-66-15-19                                                         | 534 395<br>EAMK-A-F47-64A                                                           |
| EMMS-AS-140-...                                                                   | 550 950<br>EAMM-A-F47-140A                                                        | 550 988<br>EAMF-A-64A-140A                                                        | 176 033<br>EAMC-40-66-15-24                                                         | 534 395<br>EAMK-A-F47-64A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-ST-87-...                                                                    | 550 948<br>EAMM-A-F47-87A                                                         | 533 140<br>EAMF-A-64A/B-87A                                                       | 550 998<br>EAMC-40-66-11-15                                                         | 534 395<br>EAMK-A-F47-64A                                                           |
| <b>DGE-63-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-100-...                                                                   | 550 939<br>EAMM-A-F62-100A                                                        | 529 949<br>EAMF-A-118C-100A                                                       | 551 000<br>EAMC-65-90-19-25                                                         | 124 630<br>EAMK-A-F62-118A/B/C                                                      |
| EMMS-AS-140-...                                                                   | 550 941<br>EAMM-A-F62-140A                                                        | 550 991<br>EAMF-A-118B-140A                                                       | 123 852<br>EAMC-65-90-24-25                                                         | 124 630<br>EAMK-A-F62-118A/B/C                                                      |
| <b>DGE-63-...-ZR-RF</b>                                                           |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMMS-AS-100-...                                                                   | 550 952<br>EAMM-A-F80-100A                                                        | 529 949<br>EAMF-A-118C-100A                                                       | 551 000<br>EAMC-65-90-19-25                                                         | 534 396<br>EAMK-A-F80-118A/B/C                                                      |
| EMMS-AS-140-...                                                                   | 550 954<br>EAMM-A-F80-140A                                                        | 550 991<br>EAMF-A-118B-140A                                                       | 123 852<br>EAMC-65-90-24-25                                                         | 534 396<br>EAMK-A-F80-118A/B/C                                                      |

## Toothed belt axes DGE

Accessories

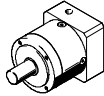
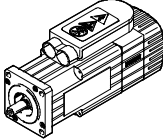
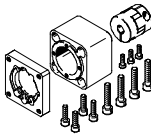
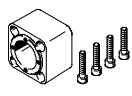
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| Permissible axis/motor combinations with axial kit – With gear unit               |                                                                                   |                                                                                   |                                                                                   |                                                                                     | Technical data → Internet: eamm-a                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Gear unit                                                                         | Motor                                                                             | Axial kit                                                                         | Axial kit consisting of:                                                          |                                                                                     |                                                                                     |
|                                                                                   |                                                                                   |                                                                                   | Motor flange                                                                      | Coupling                                                                            | Coupling housing                                                                    |
|  |  |  |  |  |  |
| Type                                                                              | Type                                                                              | Part No.<br>Type                                                                  | Part No.<br>Type                                                                  | Part No.<br>Type                                                                    | Part No.<br>Type                                                                    |
| <b>DGE-25-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-60-P-G...-SAS-55                                                             | EMMS-AS-55-...                                                                    | 550 931<br>EAMM-A-F30-60G                                                         | 529 944<br>EAMF-A-44A/B-60G                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 124 628<br>EAMK-A-F30-44A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-60-P-G...-SST-57                                                             | EMMS-ST-57-...                                                                    | 550 931<br>EAMM-A-F30-60G                                                         | 529 944<br>EAMF-A-44A/B-60G                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 124 628<br>EAMK-A-F30-44A                                                           |
| <b>DGE-25-...-ZR-RF</b>                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-60-P-G...-SAS-55                                                             | EMMS-AS-55-...                                                                    | 550 944<br>EAMM-A-F37-60G                                                         | 529 944<br>EAMF-A-44A/B-60G                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 534 394<br>EAMK-A-F37-44A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-60-P-G...-SST-57                                                             | EMMS-ST-57-...                                                                    | 550 944<br>EAMM-A-F37-60G                                                         | 529 944<br>EAMF-A-44A/B-60G                                                       | 123 042<br>EAMC-30-35-8-11                                                          | 534 394<br>EAMK-A-F37-44A                                                           |
| <b>DGE-40-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SAS-100                                                            | EMMS-AS-100-...                                                                   | 550 935<br>EAMM-A-F40-80G                                                         | 533 139<br>EAMF-A-64A/C-80G                                                       | 123 845<br>EAMC-40-66-15-20                                                         | 124 629<br>EAMK-A-F40-64A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SST-87                                                             | EMMS-ST-87-...                                                                    | 550 935<br>EAMM-A-F40-80G                                                         | 533 139<br>EAMF-A-64A/C-80G                                                       | 123 845<br>EAMC-40-66-15-20                                                         | 124 629<br>EAMK-A-F40-64A                                                           |
| <b>DGE-40-...-ZR-RF</b>                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SAS-100                                                            | EMMS-AS-100-...                                                                   | 550 947<br>EAMM-A-F47-80G                                                         | 533 139<br>EAMF-A-64A/C-80G                                                       | 123 845<br>EAMC-40-66-15-20                                                         | 534 395<br>EAMK-A-F47-64A                                                           |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SST-87                                                             | EMMS-ST-87-...                                                                    | 550 947<br>EAMM-A-F47-80G                                                         | 533 139<br>EAMF-A-64A/C-80G                                                       | 123 845<br>EAMC-40-66-15-20                                                         | 534 395<br>EAMK-A-F47-64A                                                           |

## Toothed belt axes DGE

Accessories

**FESTO**

| Permissible axis/motor combinations with axial kit – With gear unit               |                                                                                   |                                                                                   |                                                                                   |                                                                                     | Technical data → Internet: eamm-a                                                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Gear unit                                                                         | Motor                                                                             | Axial kit                                                                         | Axial kit consisting of:                                                          |                                                                                     |                                                                                     |
|                                                                                   |                                                                                   |                                                                                   | Motor flange                                                                      | Coupling                                                                            | Coupling housing                                                                    |
|  |  |  |  |  |  |
| Type                                                                              | Type                                                                              | Part No.<br>Type                                                                  | Part No.<br>Type                                                                  | Part No.<br>Type                                                                    | Part No.<br>Type                                                                    |
| <b>DGE-63-...-ZR</b>                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-120-P-G...-SAS-100                                                           | EMMS-AS-100-...                                                                   | 550 940<br>EAMM-A-F62-120G                                                        | 550 990<br>EAMF-A-118A-120G                                                       | 123 853<br>EAMC-65-90-25-25                                                         | 124 630<br>EAMK-A-F62-118A/B/C                                                      |
| EMGA-120-P-G...-SAS-140                                                           | EMMS-AS-140-...                                                                   | 550 940<br>EAMM-A-F62-120G                                                        | 550 990<br>EAMF-A-118A-120G                                                       | 123 853<br>EAMC-65-90-25-25                                                         | 124 630<br>EAMK-A-F62-118A/B/C                                                      |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SST-87                                                             | EMMS-ST-87-...                                                                    | 550 938<br>EAMM-A-F62-80G                                                         | 550 989<br>EAMF-A-118A-80G                                                        | 176 035<br>EAMC-65-90-20-25                                                         | 124 630<br>EAMK-A-F62-118A/B/C                                                      |
| <b>DGE-63-...-ZR-RF</b>                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| With servo motor                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SAS-100                                                            | EMMS-AS-100-...                                                                   | 550 951<br>EAMM-A-F80-80G                                                         | 550 989<br>EAMF-A-118A-80G                                                        | 176 035<br>EAMC-65-90-20-25                                                         | 534 396<br>EAMK-A-F80-118A/B/C                                                      |
| EMGA-120-P-G...-SAS-140                                                           | EMMS-AS-140-S-...                                                                 | 550 953<br>EAMM-A-F80-120G                                                        | 550 990<br>EAMF-A-118A-120G                                                       | 123 853<br>EAMC-65-90-25-25                                                         | 534 396<br>EAMK-A-F80-118A/B/C                                                      |
| EMGA-160-P-G...-SAS-140                                                           | EMMS-AS-140-M-...                                                                 | 550 955<br>EAMM-A-F80-160G                                                        | 550 992<br>EAMF-A-118A-160G                                                       | 551 001<br>EAMC-65-90-25-40                                                         | 534 396<br>EAMK-A-F80-118A/B/C                                                      |
| With stepper motor                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| EMGA-80-P-G...-SST-87                                                             | EMMS-ST-87-...                                                                    | 550 951<br>EAMM-A-F80-80G                                                         | 550 989<br>EAMF-A-118A-80G                                                        | 176 035<br>EAMC-65-90-20-25                                                         | 534 396<br>EAMK-A-F80-118A/B/C                                                      |

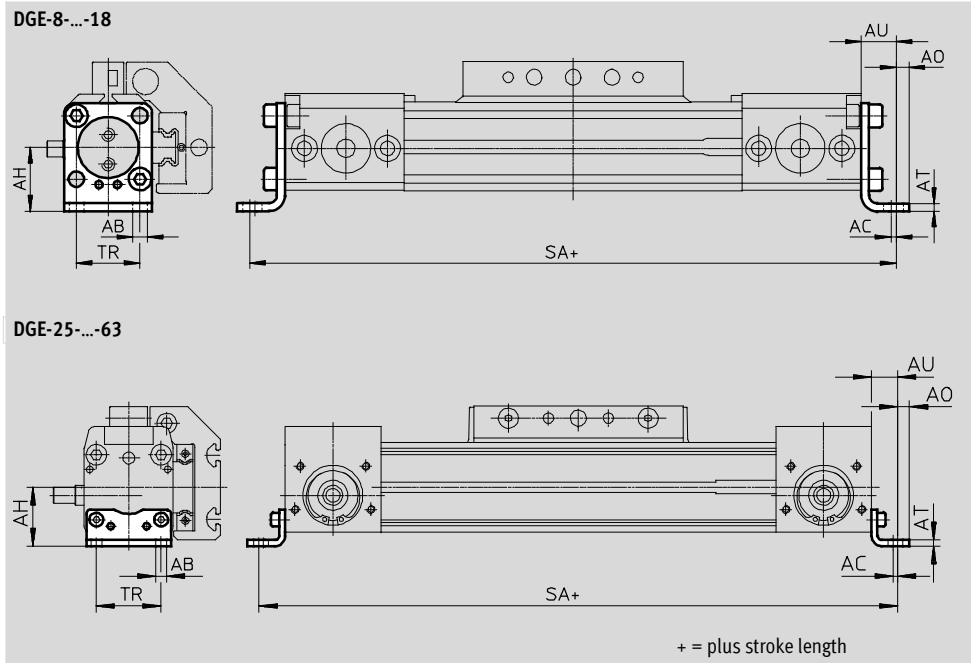
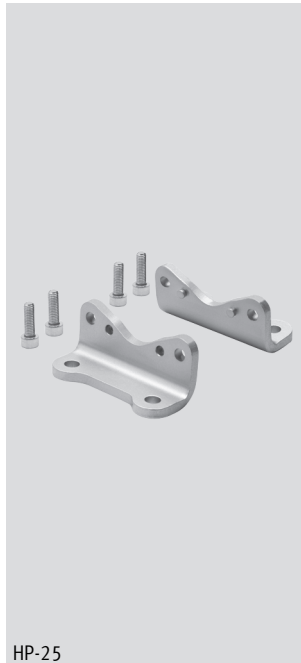
# Toothed belt axes DGE

Accessories

FESTO

**Foot mounting HP**  
(order code F)

Material:  
Galvanised steel  
Free of copper, PTFE and silicone



| Dimensions and ordering data |         |     |      |      |    |      |      |
|------------------------------|---------|-----|------|------|----|------|------|
| For size                     | AB<br>Ø | AC  | AH   | AO   | AT | AU   | TR   |
| 8                            | 3.4     | 1.5 | 13.8 | 3    | 2  | 9    | 13   |
| 12                           | 3.4     | 1.5 | 16.5 | 3    | 2  | 9    | 18.6 |
| 18                           | 5.5     | 2   | 24   | 4.8  | 3  | 13.3 | 24   |
| 25                           | 5.5     | 2   | 29.5 | 6    | 3  | 13   | 32.5 |
| 40                           | 6.6     | 2   | 46   | 8.5  | 5  | 17.5 | 45   |
| 63                           | 11      | 3   | 69   | 13.5 | 6  | 28   | 75   |

| For size | SA                   |       |               |       | Weight | Part No. | Type  |
|----------|----------------------|-------|---------------|-------|--------|----------|-------|
|          | For DGE-ZR/DGE-ZR-KF |       | For DGE-ZR-RF |       |        |          |       |
|          | GK                   | GV    | GK            | GV    | [g]    |          |       |
| 8        | 198                  | –     | –             | –     | 17     | 158 470  | HP-8  |
| 12       | 234                  | –     | –             | –     | 23     | 158 471  | HP-12 |
| 18       | 308.6                | 388.6 | –             | –     | 70     | 158 472  | HP-18 |
| 25       | 398                  | 498   | 440           | 535   | 61     | 150 731  | HP-25 |
| 40       | 604                  | 774   | 673           | 813   | 188    | 150 733  | HP-40 |
| 63       | 938                  | 1188  | 1 076         | 1 306 | 305    | 150 735  | HP-63 |

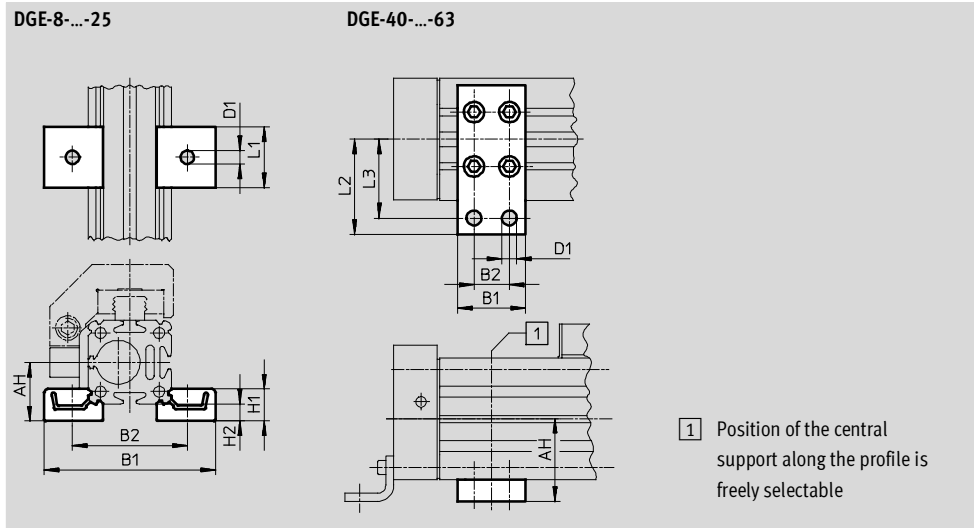
# Toothed belt axes DGE

Accessories

FESTO

**Central support MUP**  
(order code M)

Material:  
Galvanised steel  
Free of copper, PTFE and silicone



| Dimensions and ordering data |      |      |      |         |    |    |    |    |    |               |                                 |
|------------------------------|------|------|------|---------|----|----|----|----|----|---------------|---------------------------------|
| For size                     | AH   | B1   | B2   | D1<br>Ø | H1 | H2 | L1 | L2 | L3 | Weight<br>[g] | Part No.    Type                |
| 8                            | 13.8 | 40.5 | 28.5 | 3.5     | 8  | 4  | 15 | –  | –  | 8             | <b>160 909</b> <b>MUP-8/12</b>  |
| 12                           | 16.5 | 46   | 34   | 3.5     | 8  | 4  | 15 | –  | –  | 8             | <b>160 909</b> <b>MUP-8/12</b>  |
| 18                           | 24   | 70.5 | 47   | 5.5     | 13 | 7  | 25 | –  | –  | 33            | <b>150 736</b> <b>MUP-18/25</b> |
| 25                           | 29.5 | 81   | 58   | 5.5     | 13 | 7  | 25 | –  | –  | 33            | <b>150 736</b> <b>MUP-18/25</b> |
| 40                           | 46   | 35   | 22   | 6.6     | –  | –  | –  | 47 | 40 | 126           | <b>150 738</b> <b>MUP-40</b>    |
| 63                           | 69   | 50   | 26   | 11      | –  | –  | –  | 77 | 65 | 340           | <b>150 800</b> <b>MUP-63</b>    |

# Toothed belt axes DGE

Accessories

FESTO

## Foot mounting HHP

for heavy-duty guide

(order code F)

Material:

Galvanised steel



## Central support MUP

for heavy-duty guide

(order code M)

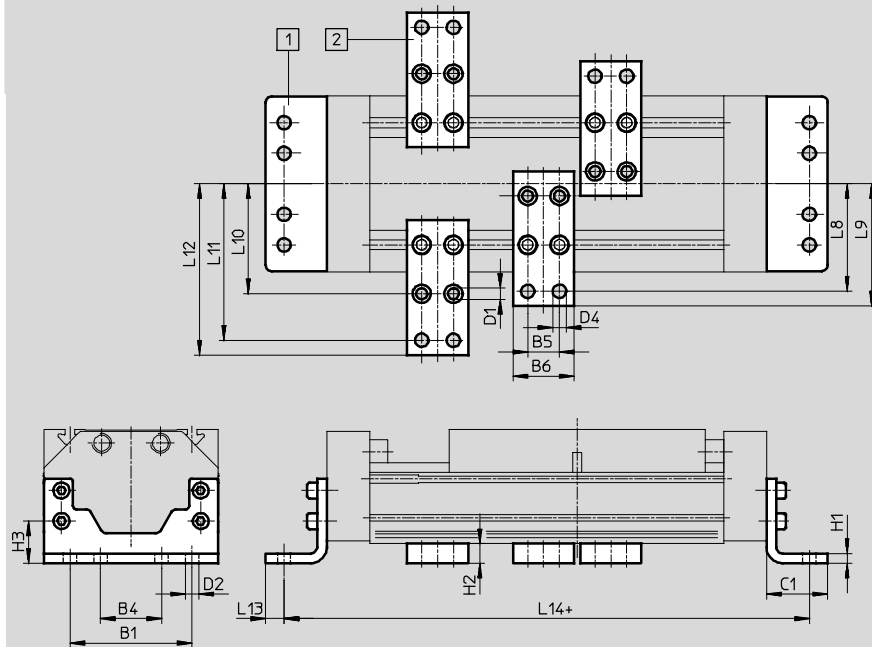
Material:

Galvanised steel

Free of copper, PTFE and silicone



## DGE...-HD18/-HD25/-HD40



- 1 Foot mounting HHP
- 2 Central support MUP

+ = plus stroke length

## Dimensions and ordering data

| For heavy-duty guide | B1  | B4 | B5 | B6 | C1 | D1  | D2  | D4  | H1 | H2 | H3   |
|----------------------|-----|----|----|----|----|-----|-----|-----|----|----|------|
| HD18                 | 80  | 40 | 22 | 35 | 34 | 5.5 | 6.6 | 6.6 | 8  | 14 | 26.8 |
| HD25                 | 100 | 50 | 26 | 50 | 50 | 9   | 11  | 11  | 8  | 16 | 34.5 |
| HD40                 | 140 | 70 | 26 | 50 | 50 | 9   | 11  | 11  | 10 | 16 | 37   |

| For heavy-duty guide | L8  | L9  | L10 | L11 | L12 | L13 | L14 | Weight<br>[g] | Part No.           | Type             |
|----------------------|-----|-----|-----|-----|-----|-----|-----|---------------|--------------------|------------------|
| HD18                 | 68  | 75  | 64  | 92  | 99  | 9   | 290 | 357<br>126    | 161 993<br>150 738 | HHP-18<br>MUP-40 |
| HD25                 | 88  | 100 | 90  | 128 | 140 | 15  | 380 | 794<br>347    | 161 994<br>150 739 | HHP-25<br>MUP-50 |
| HD40                 | 108 | 120 | 110 | 148 | 160 | 15  | 424 | 1,318<br>347  | 161 995<br>150 739 | HHP-40<br>MUP-50 |

## Toothed belt axes DGE

Accessories

FESTO

### Shock absorber YSR-...-C (order code C)

Materials:

Housing: Galvanised steel; piston rod:

High-alloy steel

Seals: Perbunan, polyurethane

Free of copper, PTFE and silicone



Note

Shock absorber YSRW with  
progressive characteristics

→ Internet: ysrw

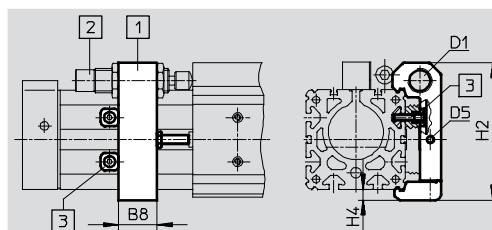
| Ordering data |               |                    |
|---------------|---------------|--------------------|
| For size      | Weight<br>[g] | Part No. Type      |
| 8             | 9             | 158 981 YSR-5-5-C  |
| 12            | 9             | 158 981 YSR-5-5-C  |
| 18            | 30            | 34 571 YSR-8-8-C   |
| 25            | 70            | 34 572 YSR-12-12-C |
| 40            | 140           | 34 573 YSR-16-20-C |
| 63            | 240           | 34 574 YSR-20-25-C |

### Shock absorber retainer KYP (order code C)

Materials:

Retainer: Aluminium

Sleeve: Corrosion-resistant steel



- 1 Shock absorber retainer KYP  
(if the retainer is in contact with  
the bearing cap, i.e. cap serves  
to secure position, the entire  
stroke length can be utilised)
- 2 Shock absorber YSR-...-C
- 3 Position retainer  
(included in the scope of deliv-  
ery) either behind or underneath  
the shock absorber retainer KYP

| Dimensions and ordering data |    |         |     |       |      |               |                |
|------------------------------|----|---------|-----|-------|------|---------------|----------------|
| For size                     | B8 | D1      | D5  | H2    | H4   | Weight<br>[g] | Part No. Type  |
| 8                            | 8  | M8x1    | M3  | 31.5  | 3    | 36            | 158 905 KYP-8  |
| 12                           | 11 | M8x1    | M4  | 37    | 3    | 44            | 158 906 KYP-12 |
| 18                           | 14 | M12x1   | M4  | 50.5  | 4.5  | 66            | 158 907 KYP-18 |
| 25                           | 19 | M16x1   | M5  | 69.5  | 6    | 95            | 158 908 KYP-25 |
| 40                           | 32 | M22x1.5 | M5  | 102   | 8    | 209           | 158 910 KYP-40 |
| 63                           | 44 | M26x1.5 | M10 | 152.5 | 11.5 | 609           | 158 912 KYP-63 |

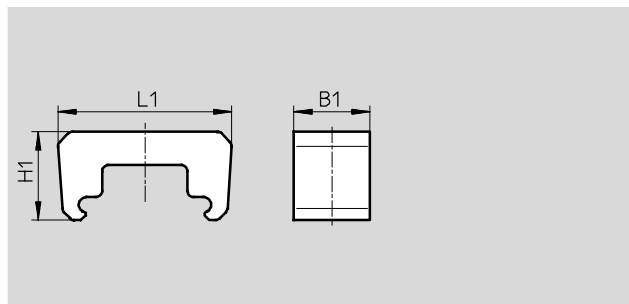
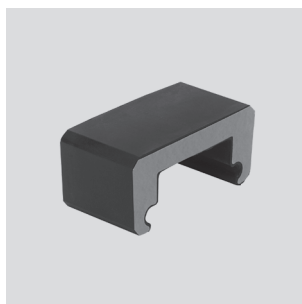
## Toothed belt axes DGE

Accessories

FESTO

### Emergency buffer NPE (order code A)

Material:  
Polyurethane



| Dimensions and ordering data |    |       |      |            |          |        |
|------------------------------|----|-------|------|------------|----------|--------|
| For size                     | B1 | L1    | H1   | Weight [g] | Part No. | Type   |
| 18                           | 15 | 43.1  | 28.5 | 6          | 193 901  | NPE-18 |
| 25                           | 25 | 57    | 29   | 12         | 193 902  | NPE-25 |
| 40                           | 40 | 80.5  | 36   | 41         | 193 904  | NPE-40 |
| 63                           | 60 | 128.6 | 55   | 152        | 193 906  | NPE-63 |

 Note

The emergency buffer can only be used in combination with shock absorber retainer KYP. →79  
(A threaded stud and nut are not required.)

### Shock absorber DG-GA for protected version GA (order code E)

Materials:  
Housing: Galvanised steel; piston rod:  
High-alloy steel  
Seals: Perbunan, polyurethane  
Free of copper, PTFE and silicone



| Ordering data |            |          |              |
|---------------|------------|----------|--------------|
| For size      | Weight [g] | Part No. | Type         |
| 25            | 70         | 192 875  | DG-GA-25-YSR |
| 40            | 140        | 192 877  | DG-GA-40-YSR |

# Toothed belt axes DGE

Accessories

FESTO

## Shock absorber kit YHD

for heavy-duty guide  
(order code D)

Materials:

Housing: Galvanised steel

Seals: TPE-U(PU), NBR

Free of copper, PTFE and silicone



| Ordering data        |        |          |        |
|----------------------|--------|----------|--------|
| For heavy-duty guide | Weight | Part No. | Type   |
|                      | [g]    |          |        |
| HD18                 | 203    | 174 544  | YHD-18 |
| HD25                 | 293    | 174 545  | YHD-25 |
| HD40                 | 515    | 174 546  | YHD-40 |

# Toothed belt axes DGE

Accessories

FESTO

## Sensor bracket HWS

for inductive proximity sensors

(order code T)

Material:

Galvanised steel



## Switch lug SF

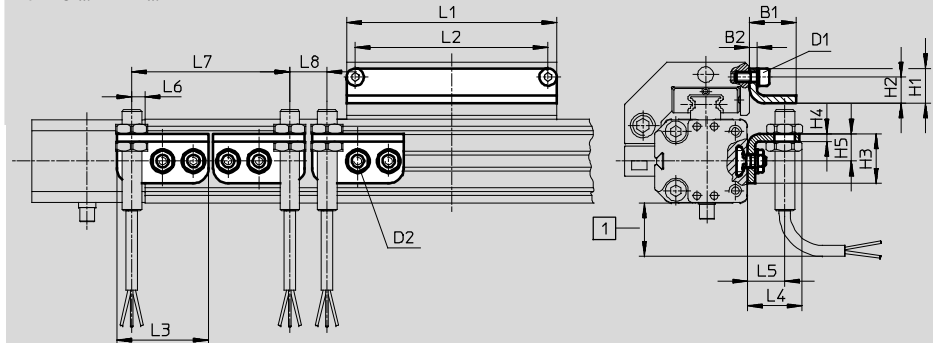
(order code L)

Material:

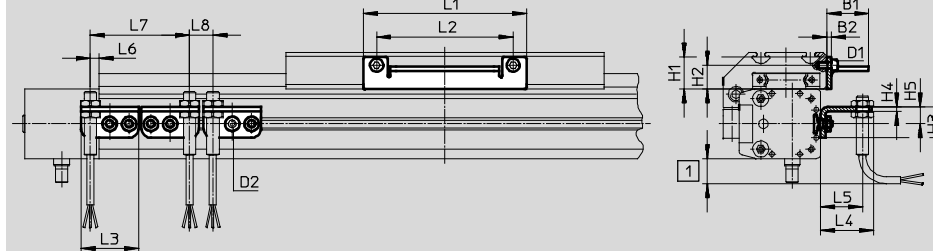
Galvanised steel



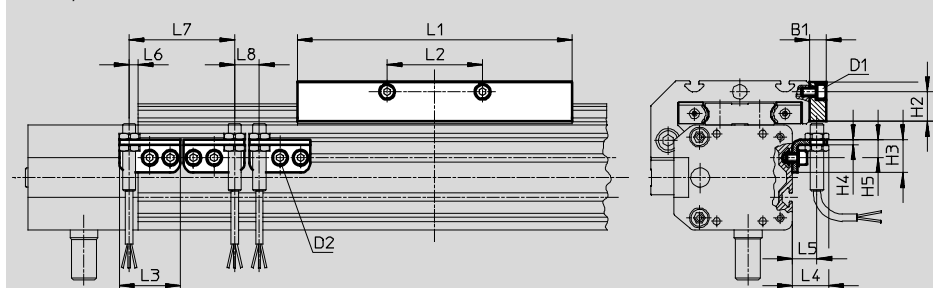
DGE-18-...-ZR-KF-...



DGE-25-...-ZR-KF-...



DGE-40/-63-...-ZR-KF-...



- 1 Protruding sensor cable, ensure sufficient installation space

-  - Note

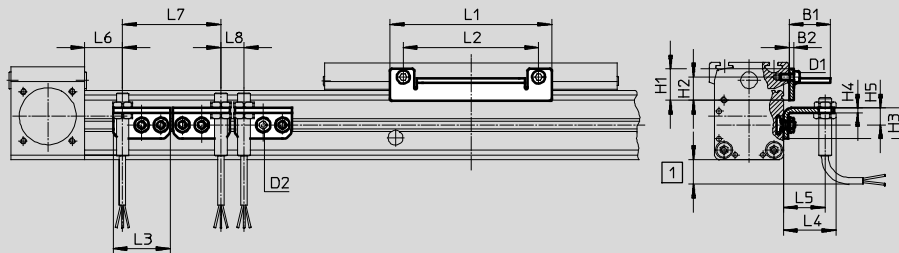
Cannot be used in combination with the variant DGE-...-GA (protected version).

# Toothed belt axes DGE

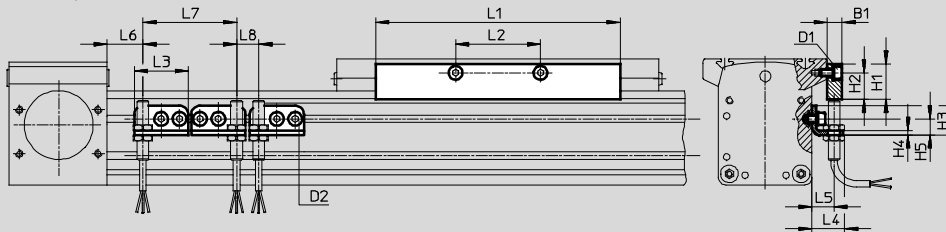
Accessories

FESTO

DGE-25-...-ZR-RF-...



DGE-40/-63-...-ZR-RF-...



1 Protruding sensor cable, ensure sufficient installation space

## Dimensions and ordering data

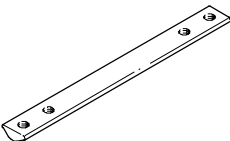
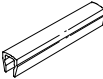
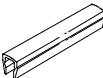
| For size | D1 | D2 | B1 | B2 | H1   | H2   | H3 | H4 | H5 | L1  | L2 | L3 | L4   | L5 |
|----------|----|----|----|----|------|------|----|----|----|-----|----|----|------|----|
| 18       | M4 | M5 | 19 | 3  | 14   | 10.5 | 20 | 3  | 11 | 85  | 78 | 37 | 22.5 | 15 |
| 25       | M5 | M5 | 27 | 3  | 20.5 | 15.3 | 20 | 3  | 11 | 105 | 88 | 37 | 34.5 | 27 |
| 40       | M5 | M5 | 10 | –  | 24   | 18   | 20 | 3  | 11 | 167 | 58 | 37 | 22.5 | 15 |
| 63       | M8 | M5 | 10 | –  | 35   | 25   | 20 | 3  | 11 | 230 | 72 | 37 | 22.5 | 15 |

| For size | L6                |                 |       | L7<br>min. | L8<br>min. | Weight<br>[g] | Part No. | Type          |
|----------|-------------------|-----------------|-------|------------|------------|---------------|----------|---------------|
|          | DGE-ZR-KF<br>max. | DGE-ZR-RF<br>GK | GV    |            |            |               |          |               |
| 18       | 5.5               | –               | –     | 64         | 15         | 30            | 188 968  | HWS-18/25-M8  |
|          |                   |                 |       |            |            | 60            | 188 964  | SF-18         |
| 25       | 5.5               | 43.5            | 91    | 64         | 15         | 30            | 540 780  | HWS-25-MAB-M8 |
|          |                   |                 |       |            |            | 80            | 540 430  | SF-25-MAB     |
| 40       | 5.5               | 68.5            | 138.5 | 64         | 15         | 40            | 188 969  | HWS-40-M8     |
|          |                   |                 |       |            |            | 310           | 188 966  | SF-40         |
| 63       | 5.5               | 117             | 232   | 64         | 15         | 40            | 188 970  | HWS-63-M8     |
|          |                   |                 |       |            |            | 630           | 188 967  | SF-63         |

# Toothed belt axes DGE

Accessories

**FESTO**

| Ordering data                                                                       |            |                                                          | Technical data → Internet: mounting attachment |          |            |                  |  |
|-------------------------------------------------------------------------------------|------------|----------------------------------------------------------|------------------------------------------------|----------|------------|------------------|--|
|                                                                                     | For size   | Comment                                                  | Order code                                     | Part No. | Type       | PU <sup>1)</sup> |  |
| Slot nut NST                                                                        |            |                                                          |                                                |          |            |                  |  |
|    | 18, 25     | For mounting slot/profile slot                           | Y                                              | 526 091  | NST-HMV-M4 | 1                |  |
|                                                                                     | 40         |                                                          |                                                | 150 914  | NST-5-M5   | 1                |  |
|                                                                                     | 63         |                                                          |                                                | 150 915  | NST-8-M6   | 1                |  |
|                                                                                     | HD18, HD25 | For heavy-duty guide: mounting slot                      | Y                                              | 150 914  | NST-5-M5   | 1                |  |
|                                                                                     | HD40       |                                                          |                                                | 150 915  | NST-8-M6   | 1                |  |
|                                                                                     | HD18       | For heavy-duty guide: HD underneath                      | U                                              | 150 914  | NST-5-M5   | 1                |  |
|                                                                                     | HD25, HD40 |                                                          |                                                | 150 915  | NST-8-M6   | 1                |  |
| Slot nut NSTL                                                                       |            |                                                          |                                                |          |            |                  |  |
|    | 25         | For slide                                                | X                                              | 158 410  | NSTL-25    | 1                |  |
|                                                                                     | 40         |                                                          |                                                | 158 412  | NSTL-40    | 1                |  |
|                                                                                     | 63         |                                                          |                                                | 158 414  | NSTL-63    | 1                |  |
|                                                                                     | HD18       | For heavy-duty guide: slide                              | X                                              | 161 020  | NSTH-18    | 1                |  |
|                                                                                     | HD25       |                                                          |                                                | 161 021  | NSTH-25    | 1                |  |
|                                                                                     | HD40       |                                                          |                                                | 161 022  | NSTH-40    | 1                |  |
| Centring pin/sleeve ZBS/ZBH                                                         |            |                                                          |                                                |          |            |                  |  |
|   | 8 ... 18   | For slide                                                | Z                                              | 150 928  | ZBS-5      | 10               |  |
|                                                                                     | 25 ... 63  |                                                          |                                                | 150 927  | ZBH-9      | 10               |  |
| Central mounting SLZZ                                                               |            |                                                          |                                                |          |            |                  |  |
|  | HD18       | For heavy-duty guide: slide                              | Q                                              | 150 901  | SLZZ-25/16 | 1                |  |
|                                                                                     | HD25       |                                                          |                                                |          |            |                  |  |
|                                                                                     | HD40       |                                                          |                                                |          |            |                  |  |
| Slot cover ABP                                                                      |            |                                                          |                                                |          |            |                  |  |
|  | 40         | For mounting slot every 0.5 m                            | B                                              | 151 681  | ABP-5      | 2                |  |
|                                                                                     | 63         |                                                          |                                                | 151 682  | ABP-8      |                  |  |
|                                                                                     | HD18, HD25 | For mounting slot on the side and underneath, each 0.5 m |                                                | 151 681  | ABP-5      |                  |  |
|                                                                                     | HD40       |                                                          |                                                | 151 682  | ABP-8      |                  |  |
| Slot cover ABP-S                                                                    |            |                                                          |                                                |          |            |                  |  |
|  | 8 ... 63   | For sensor slot every 0.5 m                              | S                                              | 151 680  | ABP-5-S    | 2                |  |
|                                                                                     | 25         | For mounting slot for DGE-ZR-RF                          | B                                              |          |            |                  |  |

1) Packaging unit

## Toothed belt axes DGE

Accessories

**FESTO**

| Ordering data – Proximity sensors for T-slot, magnetic reed                       |                                                                    |                  |                       |                  | Technical data → Internet: sme |                  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------|-----------------------|------------------|--------------------------------|------------------|
|                                                                                   | Type of mounting                                                   | Switching output | Electrical connection | Cable length [m] | Part No.                       | Type             |
| N/O contact                                                                       |                                                                    |                  |                       |                  |                                |                  |
|  | Insertable in the slot lengthwise, flush with the cylinder profile | Contacting       | Cable, 3-wire         | 2.5              | 150 855                        | SME-8-K-LED-24   |
|                                                                                   |                                                                    |                  | Plug M8x1, 3-pin      | 0.3              | 150 857                        | SME-8-S-LED-24   |
| N/C contact                                                                       |                                                                    |                  |                       |                  |                                |                  |
|  | Insertable in the slot lengthwise, flush with the cylinder profile | Contacting       | Cable, 3-wire         | 7.5              | 160 251                        | SME-8-O-K-LED-24 |

| Ordering data – Proximity sensors for T-slot, magneto-resistive                    |                                                                    |                  |                       |                  | Technical data → Internet: smt |                       |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------|-----------------------|------------------|--------------------------------|-----------------------|
|                                                                                    | Type of mounting                                                   | Switching output | Electrical connection | Cable length [m] | Part No.                       | Type                  |
| N/O contact                                                                        |                                                                    |                  |                       |                  |                                |                       |
|   | Insertable in the slot lengthwise, flush with the cylinder profile | PNP              | Cable, 3-wire         | 2.5              | 175 436                        | SMT-8-PS-K-LED-24-B   |
|                                                                                    |                                                                    |                  | Plug M8x1, 3-pin      | 0.3              | 175 484                        | SMT-8-PS-S-LED-24-B   |
| N/C contact                                                                        |                                                                    |                  |                       |                  |                                |                       |
|  | Insertable in the slot from above, flush with the cylinder profile | PNP              | Cable, 3-wire         | 7.5              | 543 873                        | SMT-8M-PO-24V-K7,5-OE |

| Ordering data – Inductive proximity sensors M8                                      |                       |         |                  |     |                  | Technical data → Internet: sien |                 |
|-------------------------------------------------------------------------------------|-----------------------|---------|------------------|-----|------------------|---------------------------------|-----------------|
|                                                                                     | Electrical connection |         | Switching output | LED | Cable length [m] | Part No.                        | Type            |
|                                                                                     | Cable                 | Plug M8 |                  |     |                  |                                 |                 |
| N/O contact                                                                         |                       |         |                  |     |                  |                                 |                 |
|  | 3-wire                | –       | PNP              | ■   | 2.5              | 150 386                         | SIEN-M8B-PS-K-L |
|                                                                                     | –                     | 3-pin   | PNP              | ■   | –                | 150 387                         | SIEN-M8B-PS-S-L |
| N/C contact                                                                         |                       |         |                  |     |                  |                                 |                 |
|  | 3-wire                | –       | PNP              | ■   | 2.5              | 150 390                         | SIEN-M8B-PO-K-L |
|                                                                                     | –                     | 3-pin   | PNP              | ■   | –                | 150 391                         | SIEN-M8B-PO-S-L |

| Ordering data – Connecting cables                                                   |                              |  |                              |  | Technical data → Internet: nebu |                             |
|-------------------------------------------------------------------------------------|------------------------------|--|------------------------------|--|---------------------------------|-----------------------------|
|                                                                                     | Electrical connection, left  |  | Electrical connection, right |  | Part No.                        | Type                        |
|                                                                                     |                              |  |                              |  |                                 |                             |
|  | Straight socket, M8x1, 3-pin |  | Cable, open end, 3-wire      |  | 2.5                             | 541 333 NEBU-M8G3-K-2.5-LE3 |
|                                                                                     |                              |  |                              |  | 5                               | 541 334 NEBU-M8G3-K-5-LE3   |
|  | Angled socket, M8x1, 3-pin   |  | Cable, open end, 3-wire      |  | 2.5                             | 541 338 NEBU-M8W3-K-2.5-LE3 |
|                                                                                     |                              |  |                              |  | 5                               | 541 341 NEBU-M8W3-K-5-LE3   |