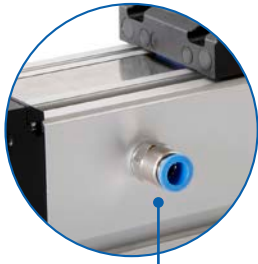
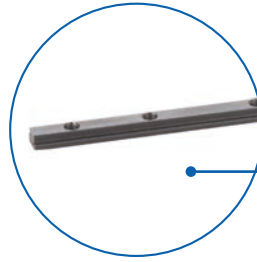


# RK DuoLine Z/R – Key features/technical benefits



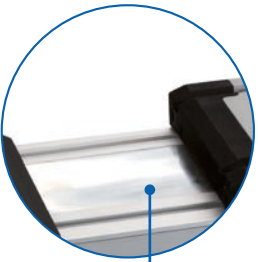
## Connection

- ✓ For sealing air or vacuum available on request



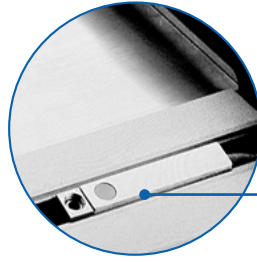
## Slot stone strip

- ✓ To hold your load securely



## Cover strip

- ✓ Degree of protection mode IP40



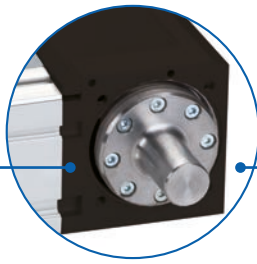
## Proximity switch

- ✓ Simple installation without protruding contours
- ✓ Up to 3 sensors per slot
- ✓ Can be installed and changed subsequently



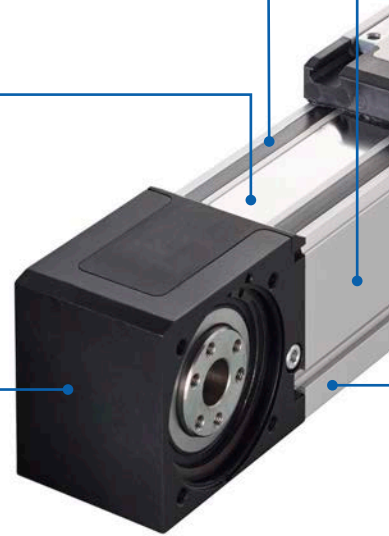
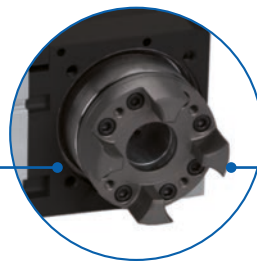
## Motor position

- ✓ Can be modified at a later stage
- ✓ Freely selectable motor position
- ✓ Motor can be rotated in 90° carriage



## Variable motor connection

- ✓ For metal bellows coupling
- ✓ For servo coupling with zero backlash



## Key features general

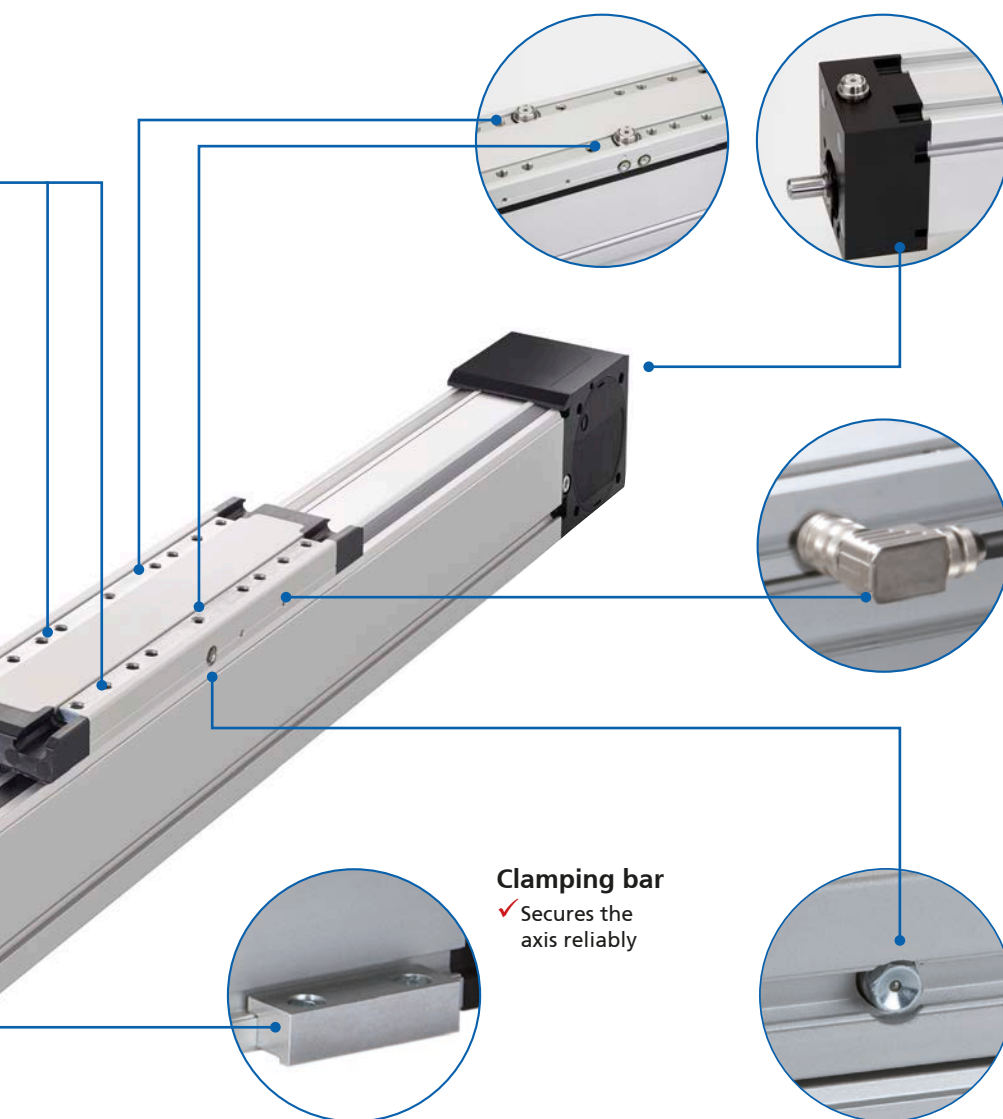
- High efficiency
- Low idle torque
- Max. usable travel speed regardless of length
- Central lubricating access on the carriage facilitates maintenance
- Profile slots for fastening the axis both at the sides and underneath
- Slot stones can be subsequently inserted in the side and bottom slots

## RK DuoLine Z (toothed-belt drive)

- Degree of protection IP20
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeat accuracy  $\pm 0.05$  mm

## RK DuoLine Z Protect (toothed-belt drive)

- Degree of protection IP40 provided by steel cover strip and seals
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeat accuracy  $\pm 0.05$  mm



## Centring holes

- ✓ Reproducible payload position/linear unit

## Integr. position sensing system

- ✓ High positioning accuracy across the entire unit length
- ✓ Direct detection of carriage position
- ✓ Elasticities of the drive train identifiable and can be offset by the motor controller

## Clamping bar

- ✓ Secures the axis reliably

## Tapered lubricating nipple

- ✓ Central lubricating access on the carriage facilitates maintenance
- ✓ RK DuoLine S with trapezoidal thread is lifetime lubricated\*
- ✓ Alternative connection to permanent lubrication available on request

## RK DuoLine R Protect (guide axis)

- Without dedicated drive
- Freely movable carriage

## Variants

RK DuoLine Clean suitable for use in cleanrooms up to ISO class 1



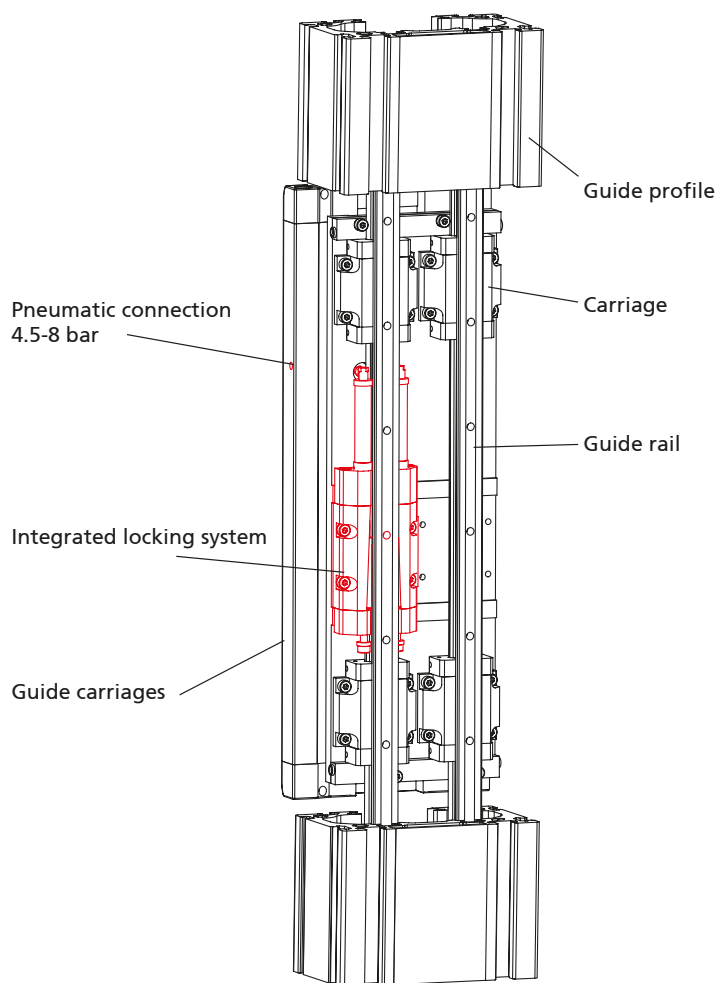
### Note:

More information in chapter RK DuoLine Clean (p. 428)

\* up to approximately 30 km running performance

# RK DuoLine Safelock

Timing-belt- and Spindle units with secure locking function



- ✓ As a safeguard for installation, removal and maintenance work
- ✓ Guaranteed nominal holding force on greased ball rails thanks to self-amplifying system
- ✓ „Safelock“ safety locking device is an approved component in accordance with category 1 of DIN EN ISO 13849-1, which should be considered
- ✓  $B_{10} = 1.000.000$  operations (static)
- ✓ Performance level PL D achievable. PL E as redundant version available on request
- ✓ Integrated locking system. No protruding contours outside the linear axis.
- ✓ Overload-proof locking element

|                                                                        | Recirculating ball                                          | Toothed belt                      |                  |
|------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------|------------------|
|                                                                        | RK DuoLine S 160                                            | RK DuoLine Z 120<br>one ball rail | RK DuoLine Z 160 |
| Nominal holding force Safelock<br>(at $B_{10} = 1.000.000$ operations) | 1800 N                                                      | 2500 N                            | 1800 N           |
| DGUV test certification                                                | Tested based on testing principles<br>GS-MF-01 and GS-MF-28 |                                   |                  |

## Note:

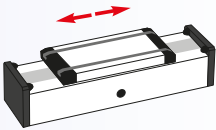
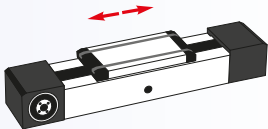
Maximum holding force = 2x nominal holding force.

Emergency braking of a moving load is not proper use.

If the nominal holding force is exceeded, or after every emergency braking, a functional check has to be performed in normal mode as per the operating instructions.

[http://www.rk-rose-krieger.com/fileadmin/catalogue/manuals\\_lineartechnik/99347\\_safelock.pdf](http://www.rk-rose-krieger.com/fileadmin/catalogue/manuals_lineartechnik/99347_safelock.pdf)

## RK DuoLine Z 80/120/160 – Table of contents

|                                                                                                                                                                                                                                       |                               |                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Properties/Technical data</b>                                                                                                                                                                                                      |                               | <ul style="list-style-type: none"> <li>■ General information/operating conditions... 406</li> <li>■ Load data..... 406</li> <li>■ Calculation of the load characteristic ..... 407</li> </ul>        |
| <b>Versions</b><br>(Dimensions, order numbers) <div>  <br/>  </div> |                               | <ul style="list-style-type: none"> <li>■ RK DuoLine R guide unit ..... 408</li> <li>■ RK DuoLine Z timing-belt uni..... 410</li> <li>■ RK DuoLine Z Safelock..... 412</li> </ul>                     |
| <b>Accessories</b>                                                                                                                                                                                                                    | <b>Fixing</b>                 | <ul style="list-style-type: none"> <li>■ Fixing the rated load ..... 414</li> <li>■ Fixing the linear unit ..... 415</li> <li>■ Slot stones ..... 415</li> <li>■ Centering Sets ..... 416</li> </ul> |
|                                                                                                                                                                                                                                       | <b>Drive</b>                  | <ul style="list-style-type: none"> <li>■ Drive shaft ..... 418</li> <li>■ Screw-on hub ..... 419</li> <li>■ Synchronisation shaft ..... 420</li> <li>■ Motor adaptor kit ..... 422</li> </ul>        |
|                                                                                                                                                                                                                                       | <b>Position determination</b> | <ul style="list-style-type: none"> <li>■ Limit switch ..... 426</li> </ul>                                                                                                                           |

# RK DuoLine Z 60/80/120/160 – Technical data

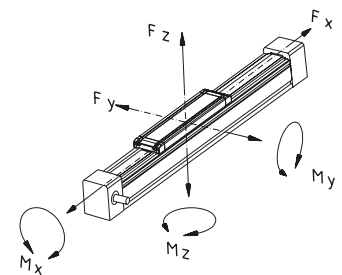
## General information / operating conditions

|                            | RK DuoLine Z 60                                                              | RK DuoLine Z 80                                 | RK DuoLine Z 120                                | RK DuoLine Z 120 II                             | RK DuoLine Z 160                                |
|----------------------------|------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Guidance system            | 1 Ball rail system                                                           | 1 Ball rail system                              | 1 Ball rail system                              | 2 Ball rail system                              | 2 Ball rail system                              |
| Installation position      | any position                                                                 |                                                 |                                                 |                                                 |                                                 |
| Max. driving torque        | 28 Nm                                                                        | 67 Nm                                           | 141 Nm                                          | 141 Nm                                          | 220 Nm                                          |
| Max. speed                 | 5 m/s                                                                        | 5 m/s                                           | 5 m/s (10m/s)                                   | 5 m/s                                           | 5 m/s                                           |
| Max. acceleration          | 50 m/s <sup>2</sup>                                                          | 50 m/s <sup>2</sup>                             | 50 m/s <sup>2</sup>                             | 50 m/s <sup>2</sup>                             | 50 m/s <sup>2</sup>                             |
| Repeat accuracy            | ± 0,05 mm                                                                    | ± 0,05 mm                                       | ± 0,05 mm                                       | ± 0,05 mm                                       | ± 0,05 mm                                       |
| Positioning accuracy       | with integrated linear encoder ± (0.025 + 0.01 x L) mm; L = travel in meters |                                                 |                                                 |                                                 |                                                 |
| Max. no-load torque        | 2 Nm                                                                         | 2,2 Nm                                          | 2,3 Nm                                          | 2,3 Nm                                          | 2,5 Nm                                          |
| Drive                      | GT Belts from neoprene, Pitch 5 mm, Width 20 mm                              | GT Belts from neoprene, Pitch 8 mm, Width 30 mm | GT Belts from neoprene, Pitch 8 mm, Width 50 mm | GT Belts from neoprene, Pitch 8 mm, Width 50 mm | GT Belts from neoprene, Pitch 8 mm, Width 75 mm |
| Active Ø pulley wheel      | 52,52 mm                                                                     | 66,21 mm                                        | 76,39 mm                                        | 76,39 mm                                        | 76,39 mm                                        |
| Pulley wheel circumference | 165 mm                                                                       | 208 mm                                          | 239,99 mm                                       | 239,99 mm                                       | 239,99 mm                                       |
| Ambient temperature        | 0 to +60°C                                                                   | 0 to +60°C                                      | 0 to +60°C                                      | 0 to +60°C                                      | 0 to +60°C                                      |
| Degree of protection       | Basic IP 20 / Protect IP 40                                                  | Basic IP 20 / Protect IP 40                     | Basic IP 20 / Protect IP 40                     | Basic IP 20 / Protect IP 40                     | Basic IP 20 / Protect IP 40                     |

## Dynamic load data

Force [N]

Torque [Nm]



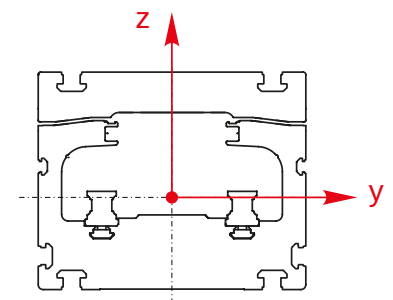
| Toothed-belt drive                            |      |      |      |     |      |      |
|-----------------------------------------------|------|------|------|-----|------|------|
| Load data                                     | Fx*  | Fy   | Fz   | Mx  | My   | Mz   |
| Standard guide carriage                       |      |      |      |     |      |      |
| RK DuoLine Z 60                               | 900  | 700  | 2500 | 48  | 160  | 140  |
| RK DuoLine Z 80                               | 2000 | 1000 | 4100 | 100 | 340  | 300  |
| RK DuoLine Z 120<br>RK DuoLine Z 120 Safelock | 3600 | 1400 | 6400 | 125 | 550  | 530  |
| RK DuoLine Z 120 II                           | 3600 | 2000 | 6900 | 205 | 620  | 560  |
| RK DuoLine Z 160<br>RK DuoLine Z 160 Safelock | 6000 | 5100 | 8900 | 500 | 840  | 810  |
| Extended guide carriage                       |      |      |      |     |      |      |
| RK DuoLine Z 60                               | 900  | 700  | 2500 | 48  | 250  | 220  |
| RK DuoLine Z 80                               | 2000 | 1000 | 4100 | 100 | 590  | 520  |
| RK DuoLine Z 120                              | 3600 | 1400 | 6400 | 125 | 890  | 680  |
| RK DuoLine Z 120 II                           | 3600 | 2000 | 6900 | 205 | 940  | 790  |
| RK DuoLine Z 160                              | 6000 | 5100 | 8900 | 500 | 1200 | 1150 |

\* Initial tension of the timing belt 0,8 x Fx

## Geometric moment of inertia

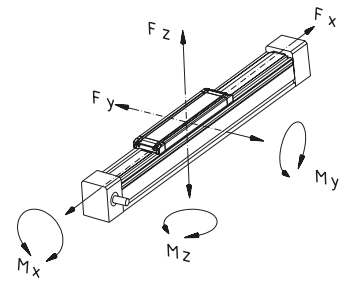
[cm<sup>4</sup>]

|                     | Iy                     | Iz                      |
|---------------------|------------------------|-------------------------|
| RK DuoLine Z 60     | 52,54 cm <sup>4</sup>  | 67,41 cm <sup>4</sup>   |
| RK DuoLine Z 80     | 127,90 cm <sup>4</sup> | 172,80 cm <sup>4</sup>  |
| RK DuoLine Z 120    | 289,5 cm <sup>4</sup>  | 627,8 cm <sup>4</sup>   |
| RK DuoLine Z 120 II | 287,3 cm <sup>4</sup>  | 597,9 cm <sup>4</sup>   |
| RK DuoLine 160      | 437,70 cm <sup>4</sup> | 1455,90 cm <sup>4</sup> |



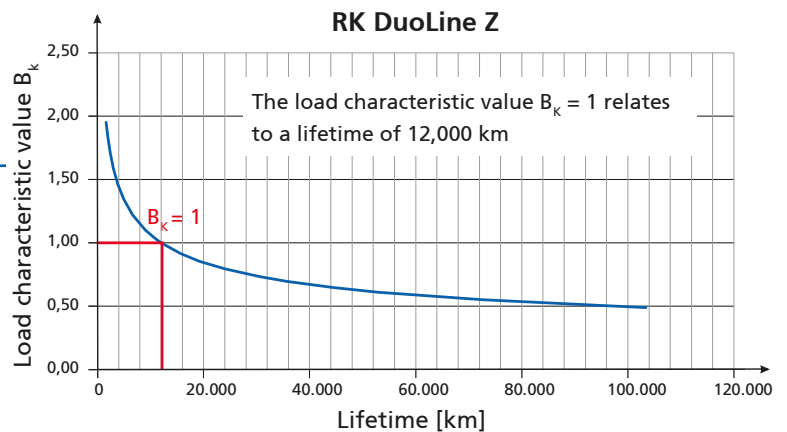
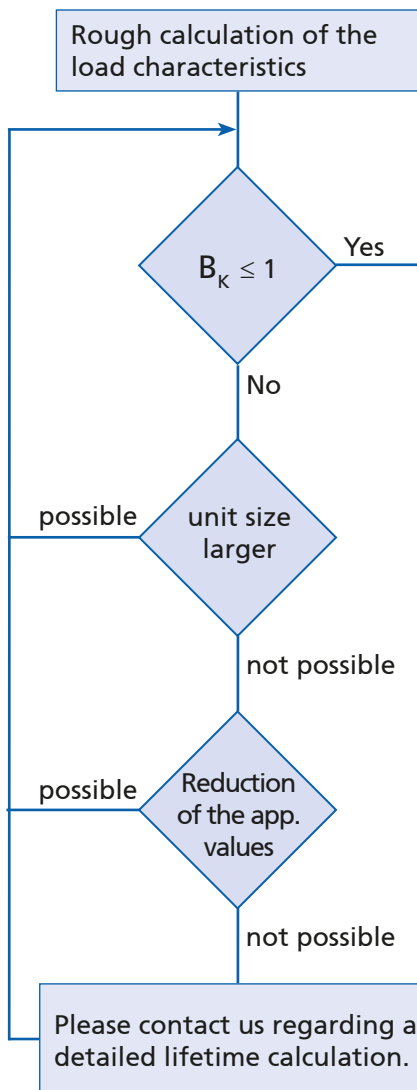
## Calculation of the load characteristic to define the lifetime

- The lifetime of linear units are in accordance with the average loads and moments of an application. The load characteristic can approximately calculated by following equation with simultaneously appearing load and moments.



$$\text{Load characteristic} = \frac{\text{Application values (z.B. } F_y)}{\text{Catalog values (z.B. } F_{y_{\max}})}$$

$$\text{Load characteristic } B_k = \frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$



At a load characteristic value of  $B_k < 1$  higher theoretical lifetime can be achieved.

The illustration is intended as an approximate reflection of the expected lifetime depending on the load characteristic value  $B_k$ . Increased speeds, short-stroke, vibrations, impacts, insufficient lubrication or other specific conditions are not taken into account.

Please contact us regarding a detailed lifetime calculation.

### Example:

- ✓ The load and moments of the application are:  
 $F_z = 200\text{N}$ ,  $M_x = 20\text{ Nm}$  und  $M_z = 45\text{ Nm}$   
 According to the above equation you will have following load characteristic of a RK MonoLine 80:  $B_k = 0.55$ .

# RK DuoLine R 60/80/120 – Versions

## Order instructions:

- Longer travel lengths on request
- Integrated linear encoder as Option

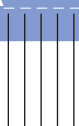
## Version

## ■ Guide

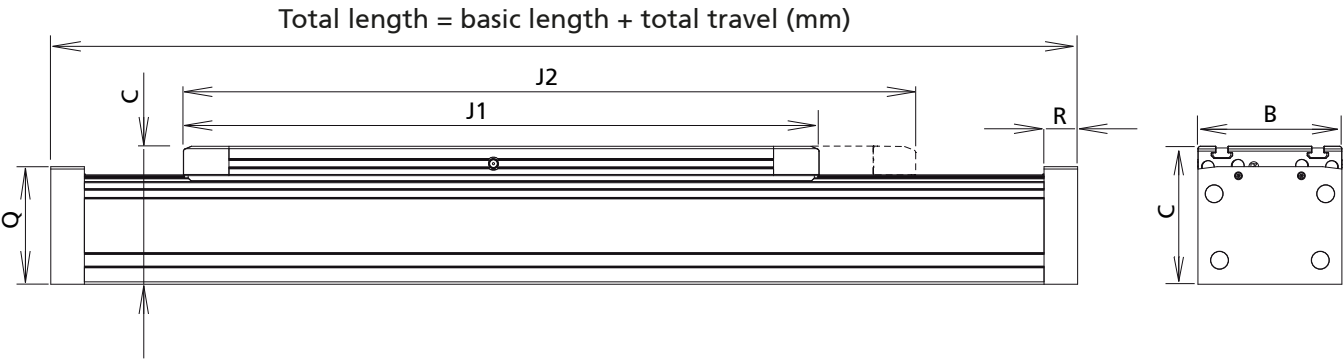
Ideal as additional / secondary support for the DuoLine with toothed belt or spindle.



| Code No.              | Type                                                                      | Basic length | B   | C   |
|-----------------------|---------------------------------------------------------------------------|--------------|-----|-----|
| TD14A5T1A11A0 _ _ _ _ | RK DuoLine R 60 Protect                                                   | 295          | 60  | 80  |
| TD14A5T1B11A0 _ _ _ _ | RK DuoLine R 60 Protect with extended guide carriage                      | 385          |     |     |
| TD14A2T1A11A0 _ _ _ _ | RK DuoLine R 80 Protect                                                   | 352          | 80  | 100 |
| TD14A2T1B11A0 _ _ _ _ | RK DuoLine R 80 Protect with extended guide carriage                      | 484          |     |     |
| TD14A3T1A11A _ _ _ _  | RK DuoLine R 120 Protect one ball rail guide                              | 472          | 120 | 115 |
| TD14A3T1B11A _ _ _ _  | RK DuoLine R 120 Protect one ball rail guide with extended guide carriage | 616          |     |     |



Total length = basic length + total travel (mm)



[mm]

| J1  | J2  | Q  | R  | max. travel | Mass [kg]    |                   |
|-----|-----|----|----|-------------|--------------|-------------------|
|     |     |    |    |             | Basic length | per 100 mm travel |
| 245 | –   | 70 | 22 | 3587        | 3,73         | 0,54              |
| –   | 335 |    |    | 3497        | 4,46         | 0,54              |
| 278 | –   | 97 | 22 | 7692        | 5,22         | 0,83              |
| –   | 410 |    |    | 7560        | 6,89         | 0,83              |
| 386 | –   | 98 | 28 | 7584        | 9,76         | 1,19              |
| –   | 530 |    |    | 7440        | 12,16        | 1,19              |

## RK DuoLine Z 60/80/120/160 – Versions

### Order instructions:

- Longer travel lengths on request
- Also available without screw drive as a torque support

## Timing-belt unit RK DuoLine Z Place-Tec



| Code No.             | Type                                                                  | Basic length | B   | C   | D1                           | D2               |
|----------------------|-----------------------------------------------------------------------|--------------|-----|-----|------------------------------|------------------|
| TD1_A5F1A11A0_ _ _ _ | RK DuoLine Z 60                                                       | 405          | 60  | 80  | 62 <sup>H7</sup><br>5 deep   | 15 <sup>H6</sup> |
| TD1_A5F1B11A0_ _ _ _ | RK DuoLine Z 60 one ball rail guide<br>with extended guide carriage   | 495          |     |     |                              |                  |
| TD1_A2F1A_1A_ _ _ _  | RK DuoLine Z 80                                                       | 468          | 80  | 100 | 75 <sup>H7</sup><br>7 deep   | 16 <sup>H6</sup> |
| TD1_A2F1B_1A_ _ _ _  | RK DuoLine Z 80<br>with extended guide carriage                       | 600          |     |     |                              |                  |
| TD1_A3F1A_1A_ _ _ _  | RK DuoLine Z 120 one ball rail guide                                  | 606          | 120 | 115 | 90 <sup>H7</sup><br>3,5 deep | 20 <sup>H6</sup> |
| TD1_A3F1B_1A_ _ _ _  | RK DuoLine Z 120 one ball rail guide<br>with extended guide carriage  | 750          |     |     |                              |                  |
| TD1_A4F1A_1A_ _ _ _  | RK DuoLine Z 120 two ball rail guides                                 | 606          |     |     |                              |                  |
| TD1_A4F1B_1A_ _ _ _  | RK DuoLine Z 120 two ball rail guides<br>with extended guide carriage | 750          |     |     |                              |                  |
| TD1_A1F1A_1A_ _ _ _  | RK DuoLine Z 160                                                      | 630          | 160 | 130 | 90 <sup>H7</sup><br>3,5 deep | 25 <sup>H6</sup> |
| TD1_A1F1B_1A_ _ _ _  | RK DuoLine Z 160<br>with extended guide carriage                      | 780          |     |     |                              |                  |

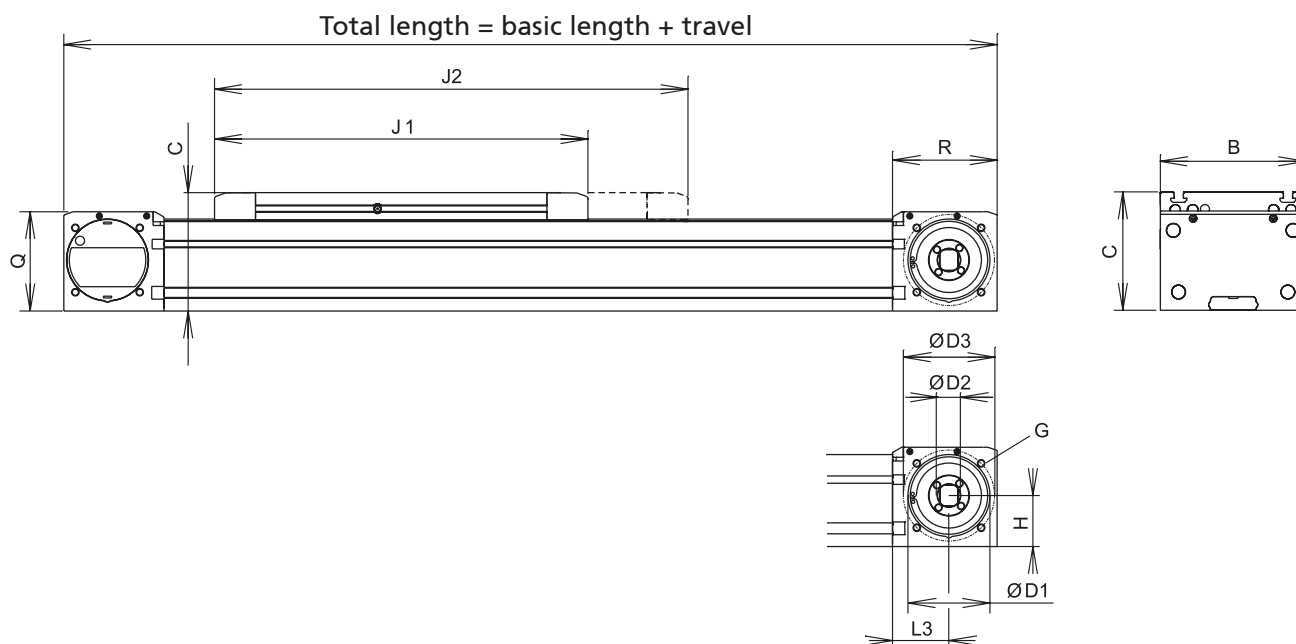
Total length = basic length + total travel (mm)

**Integrated linear encoder:**

- 1 = without  
2 = with plug-in coupling and 20 m of cable  
3 = with 20 m of cable

**Version:**

- 1 = Basic  
2 = Protect



[mm]

| D3       | G             | H    | J1  | J2  | L3 | Q   | R   | max.<br>travel | Mass [kg]    |                   |
|----------|---------------|------|-----|-----|----|-----|-----|----------------|--------------|-------------------|
|          |               |      |     |     |    |     |     |                | Basic length | pro 100 mm travel |
| 72,1±0.2 | M6-12<br>deep | 33.8 | 245 | –   | 44 | 70  | 80  | 5753           | 4.65         | 0.54              |
|          |               |      | –   | 335 |    |     |     | 5665           | 5.38         | 0.54              |
| 90.5±0.2 | M8-12<br>deep | 40.1 | 278 | –   | 52 | 85  | 95  | 7722           | 7.84         | 0.83              |
|          |               |      | –   | 410 |    |     |     | 7590           | 9.51         | 0.83              |
| 100±0.2  | M8-16<br>deep | 46.8 | 386 | –   | 62 | 98  | 110 | 7614           | 16.33        | 1.19              |
|          |               |      | –   | 530 |    |     |     | 7470           | 18.72        | 1.19              |
|          |               |      | 386 | –   |    |     |     | 5614           | 16.33        | 1.19              |
|          |               |      | –   | 530 |    |     |     | 5470           | 18.72        | 1.19              |
| 100±0.2  | M8-28<br>deep | 56   | 410 | –   | 62 | 109 | 110 | 9010           | 25.76        | 1.80              |
|          |               |      | –   | 560 |    |     |     | 8860           | 28.16        | 1.80              |

# RK DuoLine Z Safelock

### Order instructions:

- Longer travel lengths on request



| Code No.             | Type                      | Basic length | B   | C   | ØD1              | ØD2              | ØD3     |
|----------------------|---------------------------|--------------|-----|-----|------------------|------------------|---------|
| TD1_A3A1C_1_ _ _ _ _ | RK DuoLine Z Safelock 120 | 836          | 120 | 115 | 90               | 20 <sup>H6</sup> | 100±0.2 |
| TD1_A1A1C_1_ _ _ _ _ | RK DuoLine Z Safelock 160 | 820          | 160 | 130 | 90 <sup>H7</sup> | 25 <sup>H6</sup> | 100±0.2 |

- Total length (basic length + travel) in mm

**Version:**

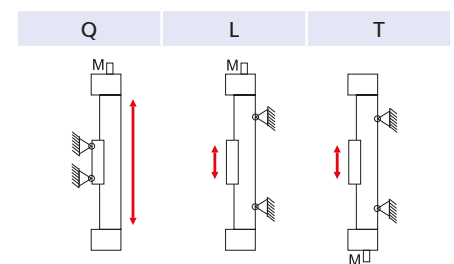
Q = Motor at top / Profile moves  
L = Motor at top / Carriage moves  
T = Motor at bottom / Carriage moves

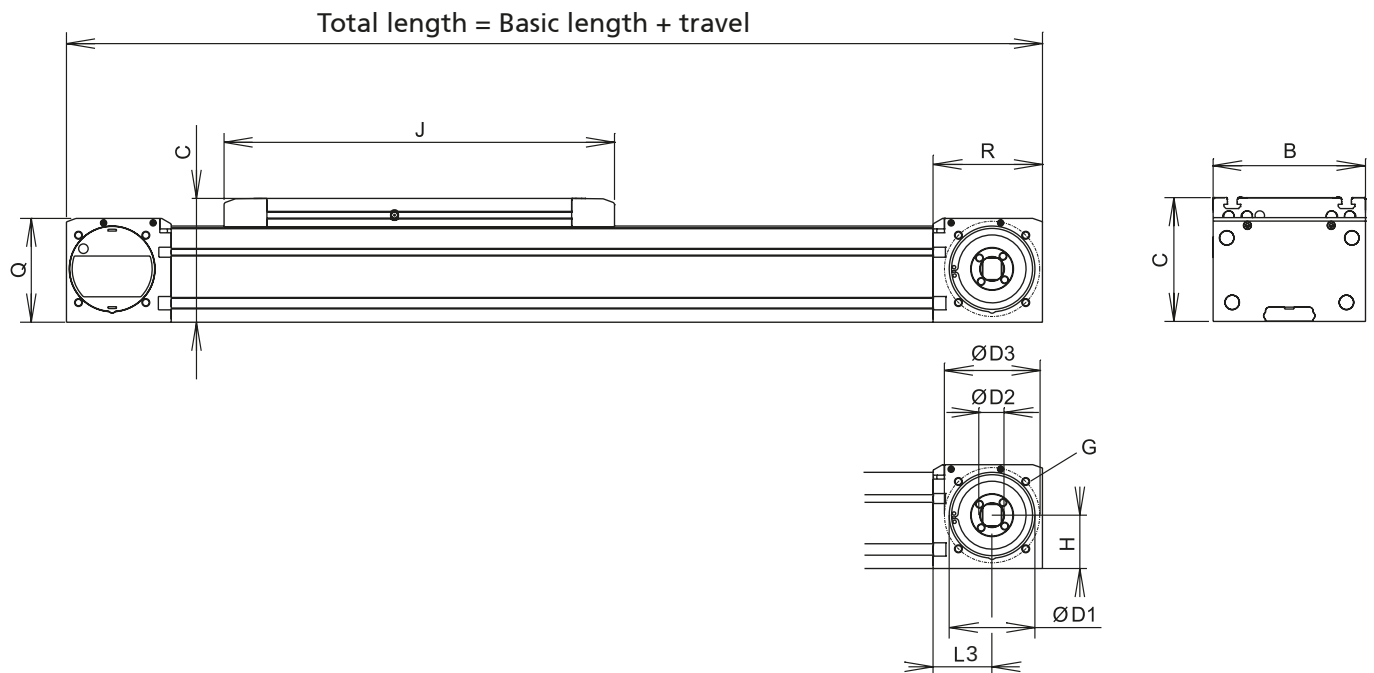
- Integrated position sensing system:

1 = without  
2 = with plug-in coupling and 20 m of cable  
3 = with 20 m of cable

**Degree of protection:**

- 1 = Basic
- 2 = Protect (IP 40 via cover strip)





[mm]

| G          | H    | J   | L  | Q   | R   | Max.<br>travel | Mass [kg]    |                   |
|------------|------|-----|----|-----|-----|----------------|--------------|-------------------|
|            |      |     |    |     |     |                | Basic length | per 100 mm travel |
| M8-16 deep | 46.8 | 616 | 62 | 98  | 110 | 7384           | 21.27        | 1.19              |
| M8-28 deep | 56   | 600 | 62 | 109 | 110 | 9380           | 30.20        | 1.80              |

# RK DuoLine Z 60/80/120/160 – Fixing

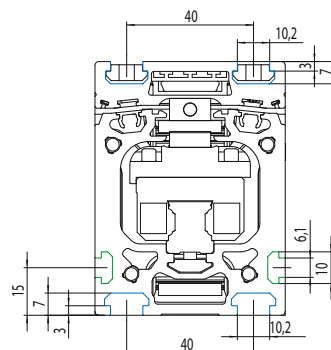
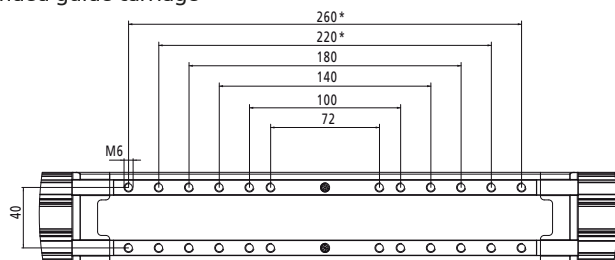
## Fixation of payload RK DuoLine S/Z 80

■ Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways

■ Profile slots in the guide carriage and guide profiles facilitate fixation

## RK DuoLine R/Z 60

\*only with version with extended guide carriage

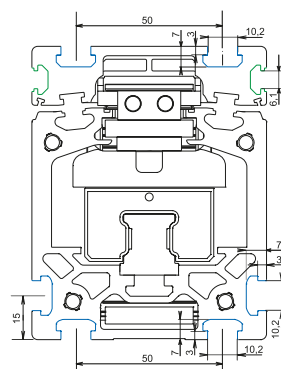
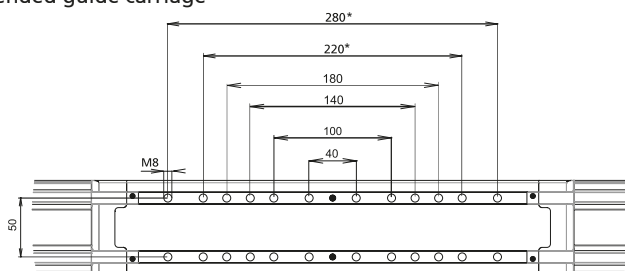


— 20 slot geometry

— 30 slot geometry

## RK DuoLine R/Z 80

\*only with version with extended guide carriage

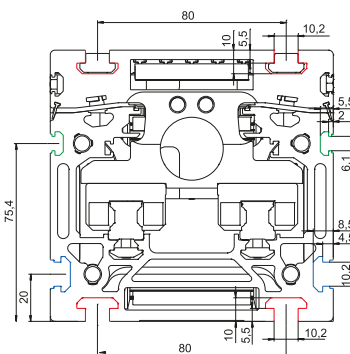
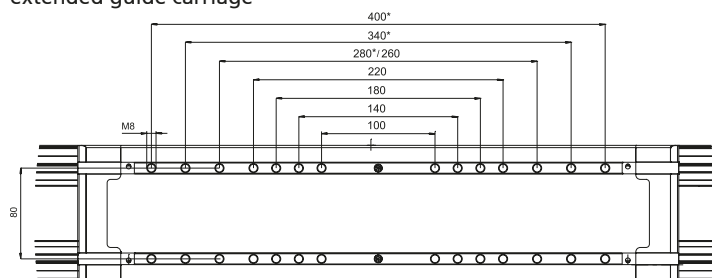


— 20 slot geometry

— 30 slot geometry

## RK DuoLine R/Z 120

\*only with version with extended guide carriage



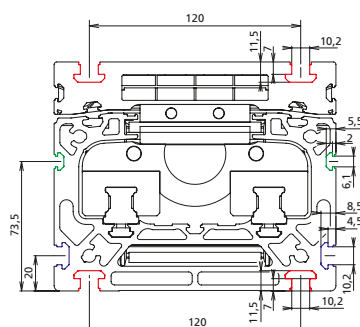
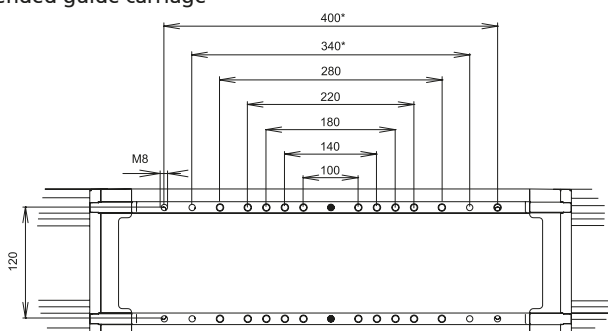
— 20 slot geometry

— 30 slot geometry

— 40 slot geometry

## RK DuoLine Z 160

\*only with version with extended guide carriage



— 20 slot geometry

— 30 slot geometry

— 40 slot geometry

## Clamping strips

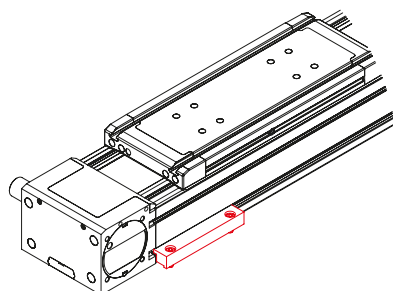
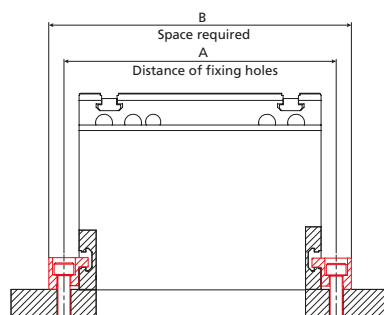


Fig.1: Ground assembly

- Clamping strips facilitate fixation of the linear unit to the chassis or two units to a crossing table

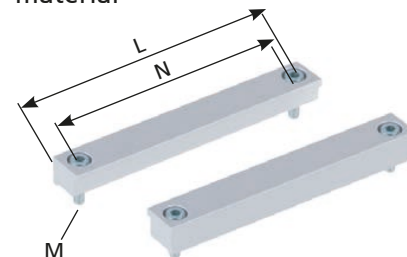


### Material:

Natural anodised aluminium, zinc plated fixation material.

### Scope of delivery:

2 clamping strips with fixation material



[mm]

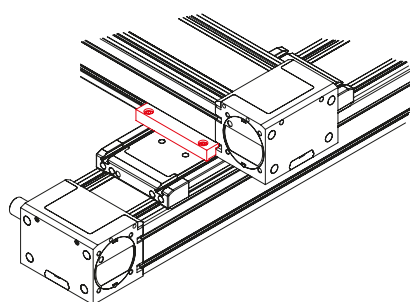


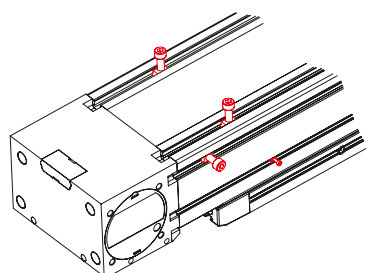
Fig.2: Crossing units

| Code No. | Type                           | Abb. | A   | B   | L   | M  | N   |
|----------|--------------------------------|------|-----|-----|-----|----|-----|
| 91818    | RK DuoLine 60 ground assembly  | 1    | 72  | 91  | 57  | M6 | 40  |
|          | RK DuoLine 60 crossing to 60   | 2    |     |     |     |    |     |
| 91886    | RK DuoLine 80 ground assembly  | 1    | 100 | 122 | 76  | M8 | 50  |
|          | RK DuoLine 80 crossing to 80   | 2    |     |     |     |    |     |
| 91812    | RK DuoLine 120 ground assembly | 1    | 140 | 160 | 116 | M8 | 80  |
|          | RK DuoLine 120 crossing to 120 | 2    |     |     |     |    |     |
|          | RK DuoLine 160 crossing to 120 | 2    |     |     |     |    |     |
| 91802    | RK DuoLine 160 ground assembly | 1    | 180 | 200 | 156 | M8 | 120 |
|          | RK DuoLine 160 crossing to 160 | 2    |     |     |     |    |     |
|          | RK DuoLine 120 crossing to 160 | 2    |     |     |     |    |     |

## Order instruction square nut:

- Purchase only in lot sizes and a multiple of that, see product table below

## Slot stones

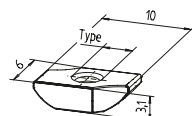


View of DuoLine from below

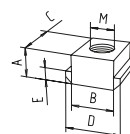
- Slot stones can be inserted and positioned at the guide profile and guide carriage

Material: zinc plated steel

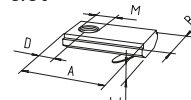
Slot stone -B- can be swivelled into the slot



Slot stone -N- can be slid into the slot



Slot stone -K- can be swivelled into the slot



[mm]

| Code No.       | Type | lot sizes         | Slot geometry | A  | B  | C  | D  | E | M  | F [N] |
|----------------|------|-------------------|---------------|----|----|----|----|---|----|-------|
| Slot stone -B- |      |                   |               |    |    |    |    |   |    |       |
| E00017CEE      | M3   | 10, 20, 30... pcs | 20            |    |    |    |    |   |    |       |
| E00058CEE      | M4   | 10, 20, 30... pcs | 20            |    |    |    |    |   |    |       |
| Slot stone -N- |      |                   |               |    |    |    |    |   |    |       |
| 4006202        | M8   | 10, 20, 30... pcs | 30            | 5  | 10 | 13 | 13 | 3 | M8 | 4000  |
| 4026206        | M8   | 10, 20, 30... pcs | 40            | 8  | 10 | 13 | 15 | 4 | M8 | 9000  |
| Slot stone -K- |      |                   |               |    |    |    |    |   |    |       |
| 4006211        | M5   | 10, 20, 30... pcs | 30            | 21 | 12 | 4  | 7  | - | M5 | 5000  |
| 4006212        | M6   | 10, 20, 30... pcs | 30            | 21 | 12 | 4  | 7  | - | M6 | 5000  |
| 4016212        | M6   | 10, 20, 30... pcs | 40            | 21 | 14 | 4  | 7  | - | M6 | 5000  |

# RK DuoLine Z 60/80/120/160 – Fixing

## Centering Sets for RK DuoLine

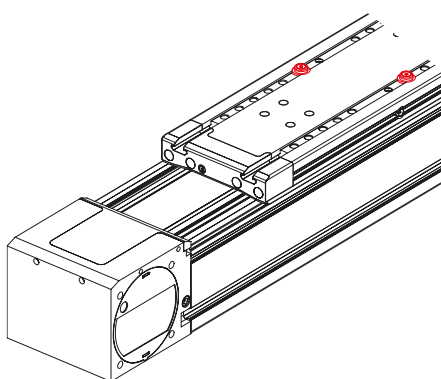


Abb.1: Slide centering

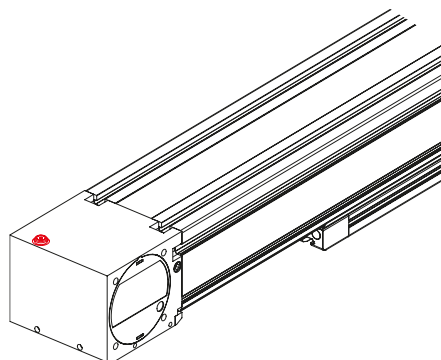
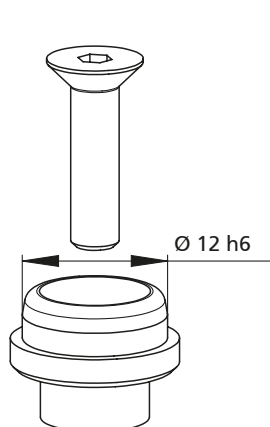


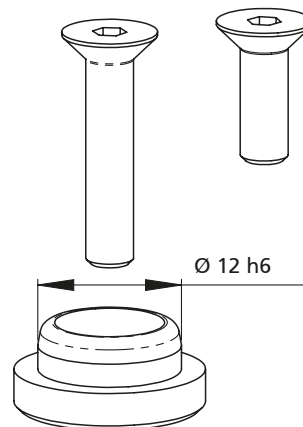
Abb.2: Base centering

- The following positions could be defined exactly during the design process per set
  - Load capacity
  - Linear unit
- Reproducible position of the load capacity
- Reduced assembly/disassembly time of the load capacity or the linear unit
- Accuracy of the centering bolts h6
- To use for all RK DuoLine linear units in Basic and Protect design from October 2015 production date

**Scope of delivery per set:**  
2 centering bolts and fixing material

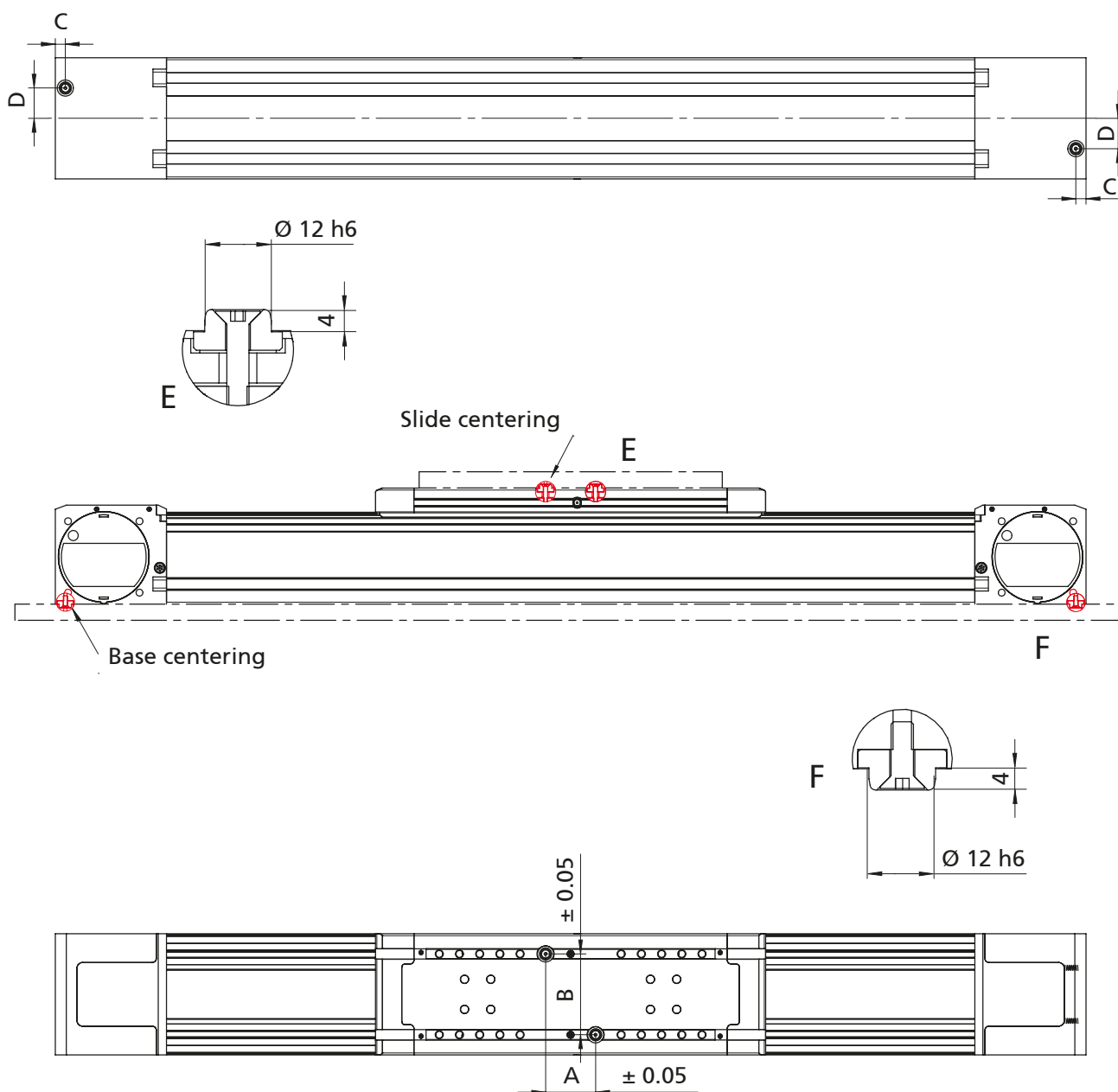


Size -A-



Size -B-

| Code No. | Type                      | Use for                                                                                                                                                                   |
|----------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 91898    | Centering Set<br>Size -A- | Slide centering<br>RK DuoLine Z 60 + Z 80                                                                                                                                 |
| 91899    | Centering Set<br>Size -B- | Slide centering<br>RK DuoLine Z 120 + Z 160<br>RK DuoLine Z 120/160 Safelock<br>Base centering<br>RK DuoLine Z 60 + Z 80 + Z 120 + Z 160<br>RK DuoLine Z 120/160 Safelock |



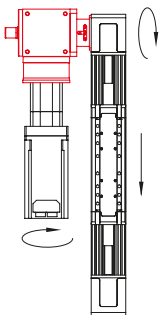
| Type                                             | A    | B   | C  | D  |
|--------------------------------------------------|------|-----|----|----|
| RK DuoLine Z 60                                  | 42   | 40  | 10 | 0  |
| RK DuoLine Z 60<br>with extended guide carriage  | 48   | 40  | 10 | 0  |
| RK DuoLine Z 80                                  | 65   | 50  | 10 | 15 |
| RK DuoLine Z 80<br>with extended guide carriage  | 70   | 50  | 10 | 15 |
| RK DuoLine Z 120                                 | 49.5 | 80  | 10 | 30 |
| RK DuoLine Z 120<br>with extended guide carriage | 250  | 80  | 10 | 30 |
| RK DuoLine Z 160                                 | 70   | 120 | 10 | 40 |
| RK DuoLine Z 160<br>with extended guide carriage | 366  | 120 | 10 | 40 |

# RK DuoLine Z 60/80/120/160 – Drive

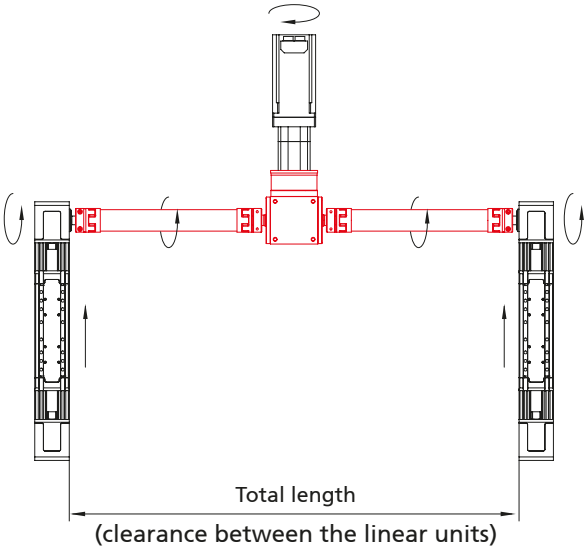
## Bevel gear for RK DuoLine Z

- The following combination options are available on request

System 1



System 4



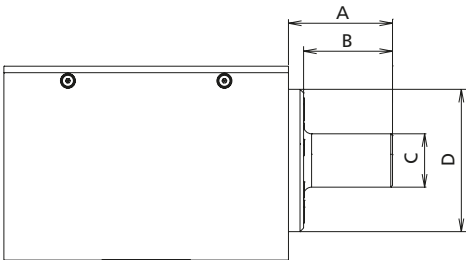
## Drive shaft

- The RK DuoLine Z is fitted as standard with a hollow shaft
- This can be retrofitted with a drive shaft as an optional extra

**Scope of delivery:**  
Drive shaft with fixation material



For metal bellows coupling



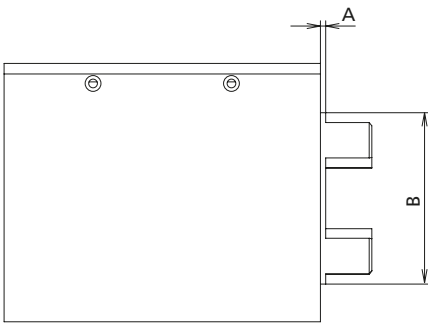
| [mm]     |                  |                                        |      |      |    |    |
|----------|------------------|----------------------------------------|------|------|----|----|
| Code No. | Type             | Version                                | A    | B    | C  | D  |
| 91328    | RK DuoLine Z 60  | Drive shaft for metal bellows coupling | 28,6 | 25   | 16 | 44 |
| 91312    | RK DuoLine Z 80  |                                        | 35   | 31,5 | 20 | 52 |
| 91320    | RK DuoLine Z 120 |                                        | 45,5 | 39   | 25 | 74 |
| 9720000  | RK DuoLine Z 160 |                                        | 58,5 | 50   | 30 | 80 |



Screw-on hub

- The RK DuoLine Z is fitted as standard with a hollow shaft
- This can be retrofitted with a Screw-on hub as an optional extra

**Scope of delivery:**  
Screw-on hub with fixation material



For servo coupling with zero backlash

| [mm]     |                  |                                                                       |       |     |    |
|----------|------------------|-----------------------------------------------------------------------|-------|-----|----|
| Code No. | Type             | Version                                                               | Size  | A   | B  |
| 91318    | RK DuoLine Z 60  | Screw-on hub for KTR type Rotex GS servo couplings with zero backlash | GS 19 | 5,5 | 40 |
| 91338    | RK DuoLine Z 80  |                                                                       | GS 24 | 6,5 | 55 |
| 91321    | RK DuoLine Z 120 |                                                                       | GS 28 | 2   | 65 |
| 91327    | RK DuoLine Z 160 |                                                                       | GS 38 | 4,5 | 80 |

# RK DuoLine Z 60/80/120/160 – Drive

## Synchronisation shaft

- For torque transmission with parallel linear units
- Synchronisation of the guide carriages by zero point alignment

## Scope of delivery:

Synchronisation shaft with fixation material

## Max. transfer torque:

|                  |        |
|------------------|--------|
| RK DuoLine Z 60  | 28 Nm  |
| RK DuoLine Z 80  | 67 Nm  |
| RK DuoLine Z 120 | 141 Nm |
| RK DuoLine Z 160 | 220 Nm |

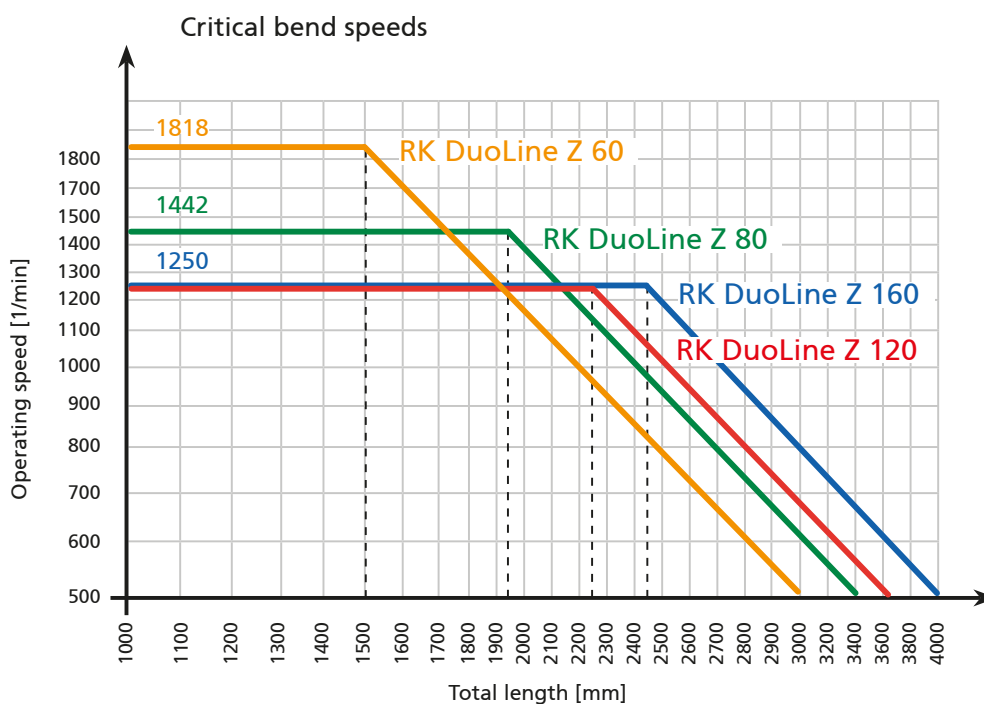
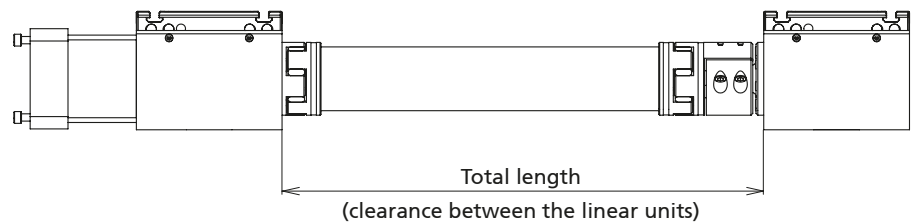


Fig. shows synchronisation shaft

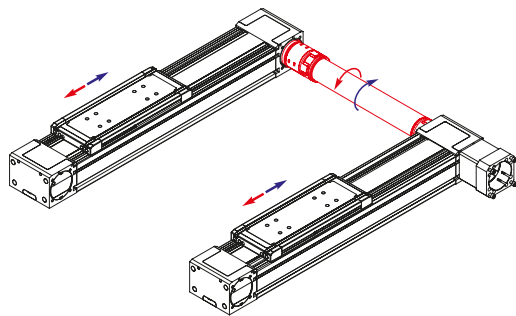
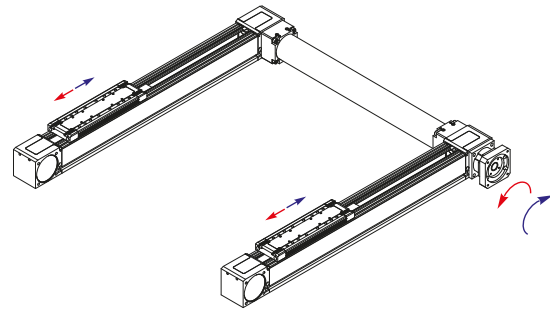


Fig. shows synchronisation shaft with protection



[mm]

| Code No.     | Type                                   | Basic length<br>(minimum<br>length) | Max. length<br>(clearance) | Weight [kg]     |                      |
|--------------|----------------------------------------|-------------------------------------|----------------------------|-----------------|----------------------|
|              |                                        |                                     |                            | Basic<br>length | per 100 mm<br>travel |
| 92548_ _ _ _ | Synchronisation shaft RK DuoLine Z 60  | 127                                 | 2985                       | 0,53            | 0,09                 |
| 92538_ _ _ _ | Synchronisation shaft RK DuoLine Z 80  | 157                                 | 3400                       | 1,07            | 0,12                 |
| 92519_ _ _ _ | Synchronisation shaft RK DuoLine Z 120 | 182                                 | 3994                       | 1,38            | 0,15                 |
| 92510_ _ _ _ | Synchronisation shaft RK DuoLine Z 160 | 227                                 | 4075                       | 3,42            | 0,22                 |

Total length [mm]

[mm]

| Code No.        | Type                                                   | Basic length<br>(minimum<br>length) | Max. length<br>(clearance) | Weight [kg]     |                      |
|-----------------|--------------------------------------------------------|-------------------------------------|----------------------------|-----------------|----------------------|
|                 |                                                        |                                     |                            | Basic<br>length | per 100 mm<br>travel |
| 92521700_ _ _ _ | Synchronisation shaft RK DuoLine Z 60 with protection  | 127                                 | 2985                       | 1,0             | 0,24                 |
| 92521710_ _ _ _ | Synchronisation shaft RK DuoLine Z 80 with protection  | 157                                 | 3400                       | 1,96            | 0,29                 |
| 92521720_ _ _ _ | Synchronisation shaft RK DuoLine Z 120 with protection | 182                                 | 3994                       | 2,53            | 0,36                 |
| 92521730_ _ _ _ | Synchronisation shaft RK DuoLine Z 160 with protection | 227                                 | 4075                       | 5,38            | 0,44                 |

Total length [mm]

# RK DuoLine Z 60/80/120/160 – Drive

## Selection table motor adapter kits DuoLine Z for servo motors without gear

- Servomotors can be easily connected
- Complete motor adapter kits manufactured to your specifications on request

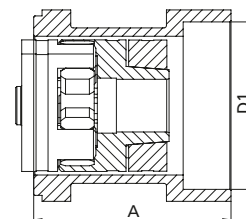
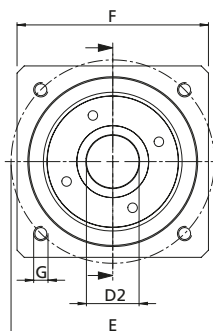
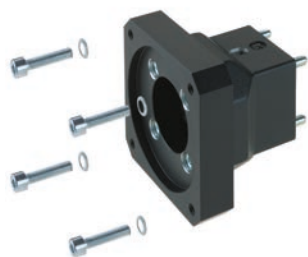
**Scope of delivery:**  
Motor adapter kit, servo coupling with zero backlash and fixation material

| Manufacturers     | Motor                                                          | RK DuoLine Z 60 | RK DuoLine Z 80 | Motor flange |
|-------------------|----------------------------------------------------------------|-----------------|-----------------|--------------|
| RK Rose + Krieger | RK-AC 240                                                      | 949376          | –               | IM B5 56     |
|                   | RK-AC 470                                                      | –               | 949357          | IM B5 63     |
| Baumüller         | DSD2-045                                                       | 949376          | On request      | IM B5 56     |
| Beckhoff          | AM8041, AM8042, AM8043                                         | On request      | On request      | IM B5 56     |
| Bosch             | MSK050B, MSK050C                                               | –               | 949357          | IM B5 63     |
| Kollmorgen        | AKM2G-41, AKM2G-42, AKM2G-43, AKM2G-44                         | On request      | On request      | IM B5 56     |
| Lenze             | MCS09D, MCS09F, MCS09H, MCS09L                                 | 949376          | On request      | IM B5 56     |
| Lti/Keba          | LSP10                                                          | –               | 949357          | IM B5 63     |
| Mitsubishi        | HG-JR53(4), HG-JR 73(4), HG-JR103(4), HG-JR153(4), HG-JR203(4) | On request      | On request      | IM B5 56     |
| Parker            | SMH 82, SMHA 82                                                | 949376          | –               | IM B5 56     |
|                   | SMH 100, SMHA 100                                              | –               | 949357          | IM B5 63     |
| SEW               | CMP63S, CMP63M, CPM63L                                         | 949376          | On request      | IM B5 56     |
| Siemens           | 1FK7040, 1FK042, 1FK043, 1FK2205                               | On request      | On request      | IM B5 56     |
|                   | 1FK2105                                                        | –               | 949357          | IM B5 63     |



# RK DuoLine Z 60/80/120/160 – Drive

**RK ROSE+KRIEGER**



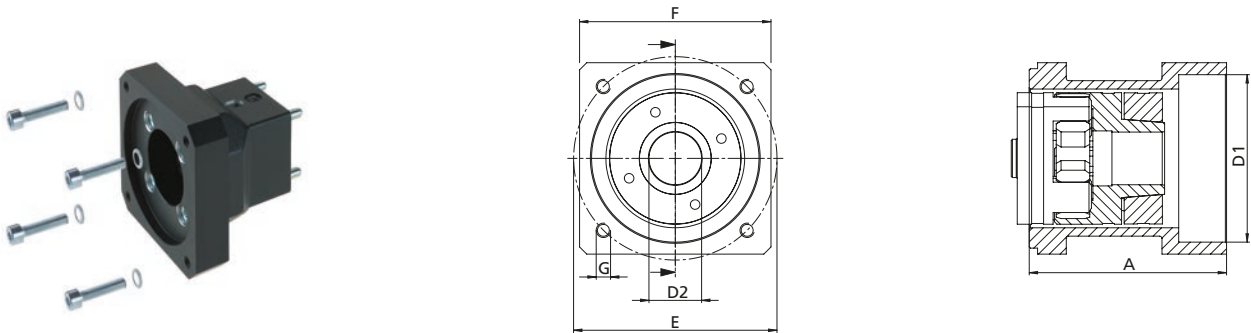
| A         | D1                               | D2     | E     | F       | G                | Masse [kg] |
|-----------|----------------------------------|--------|-------|---------|------------------|------------|
| 55        | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90     | M6<br>11 deep    | 0,79       |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |
| 55/59     | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90/□82 | M6<br>11/12 deep | 0,79/0,93  |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø19x40 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7/5 deep | Ø19x40 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 55/59     | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90/□82 | M6<br>11/12 deep | 0,79/0,93  |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7/5 deep | Ø16x30 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 55        | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90     | M6<br>11 deep    | 0,79       |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19 deep    | 1,38       |
| 55/59     | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90/□82 | M6<br>11/12 deep | 0,79/0,93  |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7/5 deep | Ø19x40 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |

# RK DuoLine Z 60/80/120/160 – Drive

## Motor adapter kits

- Servo- and three phase motors can be easily connected
- Complete motor adapter kits manufactured to your specifications on request

**Scope of delivery:**  
Motor adapter kit, servo coupling with zero backlash and fixation material



## Selection table motor adapter kits for three-phase motor

| Manufacturers     | Motor    | RK DuoLine Z 60 | RK DuoLine Z 80 | RK DuoLine Z 120 |
|-------------------|----------|-----------------|-----------------|------------------|
| RK Rose + Krieger | 90/120W  | 949377          | 949355          | 949372           |
| RK Rose + Krieger | 180/250W | 949378          | 949117          | 949373           |



## Selection table motor adapter kits servo motors with gear

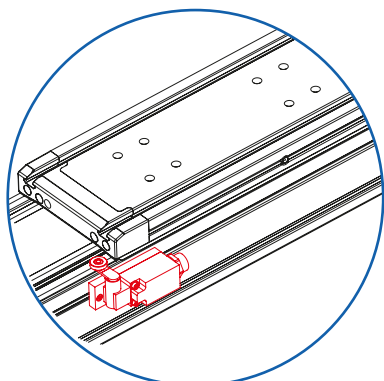
| Manu-<br>facturers            | Gear                  | RK DuoLine<br>Z 60 | RK DuoLine<br>Z 80 | RK DuoLine<br>Z 120 | RK DuoLine<br>Z 160 | A              | D1                     | D2        | E     | F                     | G    | Mass<br>[kg]   |
|-------------------------------|-----------------------|--------------------|--------------------|---------------------|---------------------|----------------|------------------------|-----------|-------|-----------------------|------|----------------|
| Neugart                       | PLE 60                | 949374             | 949350             | –                   | –                   | 57/60          | Ø 40<br>5/7,8 deep     | Ø 14x30   | Ø 52  | 70x67/□ 80            | M 5  | 0,65/0,92      |
|                               | PLE 80                | 949375             | 949353             | 949371              | –                   | 60/64/<br>67,5 | Ø 60<br>3,5/5/13 deep  | Ø 20x36   | Ø 70  | □ 75/□ 80/<br>□ 92,6  | M 6  | 0,69/0,92/1,47 |
|                               | PLE 120               | –                  | 949354             | 949370              | 949344              | 78/75,5/<br>82 | Ø 80<br>4,5 deep       | Ø 25x50   | Ø 100 | Ø 120/□ 120<br>□ 130  | M 10 | 1,43/1,97/3,04 |
|                               | PLE 160               | –                  | –                  | –                   | 949345              | 114            | Ø 130<br>13 deep       | Ø 40x80   | Ø 145 | □ 140                 | M 12 | 2,63           |
| Atlanta                       | APG 080               | 949375             | 949353             | 949371              | –                   | 60/64/<br>67,5 | Ø 60<br>3,5/5/13 deep  | Ø 20x36   | Ø 70  | □ 75/□ 80/<br>□ 92,6  | M 5  | 0,69/0,92/1,47 |
|                               | APG 120               | –                  | 949354             | 949370              | 949344              | 78/75,5/<br>82 | Ø 80<br>4,5 deep       | Ø 25x50   | Ø 100 | Ø 120/□ 120<br>□ 130  | M 6  | 1,43/1,97/3,04 |
| Eppinger                      | PE065                 | 949374             | 949350             | –                   | –                   | 57/60          | Ø 40<br>5/7,8 deep     | Ø 14x30   | Ø 52  | 70x67/□ 80            | M 5  | 0,65/0,92      |
|                               | PE080                 | 949375             | 949353             | 949371              | –                   | 60/64/<br>67,5 | Ø 60<br>3,5/5/13 deep  | Ø 20x36   | Ø 70  | □ 75/□ 80/<br>□ 92,6  | M 6  | 0,69/0,92/1,47 |
| Ruhrge-<br>triebe             | RPS060                | 949374             | 949350             | –                   | –                   | 57/60          | Ø 40<br>3/7,8/5,4 deep | Ø 14x30   | Ø 52  | 70x67/□ 80            | M 5  | 0,65/0,92      |
|                               | RPS080                | 949375             | 949353             | 949371              | –                   | 60/64/<br>67,5 | Ø 60<br>3,5/5/13 deep  | Ø 20x36   | Ø 70  | □ 75/□ 80/<br>□ 92,6  | M 6  | 0,69/0,92/1,47 |
| SPN<br>Schwabens<br>Präzision | SPN-ECO<br>(E2) EZ 23 | 949374             | 949350             | –                   | –                   | 57/60          | Ø 40<br>5/7,8 deep     | Ø 14 x 30 | Ø 52  | 70x67/□ 80            | M 5  | 0,65/0,92      |
|                               | SPN-ECO<br>(E2) EZ 24 | 949375             | 949353             | 949371              | –                   | 60/64/<br>67,5 | Ø 60<br>3,5/5/13 deep  | Ø 20 x 36 | Ø 70  | □ 75/□ 80/<br>□ 92,6  | M 6  | 0,69/0,92/1,47 |
|                               | SPN-ECO<br>(E2) EZ 25 | –                  | 949354             | 949370              | 949344              | 78/75,5/<br>82 | Ø 80<br>4,5 deep       | Ø 25x50   | Ø 100 | Ø 120/ □ 120<br>□ 130 | M 10 | 1,43/1,97/3,04 |
|                               | SPN-ECO<br>(E2) EZ 26 | –                  | –                  | –                   | 949345              | 114            | Ø 130<br>13 deep       | Ø 40x80   | Ø 145 | □ 140                 | M 12 | 2,63           |
| Witten-<br>stein              | Alpha<br>CP015 MF     | 949374             | 949350             | –                   | –                   | 57/60          | Ø 40<br>5/7,8 deep     | Ø 14 x 30 | Ø 52  | 70x67/□ 80            | M 5  | 0,65/0,92      |
|                               | Alpha<br>CP025 MF     | 949375             | 949353             | 949371              | –                   | 60/64/<br>67,5 | Ø 60<br>3,5/5/13 deep  | Ø 20 x 36 | Ø 70  | □ 75/□ 80<br>□ 92,6   | M 6  | 0,69/0,92/1,47 |
|                               | Alpha<br>CP035 MF     | –                  | 949354             | 949370              | 949344              | 78/75,5/<br>82 | Ø 80<br>4,5 deep       | Ø 25x50   | Ø 100 | Ø 120/ □ 120<br>□ 130 | M 10 | 1,43/1,97/3,04 |
|                               | Alpha<br>CP045 MF     | –                  | –                  | –                   | 949345              | 114            | Ø 130<br>13 deep       | Ø 40x82   | Ø 145 | □ 140                 | M 12 | 2,63           |

# RK DuoLine Z 60/80/120/160 – Position determination

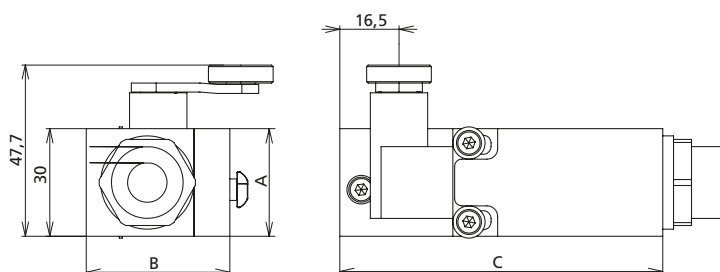
## Mechanical limit switch

- External fixing on the guide profile

**Scope of delivery:**  
Limit switch with set of fastenings



|                        |                             |
|------------------------|-----------------------------|
| Voltage                | max. 230 V AC               |
| Max. switching current | 4 A                         |
| Max. starting current  | 10 A                        |
| Operating frequency    | max. 5000/h                 |
| Mechanical lifetime    | 20 x 10 <sup>6</sup> cycles |
| Axis lever adjustment  | locking by 360°             |
| Protection class       | IP 67                       |
| Ambient temperature    | -30°C to +80°C              |

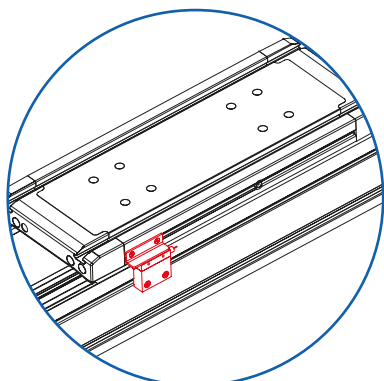


| Code No. | Type           | A  | B  | C  | Version                          |
|----------|----------------|----|----|----|----------------------------------|
| 92848    | RK DuoLine 60  | 49 | 39 | 82 | NO / NC, mechanical limit switch |
| 91919    | RK DuoLine 80  | 63 | 40 | 83 |                                  |
| 92701    | RK DuoLine 120 | 31 | 40 | 97 |                                  |
| 91910    | RK DuoLine 160 | 30 | 40 | 90 |                                  |

## External inductive limit switch

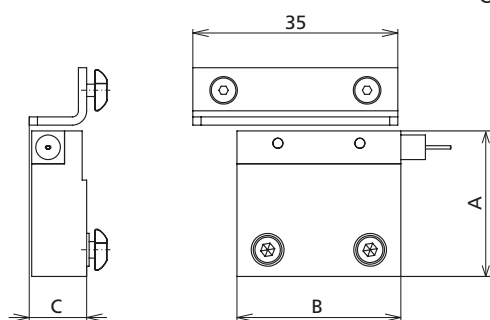
- External fixing on the guide profile

**Scope of delivery:**  
Limit switch with set of fastenings



|                        |                                 |
|------------------------|---------------------------------|
| Voltage                | 10...30 VDC                     |
| Max. switching current | 100 mA                          |
| Operating frequency    | Max. 5 kHz                      |
| Mechanical lifetime    | independent of operating cycles |
| Operating distance     | 1.5 mm                          |
| Protection class       | IP 67                           |
| Cable length           | 5 m*                            |
| Ambient temperature    | -25°C to +70°C                  |

\*Other cable lengths available on request.

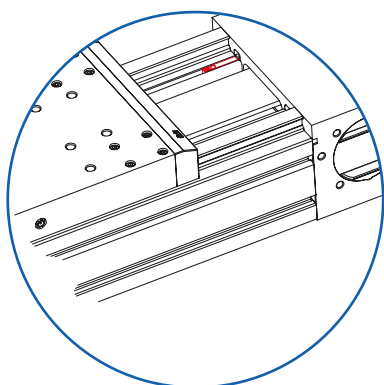


| Code No. | Type           | A    | B  | C  | Version                             |
|----------|----------------|------|----|----|-------------------------------------|
| 92838    | RK DuoLine 60  | 52,8 | 25 | 10 | NO, External inductive limit switch |
| 92819    | RK DuoLine 80  | 71,5 | 25 | 10 |                                     |
| 92840    | RK DuoLine 120 | 22   | 40 | 14 |                                     |
| 92810    | RK DuoLine 160 | 35,5 | 40 | 14 |                                     |

## Internal inductive limit switch

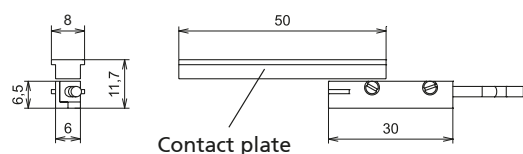
- Limit switch integrated in the guide profile - no protruding contours

**Scope of delivery:**  
Limit switch with set of fastenings



| Code No. | Type           | Version                             |
|----------|----------------|-------------------------------------|
| 92828    | RK DuoLine 60  | NC, Internal inductive limit switch |
| 92820*   | RK DuoLine 80  |                                     |
|          | RK DuoLine 120 |                                     |
|          | RK DuoLine 160 |                                     |

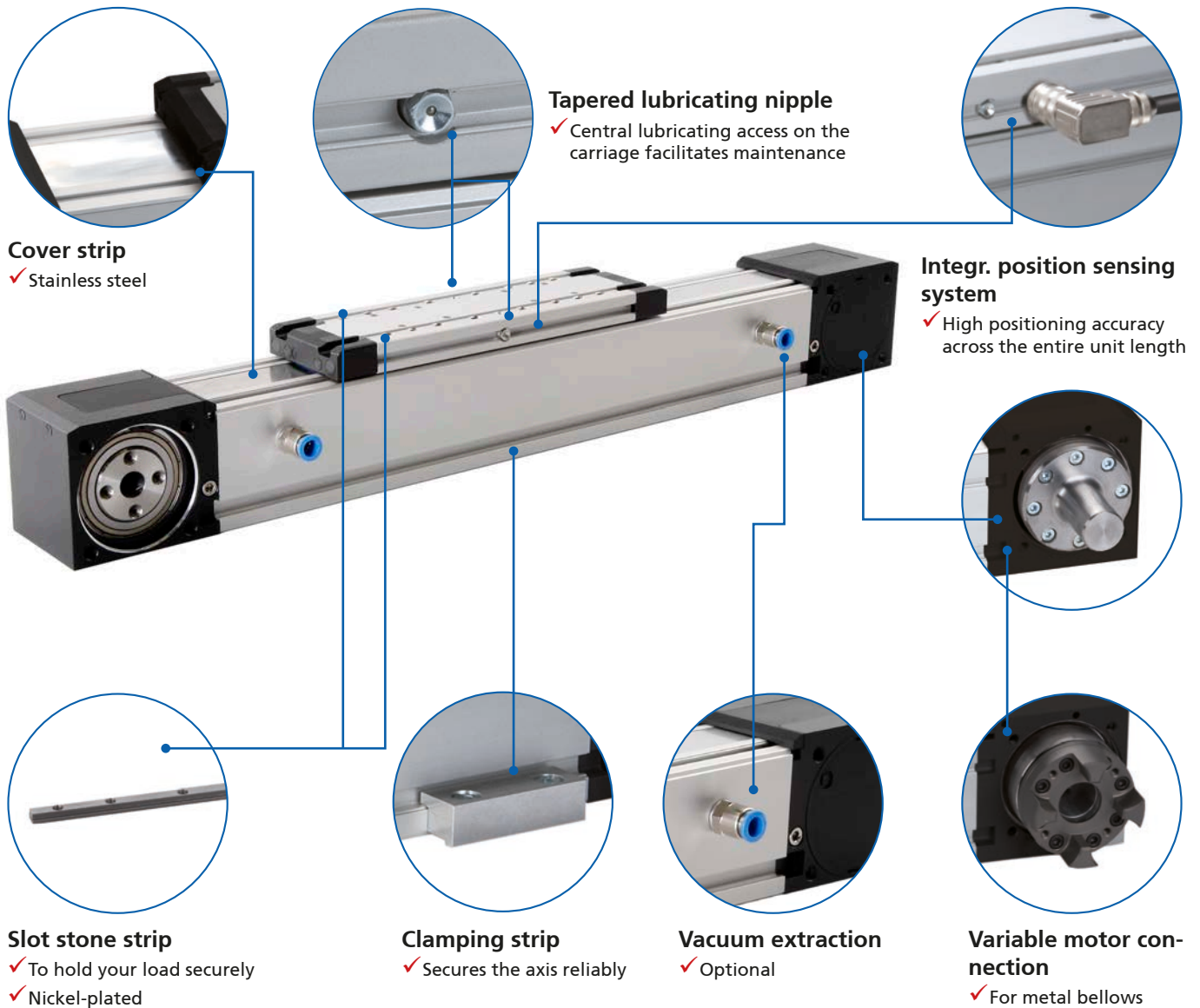
\*On this limit switch, the slot must be sealed off with a cover profile



## Cover profile

| Code No.  | Version |       |          |
|-----------|---------|-------|----------|
| E00024DAC | bar     | black | 2.000 mm |

# RK DuoLine Z/R Clean – Key features/technical benefits



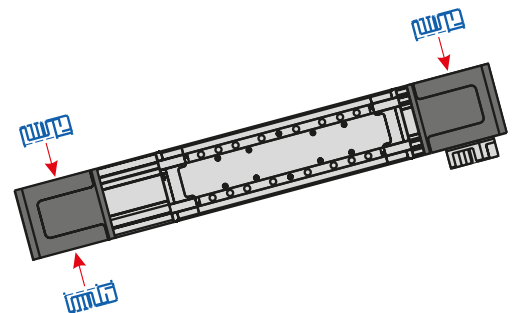
## Key features

### General

- All external steel parts nickel-plated or made of stainless steel
- Suitability according to EN ISO 14644-1 for clean rooms
- Optionally with or without vacuum extraction
- High efficiency
- Low no-load torque
- Central lubricating access on the carriage facilitates maintenance

### RK DuoLine Z Clean (toothed-belt drive)

- Cover band made from stainless steel
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeat accuracy  $\pm 0.05$  mm

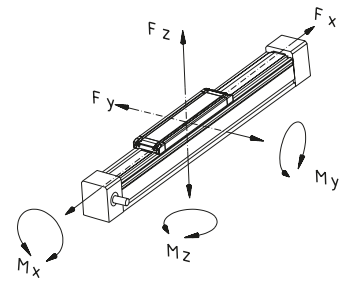


## RK DuoLine – Table of contents

|                                               |                               |                                                                                                                                                                                            |
|-----------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Properties / Technical data</b>            |                               | <ul style="list-style-type: none"> <li>■ Load characteristic ..... 430</li> <li>■ General informations/operation conditions.. 431</li> <li>■ Cleanroom air categories ..... 431</li> </ul> |
| <b>Version</b><br>(Dimensions, order numbers) | <b>Place-Tec</b>              | <ul style="list-style-type: none"> <li>■ RK DuoLine R 60/80 Clean ..... 432</li> <li>■ RK DuoLine Z 60 Clean ..... 434</li> <li>■ RK DuoLine Z 80 Clean ..... 434</li> </ul>               |
| <b>Accessories</b>                            | <b>Fixing</b>                 | <ul style="list-style-type: none"> <li>■ Fixation of payload ..... 436</li> <li>■ Clamping strips..... 437</li> <li>■ Slot stones ..... 437</li> <li>■ Centering Sets ..... 438</li> </ul> |
|                                               | <b>Drive</b>                  | <ul style="list-style-type: none"> <li>■ Motor adapter kit ..... 440</li> <li>■ Drive shaft ..... 443</li> <li>■ Synchronisation shaft ..... 444</li> </ul>                                |
|                                               | <b>Position determination</b> | <ul style="list-style-type: none"> <li>■ Limit switch ..... 445</li> </ul>                                                                                                                 |

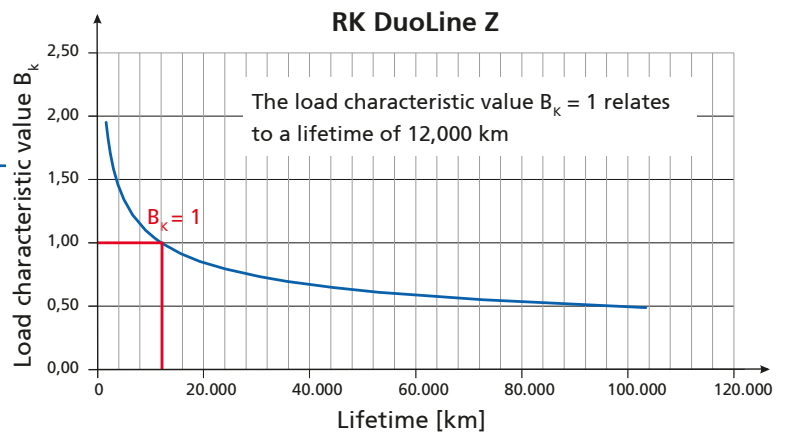
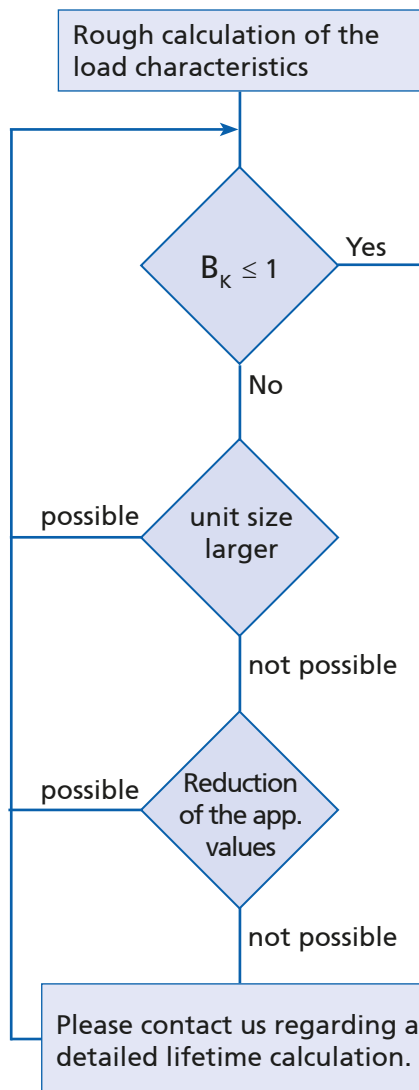
## Calculation of the load characteristic to define the lifetime

- The lifetime of linear units are in accordance with the average loads and moments of an application. The load characteristic can approximately calculated by following equation with simultaneously appearing load and moments.



$$\text{Load characteristic} = \frac{\text{Application values (z.B. } F_y)}{\text{Catalog values (z.B. } F_{y_{\max}})}$$

$$\text{Load characteristic } B_k = \frac{F_y}{F_{y_{\max}}} + \frac{F_z}{F_{z_{\max}}} + \frac{M_x}{M_{x_{\max}}} + \frac{M_y}{M_{y_{\max}}} + \frac{M_z}{M_{z_{\max}}} \leq 1$$



At a load characteristic value of  $B_k < 1$  higher theoretical lifetime can be achieved.

The illustration is intended as an approximate reflection of the expected lifetime depending on the load characteristic value  $B_k$ . Increased speeds, short-stroke, vibrations, impacts, insufficient lubrication or other specific conditions are not taken into account.

Please contact us regarding a detailed lifetime calculation.

### Example:

- ✓ The load and moments of the application are:  
 $F_z = 200\text{N}$ ,  $M_x = 20\text{ Nm}$  und  $M_z = 45\text{ Nm}$   
 According to the above equation you will have following load characteristic of a RK MonoLine 80:  $B_k = 0.55$ .

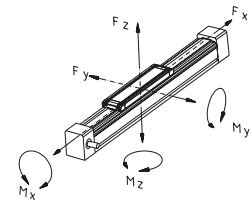
## General information / operating conditions

|                            | RK DuoLine Z 60 Clean                                  | RK DuoLine Z 80 Clean                                                           |
|----------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------|
| Guidance system            | 1 Ball rail system                                     |                                                                                 |
| Installation position      | any position                                           |                                                                                 |
| Max. driving torque        | 17 Nm                                                  | 46 Nm                                                                           |
| Max. speed                 | 1 m/s                                                  | 2 m/s                                                                           |
| Max. acceleration          | 4 m/s <sup>2</sup>                                     | 5 m/s <sup>2</sup>                                                              |
| Repeat accuracy            | ± 0,05 mm                                              | ± 0,05 mm                                                                       |
| Positioning accuracy       | only without integrated linear encoder<br>± 0,1/300 mm | with integrated linear encoder<br>± (0.025 + 0.01 x L) mm; L = travel in meters |
| Max. no-load torque        | 2 Nm                                                   | 2,2 Nm                                                                          |
| Drive                      | HTD-Belts from polyurethan,<br>Pitch 5 mm, Width 20 mm | HTD-Belts from polyurethan,<br>Pitch 8 mm, Width 30 mm                          |
| Active Ø pulley wheel      | 52,52 mm                                               | 66,21 mm                                                                        |
| Pulley wheel circumference | 165 mm                                                 | 208 mm                                                                          |
| Ambient temperature        | 0 to +60°C                                             | 0 to +60°C                                                                      |

## Dynamic load data

Force [N]

Torque [Nm]



| Toothed-belt drive      |      |      |      |     |     |     |
|-------------------------|------|------|------|-----|-----|-----|
| Load data               | Fx*  | Fy   | Fz   | Mx  | My  | Mz  |
| Standard guide carriage |      |      |      |     |     |     |
| RK DuoLine Z 60 Clean   | 630  | 700  | 2500 | 48  | 160 | 140 |
| RK DuoLine Z 80 Clean   | 1400 | 1000 | 4100 | 100 | 340 | 300 |
| Extended guide carriage |      |      |      |     |     |     |
| RK DuoLine Z 60 Clean   | 630  | 700  | 2500 | 48  | 250 | 220 |
| RK DuoLine Z 80 Clean   | 1400 | 1000 | 4100 | 100 | 590 | 520 |

\*Initial tension of the timing belt 0,8 x Fx

## Suitable for use in air purity levels according to EN ISO 14644-1

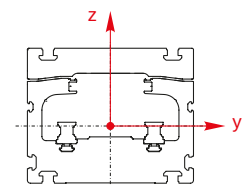
You find the documents and certificates with the test parameters on the website [www.rk-rose-krieger.com](http://www.rk-rose-krieger.com)

| Type                                  | Clean room categories         |         |          |         |              |
|---------------------------------------|-------------------------------|---------|----------|---------|--------------|
|                                       | ISO 1                         | ISO 3   | ISO 5    | ISO 6   | ISO 7        |
| RK DuoLine Z 60 Clean without suction |                               |         | 0,25 m/s | 0,5 m/s | 1 m/s        |
| RK DuoLine Z 60 Clean with suction    | 0,25 m/s; 0,5 m/s;<br>1,0 m/s |         |          |         |              |
| RK DuoLine Z 80 Clean without suction |                               |         | 0,5 m/s  |         | 1 m/s; 2 m/s |
| RK DuoLine Z 80 Clean with suction    | 0,25 m/s; 0,5 m/s             | 1,0 m/s |          |         |              |

## Geometric moment of inertia

[cm<sup>4</sup>]

|                       | Iy                     | Iz                     |
|-----------------------|------------------------|------------------------|
| RK DuoLine Z 60 Clean | 52,54 cm <sup>4</sup>  | 67,41 cm <sup>4</sup>  |
| RK DuoLine Z 80 Clean | 127,90 cm <sup>4</sup> | 172,80 cm <sup>4</sup> |



# RK DuoLine R 60 / 80 Clean – Versions

## Order instructions:

- Longer travel lengths on request
- Integrated linear encoder as Option for size 80

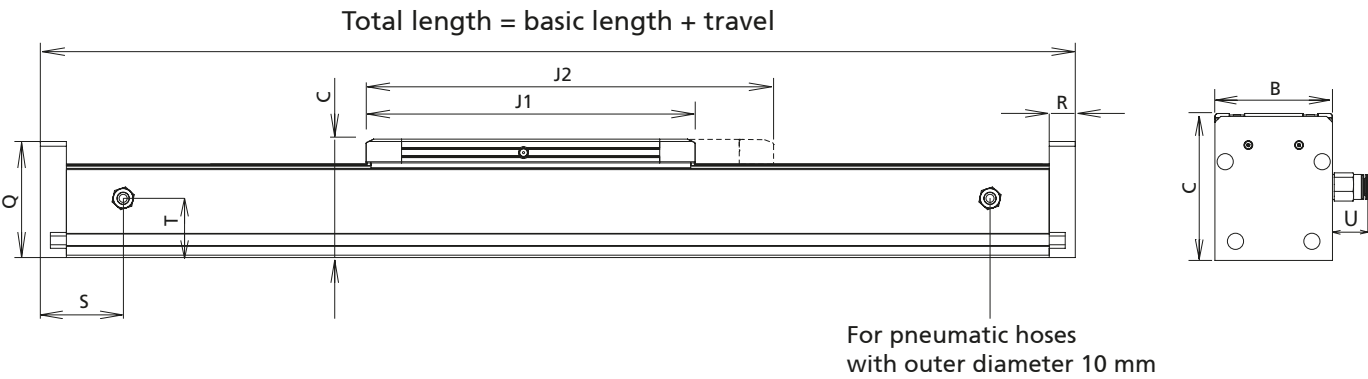
## Version: ■ Guide

Ideal as additional / secondary support for the DuoLine with toothed belt or spindle.  
Identical construction to Z/S 60 and 80, but without drive



| Code No.              | Type                                                  | Basic length | B  | C   |
|-----------------------|-------------------------------------------------------|--------------|----|-----|
| TD17A5T1A11_0 _ _ _ _ | RK DuoLine R 60 Clean                                 | 295          | 60 | 80  |
| TD17A5T1B11_0 _ _ _ _ | RK DuoLine R 60 Clean<br>with extended guide carriage | 385          |    |     |
| TD17A2T1A11_0 _ _ _ _ | RK DuoLine R 80 Clean                                 | 352          | 80 | 100 |
| TD17A2T1B11_0         | RK DuoLine R 80 Clean<br>with extended guide carriage | 484          |    |     |

Total length = basic length + total travel (mm)
   
 A = without connection for vacuum suction
   
 C = with connection for vacuum suction



[mm]

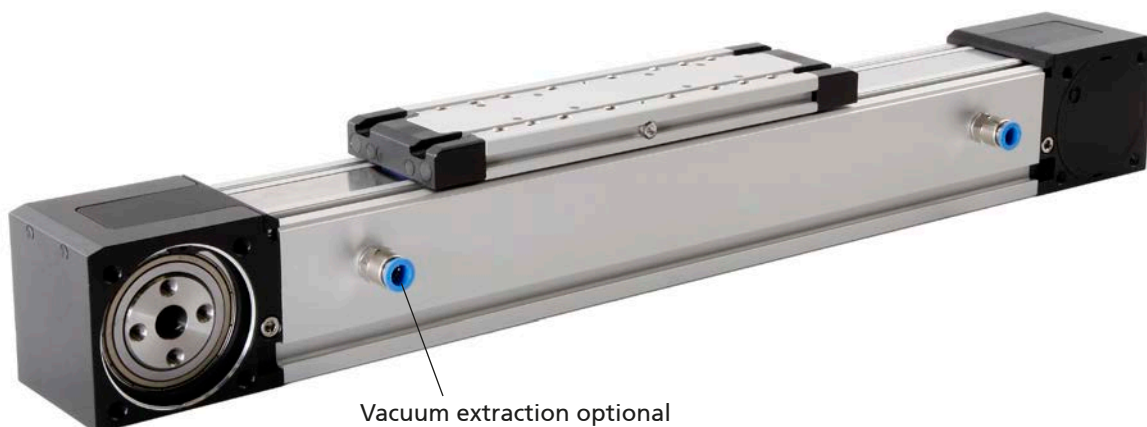
| J1  | J2  | Q  | R  | S  | T  | U  | Max.<br>travel | Mass [kg]    |                   |
|-----|-----|----|----|----|----|----|----------------|--------------|-------------------|
|     |     |    |    |    |    |    |                | Basic length | per 100 mm travel |
| 245 | –   | 70 | 22 | 72 | 38 | 24 | 3587           | 3,73         | 0,54              |
| –   | 335 |    |    |    |    |    | 3497           | 4,46         | 0,54              |
| 278 | –   | 97 | 22 | 72 | 50 | 24 | 7692           | 5,22         | 0,83              |
| –   | 410 |    |    |    |    |    | 7560           | 6,89         | 0,83              |

# RK DuoLine Z Clean – Dimensions / ordering data

## Order instructions:

- Longer travel lengths on request
- Also available without screw drive as a torque support
- Version with vacuum extraction as option

## Timing-belt unit RK DuoLine Z Clean



Vacuum extraction optional

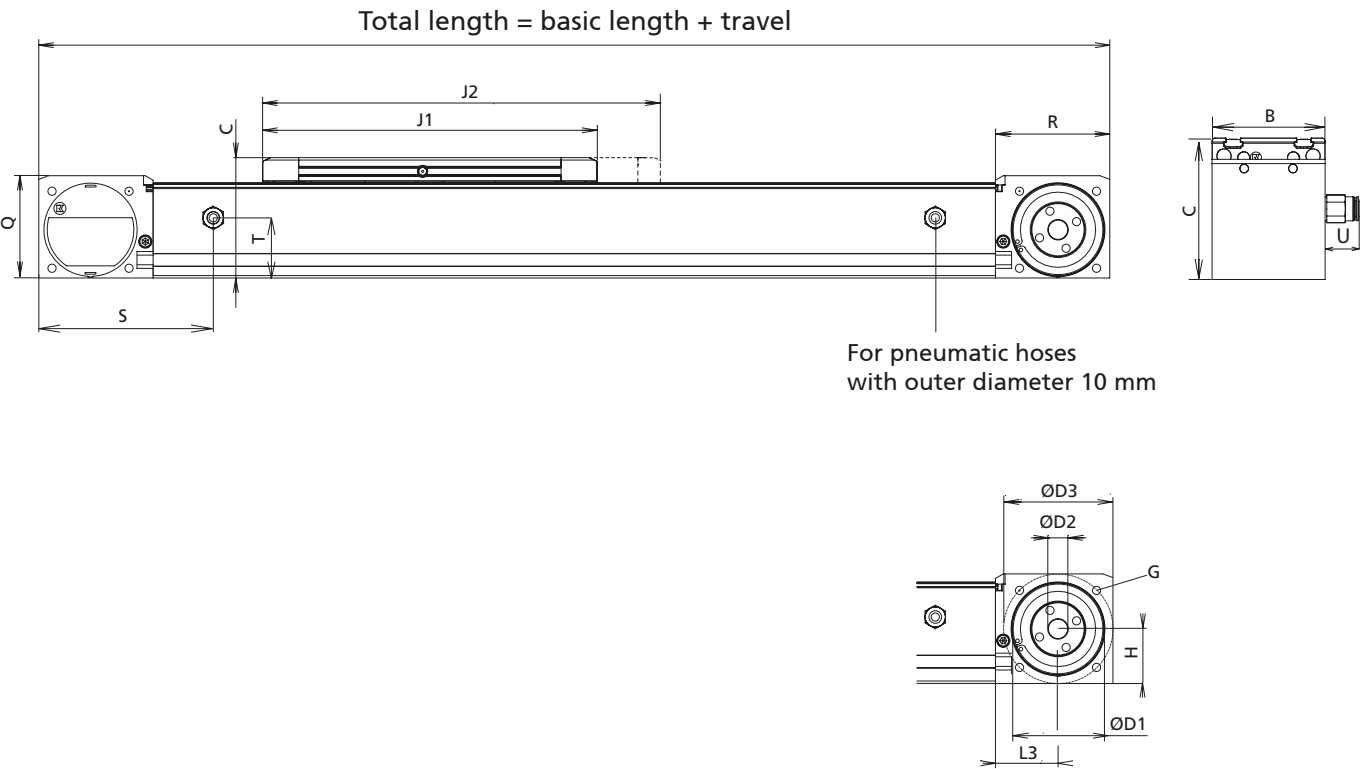
| Code No.              | Type                                                  | Basic length | B  | C   | D1                         | D2               |
|-----------------------|-------------------------------------------------------|--------------|----|-----|----------------------------|------------------|
| TD15A5F1A12_0 _ _ _ _ | RK DuoLine Z 60 Clean                                 | 405          | 60 | 80  | 62 <sup>H7</sup><br>5 deep | 15 <sup>H6</sup> |
| TD15A5F1B12_0 _ _ _ _ | RK DuoLine Z 60 Clean<br>with extended guide carriage | 495          |    |     |                            |                  |
| TD15A2F1A_2 _ _ _ _ _ | RK DuoLine Z 80 Clean                                 | 468          | 80 | 100 | 75 <sup>H7</sup><br>7 deep | 16 <sup>H6</sup> |
| TD15A2F1B_2 _ _ _ _ _ | RK DuoLine Z 80 Clean<br>with extended guide carriage | 600          |    |     |                            |                  |

Total length = basic length + total travel (mm)

A = without connection for vacuum extraction  
C = with connection for vacuum extraction

### Integrated linear encoder

1 = without  
2 = with plug-in coupling and 20 m of cable  
3 = with 20 m of cable



[mm]

| D3       | G          | H    | J1  | J2  | L3 | Q  | R  | S   | T  | U  | max. travel | Mass [kg]    |                   |
|----------|------------|------|-----|-----|----|----|----|-----|----|----|-------------|--------------|-------------------|
|          |            |      |     |     |    |    |    |     |    |    |             | Basic length | per 100 mm travel |
| 72,1±0,2 | M6-12 deep | 33,8 | 245 | –   | 44 | 70 | 80 | 130 | 38 | 24 | 5753        | 4,65         | 0,54              |
|          |            |      | –   | 335 |    |    |    |     |    |    | 5665        | 5,38         | 0,54              |
| 90,5±0,2 | M8-12 deep | 40,1 | 278 | –   | 52 | 85 | 95 | 145 | 50 | 24 | 7722        | 7,84         | 0,83              |
|          |            |      | –   | 410 |    |    |    |     |    |    | 7590        | 9,51         | 0,83              |

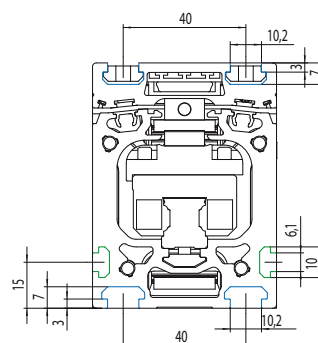
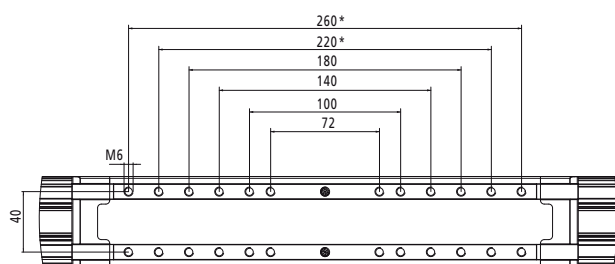
# RK DuoLine R/Z – Fixation

## Fixation of payload

- Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways
- Profile slots in the guide carriage and guide profiles facilitate fixation

## RK DuoLine R/Z 60

\*only with version with extended guide carriage

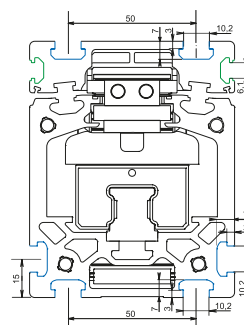
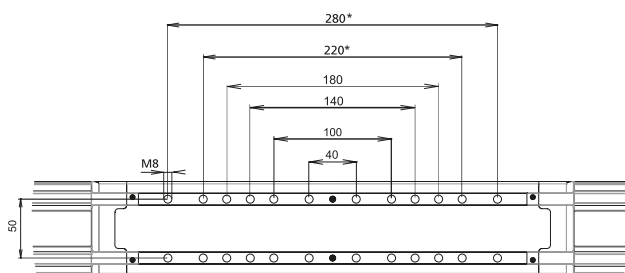


— 20 slot geometry

— 30 slot geometry

## RK DuoLine R/Z 80

\*only with version with extended guide carriage



— 20 slot geometry

— 30 slot geometry

## Clamping strips

- Clamping strips facilitate fixation of the linear unit to the chassis or two units to a crossing table

### Material:

Natural anodised aluminium, fixation material stainless steel or nickel-plated

### Scope of delivery:

2 clamping strips with fixation material

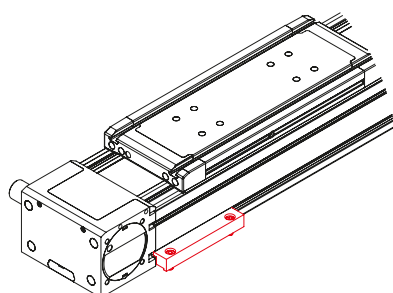


Fig.1: Ground assembly

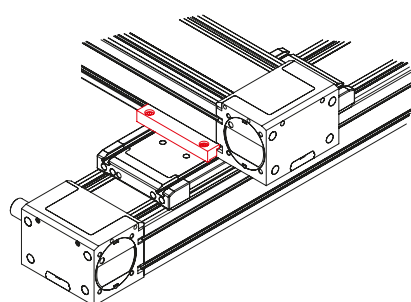
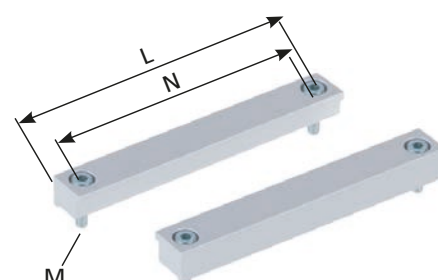
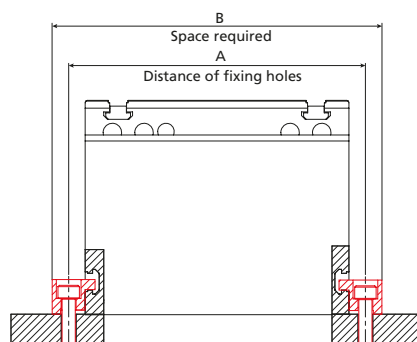


Fig.2: Crossing units

| Code No. | Type                          | Fig. | [mm] |     |    |    |    |
|----------|-------------------------------|------|------|-----|----|----|----|
|          |                               |      | A    | B   | L  | M  | N  |
| 91819    | RK DuoLine 60 ground assembly | 1    | 72   | 91  | 57 | M6 | 40 |
|          | RK DuoLine 60 crossing to 60  | 2    |      |     |    |    |    |
| 91809    | RK DuoLine 80 ground assembly | 1    | 100  | 122 | 76 | M8 | 50 |
|          | RK DuoLine 80 crossing to 80  | 2    |      |     |    |    |    |

## Slot stones

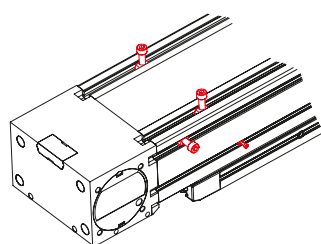
- Slot stones can be inserted and positioned at the guide profile and guide carriage

**Material:** Steel, nickel-plated or stainless steel

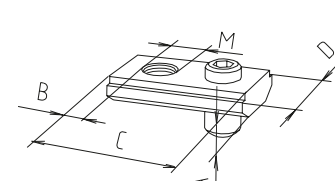
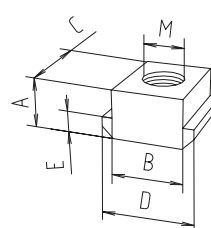
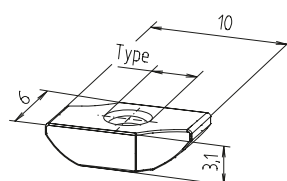
**Slot stone -B-**  
can be swivelled into the slot

**Slot stone -N-**  
can be slid into the slot

**Slot stone -P- Version K**  
can be slid into the slot



View of DuoLine from below



| Code No.                        | Type | lot sizes | Material        | Slot geometry | A | B  | C  | D  | E | M  | F [N] |
|---------------------------------|------|-----------|-----------------|---------------|---|----|----|----|---|----|-------|
| <b>Slot stone -B-</b>           |      |           |                 |               |   |    |    |    |   |    |       |
| E00017CSE                       | M3   | –         | Nickel-plated   | 20            |   |    |    |    |   |    |       |
| E00058CSE                       | M4   | –         | Nickel-plated   | 20            |   |    |    |    |   |    |       |
| <b>Slot stone -N-</b>           |      |           |                 |               |   |    |    |    |   |    |       |
| 400B202                         | M8   | –         | Nickel-plated   | 30            | 5 | 10 | 13 | 13 | 3 | M8 | 4000  |
| 40092021                        | M8   | –         | Stainless steel | 30            | 5 | 10 | 13 | 13 | 3 | M8 | 4000  |
| <b>Slot stone -P- Version K</b> |      |           |                 |               |   |    |    |    |   |    |       |
| 4009214                         | M5   | –         | Stainless steel | 30            | 4 | 7  | 20 | 12 | – | M5 | 5000  |
| 4009216                         | M6   | –         | Stainless steel | 30            | 4 | 7  | 20 | 12 | – | M6 | 5000  |

# RK DuoLine Z – Fixation

## Centering Sets for RK DuoLine Clean

- The following positions could be defined exactly during the design process per set
  - Load capacity
  - Linear unit
- Reproducible position of the load capacity
- Reduced assembly/disassembly time of the load capacity or the linear unit
- Accuracy of the centering bolts h6
- To use for all RK DuoLine Clean linear units from March 2021 production date

### Material:

Stainless steel

### Scope of delivery per set:

2 centering bolts and fixing material

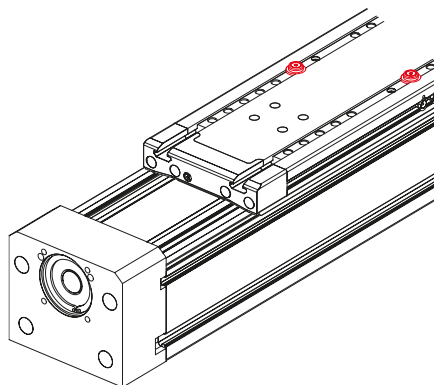


Fig. 1: Slide centering

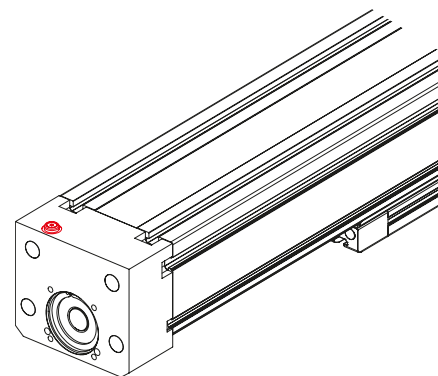
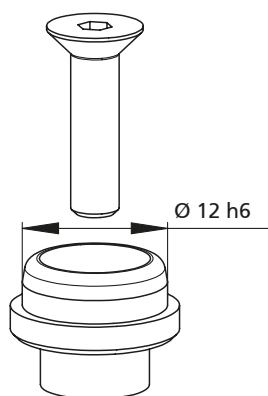
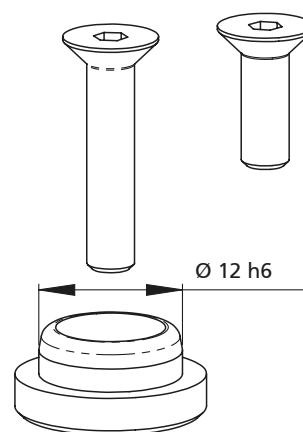


Fig. 2: Base centering

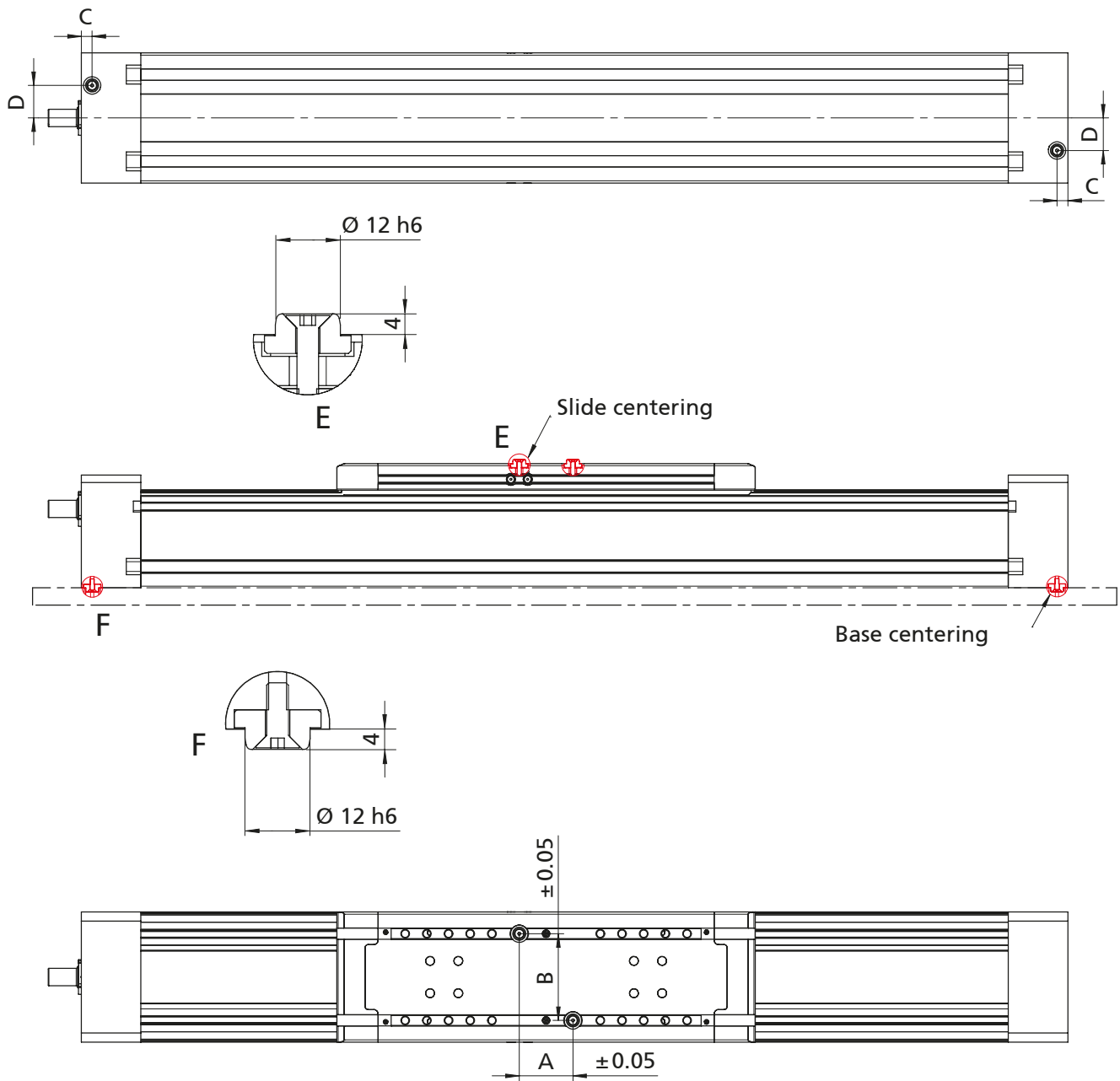


Size -A-



Size -B-

| Code No. | Type                   | Use for                                  |
|----------|------------------------|------------------------------------------|
| 91810    | Centering Set Size -A- | Slide centering<br>RK DuoLine Z 60; Z 80 |
| 91817    | Centering Set Size -B- | Base centering<br>RK DuoLine Z 60; Z 80  |



| Type                                            | A  | B  | C  | D  |
|-------------------------------------------------|----|----|----|----|
| RK DuoLine Z 60                                 | 42 | 40 | 10 | 0  |
| RK DuoLine Z 60<br>with extended guide carriage | 48 | 40 | 10 | 0  |
| RK DuoLine Z 80                                 | 65 | 50 | 10 | 15 |
| RK DuoLine Z 80<br>with extended guide carriage | 70 | 50 | 10 | 15 |

**\*Note:** Centering on request only with special drill holes in the slide/clamp strips possible

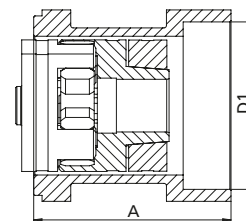
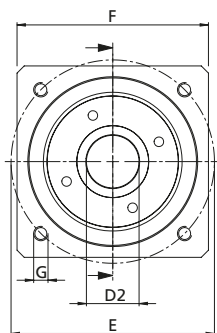
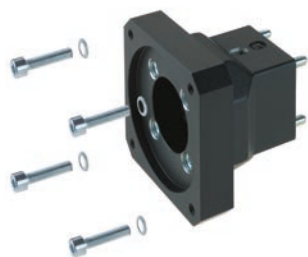
# DuoLine Z 60/80 Clean – Drive

## Selection table motor adapter kits RK DuoLine Z for servo motors without gear

- Servomotors can be easily connected
- Complete motor adapter kits manufactured to your specifications on request

**Scope of delivery:**  
Motor adapter kit, servo coupling with zero backlash and fixation material

| Manufacturers     | Motor                                                          | RK DuoLine Z 60 Clean | RK DuoLine Z 80 Clean | Motor flange |
|-------------------|----------------------------------------------------------------|-----------------------|-----------------------|--------------|
| RK Rose + Krieger | RK-AC 240                                                      | 949458                | –                     | IM B5 56     |
|                   | RK-AC 470                                                      | –                     | 949461                | IM B5 63     |
| Baumüller         | DSD2-045                                                       | 949458                | On request            | IM B5 56     |
| Beckhoff          | AM8041, AM8042, AM8043                                         | On request            | On request            | IM B5 56     |
| Bosch             | MSK050B, MSK050C                                               | –                     | 949461                | IM B5 63     |
| Kollmorgen        | AKM2G-41, AKM2G-42, AKM2G-43, AKM2G-44                         | On request            | On request            | IM B5 56     |
| Lenze             | MCS09D, MCS09F, MCS09H, MCS09L                                 | 949458                | On request            | IM B5 56     |
| Lti/Keba          | LSP10                                                          | –                     | 949461                | IM B5 63     |
| Mitsubishi        | HG-JR53(4), HG-JR 73(4), HG-JR103(4), HG-JR153(4), HG-JR203(4) | On request            | On request            | IM B5 56     |
| Parker            | SMH 82, SMHA 82                                                | 949458                | –                     | IM B5 56     |
|                   | SMH 100, SMHA 100                                              | –                     | 949461                | IM B5 63     |
| SEW               | CMP63S, CMP63M, CPM63L                                         | 949458                | On request            | IM B5 56     |
| Siemens           | 1FK7040, 1FK042, 1FK043, 1FK2205                               | On request            | On request            | IM B5 56     |
|                   | 1FK2105                                                        | –                     | 949461                | IM B5 63     |



| A         | D1                               | D2     | E     | F       | G                | Masse [kg] |
|-----------|----------------------------------|--------|-------|---------|------------------|------------|
| 55        | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90     | M6<br>11 deep    | 0,79       |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |
| 55/59     | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90/□82 | M6<br>11/12 deep | 0,79/0,93  |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø19x40 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7/5 deep | Ø19x40 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 55/59     | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90/□82 | M6<br>11/12 deep | 0,79/0,93  |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7/5 deep | Ø16x30 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 55        | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90     | M6<br>11 deep    | 0,79       |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19 deep    | 1,38       |
| 55/59     | Ø 80 <sup>H8</sup><br>5,7 deep   | Ø14x30 | Ø 100 | □90/□82 | M6<br>11/12 deep | 0,79/0,93  |
| 61,1/64,5 | Ø 80 <sup>H8</sup><br>5,7/5 deep | Ø19x40 | Ø 100 | □90/□82 | M6<br>15/12 deep | 0,72/0,93  |
| 64        | Ø 95 <sup>H7</sup><br>4 deep     | Ø19x40 | Ø 115 | □105    | M8<br>19,5 deep  | 1,38       |

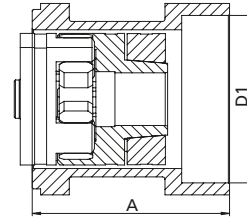
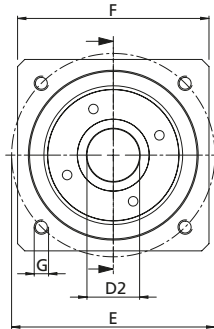
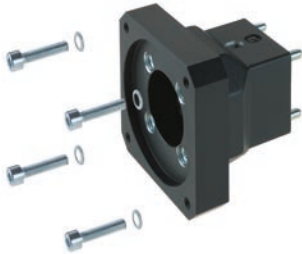
# DuoLine Z 60/80 Clean – Drive

## Motor adapter kits

- Servo motors can be easily connected
- Complete motor adapter kits manufactured to your specifications on request

### Scope of delivery:

Motor adapter kit, servo coupling with zero backlash and fixation material



## Selection table motor adapter kits servo motors with gear

| Manufacturers                | Gear                  | RK DuoLine Z 60 Clean | RK DuoLine Z 80 Clean | A     | D1                 | D2        | E     | F          | G    | Mass [kg] |
|------------------------------|-----------------------|-----------------------|-----------------------|-------|--------------------|-----------|-------|------------|------|-----------|
| Neugart                      | PLE 60                | 949459                | 949462                | 57/60 | Ø 40<br>5/7,8 deep | Ø 14x30   | Ø 52  | 70x67/□ 80 | M 5  | 0,65/0,92 |
|                              | PLE 80                | 949460                | 949463                | 60/64 | Ø 60<br>3,5/5 deep | Ø 20x36   | Ø 70  | □ 75/□ 80  | M 6  | 0,69/0,92 |
|                              | PLE 120               | –                     | 949464                | 78    | Ø 80<br>4,5 deep   | Ø 25x50   | Ø 100 | Ø 120      | M 10 | 1,43      |
| Atlanta                      | APG 080               | 949460                | 949463                | 60/64 | Ø 60<br>3,5/5 deep | Ø 20x36   | Ø 70  | □ 75/□ 80  | M 6  | 0,69/0,92 |
|                              | APG 120               | –                     | 949464                | 78    | Ø 80<br>4,5 deep   | Ø 25x50   | Ø 100 | Ø 120      | M 10 | 1,43      |
| Eppinger                     | PE065                 | 949459                | 949462                | 57/60 | Ø 40<br>5/7,8 deep | Ø 14x30   | Ø 52  | 70x67/□ 80 | M 5  | 0,65/0,92 |
|                              | PE080                 | 949460                | 949463                | 60/64 | Ø 60<br>3,5/5 deep | Ø 20x36   | Ø 70  | □ 75/□ 80  | M 6  | 0,69/0,92 |
| Ruhrgetriebe                 | RPS060                | 949459                | 949462                | 57/60 | Ø 40<br>5/7,8 deep | Ø 14x30   | Ø 52  | 70x67/□ 80 | M 5  | 0,65/0,92 |
|                              | RPS080                | 949460                | 949463                | 60/64 | Ø 60<br>3,5/5 deep | Ø 20x36   | Ø 70  | □ 75/□ 80  | M 6  | 0,69/0,92 |
| SPN<br>Schwaben<br>Präzision | SPN-ECO<br>(E2) EZ 23 | 949459                | 949462                | 57/60 | Ø 40<br>5/7,8 deep | Ø 14 x 30 | Ø 52  | 70x67/□ 80 | M 5  | 0,65/0,92 |
|                              | SPN-ECO<br>(E2) EZ 24 | 949460                | 949463                | 60/64 | Ø 60<br>3,5/5 deep | Ø 20 x 36 | Ø 70  | □ 75/□ 80  | M 6  | 0,69/0,92 |
|                              | SPN-ECO<br>(E2) EZ 25 | –                     | 949464                | 78    | Ø 80<br>4,5 deep   | Ø 25x50   | Ø 100 | Ø 120      | M 10 | 1,43      |
| Wittenstein                  | Alpha<br>CP015 MF     | 949459                | 949462                | 57/60 | Ø 40<br>5/7,8 deep | Ø 14 x 30 | Ø 52  | 70x67/□ 80 | M 5  | 0,65/0,92 |
|                              | Alpha<br>CP025 MF     | 949460                | 949463                | 60/64 | Ø 60<br>3,5/5 deep | Ø 20 x 36 | Ø 70  | □ 75/□ 80  | M 6  | 0,69/0,92 |
|                              | Alpha<br>CP035 MF     | –                     | 949464                | 78    | Ø 80<br>4,5 deep   | Ø 25x50   | Ø 100 | Ø 120      | M 10 | 1,43      |



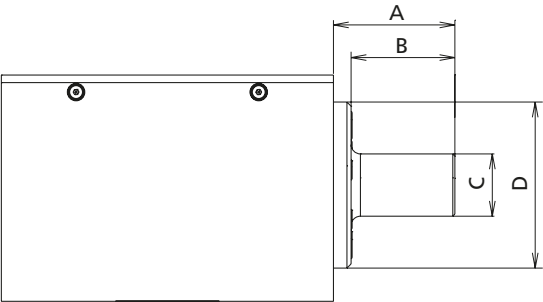
Drive shaft

- The RK DuoLine Z is fitted as standard with a hollow shaft
- This can be retrofitted with a drive shaft as an optional extra

**Scope of delivery:**  
Drive shaft with fixation material



For metal bellows coupling



| [mm]     |                       |                                        |      |      |    |    |
|----------|-----------------------|----------------------------------------|------|------|----|----|
| Code No. | Type                  | Version                                | A    | B    | C  | D  |
| 91325    | RK DuoLine Z 60 Clean | Drive shaft for metal bellows coupling | 28,6 | 25   | 16 | 44 |
| 91326    | RK DuoLine Z 80 Clean |                                        | 35   | 31,5 | 20 | 52 |

# Drive / Position determination

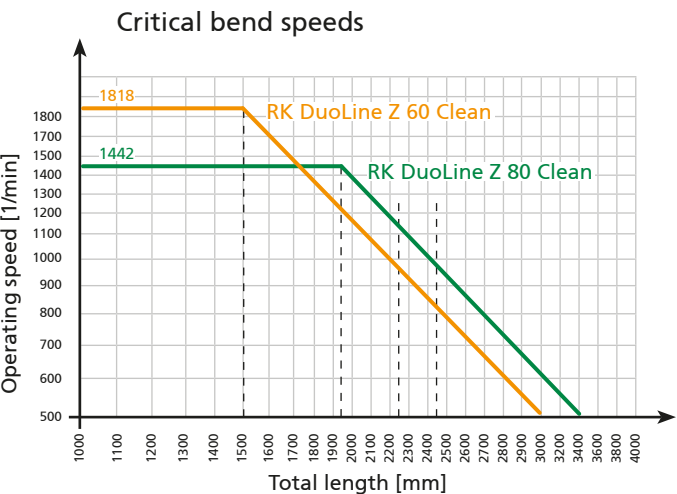
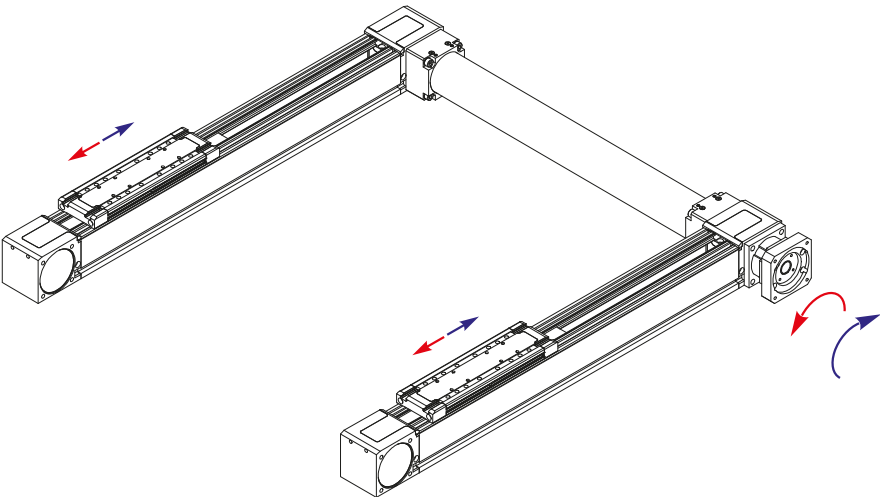
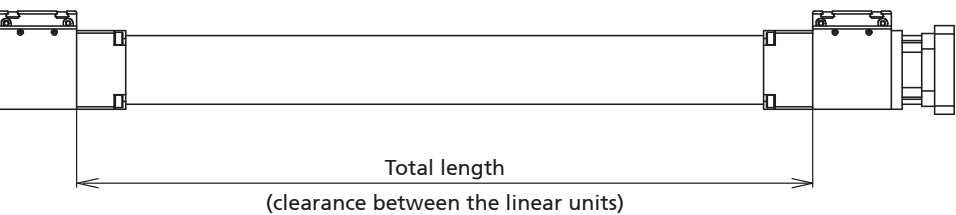
## Synchronisation shaft

- For torque transmission with parallel linear units
- Synchronisation of the guide carriages by zero point alignment

**Scope of delivery:**  
Synchronisation shaft with fixation material

### Max. transfer torque:

RK DuoLine Z 60 Clean    28 Nm  
RK DuoLine Z 80 Clean    67 Nm

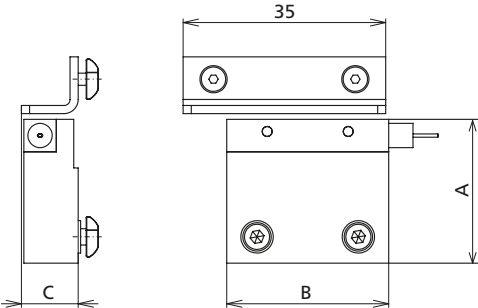
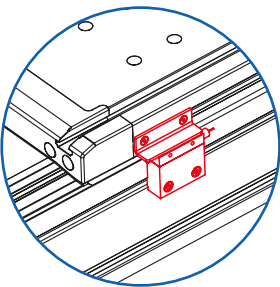


| Code No.         | Type                                         | Basic length<br>(minimum length) | Max. length<br>(clearance) | Weight [kg]  |                   |
|------------------|----------------------------------------------|----------------------------------|----------------------------|--------------|-------------------|
|                  |                                              |                                  |                            | Basic length | per 100 mm travel |
| 92521740 _ _ _ _ | Synchronising shaft<br>RK DuoLine Z 60 Clean | 127                              | 2985                       | 1,0          | 0,24              |
| 92521750 _ _ _ _ | Synchronising shaft<br>RK DuoLine Z 80 Clean | 157                              | 3400                       | 1,96         | 0,29              |

External inductive  
limit switch

- External fixation on the guide  
profil

Scope of delivery:  
Limit switch with set of fixing items



|                        |                                 |
|------------------------|---------------------------------|
| Limit switch           | external                        |
| Voltage                | 10...30 VDC                     |
| Max. switching current | 100 mA                          |
| Operating frequency    | max. 5 kHz                      |
| Mechanical lifetime    | independent of operating cycles |
| Operating distance     | 1,5 mm                          |
| Degree of protection   | IP 67                           |
| Cable length           | 5 m                             |
| Ambient temperature    | -25°C to +70°C                  |

| Code No. | Type                | A    | B  | C  | Version                             |
|----------|---------------------|------|----|----|-------------------------------------|
| 92839    | RK DuoLine 60 Clean | 52,8 | 25 | 10 | NO, Internal inductive limit switch |
| 92821    | RK DuoLine 80 Clean | 71,5 | 25 | 10 |                                     |