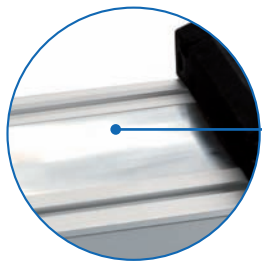


Ball rail actuator - RK DuoLine Z 80/120/160

A performance class with functional details that are unrivalled



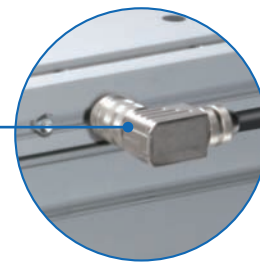
Cover strip

- ✓ Degree of protection IP 40



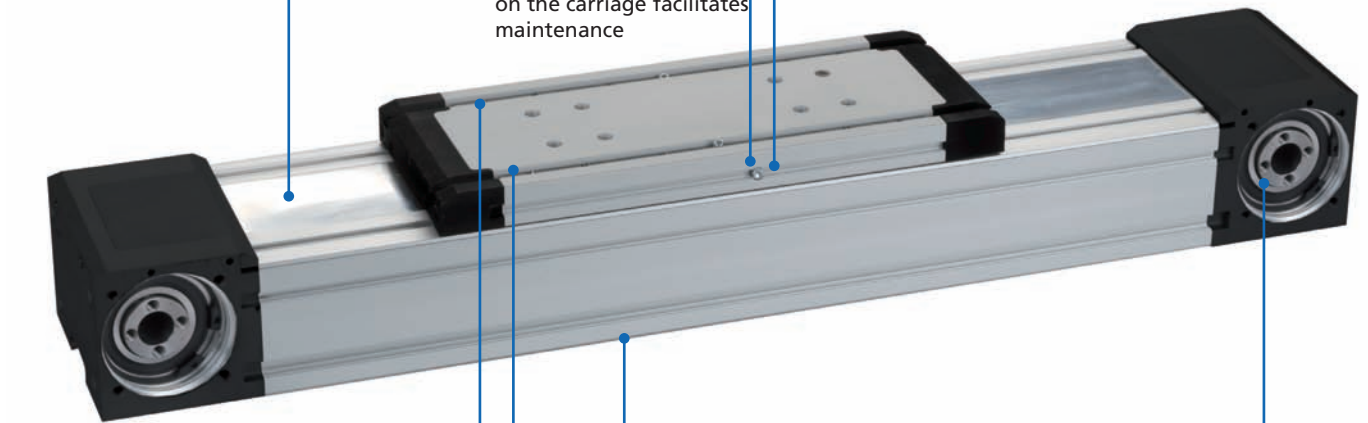
Tapered lubricating nipple

- ✓ Central lubricating access on the carriage facilitates maintenance



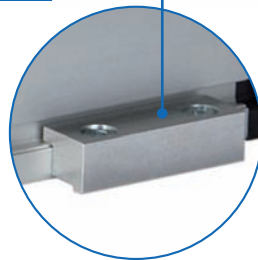
Integr. position transducer

- ✓ Excellent positioning accuracy along entire length of unit



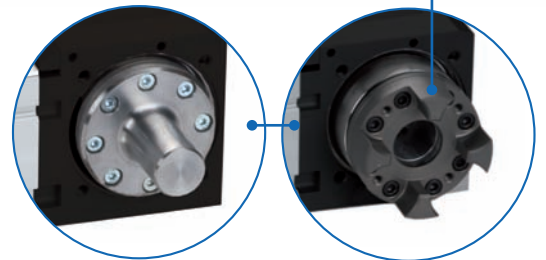
Slot stone strip

- ✓ To hold your load securely



Clamping bars

- ✓ Reliable fixation of the axis



Variable motor connection

- ✓ For metal bellows coupling
- ✓ For elastomer coupling

RK DuoLine Z Basic

- IP 20 protection class
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeatability ± 0.05 mm

Features:

- No-load torque ≤ 2.5 Nm
- Central lubricating access on the carriage facilitates maintenance

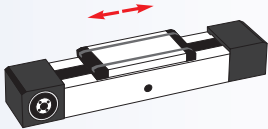
Options:

- Extended carriage

RK DuoLine Z Protect

- IP 40 protection class thanks to steel cover strip and seals
- Flexible positioning of motor thanks to pulley boxes with hollow shafts
- Repeatability ± 0.05 mm

RK DuoLine Z 80/120/160 - Table of contents

Properties/Technical data		<ul style="list-style-type: none"> ■ General information/operating conditions ... 480 ■ Load data..... 480 ■ Calculation of the load characteristic..... 481
Versions (Dimensions, order numbers)		<ul style="list-style-type: none"> ■ Dimensions/order data 482 - 483
Accessories	Fixing	<ul style="list-style-type: none"> ■ Fixing the rated load 484 ■ Fixing the linear unit 485 ■ Slot stones 485
	Drive	<ul style="list-style-type: none"> ■ Drive shaft 486 ■ Motor adaptor kit 486 ■ Synchronisation shaft 487
	Position determination	<ul style="list-style-type: none"> ■ Limit switch 488 - 489

RK DuoLine Z 80/120/160 – Technical data

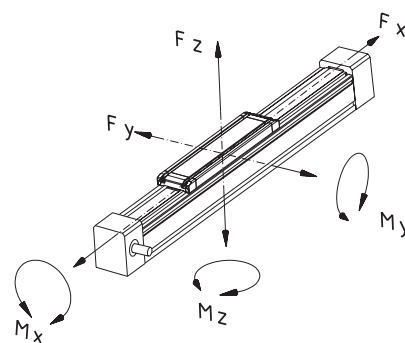
General information/operating conditions

	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	2 Ball rail systems	1 Ball rail system
Installation position	any position			
Max. driving torque	67 Nm	137 Nm	137 Nm	220 Nm
Max. speed	5 m/s	5 m/s (10m/s)	5 m/s	5 m/s
Max. acceleration	50 m/s ²	50 m/s ²	50 m/s ²	50 m/s ²
Repeat accuracy	± 0.05 mm	± 0.05 mm	± 0.05 mm	± 0.05 mm
Positioning accuracy	with integrated position sensing system ± (0.025 + 0.01 × L) mm; L = travel in meters			
Max. no-load torque	2.2 Nm			2.5 Nm
Drive	GT Belts, Pitch 8 mm, Width 30 mm	GT Belts, Pitch 8 mm, Width 50 mm	GT Belts, Pitch 8 mm, Width 50 mm	GT Belts, Pitch 8 mm, Width 75 mm
Active Ø pulley wheel	66.21 mm	76.39 mm	76.39 mm	76.39 mm
Pulley wheel circumference	208 mm	239.86 mm	239.86 mm	239.86 mm
Ambient temperature	0 bis +60°C	0 bis +60°C	0 bis +60°C	0 bis +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

Dynamic load data

F Force [N]

M Moment [Nm]

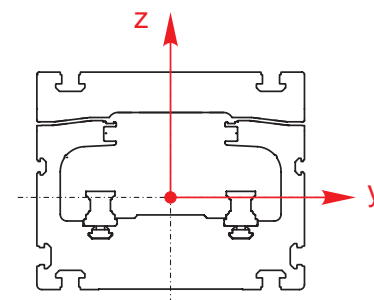


Toothed-belt drive						
Load data	Fx	Fy	Fz	Mx	My	Mz
Standard guide carriage						
RK DuoLine Z 80	2000	1000	4100	100	340	300
RK DuoLine Z 120	3600	1400	6400	125	550	530
RK DuoLine Z 120 II	3600	2000	6900	205	620	560
RK DuoLine Z 160	6000	5100	8900	500	840	810
Extended guide carriage						
RK DuoLine 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

Geometric moment of inertia

[cm⁴]

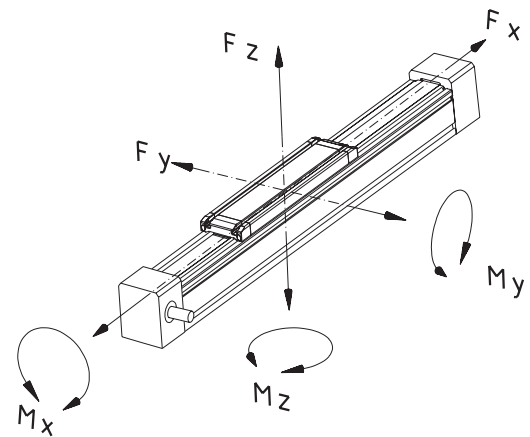
	Iy	Iz
RK DuoLine Z 80	127.90 cm ⁴	172.80 cm ⁴
RK DuoLine Z 120	285.08 cm ⁴	597.45 cm ⁴
RK DuoLine Z 120 II	290.66 cm ⁴	597.45 cm ⁴
RK DuoLine 160	437.70 cm ⁴	1455.90 cm ⁴



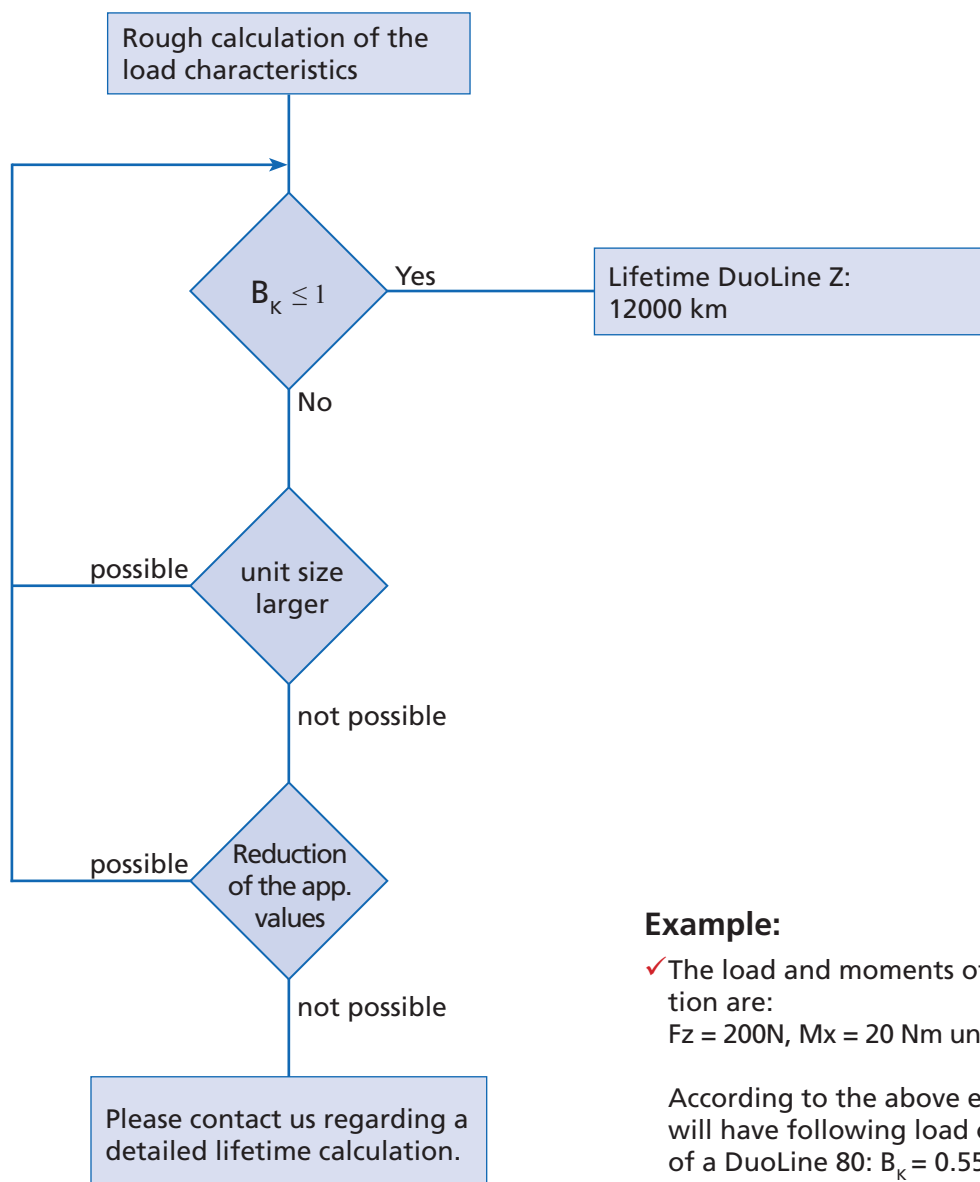
Calculation of the load characteristic to define the lifetime

- 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.

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



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



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 DuoLine 80: $B_k = 0.55$.

RK DuoLine Z 80/120/160 - Versions

Order information:

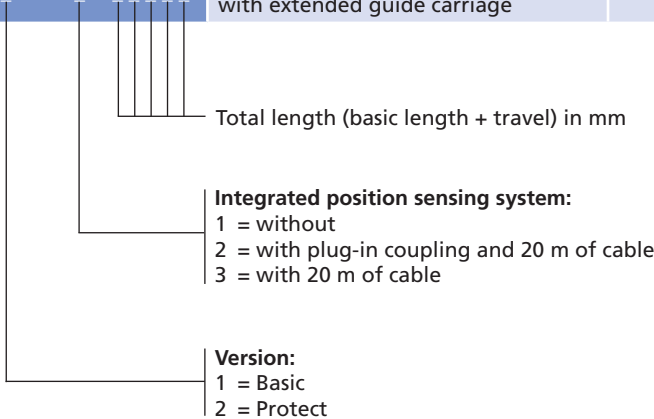
- Longer travel lengths on request
- Also available without screw drive as a torque support
- DuoLine Z 120 Basic with one ball rail guide version up to 10 m / s on request

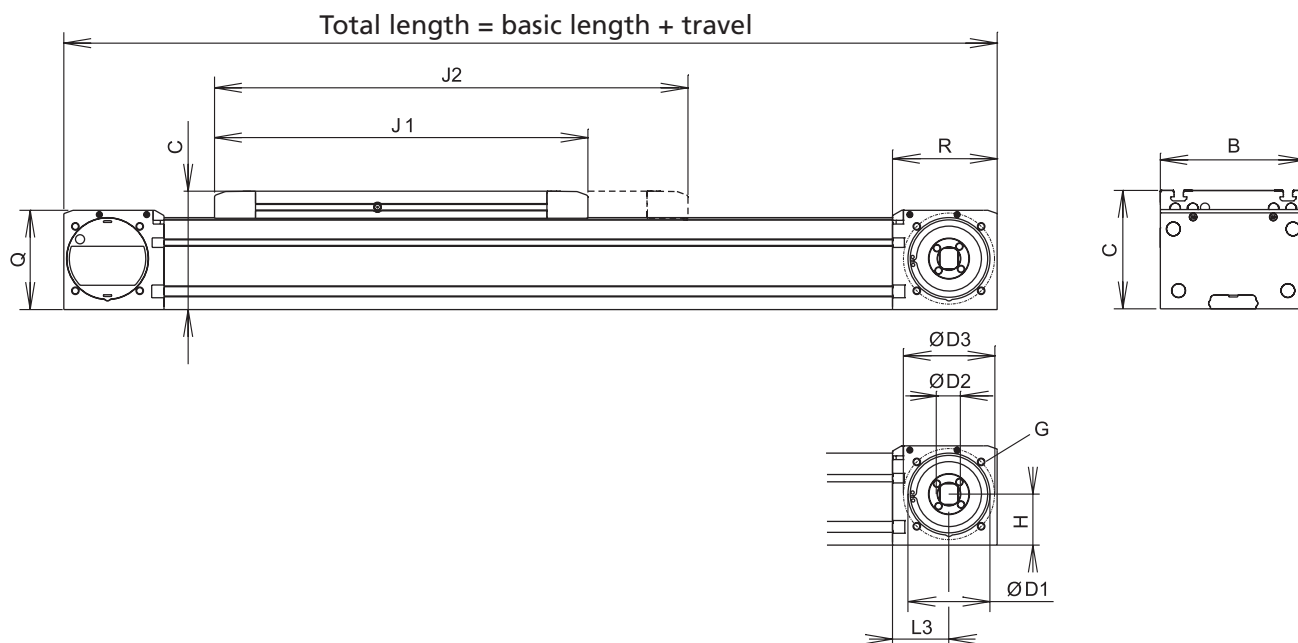
Timing-belt unit RK DuoLine Z Place-Tec



Note: DuoLine Z 120 available from 01.2012

Code No.	Type	Basic length	B	C	D1	D2
TD1_A2F1A_1A_ _ _ _	RK DuoLine Z 80	468	80	100	75 ^{H7}	16 ^{H6}
TD1_A2F1B_1A_ _ _ _	RK DuoLine Z 80 with extended guide carriage	600				
TD1_A3F1A_1A_ _ _ _	RK DuoLine Z 120 one ball rail guide	606	120	115	90 ^{H7}	20 ^{H6}
TD1_A3F1B_1A_ _ _ _	RK DuoLine Z 120 one ball rail guide 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 with extended guide carriage	750				
TD1_A1F1A_1A_ _ _ _	RK DuoLine Z 160	630	160	130	90 ^{H7}	25 ^{H6}
TD1_A1F1B_1A_ _ _ _	RK DuoLine Z 160 with extended guide carriage	780				





[mm]

D3	G	H	J1	J2	L3	Q	R	max. travel	Mass [kg]	
									Basic length	pro 100 mm travel
90.5±0.2	M8-12 deep	40.1	278	-	52	85	95	7722	7.84	0.83
			-	410				7590	9.51	0.83
100±0.2	M8-16 deep	46.8	386	-	62	98	110	7614	16.33	1.19
			-	550				7470	18.72	1.19
			386	-				5614	16.33	1.19
			-	550				5470	18.72	1.19
100±0.2	M8-28 deep	56	410	-	62	109	110	9010	25.76	1.80
			-	560				8860	28.16	1.80

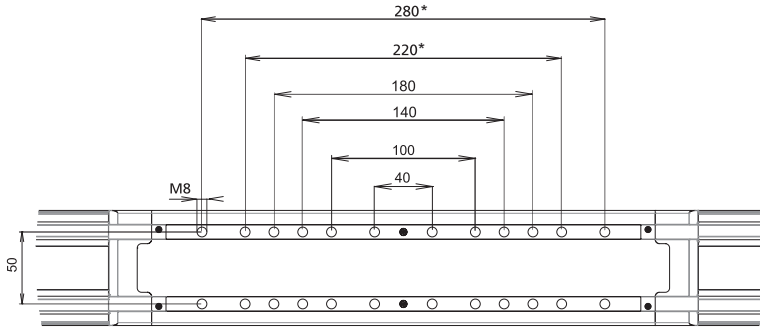
RK DuoLine Z 80/120/160 – Fixing

Fixation of rated load

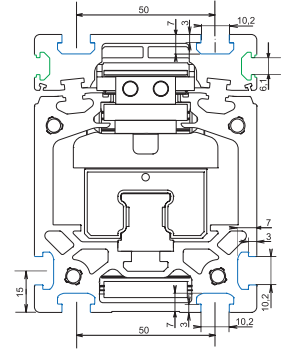
- Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways
- Profile slots in the guide carriage and guide profiles facilitate fixation

RK DuoLine Z 80

*only with version with extended guide carriage

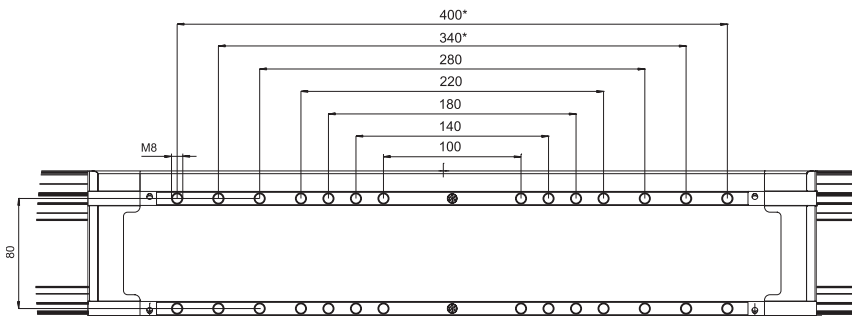


- 20 slot geometry
- 30 slot geometry

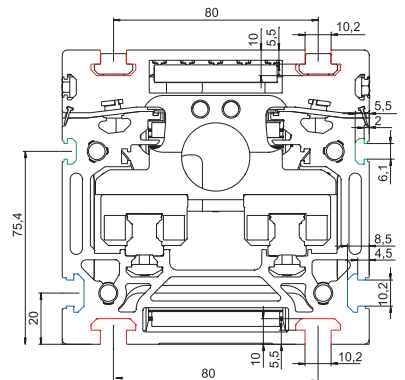


RK DuoLine Z 120

*only with version with extended guide carriage

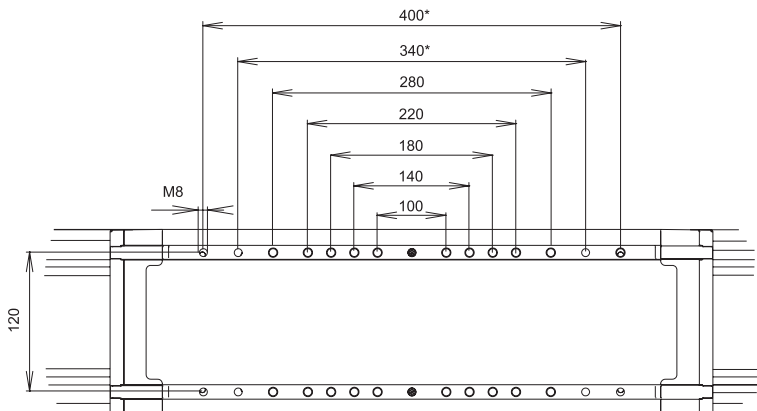


- 20 slot geometry
- 30 slot geometry
- 40 slot geometry

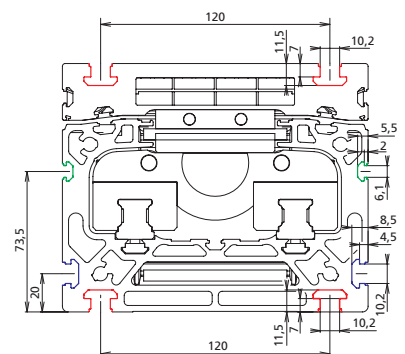


RK DuoLine Z 160

*only with version with extended guide carriage



- 20 slot geometry
- 30 slot geometry
- 40 slot geometry





Clamping strips

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

Material: Natural anodised aluminium, galvanised fixation material.
Scope of delivery: 2 clamping strips with fixation material

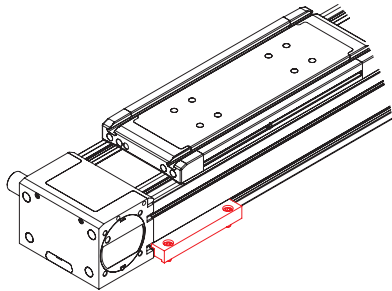
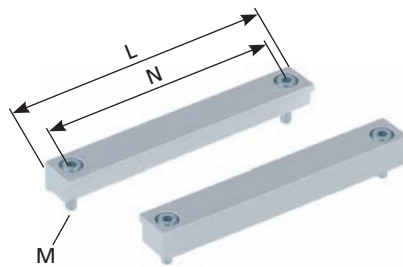


Fig.1: Ground assembly



[mm]

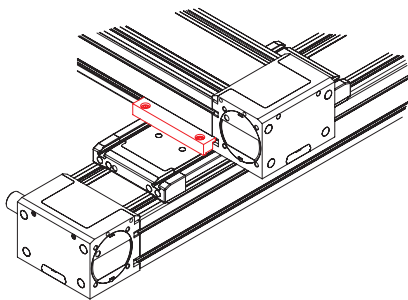


Fig.2: Crossing units

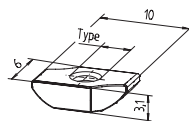
Code No.	Type	Abb.	L	M	N
91806	RK DuoLine 80 ground assembly	1	76	M8	50
	RK DuoLine 80 crossing to 80	2			
on request	RK DuoLine 120 ground assembly	1	116	M8	120
	RK DuoLine 120 crossing to 120	2			
	RK DuoLine 160 crossing to 120	2			
	RK MultiLine crossing to RK DuoLine 120	2			
91802	RK DuoLine 160 ground assembly	1	156	M8	120
	RK DuoLine 160 crossing to 160	2			
	RK MultiLine crossing to RK DuoLine 160	2			
	RK DuoLine 120 crossing to 160	2			

Slot stones

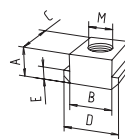
- Slot stones can be inserted and positioned at the guide profile and guide carriage

Material: galvanised steel

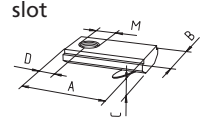
Slot stone -B- can be swivelled into the slot



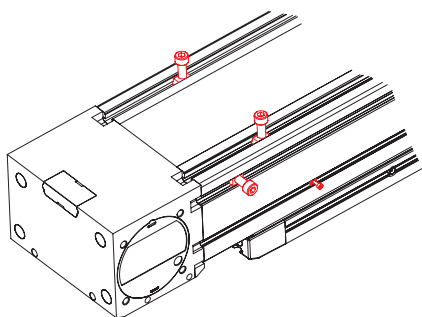
Slot stone -N- can be slid into the slot



Slot stone -K- can be swivelled into the slot



[mm]



View of DuoLine from below

Code No.	Type	Slot geometry	A	B	C	D	E	M8M	F [N]
Slot stone -B-									
E00017CEH	M3	20	Pack of 10 units						
E00058CEH	M4	20	Pack of 10 units						
Slot stone -N-									
4006202	M8	30	5	10	13	13	3	M8	4000
4026206	M8	40	8	10	13	15	4	M8	9000
Slot stone -K-									
4006211	M5	30	21	12	4	7	-	M5	5000
4006212	M6	30	21	12	4	7	-	M6	5000
4016212	M6	40	21	14	4	7	-	M6	5000

RK DuoLine Z 80/120/160 – Drive

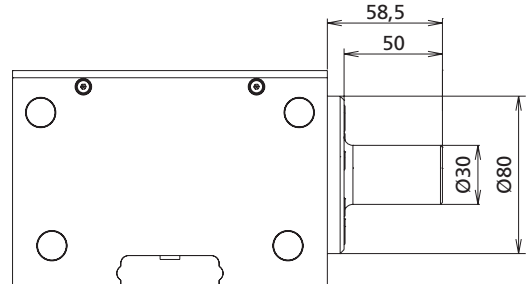
Drive shaft



For metal bellows coupling

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

Scope of delivery:
drive shaft with fastenings



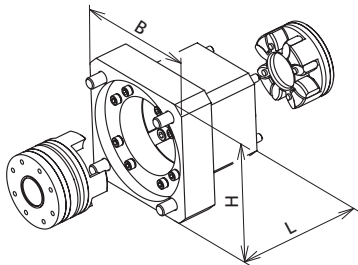
Code No.	Type	Version
91312	RK DuoLine Z 80	Drive shaft for metal bellows coupling
on request	RK DuoLine Z 120	
9720000	RK DuoLine Z 160	

Motor adaptor kit for RK AC servomotors



- Easy connection of servomotors from the RK standard range
- Motor adaptor kits for every motor or gear unit manufacturer
- Complete motor adaptor kits manufactured to your specifications on request

Scope of delivery:
Motor adaptor kit, elastomer coupling and fixation material



Code No.	Type	Version
Servo motors DuoLine Z 80		
949350	RK-AC 112	with gearbox – PLE 60
949351	RK-AC 118	with gearbox – PLN 70
949352	RK-AC 240	with gearbox – PLN 90
949353	RK-AC 260	with gearbox – PLE 80
949354	RK-AC 345	with gearbox – PLE 120
949357	RK-AC 210 / 470	without gearbox
Servo motors DuoLine Z 160		
949344	RK-AC 800	with gearbox – PLE 120
949345	RK-AC 1252 / 1776 / 2521	with gearbox – PLE 160
Three phase motors DuoLine Z 80		
949355	DSM 90 / 120 W	with gearbox
949356	DSM 180 / 250 W	with gearbox

Motor adaptor kits for every motor or gear unit manufacturer

- Complete motor adaptor kits manufactured to your specifications on request

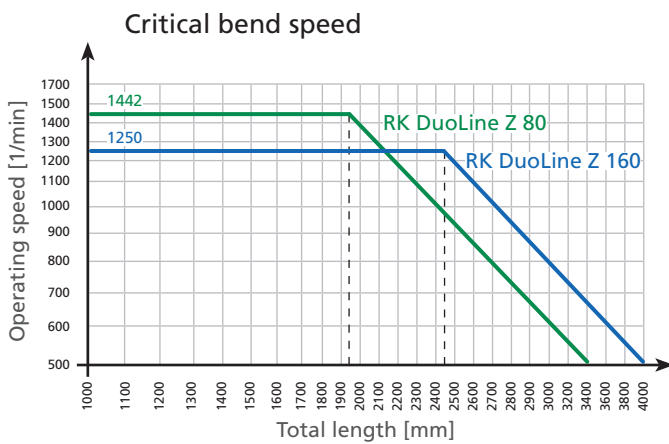
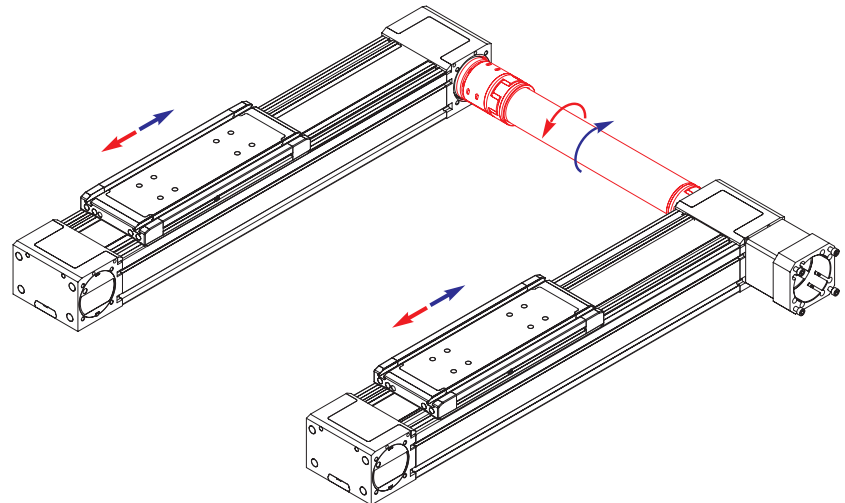
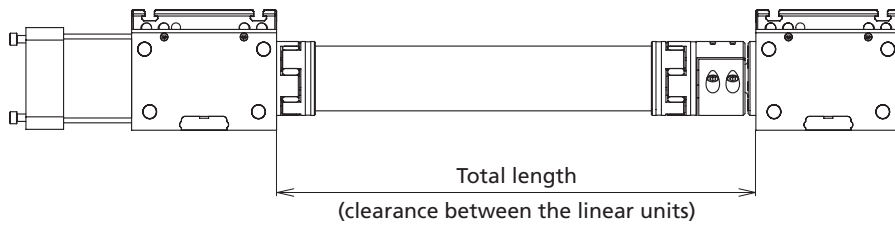


Synchronisation shaft

- For torque transmission with parallel linear units
- Synchronisation of carriages via zero point alignment

Scope of delivery:
Synchronising shaft with fastenings

Max. transfer torque:
RK DuoLine Z 80 67 Nm
RK DuoLine Z 160 220 Nm



Code No.	Type	Basic length (minimum length)	Total length (easy degree)	Weight [kg]	
				Basic length	per 100 mm travel
92538_ _ _ _	Synchronising shaft RK DuoLine Z 80	144	3400	1,07	0,12
92510_ _ _ _	Synchronising shaft RK DuoLine Z 160	220	4000	3.42	0.22



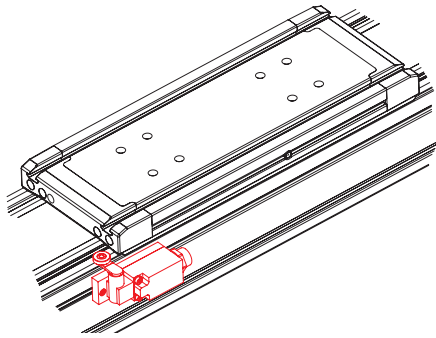
[mm]

RK DuoLine Z 80/120/160 – Position determination

Mechanical limit switch

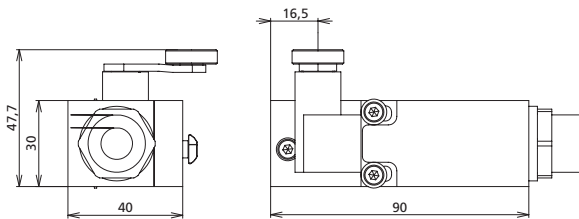
- External fixing on the guide profile

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 ⁶ cycles
Axis lever adjustment	locking by 360°
Protection class	IP 67
Ambient temperature	-30°C to +80°C

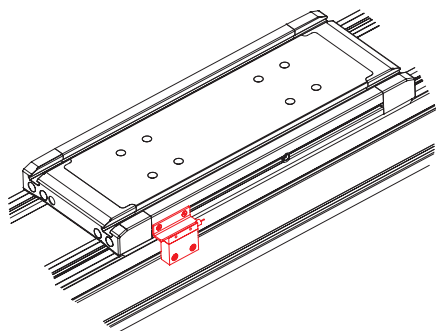
Code No.	Type	Version
91919	RK DuoLine 80	NO / NC, mechanical limit switch
on request	RK DuoLine 120	
91910	RK DuoLine 160	



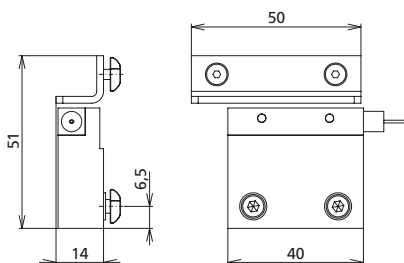
External inductive limit switch

- 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	2 mm
Protection class	IP 65
Cable length	2.5 m
Ambient temperature	-25°C to +70°C

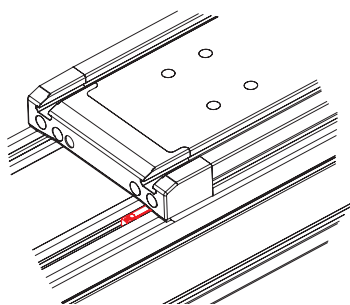


Code No.	Type	Version
92819	RK DuoLine 80	NO, External inductive limit switch
on request	RK DuoLine 120	
92810	RK DuoLine 160	

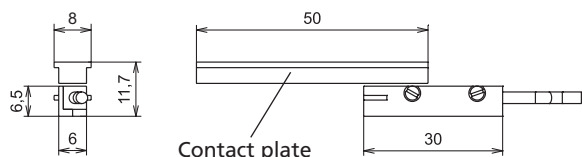
Internal inductive limit switch

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

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



Code No.	Type	Version
92820*	RK DuoLine 80	NO, Internal inductive limit switch
on request	RK DuoLine 120	
92809*	RK DuoLine 160	

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

Code No.	Version		
E00024DAA	Cut to size	black	max. 2.000 mm