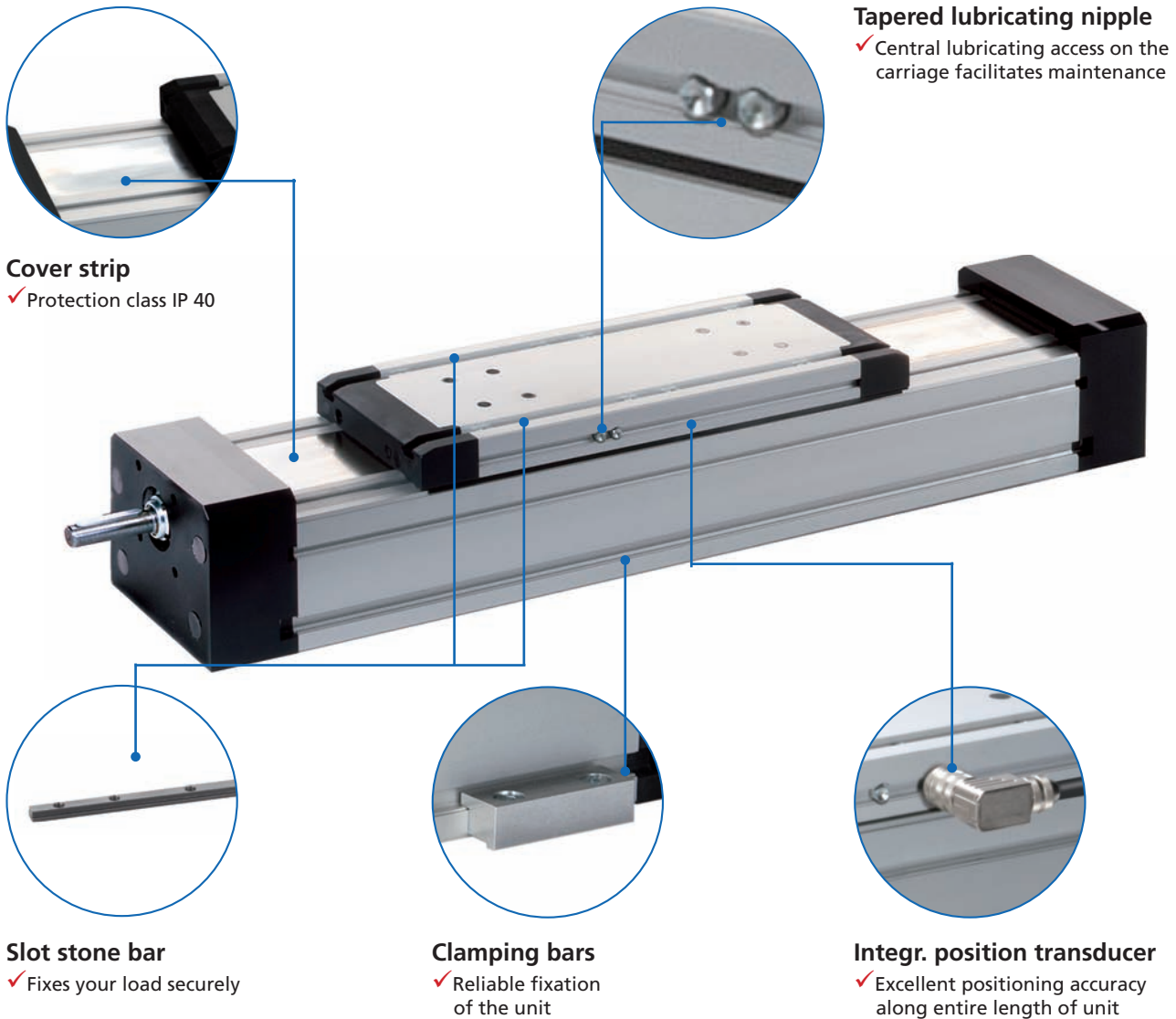


Ball rail actuator - RK DuoLine S 80/160

Optimum performance, precision and features



Features:

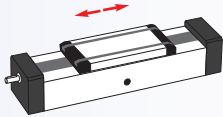
- Efficiency > 85%
- Max. travel speed regardless of length
- Central lubricating access on the carriage facilitates maintenance

RK DuoLine S Protect

- IP 40 protection class due to steel cover strip and seals
- Positioning accuracy ± 0.05 mm when using an integrated position transducer

- Multiple moving screw supports
- Repeatability ± 0.04 mm

RK DuoLine S 80/160 - Table of contents

Properties/Technical data		<ul style="list-style-type: none"> ■ General information/operating conditions... 532 ■ Load data..... 532 ■ Calculation of the load characteristic..... 533
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RK DuoLine S 80/160 – Technical data

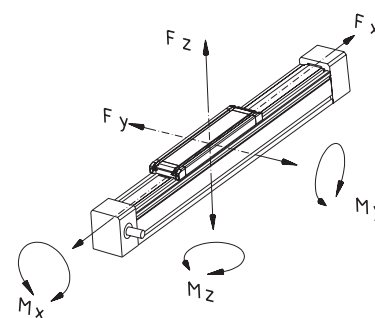
General information/operating conditions

	RK DuoLine S 80	RK DuoLine S 160
Guidance system	Ball rail system	
Installation position	any position	
Max. driving torque	17 Nm	52 Nm
Max. speed	0.94 / 2.4 m/s (regardless of travel)	2 m/s (regardless of travel)
Max. acceleration	20 m/s ²	20 m/s ²
Repeat accuracy	± 0.04 mm	± 0.04 mm
Positioning accuracy	with integrated position sensing system ± (0.025 + 0.01 x L) mm; L = travel in meters	
Max. no-load torque	0.6 Nm	0.9 Nm
Drive	Ball-and-screw, Ø 20, Pitch 20 or 50 mm, on the right	Ball-and-screw, Ø 32, Pitch 40 mm, on the right
Pitch accuracy	T5 (± 0.023 / 300 mm)	T5 (± 0.023 / 300 mm)
Duty cycle	S3 100%	S3 100%
Ambient temperature	0 to +60°C	0 to +60°C
Degree of protection	IP 40	IP 40

Dynamic load data

F Force [N]

M Moment [Nm]

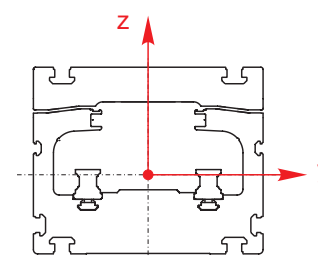


Load data	Spindle	Fx	Fy	Fz	Mx	My	Mz
Standard guide carriages							
RK DuoLine S 80	20x20	1420	1000	4100	100	380	350
	20x50	2250					
RK DuoLine S 160	32x40	8000	5100	8900	500	840	810
Extended guide carriage							
RK DuoLine S 80	20x20	1420	1000	4100	100	620	550
	20x50	2250					
RK DuoLine S 160	32x40	8000	5100	8900	500	1200	1150

Geometric moment of inertia

Type	I _y	I _z
RK DuoLine S 80	116,76	165,75
RK DuoLine S 160	437,70	1455,90

[cm⁴]

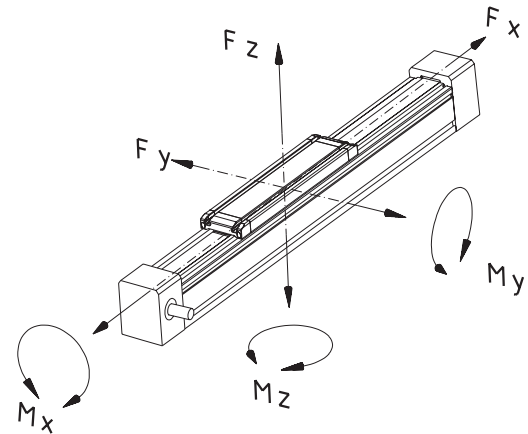


Calculation of the load characteristic

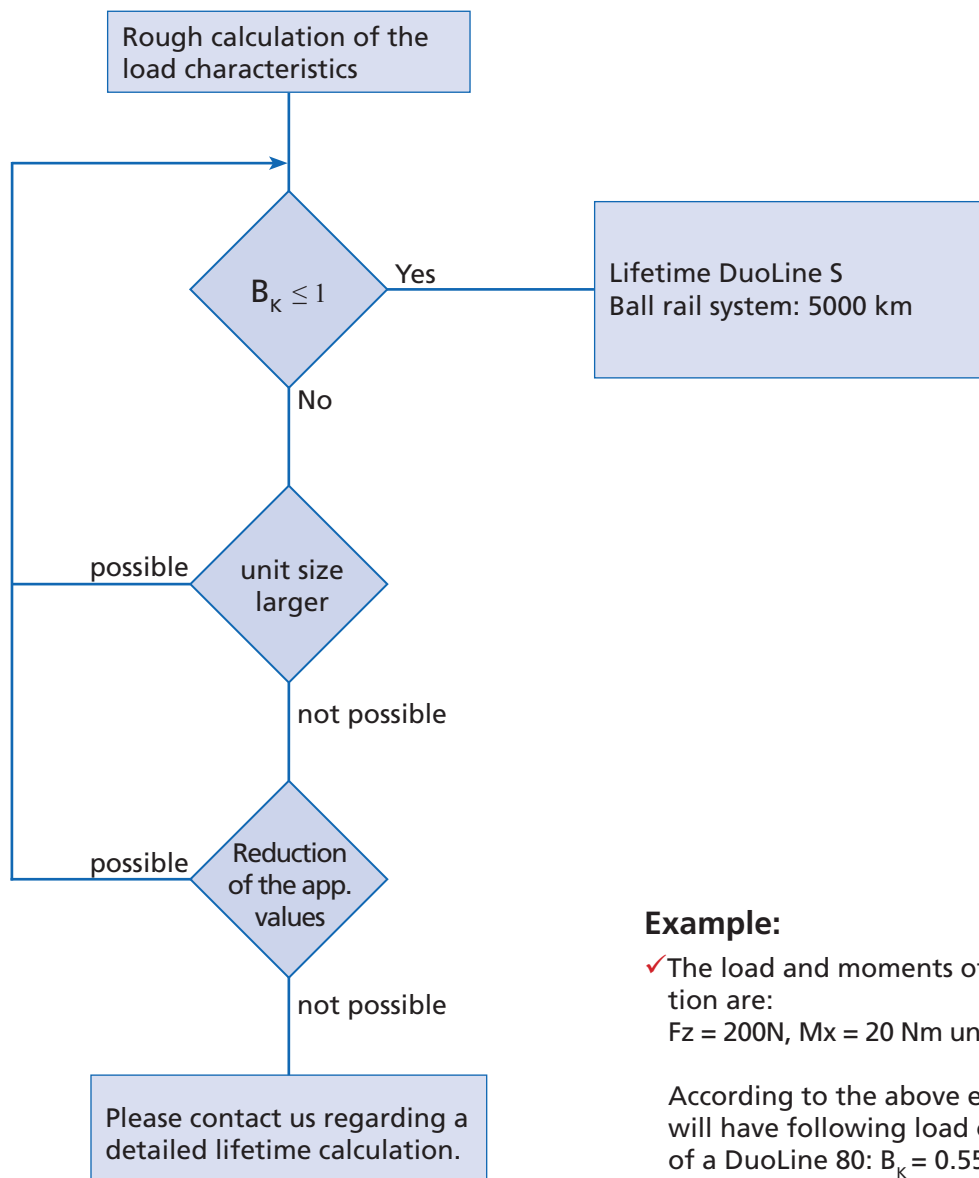
Calculation of the load characteristic to define the lifetime

- 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 S 80/160 - Versions

Order information:

- Second free concurrent carriage on request
- Also available without screw drive as a torque support

Spindle unit RK DuoLine S with ball screw



Code No.	Type	Basic length			B	C	D1	D2
		Total length of up to 1171 mm	Total length of 1172-3051 mm	Total length of ab 3052 mm				
NEW TD13A2A1A__A0__	RK DuoLine S 80 Protect	370	415	495	80	100	Ø42 ^{H7} 2.3 deep	Ø14 _{k7}
NEW TD13A2A1B__A0__	RK DuoLine S 80 Protect with extended guide carriage	502	547	627	80	100	Ø42 ^{H7} 2.3 deep	Ø14 _{k7}

_____ Total length (basic length + travel) in mm

Ball screw:

- 1 = 20x20
- 2 = 20x50

Integrated position sensing system:

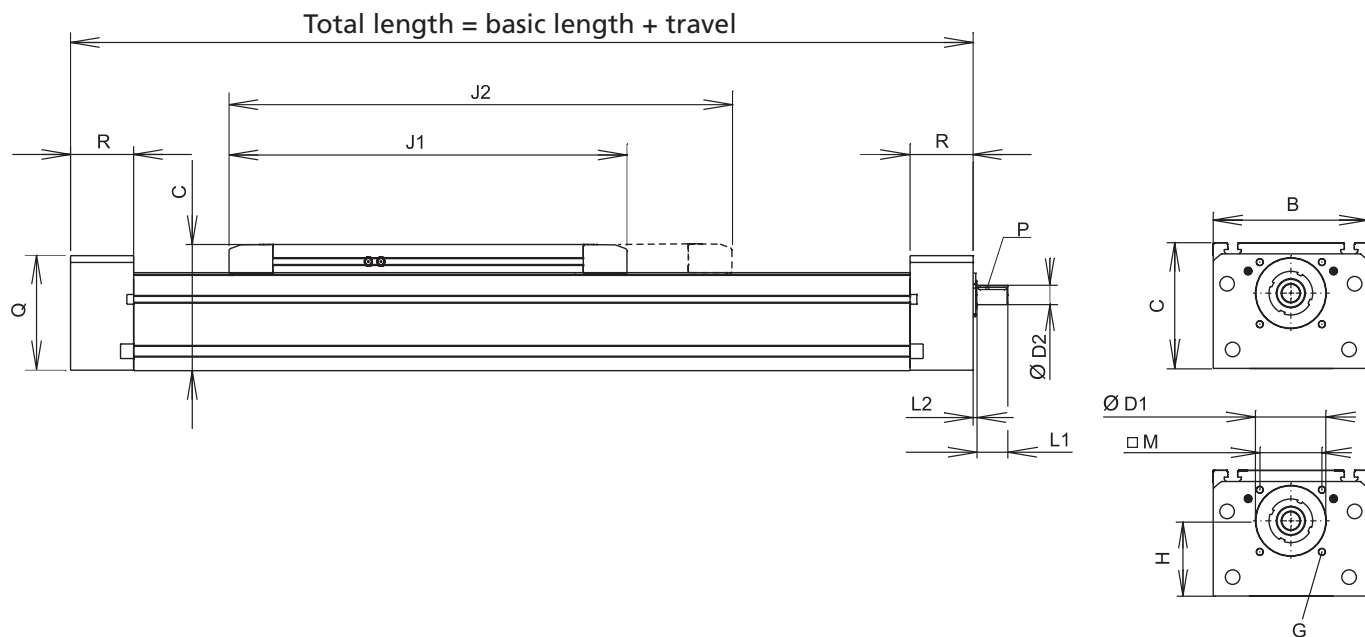
- 1 = without
- 2 = with plug-in coupling and 20 m of cable
- 3 = with 20 m of cable

Code No.	Type	Basic length			B	C	D1	D2
		Total length of up to 1350 mm	Total length of 1351-3350 mm	Total length of ab 3351 mm				
TD13A1A1A12A0__	RK DuoLine S 160 Protect	540	602	702	160	130	Ø75 ^{H7} 2.3 deep	Ø20 _{k8}
TD13A1A1B__2A0__	RK DuoLine S 160 Protect with extended guide carriage	690	752	852	160	130	Ø75 ^{H7} 2.3 deep	Ø20 _{k8}

_____ Total length (basic length + travel) in mm

Integrated position sensing system:

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



[mm]

G	H	J1	J2	L1	L2	M	Q	R	max. travel	Mass [kg]	
										Basic length	pro 100 mm travel
M6-18 deep	57.5	278	-	30	3.8	□46±0.2	89	46	4440	6.74	0.96
M6-18 deep	57.5	-	410	30	3.8	□46±0.2	89	46	4368	8.01	0.96

[mm]

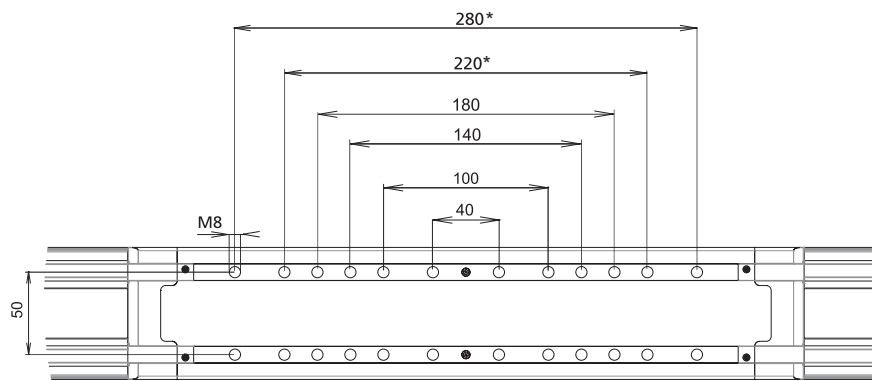
G	H	J1	J2	L1	L2	M	Q	R	max. travel	Mass [kg]	
										Basic length	pro 100 mm travel
M8-22 deep	78	410	-	32	3.7	□64±0.2	118	65	4300	23.26	2.21
M8-22 deep	78	-	560	32	3.7	□64±0.2	118	65	4150	26.59	2.21

RK DuoLine S 80/160 – Fixing

Fixation of payload RK DuoLine S 80

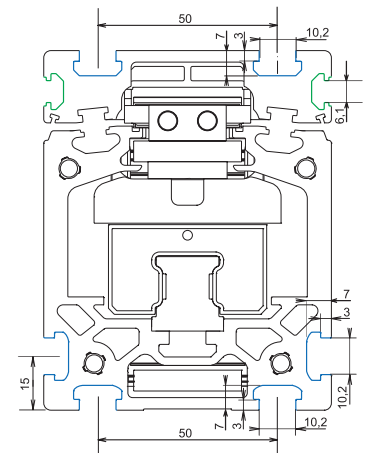
- Two slot stone strips have been inserted in the guide carriage on which fittings can be securely attached in a variety of ways
- Profile slots in the guide carriage and guide profiles facilitate fixation
- See next page for details of clamping strips and slot stones

*only with version with extended guide carriage



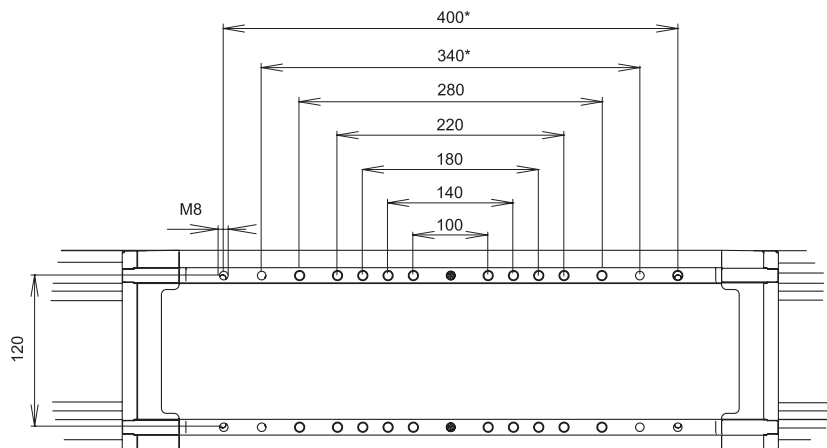
— 20 slot geometry

— 30 slot geometry



RK DuoLine S 160

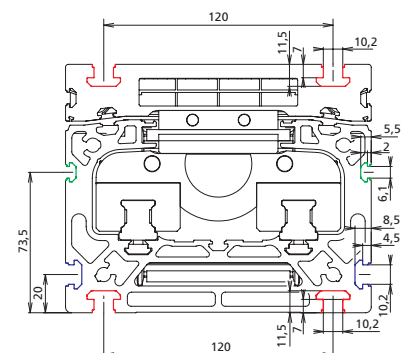
*only with version with extended guide carriage



— 20 slot geometry

— 30 slot geometry

— 40 slot geometry





Clamping bars

- Clamping bars facilitate fixation of the linear unit to the base or connection of two units to form a cross table

Material: Natural anodised aluminium, galvanised fastenings
Scope of delivery: 2 clamping bars with fastenings

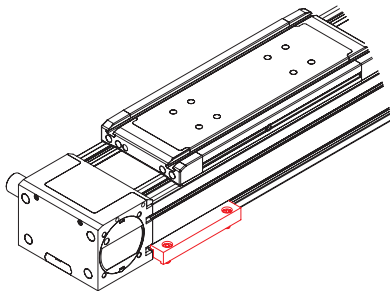


Fig.1: Base mounting

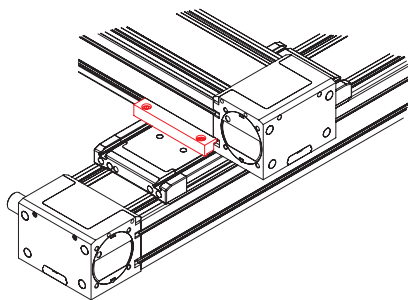
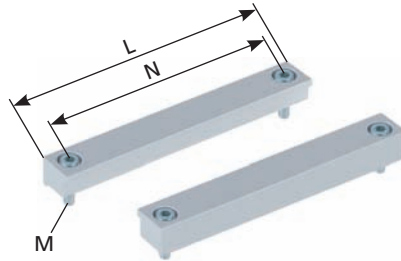


Fig.2: Crossing units

Code No.	Type	Fig.	L	M	N
91806	RK DuoLine 80 ground assembly	1	76	M8	50
	RK DuoLine 80 crossing to 80	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			

[mm]

Slot stones

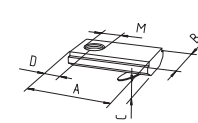
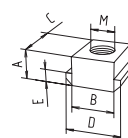
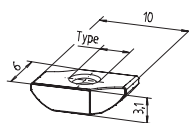
- Slot stones can be inserted and positioned on the guide profile and carriage

Material: galvanised steel

Slot stone -B- can be swivelled into the slot

Slot stone -N- can be slid into the slot

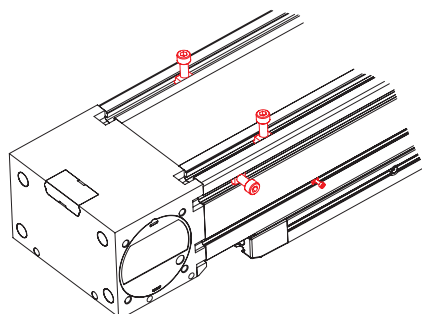
Slot stone -K- can be swivelled into the slot



[mm]



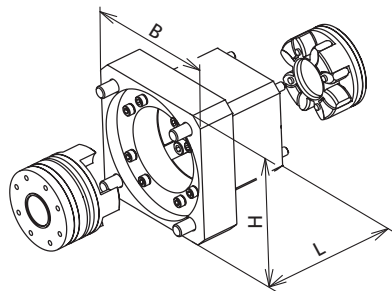
Code No.	Type	Slot geometry	A	B	C	D	E	M	F [N]
Slot stone -B-									
E00017CEH	M3	20							Pack of 10
E00058CEH	M4	20							Pack of 10
Slot stone -N-									
4006202	M8	from 30	5	10	13	13	3	M8	4000
4026206	M8	40	8	10	13	15	4	M8	9000
Slot stone -K-									
4006211	M5	from 30	21	12	4	7	-	M5	5000
4006212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



View of DuoLine from below

RK DuoLine S 80/160 – Drive/Pos. determination

Motor adapter kit for RK AC servomotors



- Servomotors from the RK standard range can be easily connected
- Motor adapter kits for every motor or gear unit manufacturer
- Complete motor adapter kits manufactured to your specifications on request

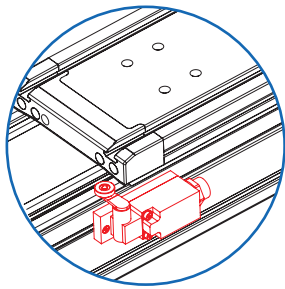
Scope of delivery:
Motor adapter kit, elastomer coupling and fixation material

Code No.	Type	Version
Servo motors DuoLine S 80		
949360	RK-AC 112	with gearbox – PLE 60
949361	RK-AC 118	with gearbox – PLN 70
949367	RK-AC 240	without gearbox
949362	RK-AC 240	with gearbox – PLE 90
949364	RK-AC 260	with gearbox – PLE 80
949366	RK-AC 210 / 470	without gearbox
Three phase motors DuoLine S 80		
949363	DSM 90 / 120 W	with gearbox
949365	DSM 180 / 250 W	with gearbox
Servo motors DuoLine S 160		
949340	RK-AC 800	without gearbox
949341	RK-AC 800	with gearbox
949342	RK-AC 1252 / 1776 / 2521	without gearbox
949343	RK-AC 1252 / 1776 / 2521	with gearbox

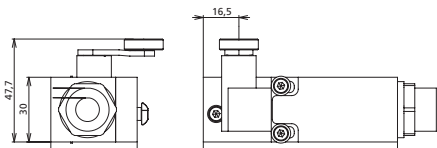
Mechanical limit switch

- External fixation on the guide profile

Scope of delivery:
Limit switch with set of fixing items



Voltage	max. 230 V AC
Max. switching current	4 A
Max. starting current	10 A
Operating frequency	max. 5000 / h
Mechanical lifetime	20x10 ⁶ cycles
Axis leverage adjustment	locking by 360°
Degree of protection	IP67
Ambient temperature	-30°C to +80°C

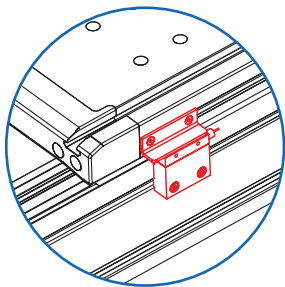


Code No.	Type	Version
91919	RK DuoLine 80	NO / NC, mechanical limit switch
91910	RK DuoLine 160	

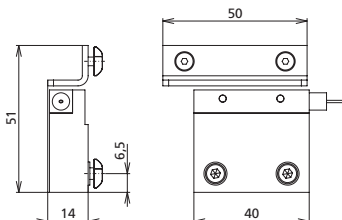
External inductive limit switch

- External fixation on the guide profile

Scope of delivery:
Limit switch with set of fixing items



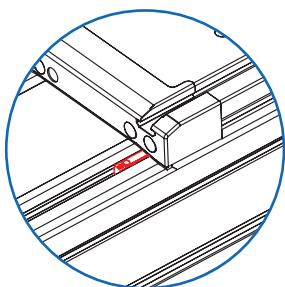
	external	internal
Voltage	10...30 VDC	10...30 VDC
Max. switching current	100 mA	100 mA
Operating frequency	max. 5 kHz	max. 5 kHz
Mechanical lifetime	independent of operating cycles	independent of operating cycles
Operating distance	2 mm	1.5 mm
Degree of protection	IP65	IP67
Cable length	2.5 m	5 m
Ambient temperature	-25°C to +70°C	-25°C to +70°C



Internal inductive limit switch

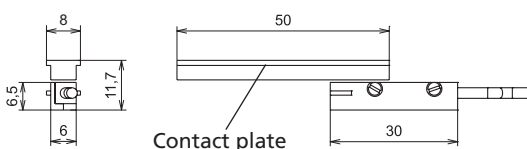
- Proximity switch integrated in the guide profile – no protruding contours

Scope of delivery:
Proximity switch with set of fixing items



Code No.	Type	Version
92819	RK DuoLine 80	NO, External inductive limit switch
92810	RK DuoLine 160	
92820*	RK DuoLine 80	NO, Internal inductive limit switch
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