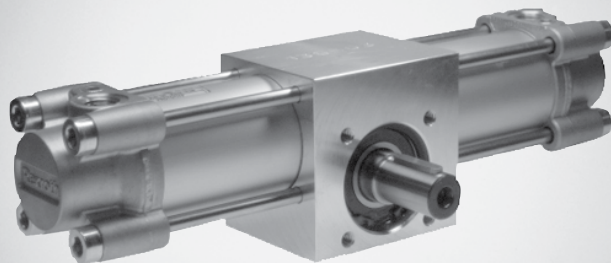


Rotary actuators → Rack-and-pinion gears
series TRR

Brochure



Rotary actuators → Rack-and-pinion gears

series TRR

Rotary cylinder, Series TRR

▶ angle of rotation: 0 - 360 ° ▶ Ø32 - 100 mm ▶ with magnetic piston ▶ double piston with rack ▶ cushioning: pneumatically, adjustable

3**Accessories****Sensors and sensor mountings, accessories**

Sensor, Series ST6

▶ 6 mm groove ▶ with cable ▶ without wire end ferrule, tin-plated

8

Sensor, Series ST6

▶ 6 mm groove ▶ with cable ▶ Plug, M8, 3-pin, with knurled screw

9

Sensor, Series ST6

▶ 6 mm groove ▶ with cable ▶ Plug, M8, 3-pin

10

Sensor, Series ST6

▶ 6 mm groove ▶ with cable ▶ Plug, M12, 3-pin, with knurled screw

12

ST6, Sensor mounting

▶ for Series ST6 ▶ to mount on cylinder Series TRB, 523, TRR

13

SN1, SN2, Sensor mounting

▶ for Series SN1, SN2 ▶ to mount on cylinder Series TRB, TRR

13

Rotary actuators → Rack-and-pinion gears

Rotary cylinder, Series TRR

► angle of rotation: 0 - 360 ° ► Ø32 - 100 mm ► with magnetic piston ► double piston with rack ► cushioning: pneumatically, adjustable



00106571

Working pressure min./max.	1.5 bar / 10 bar
Ambient temperature min./max.	-20 °C / +80 °C
Medium temperature min./max.	-20 °C / +80 °C
Medium	Compressed air
Max. particle size	5 µm
Oil content of compressed air	0 mg/m³ - 1 mg/m³
Theoretical torque at	6,3 bar

Materials:

Housing	Aluminum
Covers	Die-cast aluminum
Seals	Polyurethane
Axis	Steel

Technical Remarks

- The pressure dew point must be at least 15 °C under ambient and medium temperature and may not exceed 3 °C.

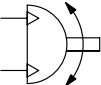
Frame size		TRR-32	TRR-40	TRR-50	TRR-63	TRR-80
Axis diameter	[mm]	14	17	22	25	30
Stroke/10° angle of rotation		2	2.2	2.6	3.5	3.9
Theoretical torque	[Nm]	4.5	7	14	29	53.5
Cushioning angle	[°]	61	69	65	49	56

Frame size		TRR-100			
Axis diameter	[mm]	35			
Stroke/10° angle of rotation		5.2			
Theoretical torque	[Nm]	111			
Cushioning angle	[°]	45			

Rotary actuators → Rack-and-pinion gears

Rotary cylinder, Series TRR

► angle of rotation: 0 - 360 ° ► Ø32 - 100 mm ► with magnetic piston ► double piston with rack ► cushioning: pneumatically, adjustable

	Frame size	Compressed air connection	angle of rotation	Rotation angle tolerance	Rotation angle setting	Tolerance in 0° position not under pressure	Direction of rotation	Max. play (radial)	Weight	Note	Part No.
			[°]			[°]		[°]	[kg]		
	TRR-32	G 1/8	0 - 90	0° / +3°	-	-3.5° / +3.5°	Counter-clockwise	2.1	1.9	2)	0822930204
	TRR-32	G 1/8	0 - 180	0° / +3°	-	-3.5° / +3.5°		2.1	2.1	2)	0822930205
	TRR-32	G 1/8	0 - 360	0° / +3°	-	-3.5° / +3.5°		2.1	2.5	2)	0822930206
	TRR-40	G 1/4	0 - 90	0° / +3°	-	-3° / +3°		1.6	2.5	2)	0822931204
	TRR-40	G 1/4	0 - 180	0° / +3°	-	-3° / +3°		1.6	2.75	2)	0822931205
	TRR-40	G 1/4	0 - 360	0° / +3°	-	-3° / +3°		1.6	3.25	2)	0822931206
	TRR-50	G 1/4	0 - 90	0° / +6°	-	-3° / +3°		1.3	3.95	2)	0822932204
	TRR-50	G 1/4	0 - 180	0° / +6°	-	-3° / +3°		1.3	4.25	2)	0822932205
	TRR-50	G 1/4	0 - 360	0° / +6°	-	-3° / +3°		1.3	4.85	2)	0822932206
	TRR-50	G 1/4	0 - 90	-	-5° / +5°	-3° / +3°		1.3	4.1	1)	0822932227
	TRR-50	G 1/4	0 - 180	-	-5° / +5°	-3° / +3°		1.3	4.4	1)	0822932228
	TRR-50	G 1/4	0 - 360	-	-5° / +5°	-3° / +3°		1.3	5	1)	0822932229
	TRR-63	G 3/8	0 - 90	0° / +5°	-	-2° / +2°		1	5.9	2)	0822933204
	TRR-63	G 3/8	0 - 180	0° / +5°	-	-2° / +2°		1	6.3	2)	0822933205
	TRR-63	G 3/8	0 - 360	0° / +5°	-	-2° / +2°		1	7.1	2)	0822933206
	TRR-63	G 3/8	0 - 90	-	-5° / +5°	-2° / +2°		1	6.4	1)	0822933227
	TRR-63	G 3/8	0 - 180	-	-5° / +5°	-2° / +2°		1	6.8	1)	0822933228
	TRR-63	G 3/8	0 - 360	-	-5° / +5°	-2° / +2°		1	7.6	1)	0822933229
	TRR-80	G 3/8	0 - 90	0° / +4°	-	-2° / +2°		0.9	11.6	2)	0822934204
	TRR-80	G 3/8	0 - 180	0° / +4°	-	-2° / +2°		0.9	12.4	2)	0822934205
	TRR-80	G 3/8	0 - 360	0° / +4°	-	-2° / +2°		0.9	14	2)	0822934206
	TRR-80	G 3/8	0 - 90	-	-7° / +7°	-2° / +2°		0.9	12	1)	0822934227
	TRR-80	G 3/8	0 - 180	-	-7° / +7°	-2° / +2°		0.9	12.8	1)	0822934228
	TRR-80	G 3/8	0 - 360	-	-7° / +7°	-2° / +2°		0.9	14.4	1)	0822934229
	TRR-100	G 1/2	0 - 90	0° / +3°	-	-1.5° / +1.5°		0.75	15.5	2)	0822935204
	TRR-100	G 1/2	0 - 180	0° / +3°	-	-1.5° / +1.5°		0.75	16.7	2)	0822935205
	TRR-100	G 1/2	0 - 360	0° / +3°	-	-1.5° / +1.5°		0.75	19.1	2)	0822935206
	TRR-100	G 1/2	0 - 90	-	-7° / +7°	-1.5° / +1.5°		0.75	16.3	1)	0822935227
TRR-100	G 1/2	0 - 180	-	-7° / +7°	-1.5° / +1.5°	0.75	17.5	1)	0822935228		
TRR-100	G 1/2	0 - 360	-	-7° / +7°	-1.5° / +1.5°	0.75	19.9	1)	0822935229		

1) Adjustable angle of rotation

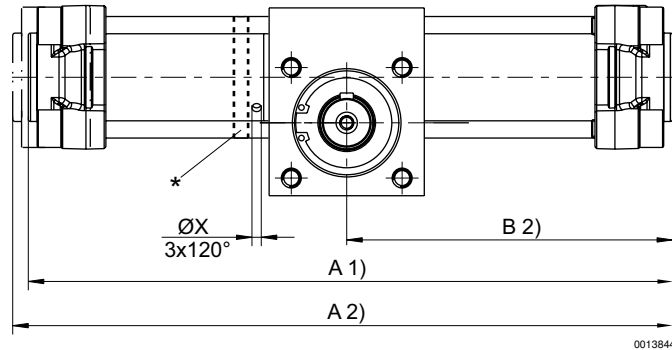
2) Non-adjustable angle of rotation

Rotary actuators → Rack-and-pinion gears

Rotary cylinder, Series TRR

► angle of rotation: 0 - 360 ° ► Ø32 - 100 mm ► with magnetic piston ► double piston with rack ► cushioning: pneumatically, adjustable

Rotation angle setting



* Rotation angle setting via rotation of the setting ring.
 The nuts of the tie rod must be loosened and tightened with the torque Ma.
 0-position: parallel key on top (piston stop on the right).
 Tightening torque TRR-50, TRR-63: 9-10 Nm
 Tightening torque TRR-80, TRR-100: 18-20 Nm

Adjustable angle of rotation

Frame size	Ø	A 1) 90°	A 1) 180°	A 1) 360°	A 2) 90°	A 2) 180°	A 2) 360°	B 2) 90°	B 2) 180°	B 2) 360°	ØX		
TRR-50	50	292	339	434	299	345	440	150	173	220	4.2		
TRR-63	63	337	400	525	344	407	533	173	204	267	4.2		
TRR-80	80	388	458	600	399	470	611	200	235	306	4.2		
TRR-100	100	440	533	722	451	544	733	226	273	366	4.2		

1) Min.
 2) Max.

Non-adjustable angle of rotation

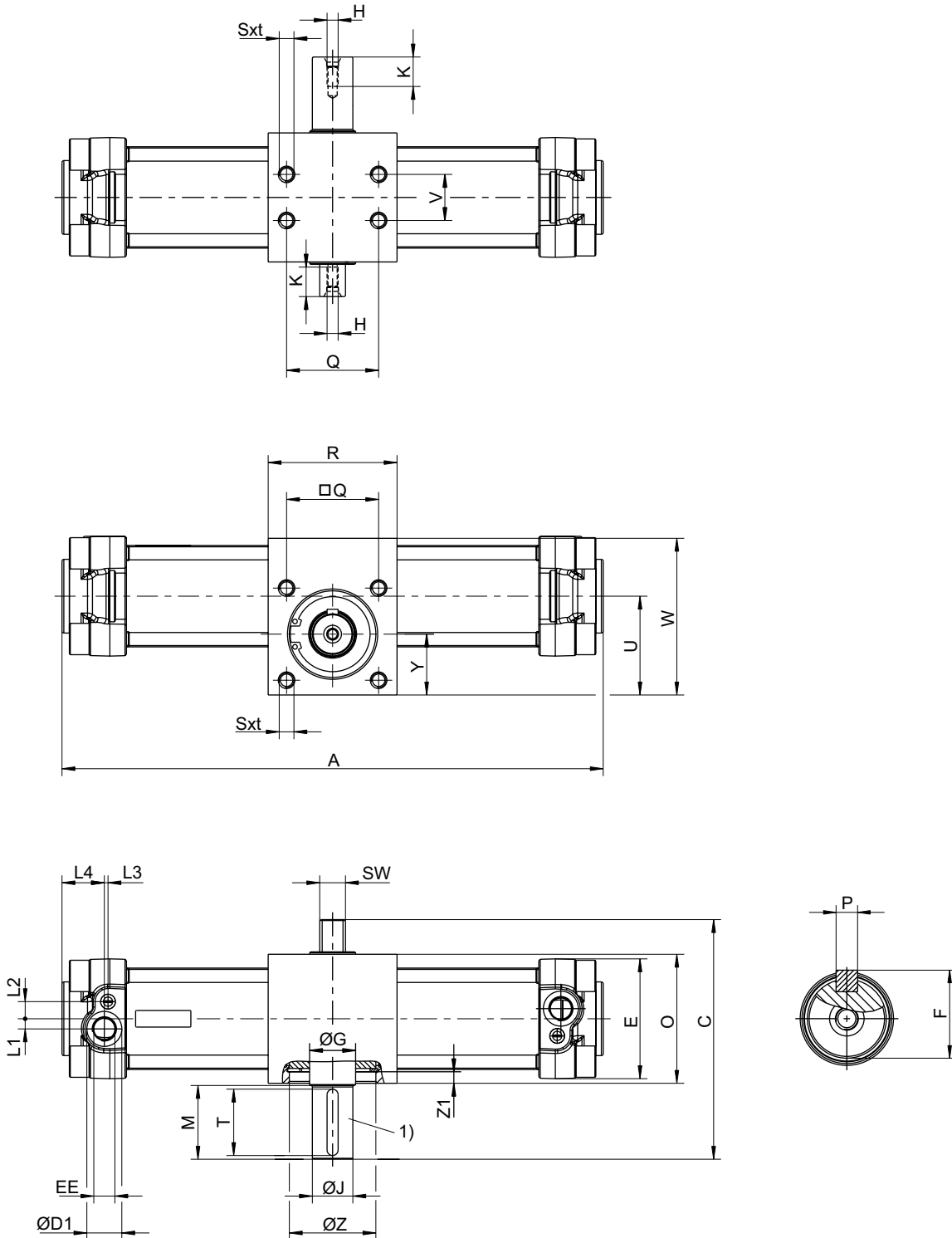
Frame size	Ø	A 2) 90°	A 2) 180°	A 2) 360°	B 2) 90°	B 2) 180°	B 2) 360°	ØX					
TRR-32	32	251	285	357	126	143	179	-					
TRR-40	40	265	304	383	133	152	192	-					
TRR-50	50	295	342	436	148	171	218	-					
TRR-63	63	338	401	527	169	200	264	-					
TRR-80	80	390	460	602	195	230	301	-					
TRR-100	100	440	536	724	220	268	362	-					

2) Max.

Rotary actuators → Rack-and-pinion gears

Rotary cylinder, Series TRR

► angle of rotation: 0 - 360 ° ► Ø32 - 100 mm ► with magnetic piston ► double piston with rack ► cushioning: pneumatically, adjustable

Dimensions

00138099

Rotary actuators → Rack-and-pinion gears

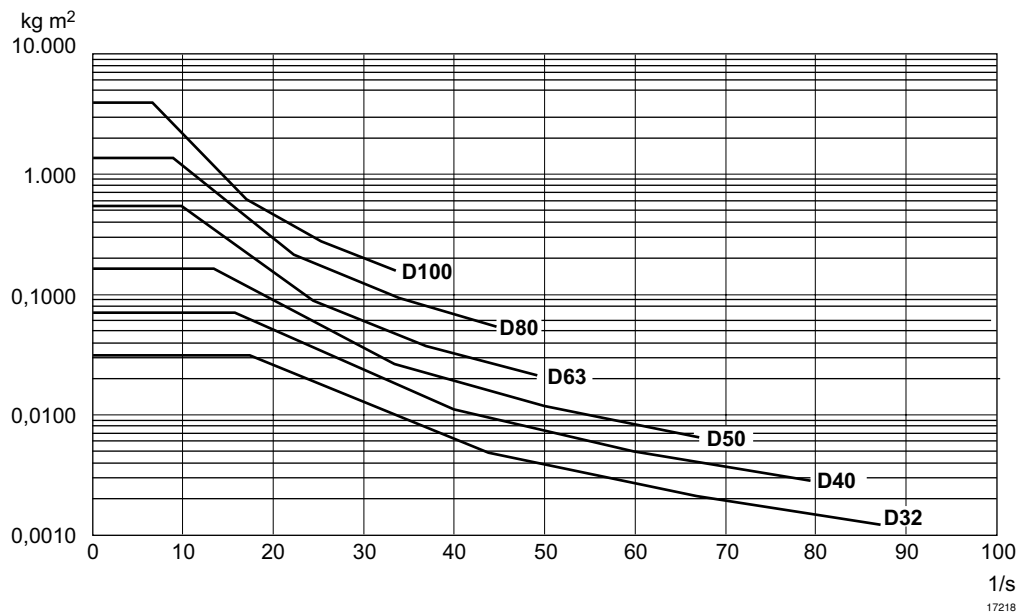
Rotary cylinder, Series TRR

► angle of rotation: 0 - 360 ° ► Ø32 - 100 mm ► with magnetic piston ► double piston with rack ► cushioning: pneumatically, adjustable

Frame size	Ø	C	ØD1	E	EE	F	ØG	H	ØJ k6	L1	L2	L3	L4
TRR-32	32	103.5	15	47	G 1/8	16	17	M5x12,5	14	5	7.5	4.2	20
TRR-40	40	110	19	53	G 1/4	19	20	M5x12,5	17	5.5	9.5	5.2	24
TRR-50	50	130	19	65	G 1/4	24.5	25	M6x16	22	5.5	9.3	2	23
TRR-63	63	142.5	23	75	G 3/8	28	30	M8x19	25	9	11.7	2	28
TRR-80	80	175	23	95	G 3/8	33	35	M8x19	30	8	15	2.5	28
TRR-100	100	190	27	115	G 1/2	38	40	M10x22	35	12	14	4	29

Frame size	M	O	P	Q	R	Sxt	SW	U	V	W	Y	ØZ H7	Z1
TRR-32	30	55	5x25	33	63	M6x9	11	40.7	18	63	25	35	4
TRR-40	30	60	5x25	40	70	M6x9	13	43.5	22	70	26.5	42	4.25
TRR-50	40	70	6x36	50	70	M8x12	14	53.5	25	85	33	47	6.25
TRR-63	40	80	8x36	60	80	M8x12	17	65	35	105	40	55	7
TRR-80	50	100	8x45	80	106	M10x15	22	84.5	50	135	53	62	9.5
TRR-100	50	114	10x45	80	125	M10x15	22	91.5	60	150	53	80	16.5

Permissible mass moment of inertia (kg m²) depending on size and angular velocity (per second)



Rotary actuators → Rack-and-pinion gears

Series TRR
Accessories

Sensor, Series ST6

▶ 6 mm groove ▶ with cable ▶ without wire end ferrule, tin-plated



00112027_2

Ambient temperature min./max.	-25 °C / +70 °C
Protection class	IP 69K
Switching point precision [mm]	±0,1
Switching capacity	3 W / 3 VA
Vibration resistance	10 - 55 Hz, 1 mm
Shock resistance	30 g / 11 ms

Materials:	
Housing	Polyamide
Cable sheath	Polyurethane

	Type of contact	Cable length	DC operating voltage min./max.	Operational voltage AC min./max.	DC switching current, max.	AC switching current, max.	Voltage drop U at I _{max}	Part No.
		[m]	[V]	[V]	[A]	[A]	[V]	
	Reed	3 5	10 / 30	10 / 30	0,13	0,13	I*Rs	0830100629 0830100630
	electronic PNP	3 5	10 / 30	-	0.1	-	≤ 2,5	0830100631 0830100632
	electronic NPN	3 5	10 / 30	-	0.1	-	≤ 2,5	0830100633 0830100634
	Reed	10	10 / 30	10 / 30	0,13	0,13	I*Rs	R412004575
	electronic PNP	10	10 / 30	-	0.1	-	≤ 2,5	R412004576

Part No.	Protective resistor for reed	Max. switching frequency	Operating current, not switched	Operating current, switched	LED	Note
	[Ω]	[kHz]	[mA]	[mA]		
0830100629 0830100630	15	< 0,3	-	< 10	Yellow	1)
0830100631 0830100632	-	< 1,0	< 20	< 30	Yellow	2)
0830100633 0830100634	-	< 1,0	< 20	< 30	Yellow	2)
R412004575	15	< 0,3	-	< 10	Yellow	1)
R412004576	-	< 1,0	< 20	< 30	Yellow	2)

1) Protected against polarity reversal

2) short circuit resistant; Protected against polarity reversal

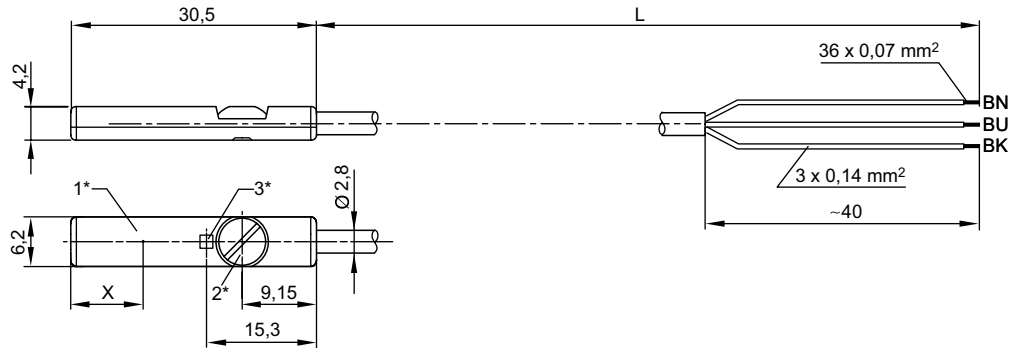
interfaces: without wire end ferrule, tin-plated

UL (Underwriters Laboratories)

Rotary actuators → Rack-and-pinion gears

Series TRR
Accessories

Dimensions



00111942_b

1* = switching point 2* = clamping screw 3* = LED
 L = cable length
 BN = brown, BK = black, BU = blue
 X = electronic: 6 mm, Reed: 10 mm

Sensor, Series ST6

► 6 mm groove ► with cable ► Plug, M8, 3-pin, with knurled screw



00112027_5

Certificates	UL (Underwriters Laboratories)
Ambient temperature min./max.	-25°C / +70°C
Protection class	IP 65, IP 67
Switching point precision [mm]	±0,1
Switching capacity	3 W / 3 VA
LED status display	Yellow
Vibration resistance	10 - 55 Hz, 1 mm
Shock resistance	30 g / 11 ms

Materials:
 Housing Polyamide

	Type of contact	Cable length	DC operating voltage min./max.	Operational voltage AC min./max.	DC switching current, max.	AC switching current, max.	Voltage drop U at I _{max}	Part No.
		[m]	[V]	[V]	[A]	[A]	[V]	
	Reed	0.3 0.5	10 / 30	10 / 30	0,13	0,13	I*Rs	0830100434 0830100436
	electronic PNP	0.3 0.5 0.3	10 / 30	-	0.1	-	≤ 2,5	0830100435 0830100437 R412004762
	electronic NPN	0.3	10 / 30	-	0.1	-	≤ 2,5	0830100431

Rotary actuators → Rack-and-pinion gears

Series TRR

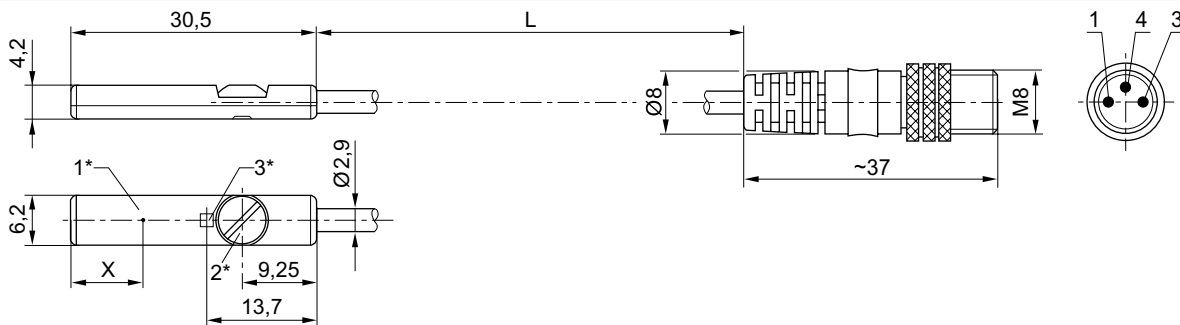
Accessories

Part No.	Protective resistor for reed	Max. switching frequency	Operating current, not switched	Operating current, switched	Note
	[Ω]	[kHz]	[mA]	[mA]	
0830100434 0830100436	15	< 0,3	-	< 10	1)
0830100435 0830100437 R412004762	-	< 1,0	< 20	< 30	2)
0830100431	-	< 1,0	< 20	< 30	2)

1) Protected against polarity reversal

2) short circuit resistant; Protected against polarity reversal
interfaces: Plug; M8; 3-pin; with knurled screw

Dimensions



0011942_d

1* = switching point 2* = clamping screw 3* = LED

L = cable length

X = electronic: 6 mm, Reed: 10 mm

Pin assignment: 1 = (+), 3 = (-), 4 = (OUT), EN 60947-5-2:1998

Sensor, Series ST6

► 6 mm groove ► with cable ► Plug, M8, 3-pin



00112027_3

Certificates

Ambient temperature min./max.

Protection class

Switching point precision [mm]

Switching capacity

LED status display

Vibration resistance

Shock resistance

Materials:

Housing

Cable sheath

UL (Underwriters Laboratories)

-25°C / +70°C

IP 65, IP 67

±0,1

3 W / 3 VA

Yellow

10 - 55 Hz, 1 mm




30 g / 11 ms

Polyamide

Polyurethane

Rotary actuators → Rack-and-pinion gears

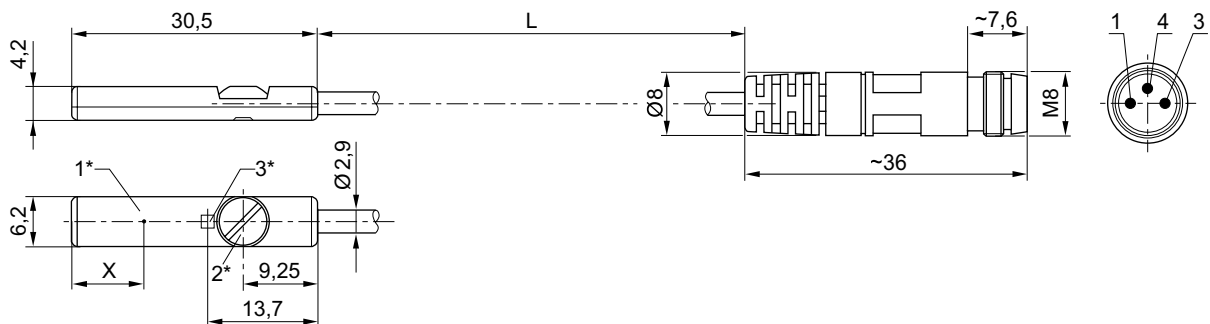
Series TRR
Accessories

	Type of contact	Cable length	DC operating voltage min./max.	Operational voltage AC min./max.	DC switching current, max.	AC switching current, max.	Voltage drop U at I _{max}	Part No.
		[m]	[V]	[V]	[A]	[A]	[V]	
	Reed	0.3	10 / 30	10 / 30	0,13	0,13	I*Rs	0830100488
	electronic PNP	0.3	10 / 30	-	0.1	-	≤ 2,5	0830100489
	electronic NPN	0.3	10 / 30	-	0.1	-	≤ 2,5	0830100430

Part No.	Protective resistor for reed	Max. switching frequency	Operating current, not switched	Operating current, switched	Note
	[Ω]	[kHz]	[mA]	[mA]	
0830100488	15	< 0,3	-	< 10	1)
0830100489	-	< 1,0	< 20	< 30	2)
0830100430	-	< 1,0	< 20	< 30	2)

1) Protected against polarity reversal
 2) short circuit resistant; Protected against polarity reversal
 interfaces: Plug; M8; 3-pin

Dimensions



00111942_a

1* = switching point 2* = clamping screw 3* = LED
 L = cable length
 X = electronic: 6 mm, Reed: 10 mm
 Pin assignment: 1 = (+), 3 = (-), 4 = (OUT), EN 60947-5-2:1998

Rotary actuators → Rack-and-pinion gears

Series TRR

Accessories

Sensor, Series ST6

► 6 mm groove ► with cable ► Plug, M12, 3-pin, with knurled screw



00112027_4

Certificates	UL (Underwriters Laboratories)
Ambient temperature min./max.	-25 °C / +70 °C
Protection class	IP 65, IP 67
Switching point precision [mm]	±0,1
Switching capacity	3 W / 3 VA
LED status display	Yellow
Vibration resistance	10 - 55 Hz, 1 mm
Shock resistance	30 g / 11 ms
Materials:	
Housing	Polyamide
Cable sheath	Polyurethane

	Type of contact	Cable length	DC operating voltage min./max.	Operational voltage AC min./max.	DC switching current, max.	AC switching current, max.	Voltage drop U at I _{max}	Part No.
		[m]	[V]	[V]	[A]	[A]	[V]	
	Reed	0.3	10 / 30	10 / 30	0,13	0,13	I*Rs	0830100432
	electronic PNP	0.3	10 / 30	-	0.1	-	≤ 2,5	0830100433

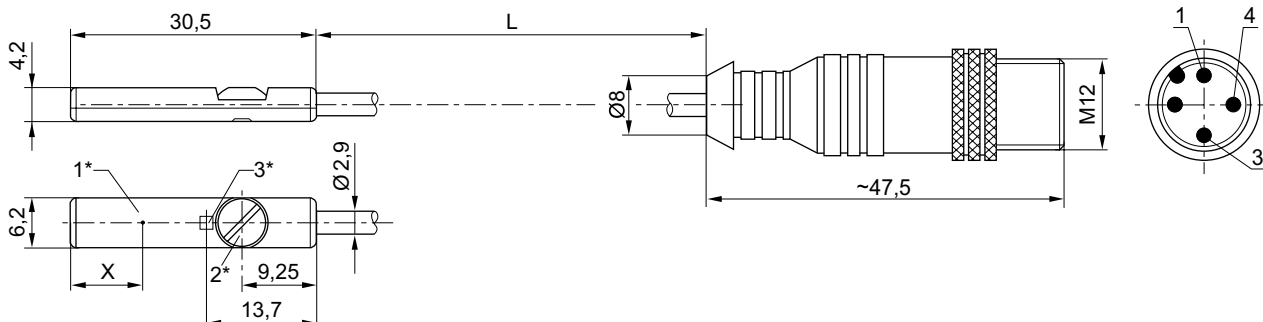
Part No.	Protective resistor for reed	Max. switching frequency	Operating current, not switched	Operating current, switched	Note
	[Ω]	[kHz]	[mA]	[mA]	
0830100432	15	< 0,3	-	< 10	1)
0830100433	-	< 1,0	< 20	< 30	2)

1) Protected against polarity reversal

2) short circuit resistant; Protected against polarity reversal

interfaces: Plug; M12; 3-pin; with knurled screw

Dimensions



00111942_c

1* = switching point 2* = clamping screw 3* = LED

L = cable length

X = PNP: 6 mm, reed: 10 mm

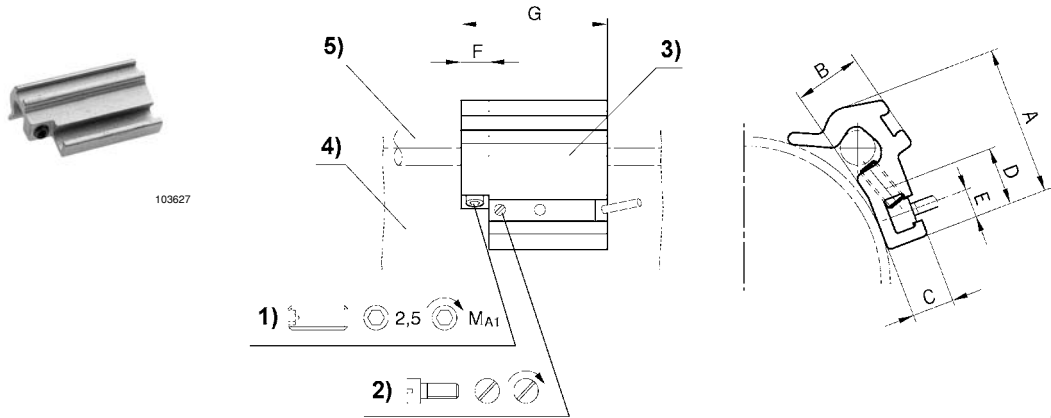
Pin assignment: 1 = (+), 3 = (-), 4 = (OUT), EN 60947-5-2:1998

Rotary actuators → Rack-and-pinion gears

Series TRR
Accessories

ST6, Sensor mounting

► for Series ST6 ► to mount on cylinder Series TRB, 523, TRR



00105013

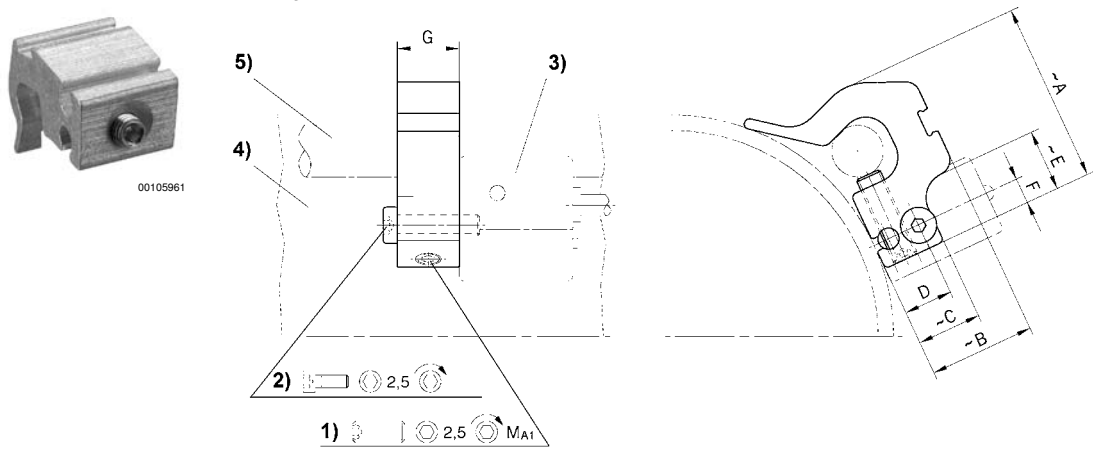
1) Clamping threaded pin 2) Mounting screw for sensor 3) Sensor 4) Cylinder profile 5) Tie rod

Part No.	Cylinders Ø [mm]	For series	A	B	C	D	E	F	G	1)
1827020282	32 - 40	ST6	26	10	7	14	5	8	40	M5x8
1827020283	50 - 63	ST6	32.5	15.5	7	14	5	8	40	M5x10
1827020284	80 - 100	ST6	43	17	6.9	14	5	8	40	M5x16

Part No.	MA1 [Nm]	Material	Weight [kg]							
1827020282	2 ±0,2	Aluminum	0.016							
1827020283	2 ±0,2	Aluminum	0.029							
1827020284	2 ±0,2	Aluminum	0.042							

SN1, SN2, Sensor mounting

► for Series SN1, SN2 ► to mount on cylinder Series TRB, TRR



00104948

1) Clamping threaded pin 2) Mounting screw for sensor 3) Sensor 4) Cylinder profile 5) Tie rod

Rotary actuators → Rack-and-pinion gears

Series TRR
Accessories

Part No.	Cylinders Ø [mm]	For series	A	B	C	D	E	F	G	1)
1827020081	32 - 40	SN1, SN2	25.3	12.5	12.5	9.5	-	5	16	M5x16
1827020082	50 - 63	SN1, SN2	28.7	15.6	12.5	9.5	12	5	12	M5x16
1827020083	80 - 100	SN1, SN2	33.8	23	12.5	9.5	12	5	12	M5x16

Part No.	MA1 [Nm]	Material	Weight [kg]							
1827020081	1 +0,3	Aluminum	0.015							
1827020082	1 +0,3	Aluminum	0.013							
1827020083	1 +0,3	Aluminum	0.018							

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