

PRA/802000/M/EX, RA/802000/M/EX, RA/8000/EX, RA/8000/M/EX ISOLine™ 15552 cylinder, double acting

- ø 32 ... 320 mm
- High performance adaptive cushioning system "ACS"
- Low temperature version up to -40 °C
- These cylinder are applicable in zone 1 & 2 (gas), 21 & 22 (dust), ATEX Cat. II 2G and 2D
Cylinder with bellows: II 3G and II 3D



Technical features

Medium:
Compressed air, filtered, lubricated or non-lubricated

Standard:
ISO 15552

Operation:
Double acting, adjustable cushioning

Operating pressure:
1 ... 10 bar (14 ... 145 psi)

Ports:
G1/8 ... 1/2

Cylinder diameters:
32, 40, 50, 63, 80, 100, 125, 160, 200, 250, 320 mm

Standard strokes:
25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500 mm

Non-standard strokes:
ø 32 ... 125 mm (5 ... 2800 mm)
ø 160 ... 320 mm (5 ... 2600 mm)

Operating temperature:
"Standard version"
ø 32 ... 125 mm
-20 ... +80 °C max. (-4 ... +176 °F)
ø 160 ... 320 mm
-10 ... +80 °C max. (+14 ... +176 °F)
"Low temperature version" (L)
ø 32 ... 125 mm
-40 max. ... +80 °C max.
(-40 ... +176 °F)
ø 160 ... 320 mm
-30 max. ... +80 °C max.
(-22 ... +176 °F)

Ambient temperature:
"Standard version"
ø 32 ... 125 mm
-20 ... +60 °C max. (-4 ... +140 °F)
ø 160 ... 320 mm
-10 ... +60 °C max. (+14 ... +140 °F)
"Low temperature version" (L)
ø 32 ... 125 mm
-40 max. ... +60 °C max.
(-40 ... +140 °F)
ø 160 ... 320 mm
-30 max. ... +60 °C max.
(-22 ... +140 °F)
Air supply must be dry enough to avoid ice formation at temperatures below +2 °C (+35 °F).

Standard Materials:
Barrel: Anodised aluminium
End covers: Pressure diecast aluminium
ø 200 ... 320 mm aluminium gravity casting)
Piston rod: Stainless steel (martensitic)
Piston rod seals: PUR
Piston seals: PUR (ø 160 ... 320 mm NBR)
'O'-rings: NBR

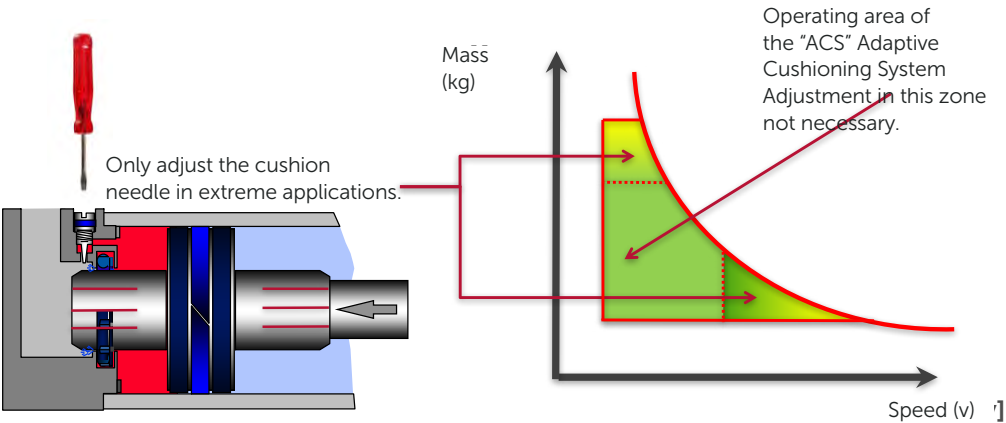
ATEX marking:
II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T120 °C Db
Cylinder with bellows:
II 3G Ex h IIC T4 Gc
II 3D Ex h IIIC T120 °C Dc

Technical data

Cylinder ø (mm)	32	40	50	63	80	100	125	160	200	250	320
Profile barrel	•	•	•	•	•	•	•				
Round barrel	•	•	•	•	•	•	•	•	•	•	•
Port size	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2	G3/4	G3/4	G1	G1
Piston rod ø (mm)	12	16	20	20	25	25	32	40	40	50	63
Piston rod thread	M10 x 1,25	M12 x 1,25	M16 x 1,5	M16 x 1,5	M20 x 1,5	M20 x 1,5	M27 x 2	M36 x 2	M36 x 2	M42 x 2	M48 x 2
Cushion length (mm)	20	22	24	24	26	33	39	43	43	55	60
Cushioning											
Adaptive cushioning systems "ACS"	•	•	•	•	•	•	•				
Cushioning: (adjustable cushion)								•	•	•	•
Initial cushion volume (cm ³)	12,8	20,2	36	64	111	235	427	784	1273	2534	4559
Theoretical thrusts at 6 bar outstroke (N)	482	754	1178	1870	3016	4710	7363	12064	18840	29436	48228
Theoretical thrusts at 6 bar instroke (N)	414	633	990	1680	2722	4416	6882	11310	18090	28236	47292
Air consumption at 6 bar outstroke (l/cm)	0,056	0,088	0,137	0,218	0,35	0,55	0,86	1,41	2,2	3,44	5,63
Air consumption at 6 bar instroke (l/cm)	0,048	0,074	0,114	0,195	0,32	0,51	0,79	1,32	2,1	3,3	5,41

The function

The new "ACS" Adaptive Cushioning System provides a high performance pneumatic damping function. The system will automatically cushion for a wide range of general applications as delivered. Manual adjustment is still possible for extreme applications.



Design and sizing in pneumatics

Golden Rules

Design and sizing in pneumatics is often based upon experience coupled with an element of fear of under specifying crucial equipment. In an attempt to ensure enough power, engineers may select over sized cylinders and then select over sized valves to supply them with enough air. The same uncertainty can also lead to over sized specification of air line equipment, fittings and tubing. The outcome is components larger than necessary that use too much compressed air and waste energy and money. However when following some well proven golden rules and a few laws of pneumatics it is easy to achieve correctly sized pneumatic installations.

Basics to Consider

The force required, the pressure available, the speed of movement and air consumption. ISO and VDMA standard or compact style also cushioning and sensors. Cylinders are greased on assembly and operate under normal conditions without additional lubrication. However using a lubricator will extend the life of these products.

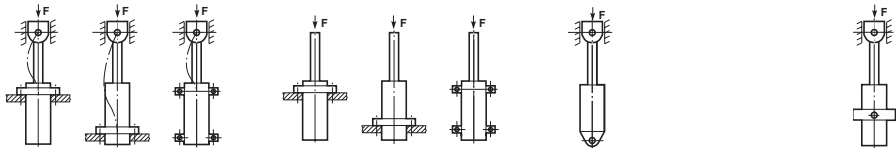
Golden Rule:

The theoretical force of the cylinder should be 25% extra for high speed, 50% extra for low speed and 100% extra for ultra low speed (positioning) applications.

The correct sizing is based upon the required force and applied pressure. Go to page 1 for more information on cylinder sizing and air consumption.

Load and Buckling

For applications with high side loading, use pneumatic slide actators or standard cylinders fitted with guide units. Alternatively external guide bearings should be installed. When a long stroke length is specified, care must be taken to ensure the rod length is within the limits for prevention of buckling. The table shows the maximum stroke length for a variety of installation arrangements.



Cylinder ø (mm)	Piston rod ø (mm)	Load case 1 Pressure (bar)				Load case 2 Pressure (bar)				Load case 3 Pressure (bar)				Load case 4 Pressure (bar)			
		4	6	10	16	4	6	10	16	4	6	10	16	4	6	10	16
32	12	1100	860	650	500	500	390	290	210	650	520	380	290	760	600	450	340
40	16	1600	1200	950	730	730	580	430	320	940	750	560	430	1100	880	660	500
50	20	2000	1600	1200	930	930	740	550	420	1200	960	720	550	1400	1100	840	640
63	20	1500	1200	930	720	720	570	420	310	930	740	550	420	1100	860	650	490
80	25	1900	1500	1100	880	880	700	510	380	1100	910	680	510	1300	1100	800	600
100	25	1500	1200	880	670	670	520	380	270	880	690	510	370	1000	820	600	450
125	32	2000	1600	1200	910	910	710	520	380	1200	940	690	520	1400	1100	820	620
160	40	2400	1900	1500	1100	1100	880	640	480	1400	1200	860	640	1700	1400	1000	760
200	40	1900	1500	1100	860	860	670	480	350	1100	890	650	480	1300	1000	770	580
250	50	2400	1900	1400	1100	1100	850	620	440	1400	1100	830	610	1700	1300	980	730
320	63	2600	2400	1800	1400	1400	1100	780	570	1800	1400	1000	780	2100	1700	1200	930

Explosion protection according ATEX directive 2014/34/EU EN ISO 80079 Non-electrical equipment for potentially explosive atmospheres



Range of application		All range of application other than mines		
Equipment group		II		
Potentially explosive atmosphere (combustible materials)		Mixture of air and gases, vapours, mists → G (gas) Dust/air - mixture → D (dust)		
Probability risk for a potentially explosive atmosphere		Continuous or long-term or frequent	Occasional	Rarely and briefly
Equipment categories		1	2	3
Equipment safety		very high	high	normal
Gas	Equipment-identification Ex...	Ex II 1G	Ex II 2G	Ex II 3G
	ATEX-zone	Zone 0	Zone 1	Zone 2
Dust	Equipment-identification Ex...	Ex II 1D	Ex II 2D	Ex II 3D
	ATEX-zone	Zone 20	Zone 21	Zone 22

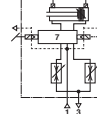
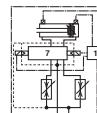
Equipment identification for IMI Norgren pneumatic cylinder: (Example for standard cylinder)

 II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T120 °C Db

Equipment group:	II	All application other than mines
Equipment categorie:	2	High level of equipment safety
Usability for zones:	G and D	Gas and dust
Explosions groups	IIC and IIIC	Max. ignitability gas- and dust groups
Temperature class for gas:	T4	Max. surface temperature 135 °C
Temperature data for dust:	120 °C	Max. surface temperature
Equipment Protection Level (EPL)	Gb and Db	Gas and dust, save by normal operation and expected equipment fault

Additional ISO 15552 Cylinder ranges (Cylinder ranges in the red frame are shown in this data sheet.)

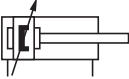
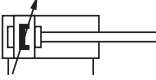
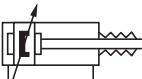
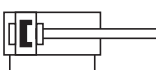
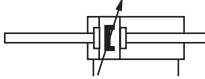
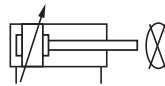


Symbols	Profile barrel	Round Barrel	Industrial Automation	Food & Beverage	Automotive	ATEX II 2GD	Rail *1)	CE-marked	ø (mm)	Range	Discription	Datasheet
		•	•	•	•	•	•	•	32 ... 125	PRA/802000	Double Acting Cylinder	1_5_220_PRA_802000_M_RA_8000_M 1_5_225_PRA_802000_M_EX
										LPRA/802000		1_5_220_LPRA_802000_M_LRA_8000_M
		•	•		•	•		•	32 ... 125	RA/802000	Double Acting Cylinder	1_5_220_PRA_802000_M_RA_8000_M 1_5_225_PRA_802000_M_EX
										LPRA/802000		1_5_220_LPRA_802000_M_LRA_8000_M
		•	•		•	•		•	160 ... 320	RA/8000	Double Acting Cylinder	1_5_220_PRA_802000_M_RA_8000_M 1_5_126_RA_8000_M_EX
										LRA/8000		1_5_220_LPRA_802000_M_LRA_8000_M
		•	•	•	•	•	•	•	32 ... 200	KA/802000	Stainless steel Cylinder	1_5_222_KA_802000_M 1_5_228_KA_802000_M_EX
		•	•	•		•		•	32 ... 100	PRA/822000	Smooth Line Cylinder	1_5_230_PRA_822000_M 1_5_235_PRA_822000_M_EX
		•	•	•		•		•	32 ... 100	PRA/842000	Clean Line Cylinder	1_5_240_PRA_842000_M 1_5_245_PRA_842000_M_EX
		•	•		•	•		•	32 ... 100	PRA/862000	IVAC Industrial Cylinder	1_5_250_PRA_862000_M 1_5_255_PRA_862000_M_EX
		•	•	•	•	•		•	32 ... 100	PRA/882000	IVAC Clean Line Cylinder	1_5_260_PRA_882000_M 1_5_265_PRA_882000_M_EX
		•	•	•	•	•		•	40 ... 125	PSA/802000/F1	Cylinder with position sensor	1_9_067_PSA_802000_F1_SA_8000_F1 1_9_068_PSA_802000_F1_EX__SA_8000_F1_EX
		•	•		•	•		•	160 ... 320	SA/8000/F1	Cylinder with position sensor	1_9_067_PSA_802000_F1_SA_8000_F1 1_9_068_PSA_802000_F1_EX__SA_8000_F1_EX
		•	•	•	•		•		32 ... 100	PRA/801000, PRA/803000	Standard Single Acting Cylinder	1_4_101_PRA_801000_803000 -
		•	•		•		•		32 ... 100	RA/801000, RA/803000	Standard Single Acting Cylinder	1_4_101_PRA_801000_803000 -

• Range available. For additional information please contact the technical service or <http://www.norgren.com>

1*) Rail cylinder: shock and vibration tested to EN 61373 Category 1; Class A + B

Cylinder variants

Symbol	Ver- sion	Piston Rod Material					Standard Model with		ø	Description	Page
Please see the description below							Male Piston Rod Thread	Female Piston Rod Thread	(mm)		
	L	R	S	C	D						
		•	X	•	•	•	.PRA/802000/M/EX	.PRA/802000/MX/EX	32 ... 125	Standard Cylinder (Profile Barrel)	9, 10
		•	X	•	•	•	.RA/802000/M/EX	.RA/802000/MX/EX	32 ... 125	Standard Cylinder (Round Barrel)	
		•	X	•	•	•	.RA/8000/M/EX	-	160 ... 320	Standard Cylinder (Round Barrel)	
		•	X	•	•	•	.RA/8000/EX	-	160 ... 320	Standard Cylinder (Round Barrel) without magnet	
		X	•	•	•	•	PRA/802000/W2/EX	PRA/802000/W2X/EX	32 ... 125	Cylinder with Special wiper seal (suitable for appl. with cement, plaster (stucco), arizona sand, hoar-frost or ice)	
		X	•	•	•	•	RA/802000/W2/EX	RA/802000/W2X/EX	32 ... 125		
		X	•	•	•	•	RA/8000/W2/EX	-	160 ... 200		
		X	•	•	•	•	RA/8000/W1/EX	-	160 ... 200	Cylinder with Special wiper seal without magnet	
		X	•	•	•	•	PRA/802000/X2/EX	PRA/802000/X2X/EX	32 ... 125	Low Friction Cylinder	
		X	•	•	•	•	RA/802000/X2/EX	RA/802000/X2X/EX	32 ... 125	Operating pressure: 1 ... 10 bar, Medium: Compressed air, filtered and non-lubricated recommended	
		X	•	•	•	•	RA/8000/X2/EX	-	160 ... 200		
	X	•	•	•	•	RA/8000/X1/EX	-	160 ... 200	Low Friction Cylinder without magnet		
		•	X	•	•	•	.PRA/802000/MU/EX	.PRA/802000/MUX/EX	32 ... 125	Cylinder with Extended Piston Rod	9, 10
		•	X	•	•	•	.RA/802000/MU/EX	.RA/802000/MUX/EX	32 ... 125	ø 32 ... 125 mm (Stroke + Extension = 2800 mm)	
		•	X	•	•	•	.RA/8000/MU/EX	-	160 ... 320	ø 160 ... 320 mm (Stroke + Extension = 2600 mm)	
		•	X	•	•	•	RA/8000/IU/EX	-	160 ... 320	Cylinder with Extended Piston Rod without magnet	
		X	•	•	•	•	PRA/802000/W6/EX	PRA/802000/W6X/EX	32 ... 125	Cylinder with Special wiper seal	
		X	•	•	•	•	RA/802000/W6/EX	RA/802000/W6X/EX	32 ... 125	suitable for appl. with cement, plaster (stucco), arizona sand, hoar-frost or ice)	
		X	•	•	•	•	RA/8000/W6/EX	-	160 ... 200		
		X	•	•	•	•	RA/8000/W5/EX	-	160 ... 200	Cylinder with Extended Piston Rod and Special wiper seal without magnet	
		•	X	•	•	•	.PRA/802000/MG/EX	.PRA/802000/MGX/EX	32 ... 125	Cylinder with Piston Rod Bellows (Zone 2 and 22)	14
		•	X	•	•	•	.RA/802000/MG/EX	.RA/802000/MGX/EX	32 ... 125	Maximal stroke:	
		X	•	•	•	•	.RA/8000/MG/EX	-	160 ... 320	ø 32= 1860 mm, ø 40 ... 320= 2000 mm	
		X	•	•	•	•	.RA/8000/G/EX	-	160 ... 320	Cylinder with Piston Rod Bellows without magnet	
			X	•	•	•	.PRA/802000/MW/EX	.PRA/802000/MWX/EX	32 ... 125	Cylinder without Cushioning	9, 10
			X	•	•	•	.RA/802000/MW/EX	.RA/802000/MWX/EX	32 ... 125		
			X	•	•	•	.RA/8000/MW/EX	-	160 ... 320		
			X	•	•	•	.RA/8000/W/EX	-	160 ... 320	Cylinder without Cushioning without magnet	
			X	•	•	•	PRA/802000/X4/EX	PRA/802000/X4X/EX	32 ... 125	Low Friction Cylinder without Cushioning	
			X	•	•	•	RA/802000/X4/EX	RA/802000/X4X/EX	32 ... 125	Operating pressure: 1 ... 10 bar, Medium: Compressed air, filtered and non-lubricated recommended	
			X	•	•	•	RA/8000/X4/EX	-	160 ... 200		
			X	•	•	•	RA/8000/X3/EX	-	160 ... 200	Low Friction Cylinder without Cushioning and without magnet	
		•	X	•	•	•	.PRA/802000/JM/EX	.PRA/802000/JMX/EX	32 ... 125	Cylinder with Double Ended Piston Rod	13
		•	X	•	•	•	.RA/802000/JM/EX	.RA/802000/JMX/EX	32 ... 125		
		•	X	•	•	•	.RA/8000/JM/EX	-	160 ... 320		
		•	X	•	•	•	.RA/8000/J/EX	-	160 ... 320	Cylinder with Double Ended Piston Rod without magnet	
			X	•	•	•	PRA/802000/W4/EX	PRA/802000/W4X/EX	32 ... 125	Cylinder with Double Ended Piston Rod and Special wiper seal (suitable for appl. with cement, plaster (stucco), arizona sand, hoar-frost or ice)	
			X	•	•	•	RA/802000/W4/EX	RA/802000/W4X/EX	32 ... 125		
			X	•	•	•	RA/8000/W4/EX	-	160 ... 200		
			X	•	•	•	RA/8000/W3/EX	-	160 ... 200	Cylinder with Double Ended Piston Rod and Special Wiper - Sea without magnet	
		•	X	•	•	•	.PRA/802000/MT/EX	.PRA/802000/MTX/EX	32 ... 125	Four Position Cylinder	13
		•	X	•	•	•	.RA/802000/MT/EX	.RA/802000/MTX/EX	32 ... 125	Maximal stroke = stroke 1 + stroke 2	
		•	X	•	•	•	.RA/8000/MT/EX	-	160 ... 200	ø 32= 700 mm, ø 40= 1000 mm, ø 50= 1000 mm, ø 63= 900 mm, ø 80= 1200 mm, ø100= 1100 mm, ø 125= 1200 mm; ø 160 mm = 1200 mm, ø 200 mm = 1100 mm	
		•	X	•	•	•	.RA/8000/IT/EX	-	160 ... 200	Four Position Cylinder without magnet	
			X				PRA/802000/N2/EX	PRA/802000/N2X/EX	32 ... 100		12
			X				RA/802000/N2/EX	RA/802000/N2X/EX	32 ... 100	Cylinder with Non-Rotating Piston Rod	
							-	-		Maximal stroke: 1000 mm	

Note: Versions: L = Low temperature -40 °C (-40 °F) (ø 32 ... 125 mm), -30 °C (-22 °F) (ø 160 ... 320 mm); T = High temperature +150 °C (+302 °F);
Piston Rod Material: C = Hard chromium plated; D = Stainless steel austenitic & hard chromium plated; R = Stainless steel martensitic;
S = Stainless steel austenitic; X = Standard; • = Option

Option selector

Non-standard variants	Substitute
Standard	None
Low temperature version -40 °C (-40 °F) (ø 32 ... 125 mm) -30 °C (-22 °F) (ø 160 ... 320 mm)	L
Standard	Substitute
Round barrel	None
Profile barrel	P
Piston rod material	Substitute
Stainless steel martensitic	R
Stainless steel austenitic	S
Hard chromium plated	C
Stainless steel austenitic & hard chromium plated	D
Cushioning	Substitute
ACS (ø 32 ... 125 mm)	02
Standard (ø 160 ... 320 mm)	None
Cylinder ø (mm)	Substitute
032, 040, 050, 063, 080, 100, 125, 160, 200, 250, 320	
Variants ø 32 ... 320 mm (magnetic piston)	Substitute
Standard	M
Special wiper/seal	W2
Low friction	X2
Piston rod bellow	MG
Without cushion	MW
Without cushion, low friction	X4
Double ended piston rod	JM
Double ended piston rod, special wiper/seal	W4
Four-positon cylinder	MT
Non-rotating piston rod (internal)	N2
Extended piston rod	MU
A/8**/MU/EX/****/***	Extension (mm)
Extended piston rod, special wiper/seal	W6
A/8**/W6/EX/****/***	Extension (mm)

★★★A/8★★★★/★★★/EX/★★★★

Strokes (mm)	Substitute
5 ... 2800	
Piston rod thread	Substitute
Male	None
Female	X
Variants ø 160 ... 320 mm (without magnetic piston)	Kennung
Standard	None
Special wiper/seal	W1
Low friction	X1
Piston rod bellow	G
Without cushion	W
Without cushion, low friction	X3
Double ended piston rod	J
Double ended piston rod, special wiper/seal	W3
Four-positon cylinder	IT
Extended piston rod	IU
A/8**/IU/EX/****/***	Extension (mm)
Extended piston rod, special wiper/seal	W5
A/8**/W5/EX/****/***	Extension (mm)

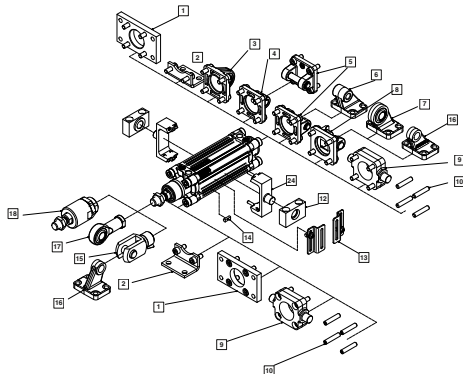
Note: If position is not required, disregard option position within part number e.g. RA/802100/M/EX/100. For combinations of cylinder variants consult our technical service.

This option selector explains only the cylinder variants.

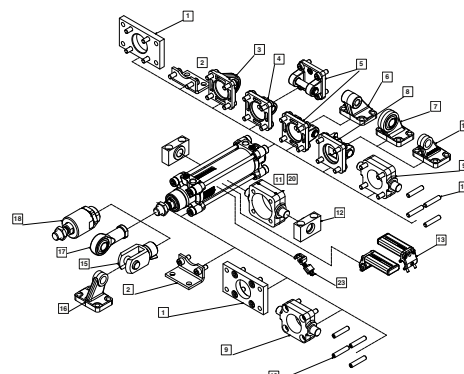
Additional variants/options are not possible.

Detail's see table on page 4.

Cylinder with Profile barrel ø 32 ... 125 mm



Cylinder with Round barrel ø 32 ... 125 mm



Mountings

Model	A	AK	B, G	C	D	D2	F	FH	H	UH				
ø														
	10 Page 14	18 Page 14	1 Page 14	2 Page 14	5 Page 15	8 Page 15	15 Page 15	9 Page 15	11 Page 16	20 Page 16				
	32	QM/8032/35	QM/8025/38	QA/8032/22	QA/8032/21	QA/8032/23	QA/8032/42	QM/8025/25	QA/8032/34	QA/8032/28	QA/8032/40			
	40	QM/8032/35	QM/8040/38	QA/8040/22	QA/8040/21	QA/8040/23	QA/8040/42	QM/8040/25	QA/8040/34	QA/8040/28	QA/8040/40			
	50	QM/8050/35	QM/8050/38	QA/8050/22	QA/8050/21	QA/8050/23	QA/8050/42	QM/8050/25	QA/8050/34	QA/8050/28	QA/8050/40			
	63	QM/8050/35	QM/8050/38	QA/8063/22	QA/8063/21	QA/8063/23	QA/8063/42	QM/8050/25	QA/8063/34	QA/8063/28	QA/8063/40			
	80	QM/8080/35	QM/8080/38	QA/8080/22	QA/8080/21	QA/8080/23	QA/8080/42	QM/8080/25	QA/8080/34	QA/8080/28	QA/8080/40			
	100	QM/8080/35	QM/8080/38	QA/8100/22	QA/8100/21	QA/8100/23	QA/8100/42	QM/8080/25	QA/8100/34	QA/8100/28	QA/8100/40			
	125	QM/8125/35	QM/8125/38	QM/8125/22	QM/8125/21	QM/8125/23	QA/8125/42	QM/8125/25	QA/8125/34	QM/8125/28	QA/8125/40			
	160	QM/8160/35	QM/8160/38	QM/8160/22	QM/8160/21	QM/8160/23	QA/8160/42	QM/8160/25	-	QM/8160/28	QA/8160/40			
200	QM/8160/35	QM/8160/38	QM/8200/22	QM/8200/21	QM/8200/23	QA/8200/42	QM/8160/25	-	QM/8200/28	QA/8200/40				
250	QM/8250/35	-	QM/8250/22	QM/8250/21	QM/8250/23	-	QM/8250/25	-	QM/8250/28	-				
320	QM/8320/35	-	QM/8320/22	QM/8320/21	QM/8320/23	-	QM/8320/25	-	QM/8320/28	-				
ø														
	24 Page 16	12 Page 16	6 Page 17	17 Page 17	4 Page 17	3 Page 17	16 Page 18	7 Page 18	14 Page 18	13 Page 23 & 24				
	32	PQA/802032/40	QA/8032/41	M/P19493	QM/8025/32	QA/8032/33	QA/8032/27	M/P19931	M/P40310	M/P72816	See page 23 & 24			
	40	PQA/802040/40	QA/8040/41	M/P19494	QM/8040/32	QA/8040/33	QA/8040/27	M/P19932	M/P40311	M/P72816				
	50	PQA/802050/40	QA/8040/41	M/P19495	QM/8050/32	QA/8050/33	QA/8050/27	M/P19933	M/P40312	M/P72816				
	63	PQA/802063/40	QA/8063/41	M/P19496	QM/8050/32	QA/8063/33	QA/8063/27	M/P19934	M/P40313	M/P72816				
	80	PQA/802080/40	QA/8063/41	M/P19497	QM/8080/32	QA/8080/33	QA/8080/27	M/P19935	M/P40314	M/P72816				
	100	PQA/802100/40	QA/8100/41	M/P19498	QM/8080/32	QA/8100/33	QA/8100/27	M/P19936	M/P40315	M/P72816				
	125	PQA/802125/40	QA/8100/41	M/P19499	QM/8125/32	QM/8125/33	QM/8125/27	M/P19937	M/P71355	M/P72816				
	160	-	QA/8160/41	M/P19679	QM/8160/32	QM/8160/33	QM/8160/27	M/P19938	M/P71356	-				
200	-	QA/8160/41	M/P19683	QM/8160/32	QM/8200/33	QM/8200/27	M/P19939	M/P71357	-					
250	-	-	M/P19446	QM/8250/32	QM/8250/33	-	-	-	-					
320	-	-	M/P19447	QM/8320/32	QM/8320/33	-	-	-	-					
Pos.	Style	Standard			Pos.	Style	Standard			Pos.	Style	Standard		
1	B, G	Clear anodised aluminium			7	US	Painted cast iron Inner ring: steel, Outer ring: brass			15	F	Galvanized steel, Bolt: galvanized steel, Circlip: Galvanized steel		
2	C	Galvanized steel (ø 32 ... 100 mm), Painted steel (ø 125 mm)			8	D2	Die-cast aluminium (Ø32 ... 100 mm) Painted cast iron (Ø160 ... 200 mm), Bolt: stainless steel (martensitic), Circlip: galvanized steel			16	SS	Painted cast iron		
3	R	Die-cast aluminium (Ø32 ... 100 mm) Painted cast iron (Ø125 ... 200 mm)			9	FH	Painted cast iron			17	UF	Galvanized steel, Inner ring: steel, Outer ring: brass		
4	UR	Die-cast aluminium (Ø32 ... 100 mm) Painted cast iron (Ø125 ... 200 mm) Inner ring: steel, Outer ring: brass			10	A	Galvanized steel			18	AK	Galvanized steel		
5	D	Die-cast aluminium (Ø32 ... 125 mm) Painted cast iron (Ø160 ... 320 mm) Bolt: galvanized steel (martensitic) Circlip: galvanized steel			11	H	Painted cast iron			20	UH	Cast iron		
6	SW	Die-cast aluminium (Ø32 ... 100 mm) Painted cast iron (Ø125 ... 320 mm)			12	S	Clear anodised aluminium Bearing: brass			24	UH	Anodised aluminium		
					13	Mounting kit	Galvanized steel							
					14	Groove key	Steel							

Accessories for Profile (ø 32 ... 125 mm) & Round barrel (ø 32 ... 125 mm)

Magnetically operated switches

Model Profile barrel	Model Round barrel		Port size	Banjo flow control	Straight fitting	Elbow fitting	M/50/**  Page 19 & 20	Switch mounting brackets for M/50  23 Page 21
		ø					ø	
PRA/802032/M/EX/*	RA/802032/M/EX/*	32	G1/8	C0K510618	C02250618	C02470618	32	QM/27/2/1
PRA/802040/M/EX/*	RA/802040/M/EX/*	40	G1/4	C0K510628	C02250628	C02470628	40	QM/27/2/1
PRA/802050/M/EX/*	RA/802050/M/EX/*	50	G1/4	C0K510828	C02250828	C02470828	50	QM/27/2/1
PRA/802063/M/EX/*	RA/802063/M/EX/*	63	G3/8	C0K510838	C02250838	C02470838	63	QM/27/2/1
PRA/802080/M/EX/*	RA/802080/M/EX/*	80	G3/8	C0K511038	C02251038	C02471038	80	QM/27/2/1
PRA/802100/M/EX/*	RA/802100/M/EX/*	100	G1/2	C0K511248	C02251248	C02471248	100	QM/27/2/1
PRA/802125/M/EX/*	RA/802125/M/EX/*	125	G1/2	C0K511248	C02251248	C02471248	125	QM/27/2/1
-	RA/8160/M/*	160	G3/4	M840 (Inline)	-	-	160	QM/27/2/1
-	RA/8200/M/*	200	G3/4	M840 (Inline)	-	-	200	QM/27/2/1
-	RA/8250/M/*	250	G1	M855 (Inline)	-	-	250	QM/27/2/2
-	RA/8320/M/*	320	G1	M855 (Inline)	-	-	320	QM/27/2/3

For alternative fitting types please contact the technical service.

Spares kit for profile and round barrel

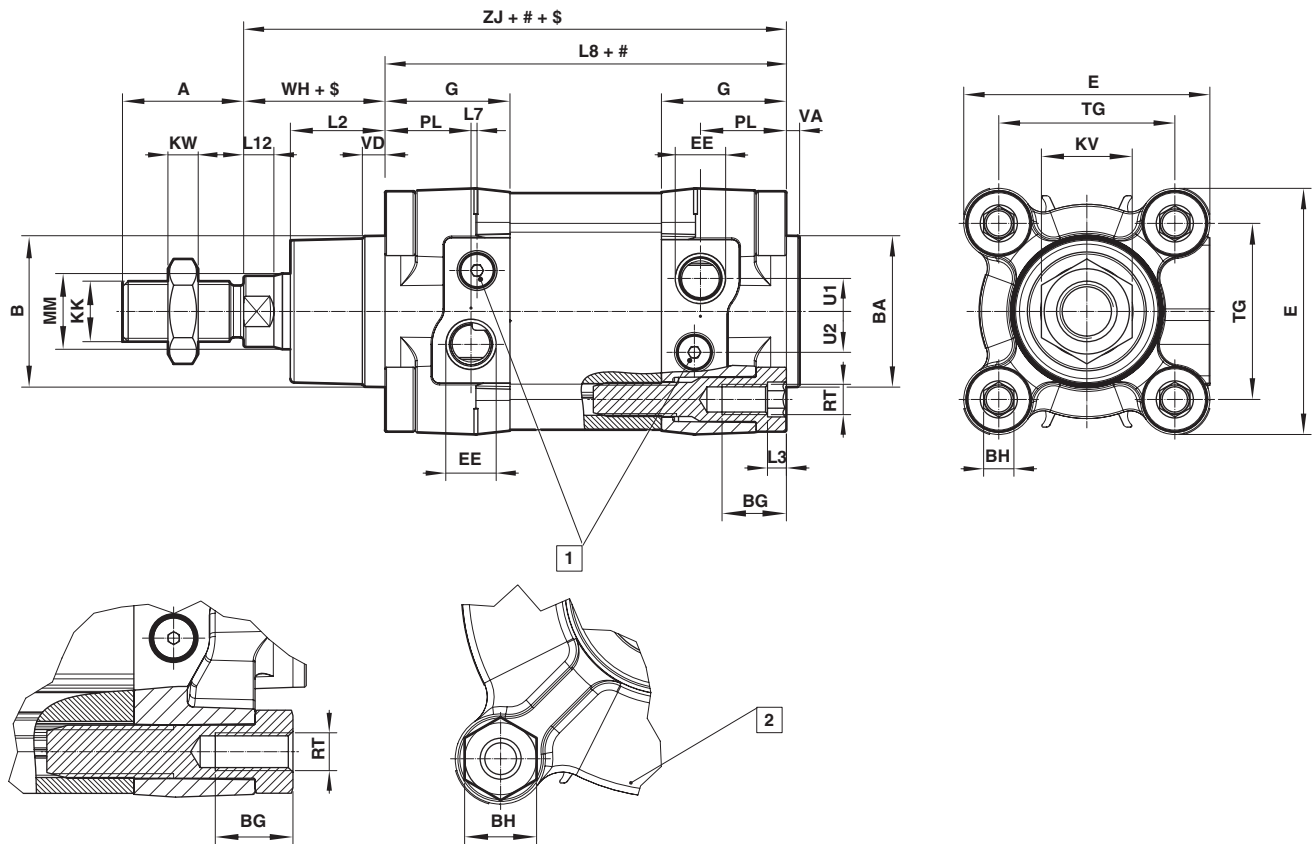
(wearing parts to be replaced are: piston seals, barrel seals, damping seals and piston rod seals as well as the wear ring)



Spares kit		Option							
Piston rod thread	Male thread		/ M / IU / MU / W / MW / G / MG	J / JM	W1 / W2 / W5 / W6	W3 / W4	N1 / N2	X1 / X2 / X3 / X4	IT / MT
	Female thread		MX / MUX / MWX / MGX	JMX	W2X / W6X	W4X	N2X	X2X / X4X	MTX
Standard	Model	Ø	Standard temperature (-20 °C / -10 °C ... +80 °C)						
	PRA/802***	032	QA/8032/00	QA/8032/J/00	QA/8032/W1/00	2x QA/8032/W1/00	QA/8032/N1/00	QA/8032/X1/00	2x QA/8032/00
	PSA/802***	040	QA/8040/00	QA/8040/J/00	QA/8040/W1/00	2x QA/8040/W1/00	QA/8040/N1/00	QA/8040/X1/00	2x QA/8040/00
	PCA/802***	050	QA/8050/00	QA/8050/J/00	QA/8050/W1/00	2x QA/8050/W1/00	QA/8050/N1/00	QA/8050/X1/00	2x QA/8050/00
	PDA/802***	063	QA/8063/00	QA/8063/J/00	QA/8063/W1/00	2x QA/8063/W1/00	QA/8063/N1/00	QA/8063/X1/00	2x QA/8063/00
	RA/802***	080	QA/8080/00	QA/8080/J/00	QA/8080/W1/00	2x QA/8080/W1/00	QA/8080/N1/00	QA/8080/X1/00	2x QA/8080/00
	SA/802***	100	QA/8100/00	QA/8100/J/00	QA/8100/W1/00	2x QA/8100/W1/00	QA/8100/N1/00	QA/8100/X1/00	2x QA/8100/00
	CA/802***	125	QA/8125/00	QA/8125/J/00	QA/8125/W1/00	2x QA/8125/W1/00	-	QA/8125/X1/00	2x QA/8125/00
	DA/802***	160	QA/8160/00	QA/8160/J/00	QA/8160/W1/00	-	-	QA/8160/X1/00	2x QA/8160/00
	RA/8***	200	QA/8200/00	QA/8200/J/00	QA/8200/W1/00	-	-	QA/8200/X1/00	2x QA/8200/00
	SA/8***	250	QA/8250/00	QA/8250/J/00	-	-	-	-	2x QA/8250/00
	CA/8***	320	QA/8320/00	QA/8320/J/00	-	-	-	-	2x QA/8320/00
	DA/8***								
Special option	Model	Ø	Low temperature (-40 °C ... +80 °C)						
	LPRA/802***	032	LQA/8032/00	LQA/8032/00	-	-	-	-	2x LQA/8032/00
	LPSA/802***	040	LQA/8040/00	LQA/8040/00	-	-	-	-	2x LQA/8040/00
	LPDA/802***	050	LQA/8050/00	LQA/8050/00	-	-	-	-	2x LQA/8050/00
	LPDA/802***	063	LQA/8063/00	LQA/8063/00	-	-	-	-	2x LQA/8063/00
	LRA/802***	080	LQA/8080/00	LQA/8080/00	-	-	-	-	2x LQA/8080/00
	LSA/802***	100	LQA/8100/00	LQA/8100/00	-	-	-	-	2x LQA/8100/00
	LCA/802***	125	LQA/8125/00	LQA/8125/00	-	-	-	-	2x LQA/8125/00
	LDA/802***	160	LQA/8160/00	LQA/8160/00	-	-	-	-	2x LQA/8160/00
	LRA/8***	200	LQA/8200/00	LQA/8200/00	-	-	-	-	2x LQA/8200/00
	LSA/8***	250	LQA/8250/00	LQA/8250/00	-	-	-	-	2x LQA/8250/00
	LCA/8***	320	LQA/8320/00	LQA/8320/00	-	-	-	-	2x LQA/8320/00
	LDA/8***								

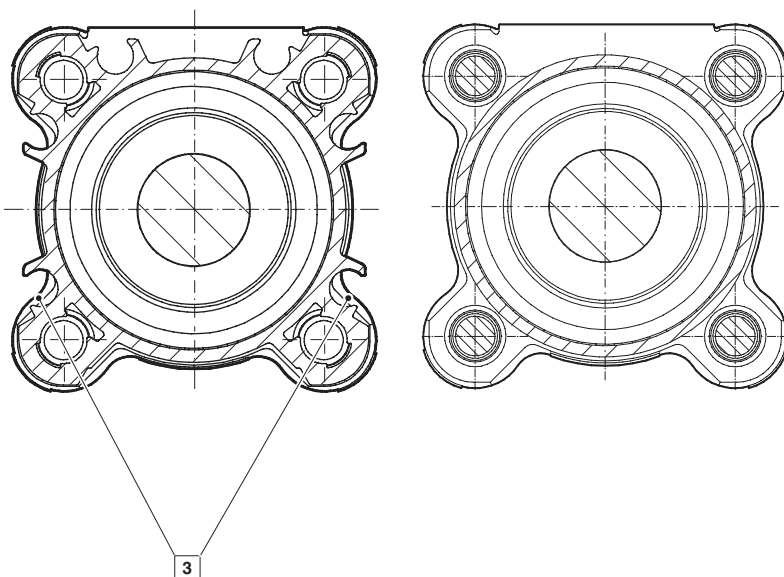
Basic dimensions
PRA/802000/M/EX, RA/802000/M/EX
Standard Cylinder

Dimensions in mm
 Projection/First angle



Model: Profile barrel
 $\varnothing 32 \dots 125 \text{ mm}$

Model: Round barrel
 $\varnothing 32 \dots 125 \text{ mm}$



Stroke

\$ Piston rod extension

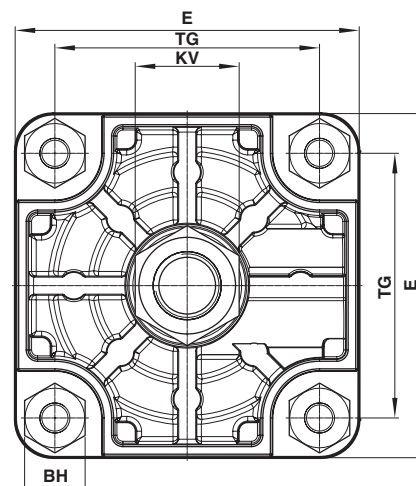
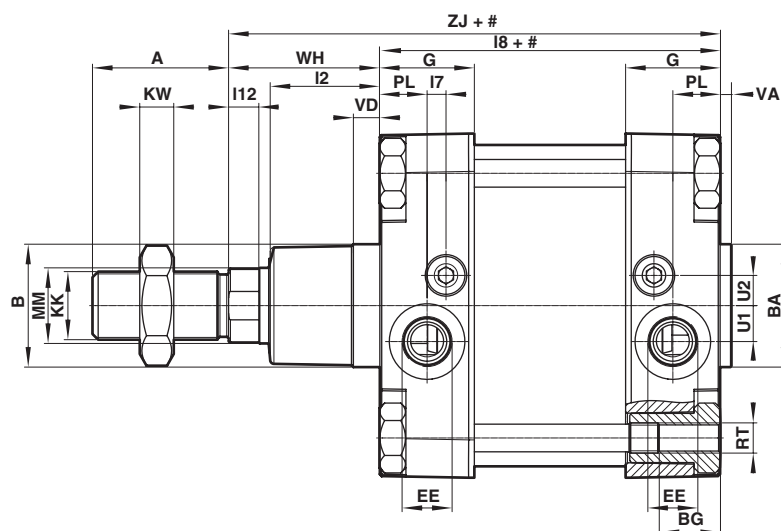
1 Cushion screw

2 $\varnothing 80 \dots 125 \text{ mm}$

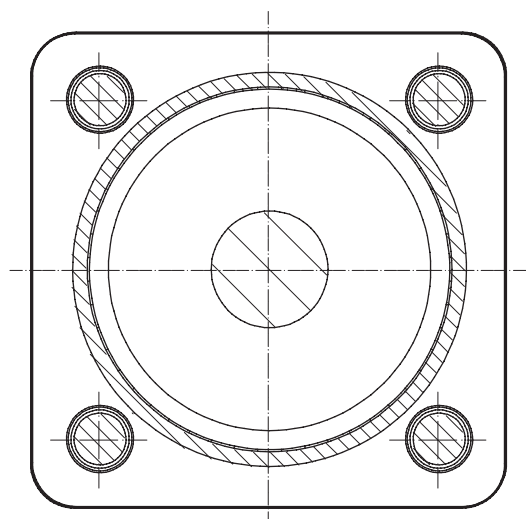
3 1450 is not a template and does not have technical service or <http://www.norgren.com>

Basic dimensions
RA/8000/EX, RA/8000/M/EX
Standard cylinder
ø 160 - 320 mm

Dimensions in mm
 Projection/First angle



Model: Round barrel
 ø 160 ... 320 mm



ø	A -0,5	ø B d11	ø BA d11	BG min	BH	E	EE	G	KK	KV	KW	L2	L3	L7	L8	L12	ø MM h9	PL	TG
32	22	30	30	16	6	47	G1/8	29	M10 x 1,25	17	5	19,5	4	6,6	94	5,5	12	15	32,5
40	24	35	35	16	6	53	G1/4	34,5	M12 x 1,25	19	6	22	4	5,6	105	6,5	16	21,5	38
50	32	40	40	16	8	65	G1/4	33	M16 x 1,5	24	8	25	5	1,6	106	8	20	22,7	46,5
63	32	45	45	16	8	75	G3/8	36,5	M16 x 1,5	24	8	25	5	3,6	121	8	20	24,2	56,5
80	40	45	45	17	19	95	G3/8	42	M20 x 1,5	30	10	33	-	1,8	128	10	25	29,7	72
100	40	55	55	17	19	113	G1/2	42	M20 x 1,5	30	10	35	-	3,8	138	10	25	27,7	89
125	54	60	60	20	24	140	G1/2	54	M27 x 2	41	13,5	44	-	1,8	160	13	32	39,7	110
160	72	65	65	28,5	32	183,5	G3/4	50	M36 x 2	55	18	58	-	10	180	16	40	25	140
200	72	75	75	28,5	32	224	G3/4	50	M36 x 2	55	18	67	-	10	180	16	40	26	175
250	84	90	90	35	36	280	G1	58	M42 x 2	65	21	80	-	4,5	200	20	50	28	220
320	96	110	110	30	46	350	G1	60	M48 x 2	75	24	90	-	4,5	220	24	63	31	270

ø	RT	SW	U1	U2	VA	VD	WH	ZJ	Model Profile barrel	at 0 mm	per 25 mm	Model Round barrel	at 0 mm	per 25 mm
32	M 6	10	4,6	6,3	3,5	6	26	120	PRA/802032/M/EX/*	0,49 (kg)	0,06 (kg)	RA/802032/M/EX/*	0,46 (kg)	0,06 (kg)
40	M 6	13	5,8	9,2	3,5	6	30	135	PRA/802040/M/EX/*	0,69 (kg)	0,08 (kg)	RA/802040/M/EX/*	0,65 (kg)	0,08 (kg)
50	M 8	17	8,7	10,8	3,5	6	37	143	PRA/802050/M/EX/*	1,09 (kg)	0,12 (kg)	RA/802050/M/EX/*	1,02 (kg)	0,12 (kg)
63	M 8	17	10	12,8	3,5	6	37	158	PRA/802063/M/EX/*	1,54 (kg)	0,13 (kg)	RA/802063/M/EX/*	1,46 (kg)	0,14 (kg)
80	M 10	22	12	14,5	3,5	6	46	174	PRA/802080/M/EX/*	2,64 (kg)	0,20 (kg)	RA/802080/M/EX/*	2,54 (kg)	0,21 (kg)
100	M 10	22	9	14,5	3,5	6	51	189	PRA/802100/M/EX/*	3,66 (kg)	0,23 (kg)	RA/802100/M/EX/*	3,50 (kg)	0,23 (kg)
125	M 12	27	12	17	5,5	8	65	225	PRA/802125/M/EX/*	6,16 (kg)	0,45 (kg)	RA/802125/M/EX/*	5,92 (kg)	0,34 (kg)
160	M 16	36	19	16	4	15	80	260	-	-	-	RA/8160/M/EX/*	14,9 (kg)	0,55 (kg)
200	M 16	36	19	16	5	15	95	275	-	-	-	RA/8200/M/EX/*	21,7 (kg)	0,60 (kg)
250	M 20	41	22	30	7	13	105	305	-	-	-	RA/8250/M/EX/*	32,6 (kg)	0,92 (kg)
320	M 24	55	22	30	7	13	120	340	-	-	-	RA/8320/M/EX/*	59,8 (kg)	1,46 (kg)

* Please insert stroke length.

Basic Dimension are also for cylinder varinats or for different piston rod material

LPRA/802000/M/EX, LRA/802000/M/EX - Low Temperature Cylinder

PRA/802000/W2/EX, RA/802000/W2/EX - Cylinder with Special wiper seal

PRA/802000/X2/EX, RA/802000/X2/EX - Low Friction Cylinder

PRA/802000/MU/EX, RA/802000/MU/EX - Cylinder with Extended Piston Rod

PRA/802000/W6/EX, RA/802000/W6/EX - Cylinder with Extended Piston Rod and Special wiper seal

PRA/802000/MW/EX, RA/802000/MW/EX - Cylinder without Cushioning

PRA/802000/X4/EX, RA/802000/X4/EX - Low Friction Cylinder without Cushioning

LRA/8000/EX - Low Temperature Cylinde

RA/8000/W1/EX -Cylinder with Special wiper seal without magnet

RA/8000/X1/EX - Low Friction Cylinder without magnet

RA/8000/IU/EX - Cylinder with Extended Piston Rod without magnet

RA/8000/W5/EX - Cylinder with Extended Piston Rod and Special wiper seal without magnet

RA/8000/W/EX - Cylinder without Cushioning und without magnet

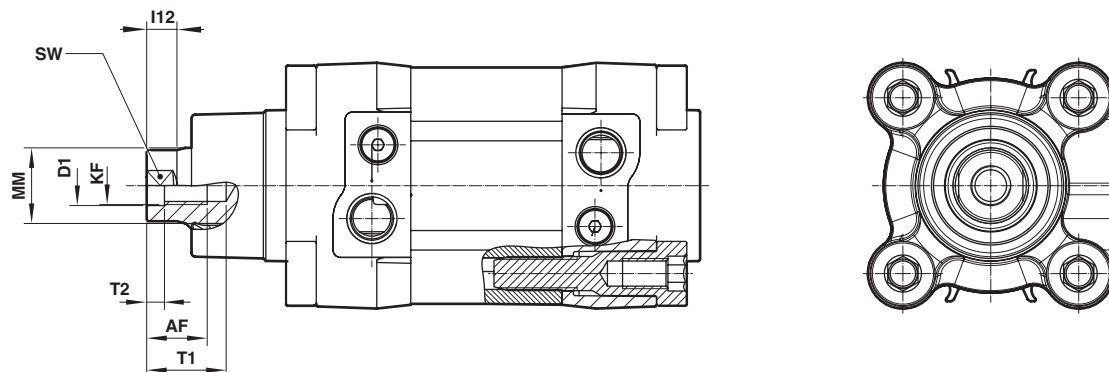
RA/8000/X3/EX - Low Friction Cylinder without Cushioning without magnet

Cylinder variants

..../802000/MX/EX; /MUX/EX; /MWX/EX; /W2X/EX; /W6X/EX; /X2X/EX; X4X/EX

Cylinder with Female Piston Rod Thread

Dimensions in mm
Projection/First angle



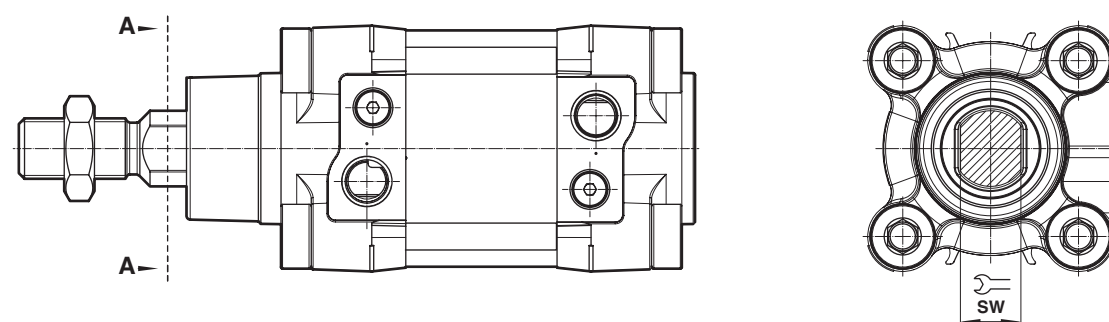
ø	AF	ø D1	KF	l12	ø MM h9	SW	T1	T2
32	12	6,4	M6	5,5	12	10	16	2,6
40	12	8,4	M8	6,5	16	13	16	3,3
50	16	10,5	M10	8	20	17	21	4,7
63	16	10,5	M10	8	20	17	21	4,7
80	20	13	M12	10	25	22	25	6,1
100	20	13	M12	10	25	22	25	6,1
125	32	17	M16	13	32	27	38	8

For missing dimensions please see page 8 and 9

Cylinder variants

PRA/802000/N2/EX, RA/802000/N2/EX – Cylinder with Non-Rotating Piston Rod

PRA/802000/N2X/EX, RA/802000/N2X/EX – Cylinder with Non-Rotating Piston Rod
and Female Piston Rod Thread



ø	SW	max. Torque (Nm)	Model Profile barrel	Model Round barrel
32	10	0,5	PRA/802032/N2/EX/*	RA/802032/N2/EX/*
40	13	1	PRA/802040/N2/EX/*	RA/802040/N2/EX/*
50	16	1,5	PRA/802050/N2/EX/*	RA/802050/N2/EX/*
63	16	1,5	PRA/802063/N2/EX/*	RA/802063/N2/EX/*
80	21	2,5	PRA/802080/N2/EX/*	RA/802080/N2/EX/*
100	21	2,5	PRA/802100/N2/EX/*	RA/802100/N2/EX/*

* Please insert stroke length; Maximum stroke: 1000 mm; For missing dimensions please see page 8 and 9

Cylinder variants

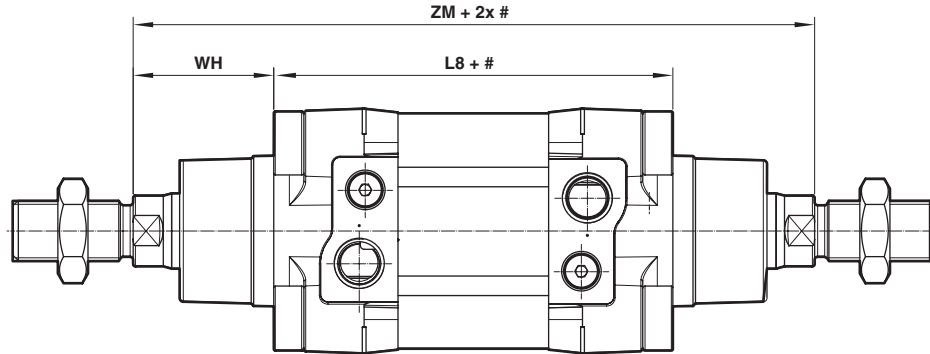
PRA/802000/JM/EX, RA/802000/JM/EX, PRA/802000/W4/EX, RA/802000/W4/EX
RA/8000/JM/EX, RA/8000/J/EX, RA/8000/W4/EX, RA/8000/W3/EX

– Cylinder with Double Ended Piston Rod

PRA/802000/JMX/EX, RA/802000/JMX/EX, PRA/802000/W4X/EX, RA/802000/W4X/EX

– Cylinder with Double Ended Piston Rod and Female Piston Rod Thread

Dimensions in mm
Projection/First angle



Stroke

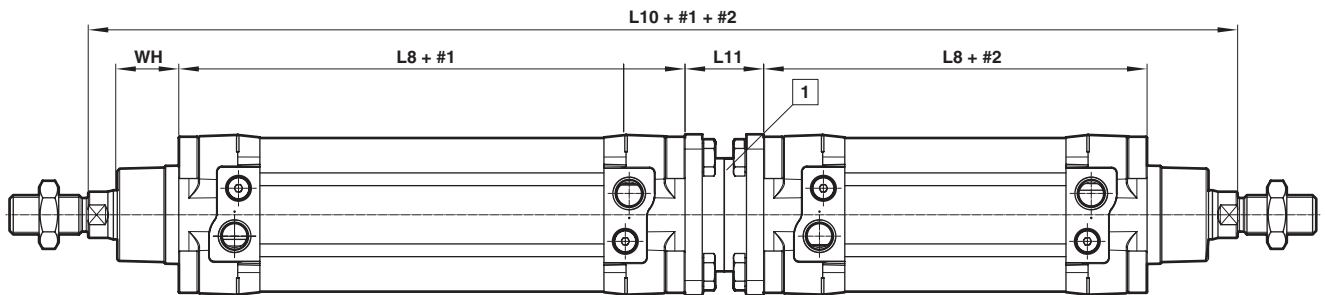
ø	L8	WH	ZM	Model Profile barrel	Model Round barrel
32	94	26	146	PRA/802032/JM/EX/*	RA/802032/JM/EX/*
40	105	30	165	PRA/802040/JM/EX/*	RA/802040/JM/EX/*
50	106	37	180	PRA/802050/JM/EX/*	RA/802050/JM/EX/*
63	121	37	195	PRA/802063/JM/EX/*	RA/802063/JM/EX/*
80	128	46	220	PRA/802080/JM/EX/*	RA/802080/JM/EX/*
100	138	51	240	PRA/802100/JM/EX/*	RA/802100/JM/EX/*
125	160	65	290	PRA/802125/JM/EX/*	RA/802125/JM/EX/*
160	180	80	340	-	RA/8160/JM/EX/*
200	180	95	370	-	RA/8200/JM/EX/*
250	200	105	410	-	RA/8250/JM/EX/*
320	220	120	460	-	RA/8320/JM/EX/*

* Please insert stroke length; For missing dimensions please see page 8 and 9

Cylinder variants

PRA/802000/MT/EX, RA/802000/MT/EX, RA/8000/MT/EX, RA/8000/IT/EX – Four Position Cylinder

PRA/802000/MTX/EX, RA/802000/MTX/EX – Four Position Cylinder and Female Piston Rod Thread



Stroke

ø	l8	l10	l11	WH	Model Profile barrel	Model Round barrel
32	94	247	27	26	PRA/802032/MT/EX/*/**	RA/802032/MT/EX/*/**
40	105	278	27	30	PRA/802040/MT/EX/*/**	RA/802040/MT/EX/*/**
50	106	294	32	37	PRA/802050/MT/EX/*/**	RA/802050/MT/EX/*/**
63	121	325	28	37	PRA/802063/MT/EX/*/**	RA/802063/MT/EX/*/**
80	128	357	38	46	PRA/802080/MT/EX/*/**	RA/802080/MT/EX/*/**
100	138	387	38	51	PRA/802100/MT/EX/*/**	RA/802100/MT/EX/*/**
125	160	462	44	65	PRA/802125/MT/EX/*/**	RA/802125/MT/EX/*/**
160	180	532	12	-	-	RA/8160/MT/EX/*/**
200	180	560	10	-	-	RA/8200/MT/EX/*/**

* Please insert stroke length 1; ** Please insert stroke length 2

Maximum stroke = stroke 1 + stroke 2; ø 32 = 700 mm, ø 40 = 1000 mm, ø 50 = 1000 mm, ø 63 = 900 mm, ø 80 = 1200 mm, ø 100 = 1100 mm, ø 125 = 1200 mm, ø 160 = 1200 mm, ø 200 = 1100 mm; For missing dimensions please see page 8, 9 and 10

1 Assembly kit for mounting two actuators together to get a four position cylinder

Cylinder variants

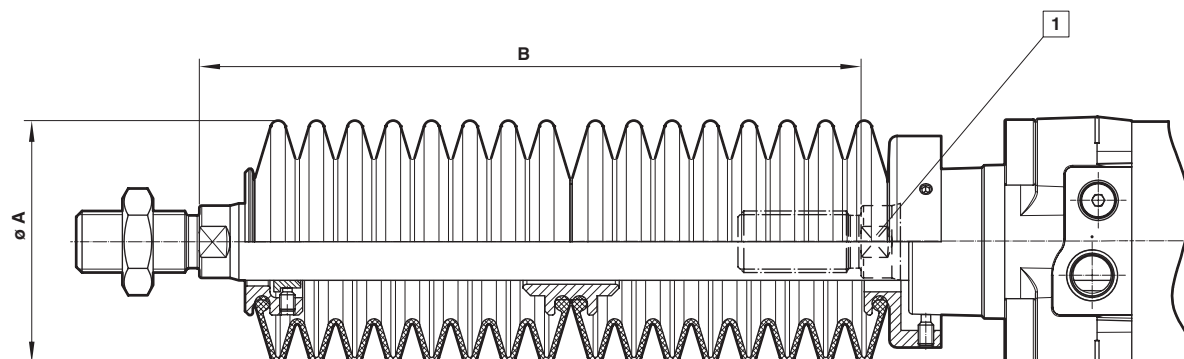
PRA/802000/MG/EX, RA/802000/MG/EX, RA/8000/MG/EX, RA/8000/G/EX

– Cylinder with Piston Rod Bellows

PRA/802000/MGX/EX, RA/802000/MGX/EX

– Cylinder with Piston Rod Bellows and Female Piston Rod Thread

Dimensions in mm
Projection/First angle



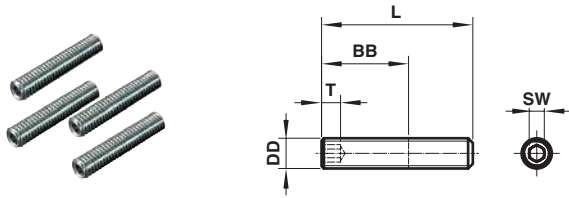
1 Piston rod without bellows

ø	ø A	Max. stroke per bellows	Piston rod extension B for first bellows	for further bellows	Model Profile barrel	Model Round barrel
32	40	60	30	25	PRA/802032/MG/EX/*	RA/802032/MG/EX/*
40	63	145	50	32	PRA/802040/MG/EX/*	RA/802040/MG/EX/*
50	63	145	40	32	PRA/802050/MG/EX/*	RA/802050/MG/EX/*
63	63	145	40	32	PRA/802063/MG/EX/*	RA/802063/MG/EX/*
80	80	250	50	45	PRA/802080/MG/EX/*	RA/802080/MG/EX/*
100	80	250	50	45	PRA/802100/MG/EX/*	RA/802100/MG/EX/*
125	80	250	50	45	PRA/802125/MG/EX/*	RA/802125/MG/EX/*
160	116	350	70	60	-	RA/8160/MG/EX/*
200	116	350	70	60	-	RA/8200/MG/EX/*
250	116	350	70	60	-	RA/8250/MG/EX/*
320	143	500	110	100	-	RA/8320/MG/EX/*

* Please insert stroke length; Maximum stroke: ø 32 = 1860 mm, ø 40 ... 125 = 2000 mm
For missing dimensions please see page 8 and 9

Mountings

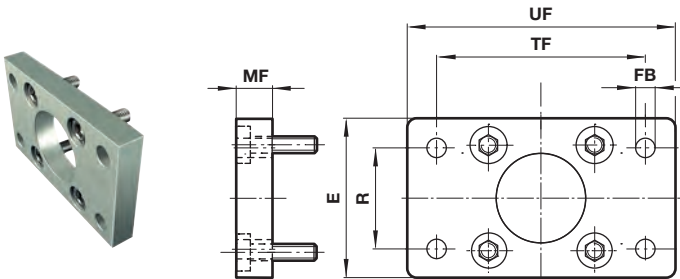
Front or rear stud mounting A



ø	BB	DD	L	SW	T (min)	(kg)	Model (A)
32/40	17	M6	30	3	3,5	0,02	QM/8032/35
50/63	23	M8	40	4	5	0,05	QM/8050/35
80/100	28	M10	45	5	6	0,08	QM/8080/35
125	34	M12	60	6	8	0,14	QM/8125/35
160/200	42	M16	70	8	10	0,31	QM/8160/35
250	50	M20	80	10	12	0,92	QM/8250/35
320	60	M24	90	12	15	1,46	QM/8320/35

Front flange B, G

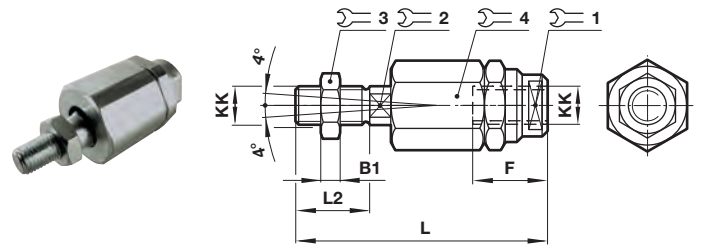
Conforms to ISO 15552, type MF1 and MF2



ø	E	ø FB	MF	R	TF	UF	(kg)	Model (B, G)
32	50	7	10	32	64	80	0,10	QA/8032/22
40	55	9	10	36	72	90	0,12	QA/8040/22
50	65	9	12	45	90	110	0,21	QA/8050/22
63	75	9	12	50	100	125	0,27	QA/8063/22
80	100	12	16	63	126	154	0,63	QA/8080/22
100	120	14	16	75	150	186	0,89	QA/8100/22
125	140	16	20	90	180	224	1,59	QM/8125/22
160	180	18	20	115	230	280	2,65	QM/8160/22
200	220	22	25	135	270	320	4,47	QM/8200/22
250	280	26	25	165	330	395	7,09	QM/8250/22
320	350	33	30	200	400	475	12,84	QM/8320/22

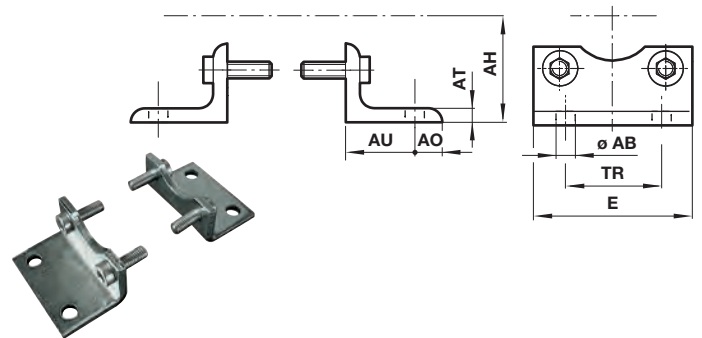
Piston rod swivel AK

Dimensions in mm
Projection/First angle



ø	KK	B1	F	L	L2					(kg)	Model (AK)
						1	2	3	4		
32	M10 x 1,25	5	26	73	20	19	12	17	30	0,20	QM/8025/38
40	M12 x 1,25	6	26	77	24	19	12	19	30	0,20	QM/8040/38
50/63	M16 x 1,5	8	34	106	32	30	19	24	42	0,65	QM/8050/38
80/100	M20 x 1,5	10	42	122	40	30	19	30	42	0,72	QM/8080/38
125	M27 x 2	13,5	40	147	54	40	24	41	55	1,70	QM/8125/38
160/200	M36 x 2	18	78	251	72	50	36	55	75	5,4	QM/8160/38

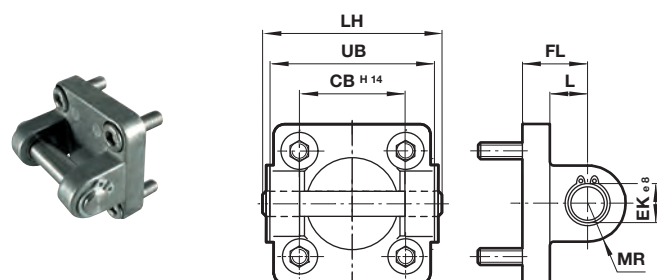
Foot mounting C
Conforms to ISO 15552, type MS1



ø	ø AB	AH	AO	AT	AU	E	TR	(kg)	Model (C)
32	7	32	8	4	24	48	32	0,15	QA/8032/21
40	10	36	9	4	28	53	36	0,18	QA/8040/21
50	10	45	10	5	32	64	45	0,30	QA/8050/21
63	10	50	12	5	32	74	50	0,39	QA/8063/21
80	12	63	19	6	41	98	63	0,80	QA/8080/21
100	14,5	71	19	6	41	115	75	0,95	QA/8100/21
125	16	90	20	9	45	140	90	2,40	QM/8125/21
160	18	115	20	8	60	180	115	3,5	QM/8160/21
200	22	135	30	9	70	220	135	5,25	QM/8200/21
250	26	165	35	10	75	280	165	9,5	QM/8250/21
320	33	200	45	16	85	350	200	22	QM/8320/21

Rear clevis D

Conforms to ISO 15552, type MP2

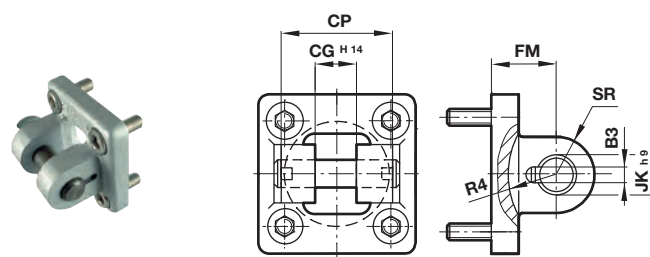


ø	CB H14	ø EK e8	FL	L	LH	MR	UB	(kg)	Model (D)
32	26	10	22	13	52	9	45	0,11	QA/8032/23
40	28	12	25	16	60	12	52	0,16	QA/8040/23
50	32	12	27	17	68	12	60	0,22	QA/8050/23
63	40	16	32	22	79	15	70	0,34	QA/8063/23
80	50	16	36	22	99	15	90	0,54	QA/8080/23
100	60	20	41	27	119	20	110	0,90	QA/8100/23
125	70	25	50	29	140	25	130	2,70	QM/8125/23
160	90	30	55	37	182	30	170	4,3	QM/8160/23
200	90	30	60	40	182	30	170	6,1	QM/8200/23
250	110	40	70	47	218	40	200	19	QM/8250/23
320	120	45	80	50	238	45	220	30,5	QM/8320/23

Rear clevis D2

Conforms to ISO 15552, type AB6

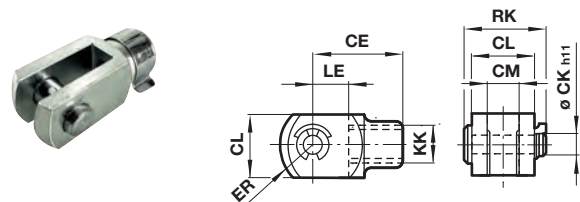
Dimensions in mm
Projection/First angle



ø	CG H14	CP	B3	ø JK h9	FM	SR	R4	(kg)	Model (D2)
32	14	34	3,3	10	22	11	17	0,20	QA/8032/42
40	16	40	4,3	12	25	12	20	0,23	QA/8040/42
50	21	45	4,3	16	27	14,5	22	0,36	QA/8050/42
63	21	51	4,3	16	32	18	25	0,55	QA/8063/42
80	25	65	4,3	20	36	22	30	0,90	QA/8080/42
100	25	75	4,3	20	41	22	32	1,45	QA/8100/42
125	37	97	6,3	30	50	30	42	2,7	QA/8125/42
160	43	122	6,3	35	55	36	46	4,3	QA/8160/42
200	43	122	6,3	35	60	38	49	6,1	QA/8200/42

Piston rod clevis F

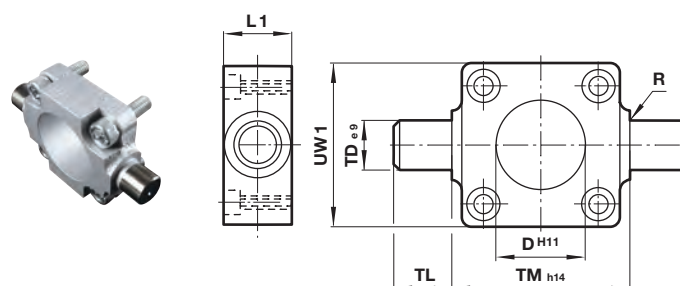
Conforms to DIN ISO 8140



ø	KK	CE	ø CK h11	CL	CM	ER	LE	RK	(kg)	Model (F)
32	M10 x 1,25	40	10	20	10	16	20	27,5	0,09	QM/8025/25
40	M12 x 1,25	48	12	24	12	19	24	33,5	0,13	QM/8040/25
50/63	M16 x 1,5	64	16	32	16	25	32	42	0,33	QM/8050/25
80/100	M20 x 1,5	80	20	40	20	32	40	51	0,67	QM/8080/25
125	M27 x 2	110	30	55	30	45	54	73,5	1,35	QM/8125/25
160/200	M36 x 2	144	35	70	35	57	72	94	3	QM/8160/25
250	M42 x 2	168	40	85	40	77	84	107	6,4	QM/8250/25
320	M48 x 2	192	50	96	50	88	96	123	8,7	QM/8320/25

Front or rear detachable trunnion FH

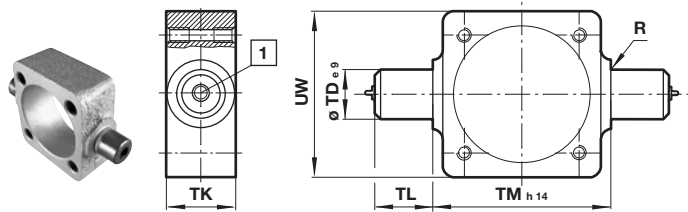
Conforms to VDMA 24562 part 2, type MT 5/6



ø	ø D H11	L1	R	ø TD e9	TL	TM h14	UW1	(kg)	Model (FH)
32	30	16	1	12	12	50	45	0,20	QA/8032/34
40	35	20	1,6	16	16	63	55	0,38	QA/8040/34
50	40	24	1,6	16	16	75	65	0,60	QA/8050/34
63	45	24	1,6	20	20	90	75	1,10	QA/8063/34
80	45	28	1,6	20	20	110	100	1,90	QA/8080/34
100	55	38	2	25	25	132	120	3,50	QA/8100/34
125	60	50	2	25	25	160	145	6,50	QA/8125/34

Centre trunnion – H

Conforms to ISO 15552, type MT4
Used for cylinder model with round barrel



1 Grease nipple from ø 125 mm

ø	R max.	øTD e9	TK	TL	TM h14	UW	XV min.	XV max. + #	(kg)	Model (H)
32	1	12	20	12	50	50	65	81	0,16	QA/8032/28
40	1,6	16	24	16	63	58	76,5	88,5	0,35	QA/8040/28
50	1,6	16	28	16	75	70	84	96	0,65	QA/8050/28
63	1,6	20	28	20	90	80	87,5	107,5	0,85	QA/8063/28
80	1,6	20	28	20	110	100	102	118	1,2	QA/8080/28
100	2	25	38	25	132	126	112	128	2,3	QA/8100/28
125	2	25	50	25	160	152	144	146	3,3	QM/8125/28
160	2,5	32	50	32	200	192	155	185	5,3	QM/8160/28
200	2,5	32	50	32	250	240	170	200	9,4	QM/8200/28
250	3,2	40	60	40	320	318	193	217	18	QM/8250/28
320	3,2	50	70	50	400	400	215	245	30	QM/8320/28

Note: Style 'H': These mountings are only supplied assembled complete with the cylinder. Unless otherwise specified, units will be supplied with dimension 'XV min'. plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting (Please see drawing).

Not for use on profile options.

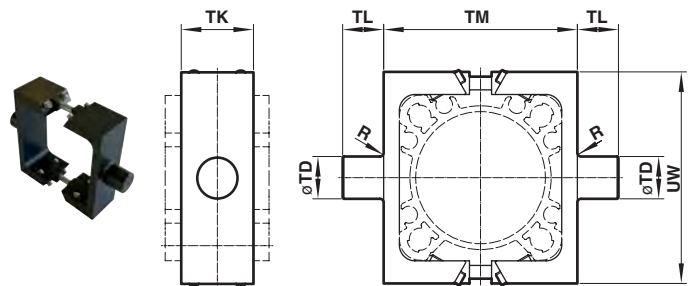
This item is suited to all loads including heavy duty loads.

This item is for replacement only

H mounting must be initially ordered with the cylinder.

Adjustable trunnion mounting UH

Conforms to ISO 15552, type MT4
Used for cylinder model with profile barrel



ø	R	øTD e9	TK max.	TL h14	TM h14	UW	XV min.	XV max. + #	(kg)	Dreh-moment (Nm)	Model (UH)
32	1	12	25	12	50	58	67,5	78,5	0,06	1,3	PQA/802032/40
40	1,6	16	28	16	63	65	78,5	86,5	0,11	1,3	PQA/802040/40
50	1,6	16	28	16	75	80	84	96	0,16	4	PQA/802050/40
63	1,6	20	36	20	90	96	91,5	103,5	0,32	4	PQA/802063/40
80	1,6	20	36	20	110	116	106	114	0,37	6,5	PQA/802080/40
100	2	25	48	25	132	140	117	123	0,72	6,5	PQA/802100/40
125	2	25	50	25	160	163	144	146	0,96	14	PQA/802125/40

Style 'UH': It is most important that the locking screws which secure the mounting to the tie rod are tightened to the torque figures shown in the table below. For maximum energy input, consult our Technical Service.

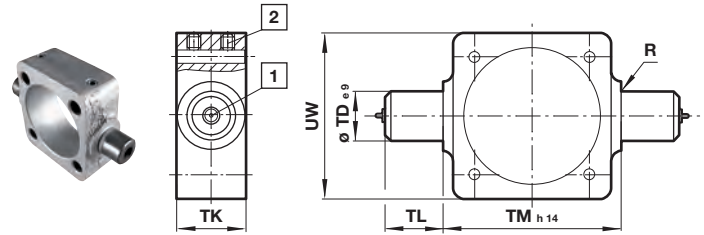
Unless otherwise specified, units will be supplied with dimension 'XV min'. plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting (Please see drawing).

This item is adjustable and suited to normal loads.

Adjustable trunnion mounting UH

Conforms to ISO 15552, type MT4
Used for cylinder model with round barrel

Dimensions in mm
Projection/First angle



1 Grease nipple from ø 125 mm

2 Locking screws

Torque max: ø 32 & 40 mm = 6 Nm; ø 50 & 63 mm = 10 Nm;
ø 80 & 100 mm = 15 Nm; ø 125 mm = 25 Nm

ø	R max.	øTD e9	TK	TL	TM h14	UW	XV min.	XV max. + #	(kg)	Model (UH)
32	1	12	20	12	50	50	65	81	0,16	QA/8032/40
40	1,6	16	24	16	63	58	76,5	88,5	0,35	QA/8040/40
50	1,6	16	28	16	75	70	84	96	0,65	QA/8050/40
63	1,6	20	28	20	90	80	87,5	107,5	0,85	QA/8063/40
80	1,6	20	28	20	110	100	102	118	1,2	QA/8080/40
100	2	25	38	25	132	126	112	128	2,3	QA/8100/40
125	2	25	50	25	160	152	144	146	3,3	QA/8125/40
160	2,5	32	50	32	200	192	155	185	5,3	QA/8160/40
200	2,5	32	50	32	250	240	170	200	9,4	QA/8200/40

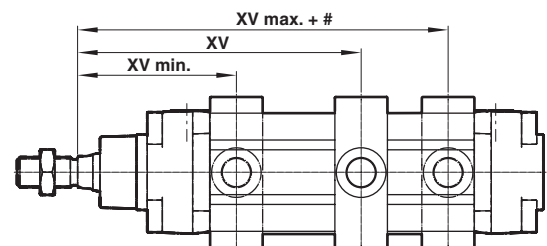
Style 'UH': It is most important that the locking screws which secure the mounting to the tie rod are tightened to the torque figures shown in the table below. For maximum energy input, consult our Technical Service.

Unless otherwise specified, units will be supplied with dimension 'XV min' plus half the stroke length. 'XV' = Distance from the piston rod shoulder to the centre of the mounting (Please see drawing).

Not for use on profile options.

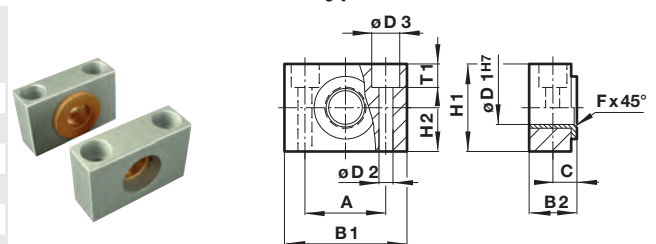
This item is adjustable and suited to normal loads.

Stroke



Trunnion support S

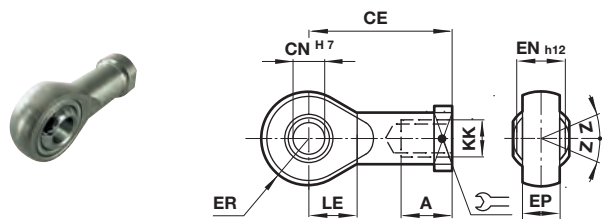
Conforms to ISO 15552, type AT4



ø	A	B		C	ø D1H7	ø D2	ø D3	F x 45°	H		T1	(kg)	Model (S)
		1	2						1	2			
32	32	46	18	10,5	12	6,6	11	1	30	15	6,8	0,10	QA/8032/41
40/50	36	55	21	12	16	9	15	1,6	36	18	9	0,14	QA/8040/41
63/80	42	65	23	13	20	11	18	1,6	40	20	11	0,18	QA/8063/41
100/125	50	75	28,5	16,5	25	14	20	2	50	25	13	0,34	QA/8100/41
160/200	60	92	39	21,5	32	18	26	2,5	60	30	15,5	1,9	QA/8160/41

Universal piston rod eye UF

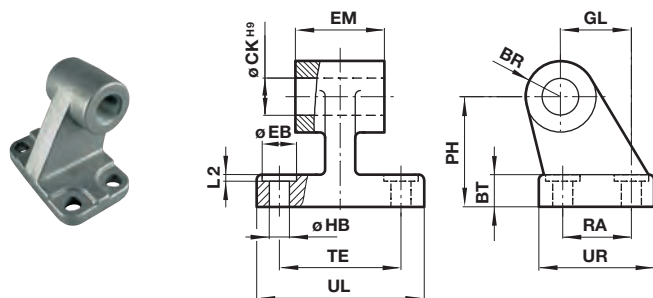
Conforms to DIN ISO 8139



ø	Gewinde KK	A	CE	ø CN H7	EN h12	ER	LE	Z	(kg)	Model (UF)
32	M10 x 1,25	20	43	10	14	14	15	9°	0,09	QM/8025/32
40	M12 x 1,25	22	50	12	16	16	17	13°	0,13	QM/8040/32
50/63	M16 x 1,5	28	64	16	21	21	22	15°	0,33	QM/8050/32
80/100	M20 x 1,5	33	77	20	25	25	26	15°	0,67	QM/8080/32
125	M27 x 2	51	110	30	37	35	36	15°	1,35	QM/8125/32
160/200	M36 x 2	56	125	35	43	40	41	16°	3	QM/8160/32
250	M42 x 2	60	142	40	49	45	46	17°	6,4	QM/8250/32
320	M48 x 2	65	160	50	60	57,5	59	12°	8,7	QM/8320/32

Wide hinge SW

Conforms to ISO 15552, type AB7



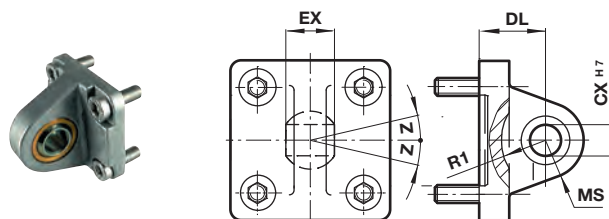
ø	BR	BT	PH	ø CK H9	ø EB	EM	GL
32	10	7	32	10	12	25,6	21
40	11	9	36	12	12	27,6	24
50	13	11	45	12	15	31,6	33
63	15	11	50	16	15	39,6	37
80	15	14	63	16	18	49,6	47
100	18	15	71	20	18	59,6	55
125	22	20	90	25	20	69	70
160	31	25	115	30	20	89	97
200	31	30	135	30	26	89	105
250	39	35	165	40	40	109	128
320	44	40	200	45	48	119	150

ø	ø HB	L2	RA	TE	UL	UR	(kg)	Model (SW)
32	6,6	1,6	18	38	50	31	0,05	M/P19493
40	6,6	1,6	22	41	53	35	0,07	M/P19494
50	9	1,6	30	50	65	45	0,14	M/P19495
63	9	1,6	35	52	67	50	0,18	M/P19496
80	11	2,5	40	66	84	60	0,28	M/P19497
100	11	2,5	50	76	94	70	0,42	M/P19498
125	14	3,2	60	94	124	90	2,70	M/P19499
160	14	4	88	118	156	126	6,3	M/P19679
200	18	4	90	122	162	130	8	M/P19683
250	22	4	110	150	200	160	13,4	M/P19446
320	26	4	122	170	234	186	22	M/P19447

Universal rear eye UR

Conforms to ISO 15552, type MP6

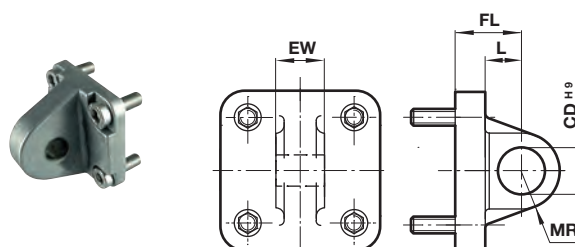
Dimensions in mm
Projection/First angle



ø	ø CX H7	EX	MS	DL	R1	Z	(kg)	Model (UR)
32	10	14	16	22	13	13°	0,15	QA/8032/33
40	12	16	18	25	16	13°	0,25	QA/8040/33
50	16	21	21	27	19	15°	0,40	QA/8050/33
63	16	21	23	32	22	15°	0,55	QA/8063/33
80	20	25	28	36	24	14°	0,90	QA/8080/33
100	20	25	30	41	27	14°	1,50	QA/8100/33
125	30	37	40	50	36	17°	2,70	QM/8125/33
160	35	43	44	55	41	16°	4,6	QM/8160/33
200	35	43	48	60	42	16°	7,3	QM/8200/33
250	40	49	50	70	47	16°	16,5	QM/8250/33
320	50	60	58	80	52	14°	26	QM/8320/33

Rear eye R

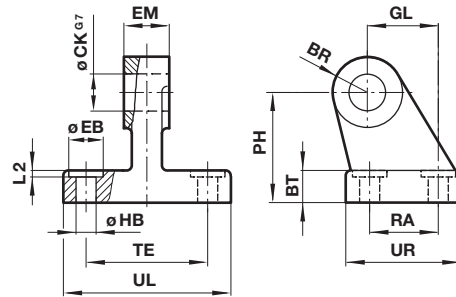
Conforms to ISO 15552, type MP4



ø	ø CD H9	EW	FL	L	MR	(kg)	Model (R)
32	10	25,6	22	13	9	0,09	QA/8032/27
40	12	27,6	25	16	12	0,11	QA/8040/27
50	12	31,6	27	17	12	0,17	QA/8050/27
63	16	39,6	32	22	15	0,24	QA/8063/27
80	16	49,6	36	22	15	0,37	QA/8080/27
100	20	59,6	41	27	20	0,59	QA/8100/27
125	25	69,6	50	33	25	3,20	QM/8125/27
160	30	89,6	55	35,5	30	6,1	QM/8160/27
200	30	89,6	60	37	30	6,8	QM/8200/27

Narrow hinge SS

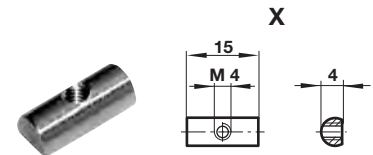
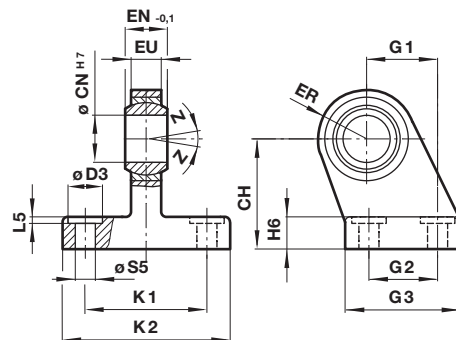
Dimensions in mm
Projection/First angle



ø	BR	BT	ø CK G7	ø EB	EM	GL	ø HB	L2	PH	RA	TE	UL	UR	(kg)	Model (SS)
32	10	8	10	11	10	21	6,6	1,6	32	18	38	51	31	0,15	M/P19931
40	11	10	12	11	12	24	6,6	1,6	36	22	41	54	35	0,20	M/P19932
50	13	12	16	15	16	33	9	1,6	45	30	50	65	45	0,48	M/P19933
63	15	12	16	15	16	37	9	1,6	50	35	52	67	50	0,50	M/P19934
80	15	14	20	18	20	47	11	2,5	63	40	66	86	60	0,75	M/P19935
100	19	15	20	18	20	55	11	2,5	71	50	76	96	70	1,20	M/P19936
125	22	20	30	20	30	70	14	3,2	90	60	94	124	90	2,50	M/P19937
160	31	25	35	20	35	97	14	4	115	88	118	156	126	6,00	M/P19938
200	31	30	35	26	35	105	18	4	135	90	122	162	130	7,60	M/P19939

Swivel hinge US Conforms to VDMA 24562 part 2

Groove key M/P72816 Weight: 0,01 (kg)



ø	CH	ø CN H7	ø D3	EN -0,1	ER	EU	G1	G2	G3	H6	K1	K2	L5	S5	Z	(kg)	Model (US)
32	32	10	11	14	16	10,5	21	18	31	10	38	51	1,6	6,6	13 °	0,19	M/P40310
40	36	12	11	16	18	12	24	22	35	10	41	54	1,6	6,6	13 °	0,24	M/P40311
50	45	16	15	21	21	15	33	30	45	12	50	65	1,6	9	15 °	0,46	M/P40312
63	50	16	15	21	23	15	37	35	50	12	52	67	1,6	9	15 °	0,59	M/P40313
80	63	20	18	25	28	18	47	40	60	14	66	86	2,5	11	14 °	1,03	M/P40314
100	71	20	18	25	30	18	55	50	70	15	76	96	2,5	11	14 °	1,40	M/P40315
125	90	30	20	37	40	25	70	60	90	20	94	124	3,2	14	17 °	3,10	M/P71355
160	115	35	20	43	44	28	97	88	126	25	118	156	4	14	16 °	6,40	M/P71356
200	135	35	26	43	47	28	105	90	130	30	122	162	4	18	16 °	9,10	M/P71357

- ATEX - Magnetically operated switch, reed contact
- LED indicator
- CE verified
- Suitable for all cylinder ranges with magnetic piston



Technical features

Operation:
Normal open with LED (yellow)

switching voltage (Ub):
10 ... 240 V a.c./170 V d.c.

Switching voltage output:
Ub - 2,7 V

Switching current (see graph overleaf):
0,18 A max.

Switching power:
10 W/10 VA max.

Contact resistance:
150 mΩ

Response time:
1,8 ms

Operating temperature:
-20 ... +50 °C (-4 ... +122 °F)



Ex-Identification:
II 3G Ex nC IIC T5 Gc X
II 3D Ex tc IIIC T120 °C Dc X

Protection rating (EN 60529):
IP67

Cable type:
PVC 2 x 0,25 mm²

Cable length:
5 m



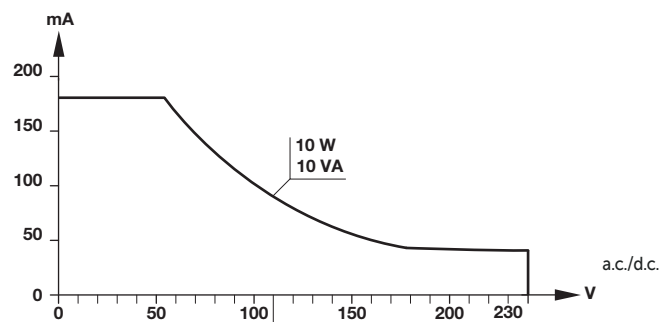
Electromagnetic compatibility according to:
EN 60947-5-2

Materials:
Body: plastic
Cable: see table below

Symbol	Voltage (V a.c.)	(V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Cable length (m)	Cable type	Weight (g)	Model
 BN	10 ... 240	10 ... 170	180	Closer	-20 ... +50	•	IP67	5	PVC 2 x 0,25	40	M/50/LXU/5V
BU											

Color code: BN = brown, BU = blue

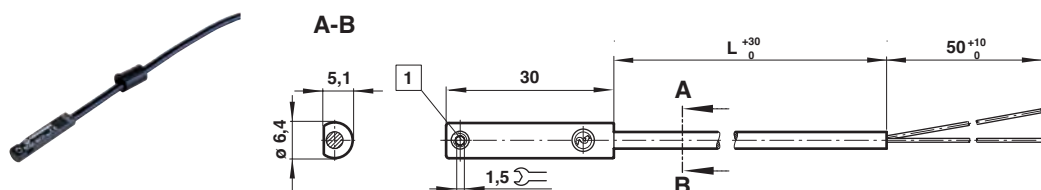
Switching current and switching voltage



Dimensions

Cable length L = 5 m

Dimensions in mm
Projection/First angle



1 Fixing screw

ATTENTION:

The setting of magnetic switches on a cylinder barrel forms an ATEX assembly:

- Each part is separate classified according ATEX for use in potentially explosive atmospheres.
- The resulting range of approved applications for the module corresponds to that of the individual part assigned to the lowest category.
- The result concerns the device category, potentially explosive atmosphere G or D, max. surface temperature and explosion classification if applicable.

- Magnetically operated switch, solid state - round style
- IO-Link version available
- Suitable for all cylinder ranges with magnetic piston
- Resistant, reliable switching with a very fast response time
- Particularly suited for use in high levels of vibration
- LED indicator
- UL listed



 IO-Link

 LISTED



Technical features

Operation:

PNP (see table)
Output with LED (yellow)
Normally open (standard)

Switching voltage (U_b):

10 ... 30 V d.c.
("supply class 2" acc. to cULus)
Voltage drop at output:
< 2,5 V

Residual current:

< 0,5 mA

Switching current (see graph):

150 mA max. (standard)
100 mA max. (M/50/IXP)

Switching power:

4,5 W max. (standard)
3,0 W max. (M/50/IXP)

Response time:

< 0,1 ms (standard)
< 5 ms (M/50/IXP)

Operating frequency:

1 kHz (standard)
200 Hz (M/50/IXP)

Protection rating (EN 60529):

IP67

Ambient temperatur:

-20 ... +50 °C (-4 ... 122 °F)

Responsiveness:

2,8 mT

Hysteresis:

0,5 ... 1,5 mT (standard)
0,2 mT (M/50/IXP)

Repeatability:

< 0,1 mT

Ex-Identification:

II 3G Ex ec IIC T4 Gc X
II 3D Ex tc IIIC T110 °C Dc X

Cable type:

PVC 3 x 0,14 mm² (Standard)
PUR 3 x 0,14 mm² (all variants with connector)

Cable length:

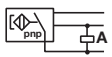
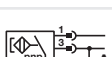
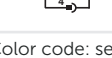
5 m

Electromagnetic compatibility

according to:
EN 60947-5-2

Materials:

Housing: plastic
Thread insert: brass
Set screw: stainless steel
Cable: see table below

Symbol	Voltage (V d.c.)	Current maximum (mA)	Function	IO-Link *1)	Ambient temperature (°C)	LED	Protection class	Connector	Cable length (m)	Cable type	Weight (g)	Model
 + BN BU BK	10 ... 30	150	PNP		-20 ... +50	•	IP67	---	5	PVC 3 x 0,14	56	M/50/EXP/5V
 + BN BU BK	10 ... 30	100	PNP / NPN	•	-20 ... +50	•	IP67	---	5	PVC 3 x 0,14	56	M/50/IXP/5V
 + BN BU BK	10 ... 30	150	PNP		-20 ... +50	•	IP67	M8 x 1	0,3	PUR 3 x 0,14	7	M/50/EXP/CP
 + BN BU BK	10 ... 30	150	PNP		-20 ... +50	•	IP67	M12 x 1	0,3	PUR 3 x 0,14	16	M/50/EXP/CC

Color code: see next page

*1) IO-Link functionality: see next page

IO-Link Switch conforming to IEC 61131-9

Properties and Functionality	M/50/EXP	M/50/IXP
Operating Mode	Standard	Standard
Power LED		•
LED sensor signal	•	•
Normally open (delivery status)	•	•
Normally closed		O
Delay mode		O
Installation aid		•
Temperature measurement		•
Detection counter		•
Teach functionality		•
Responsiveness adjustment		•

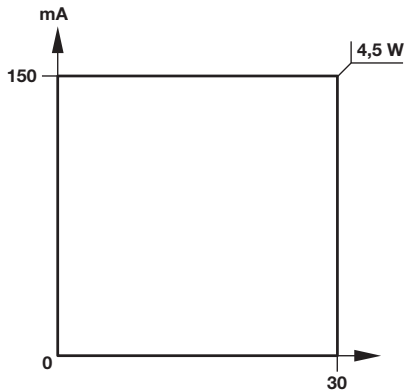
Note: IODD for the M/50/IXP switches available on the Norgren homepage.
<https://www.norgren.com/uk/en/technical-support/software>

• = included

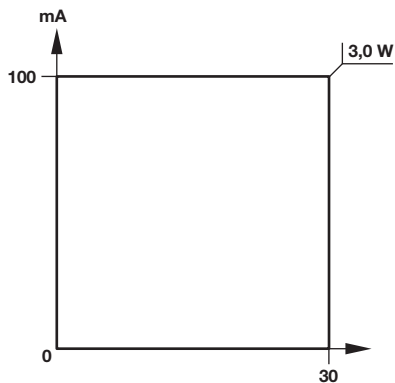
O = optional (manufacture pre-setting required)

Switching current and switching voltage

M/50/EXP

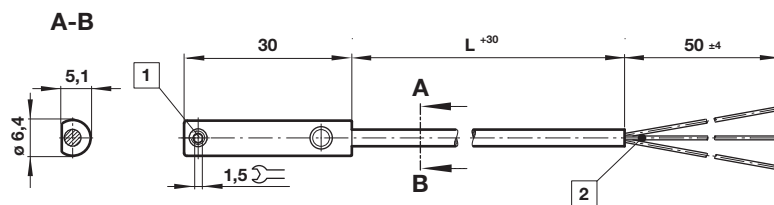


M/50/IXP



Dimensions

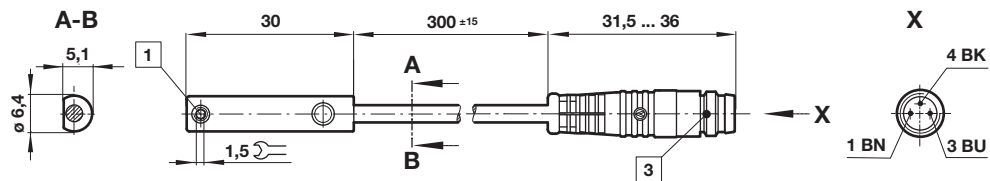
M/50/EXP/5V
M/50/IXP/5V
Cable length L = 2, 5 or 10 m



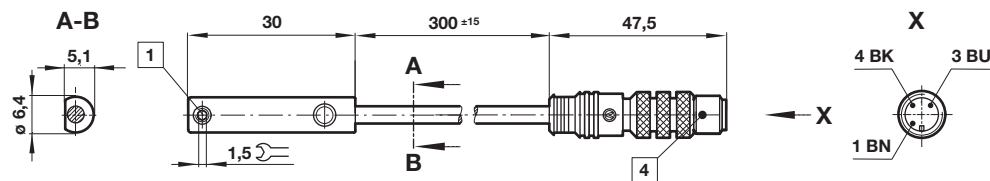
Dimensions in mm
Projection/First angle



M/50/EXP/CP



M/50/EXP/CC



- 1 Fixing screw
- 2 Color code: BK = black (output); BN = brown (+); BU = blue (-)
- 3 Connector M8 x 1; 1 BN = +; 3 BU = -; 4 BK = output
- 4 Connector M12 x 1; 1 BN = +; 3 BU = -; 4 BK = output

ATTENTION:

The setting of magnetic switches on a cylinder barrel forms an ATEX assembly:

- Each part is separate classified according ATEX for use in potentially explosive atmospheres.
- The resulting range of approved applications for the module corresponds to that of the individual part assigned to the lowest category.
- The result concerns the device category, potentially explosive atmosphere G or D, max. surface temperature and explosion classification if applicable.

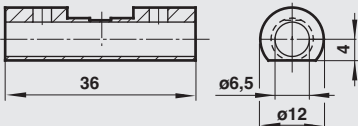
ATTENTION:

The setting of magnetic switches in a closed profil barrel forms an ATEX assembly:

- Each part is separate classified according ATEX for use in potentially explosive atmospheres.
- The resulting range of approved applications for the module corresponds to that of the individual part assigned to the lowest category.
- The result concerns the device category, potentially explosive atmosphere G or D, max. surface temperature and explosion classification if applicable.

Protection of the magnetic switch

1. Install the switch in a way that ensures to protect the switch against mechanical damage, shock or impact from any direction.
2. For an open installation of a magnetic switch onto a cylinder barrel with external tie rods, an additional protection element for the magnetic switch and his cable has to be installed with the mounting element. For the protection element of the housing together with mounting bracket QM/27/2/1 a separate order for M/P73668 is required.

Cylinder with external tie rods	Mounting element for magnetic switch	Protection unit ATEX	
			
Cylinder Ø (mm)	Model	Model	
32 ... 125	QM/27/2/1	M/P73668	

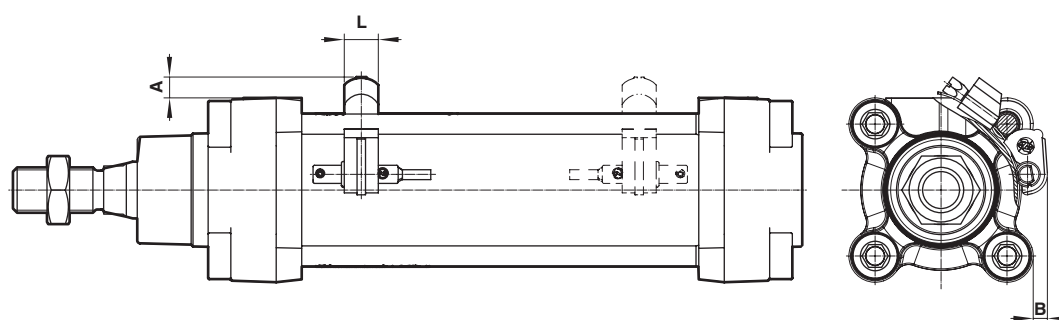
QM/27/2/1 – Switch mounting brackets for Round barrel

Switch: M/50



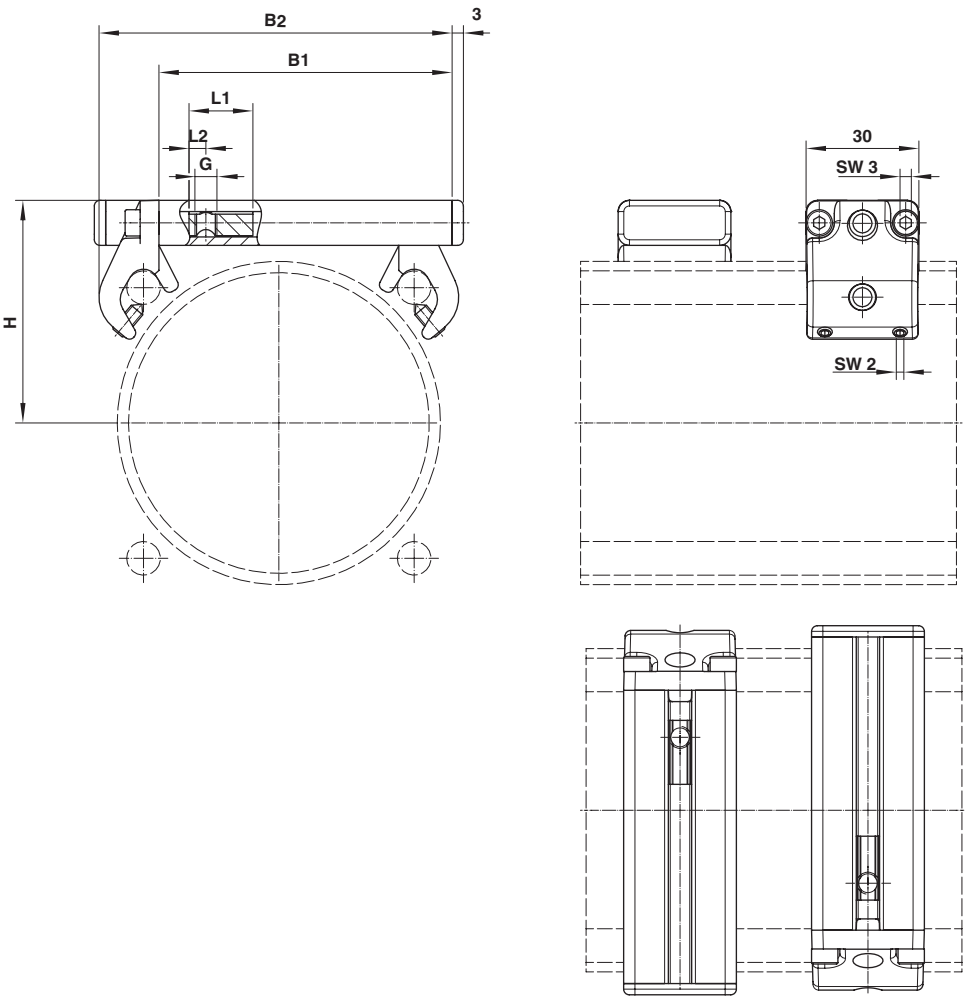
ø	A	B	L	Weight (kg)	Model
32	9	6	12	0,010	QM/27/2/1
40	9	7	12	0,010	QM/27/2/1
50	7	5	12	0,010	QM/27/2/1
63	7	6	12	0,010	QM/27/2/1

ø	A	B	L	Weight (kg)	Model
100	3	2	12	0,010	QM/27/2/1
125	-2	-2	12	0,010	QM/27/2/1
160	-10	-9	12	0,010	QM/27/2/1
200	-17	-16	12	0,010	QM/27/2/1
250	-10	-6	35	0,085	QM/27/2/2
320	-20	-16	35	0,072	QM/27/2/3



Valve mounting kit for Round barrel

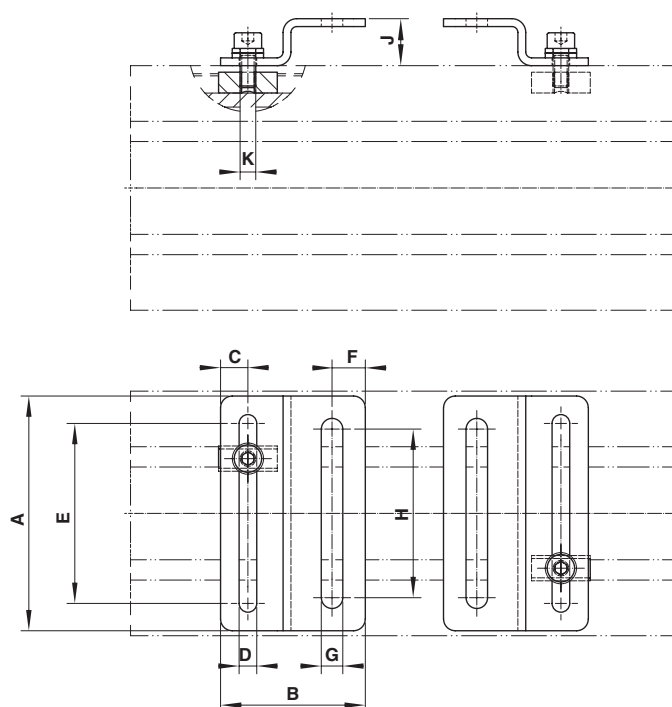
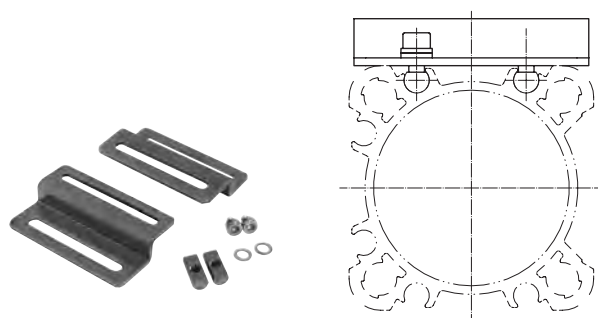
Dimensions in mm
Projection/First angle



ø	B1	B2	H	L1	L2	G	kg	Model
63	61,5	77,5	50	17	4,5	M4	0,13	QA/8063/22/55/4
63	61,5	77,5	50	17	4,5	M5	0,13	QA/8063/22/55/5
63	61,5	77,5	50	17	4,5	M6	0,13	QA/8063/22/55/6
80	78	94	59,5	17	4,5	M4	0,14	QA/8080/22/55/4
80	78	94	59,5	17	4,5	M5	0,14	QA/8080/22/55/5
80	78	94	59,5	17	4,5	M6	0,14	QA/8080/22/55/6
100	97	113	68	17	4,5	M4	0,19	QA/8100/22/55/4
100	97	113	68	17	4,5	M5	0,19	QA/8100/22/55/5
100	97	113	68	17	4,5	M6	0,19	QA/8100/22/55/6
125	120	136	80	17	4,5	M4	0,21	QA/8125/22/55/4
125	120	136	80	17	4,5	M5	0,21	QA/8125/22/55/5
125	120	136	80	17	4,5	M6	0,21	QA/8125/22/55/6
160	156	175	101,5	17	4,5	M4	0,28	QA/8160/22/55/4
160	156	175	101,5	17	4,5	M5	0,28	QA/8160/22/55/5
160	156	175	101,5	17	4,5	M6	0,28	QA/8160/22/55/6
200	194	231	119	17	4,5	M4	0,31	QA/8200/22/55/4
200	194	231	119	17	4,5	M5	0,31	QA/8200/22/55/5
200	194	231	119	17	4,5	M6	0,31	QA/8200/22/55/6

Valve mounting kit for Profile barrel

Dimensions in mm
Projection/First angle



ø	A	B	C	D	E	F	G	H	J	K	SW	(kg)	Model
32/40	45	37	7	4,5	31	8,5	5,5	28,1	12	M4	3	0,06	PQA/802032/22/54
50/63	60	37	7	4,5	46	8,5	5,5	43	12	M4	3	0,08	PQA/802050/22/54
80/100	90	37	7	4,5	76	8,5	6,5	70	12	M4	3	0,11	PQA/802080/22/54
125	135	37	7	4,5	121	8,5	6,5	115	12	M4	3	0,16	PQA/802125/22/54

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under »**Technical features/data**«.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems or other applications not within published specifications, consult Norgren GmbH.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.