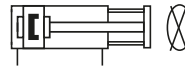


- > Ø 32 ... 100 mm
- > Guiding accuracy ± 0,02 mm
- > Non-rotation accuracy ± 0,02°
- > Integrated heavy duty guide rods
- > Linear ball bearing option provides precision guiding for higher speeds
- > Plain bearing option offers higher side load capacity
- > Easy installation
- > Magnetic piston as standard
- > Buffer pad for noise reduction



Technical features

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting with magnetic piston and buffer cushioning

Operating pressure:

1 ... 10 bar (14 ... 145 psi)

Cylinder diameters:

32, 40, 50, 63, 80 (plain bearings)
 32, 40, 50, 63, 80, 100 (ball bearings)

Standard Strokes:

25, 50, 75, 100 mm
 (non-standard strokes <100 mm available.)

They have the dimensions of the next longer standard stroke.)

Operating temperature:

-10°C ... +80°C max.

(+14 ... +176°F)

Air supply must be dry enough to avoid ice formation at temperatures below +2°C (+35°F).

Materials:

Profile barrel: anodized aluminium

Piston rod: stainless steel (martensitic)

Guide rod: stainless steel martensitic (plain bearings), hardened steel, hard-chrome plated (ball bearings)

Bearing: solid bronze (plain bearings), steel roller (ball bearings)

Mounting plate: stainless steel (austenitic)

Piston rod seals: PUR

Piston seals: NBR

'O'-ring: NBR

Technical data

Cylinder Ø (mm)	32	40	50	63	80	100
Port size	G1/8	G1/8	G1/4	G1/4	G1/4	G1/4
Theoretical forces at 6 bar outstroke (N)	482	754	1178	1870	3016	4710
Theoretical forces at 6 bar instroke (N)	414	633	990	1680	2722	4416
Air consumption at 6 bar outstroke (l/cm)	0,056	0,088	0,137	0,218	0,35	0,55
Air consumption at 6 bar instroke (l/cm)	0,048	0,074	0,114	0,195	0,32	0,51

Option selector

M/61★★★/★★/★★★

Cylinder Ø (mm)	Substitute
32	032
40	040
50	050
63	063
80	080
100	100

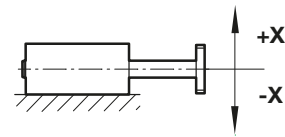
Strokes (mm)	Substitute
25	25
50	50
75	75
100	100
Variants (magnetic piston)	Substitute
Plain bearings (Ø 32 ... 80 mm)	M
Ball bearings (Ø 32 ... 100 mm)	MR
Ball bearings, special wipers (Ø 32 ... 100 mm)	W2R













Weights (kg)

Ø	Stroke (mm)				Model
	25	50	75	100	
32	1,50	1,99	2,48	2,97	M/61000/M Cylinder with slide bearing
40	1,70	2,21	2,72	3,23	
50	2,40	3,10	3,80	4,50	
63	3,10	3,91	4,72	5,53	
80	6,45	7,77	9,09	10,40	
32	1,25	1,65	2,05	2,45	M/61000/MR Cylinder with roller bearing
40	1,45	1,87	2,29	2,71	
50	2,10	2,68	3,26	3,84	
63	2,60	3,27	3,94	4,61	
80	5,99	7,14	8,29	9,44	
100	9,16	10,75	12,35	13,95	

Guiding accuracy

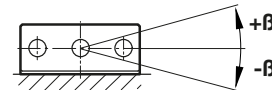
Deflection of the mounting platem at instroke and outstroke position without load.



Cylinder Ø (mm)	32		40		50		63		80		100	
	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke	Instroke	Outstroke
Position												
Slidebearing	± 0,06	± 0,11	± 0,06	± 0,11	± 0,06	± 0,11	± 0,06	± 0,11	± 0,07	± 0,11	–	–
Rollerbearing	± 0,02	± 0,04	± 0,02	± 0,04	± 0,03	± 0,05	± 0,03	± 0,05	± 0,03	± 0,05	± 0,03	± 0,05

Non-rotation Accuracy

Deflection of the mounting plate β (°) at instroke position without load.



Cylinder Ø (mm)	32	40	50	63	80	100
Slide bearing	± 0,06	± 0,06	± 0,05	± 0,05	± 0,04	–
Roller bearing	± 0,03	± 0,03	± 0,03	± 0,03	± 0,02	± 0,02

Load data General:

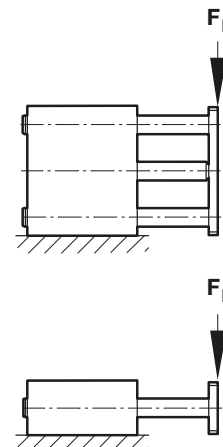
The combination of different load cases (e.g. load plus torque or eccentricity in two directions) will reduce the permissible load accordingly. Keep the guide rods free from any pollution.

Maximum load FL* (N)

at the front plate

Cylinder Ø (mm)	Stroke (mm)				Model
	25	50	75	100	
32	212	214	215	216	M/61032/M
32	163	179	187	191	M/61032/MR
40	227	224	223	222	M/61040/M
40	181	191	195	198	M/61040/MR
50	324	331	334	337	M/61050/M
50	223	236	242	246	M/61050/MR
63	343	343	343	344	M/61063/M
63	251	254	256	257	M/61063/MR
80	470	479	484	487	M/61080/M
80	423	459	477	488	M/61080/MR
100	902	761	799	821	M/61100/MR

* Dependent on stroke



Maximum Load FL' (N) at the distance DL

A distance DL between the force and the front plate (e.g. force in the centre of gravity of a load) will reduce the permissible Load as follows:

$$F_L' = F_L \times (b : b + \Delta l)$$

F_L' – Max. load at the distance Δl (N)

F_L – Max. load at the front plate (N)

Δl – Distance (mm)

$b = a + 2 \times \text{stroke (mm)}$

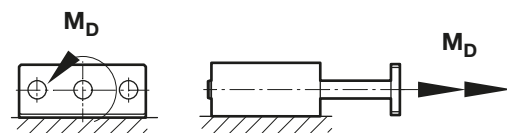
a – Constant (mm)

Cylinder Ø (mm)	32	40	50	63	80	100
a	32	39	41	46	54	59

Maximum torque MD* (Nm)

Cylinder Ø (mm)	Stroke (mm)				Model
	25	50	75	100	
32	8,5	8,5	8,6	8,6	M/61032/M
32	6,5	7,1	7,5	7,6	M/61032/MR
40	10,2	10,1	10	10	M/61040/M
40	8,1	8,6	8,7	8,9	M/61040/MR
50	16,2	16,5	16,7	16,8	M/61050/M
50	11,1	11,8	12,1	12,3	M/61050/MR
63	18,8	18,8	18,8	18,9	M/61063/M
63	13,8	14	14,1	14,1	M/61063/MR
80	32,9	33,5	33,9	34,1	M/61080/M
80	29,6	32,1	33,4	34,1	M/61080/MR
100	76,7	64,7	67,9	69,8	M/61100/MR

* Dependent on stroke



Calculation of permissible Speed or maximum Load

For a cylinder with guiding used as actuator

ES – Max. kinetic energy (Nm)

mE – Moved weight (kg)

mL – Additional load (kg)

v – Speed (m/s)

$$ES = 0,5 (mE + mL) \times v^2$$

Maximum permissible speed v max.

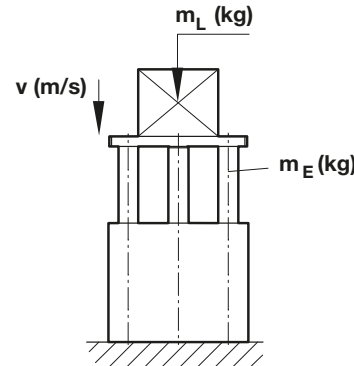
$$v_{max.} = \sqrt{\frac{2 ES}{mE + mL}}$$

$v_{zyl} = 0,6$ m/s for cylinder Ø 32 ... 63 mm

$v_{zyl} = 0,4$ m/s for cylinder Ø 80 ... 100 mm

Maximum additional load mL max.

$$mL_{max.} = \frac{2 ES}{v^2} - mE$$



Maximum kinetic energy ES (Nm)

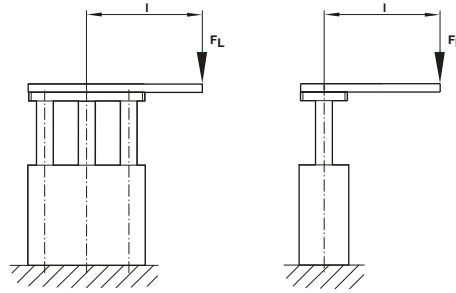
Cylinder Ø (mm)	32	40	50	63	80	100
Es	0,4	0,58	0,67	0,67	1,33	1,33

Moved weight mE (kg)

Ø	Stroke (mm)				Model
	25	50	75	100	
32	0,92	1,19	1,46	1,73	M/61000/M Cylinder with slide bearing
40	1,01	1,3	1,59	1,88	
50	1,49	1,94	2,39	2,84	
63	1,9	2,35	2,8	3,25	
80	3,73	4,38	5,03	5,68	M/61000/MR Cylinder with roller bearing
32	0,74	0,92	1,1	1,28	
40	0,83	1,03	1,23	1,43	
50	1,21	1,52	1,83	2,14	
63	1,61	1,92	2,23	2,54	
80	3,35	3,83	4,32	4,8	
100	4,9	5,55	6,2	6,85	

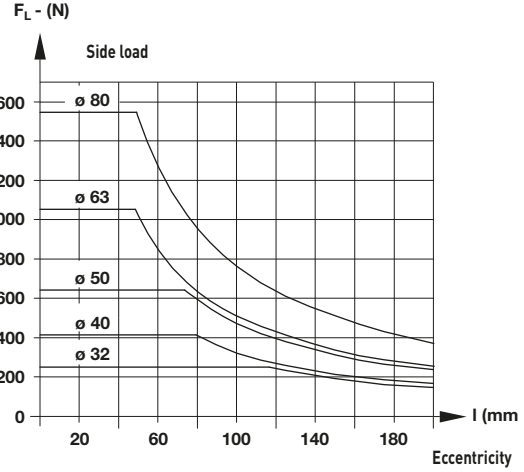
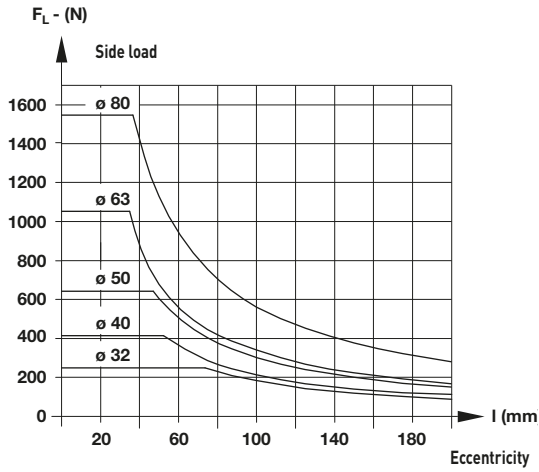
M/61000/M
Used as stopper cylinder

Max. side load (F_L) depending on the eccentricity (I), cylinder with slide bearings.



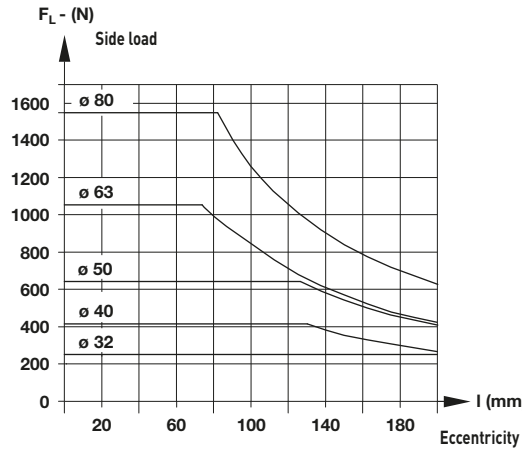
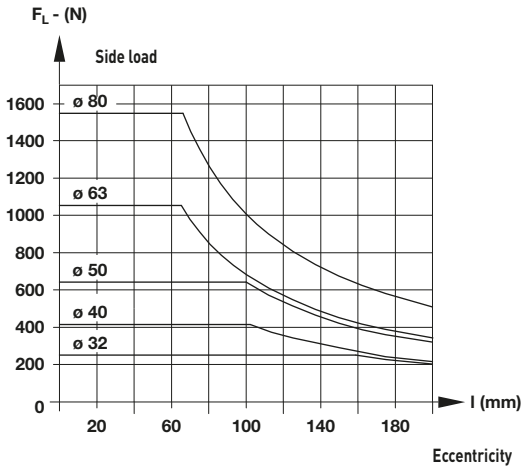
Stroke: 25 mm

Stroke: 50 mm



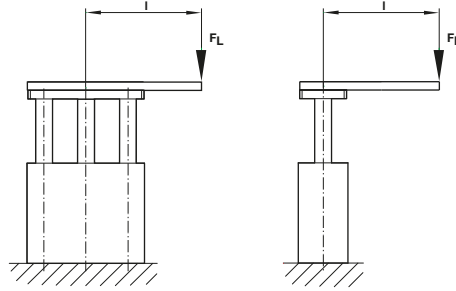
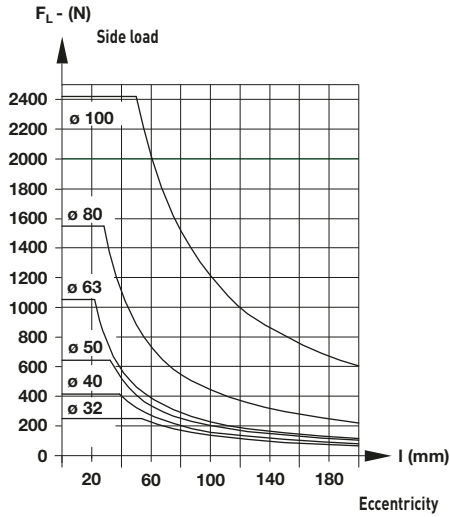
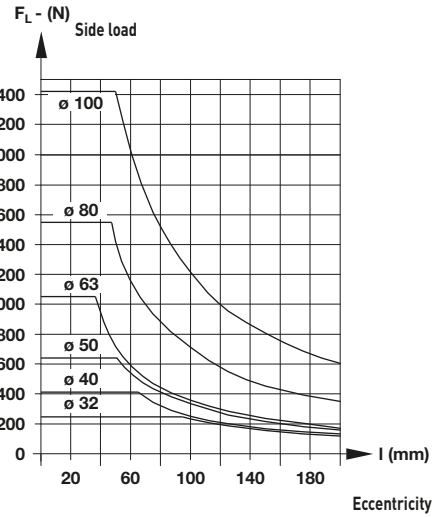
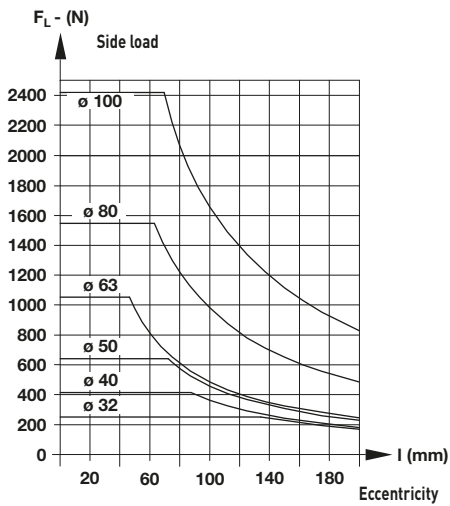
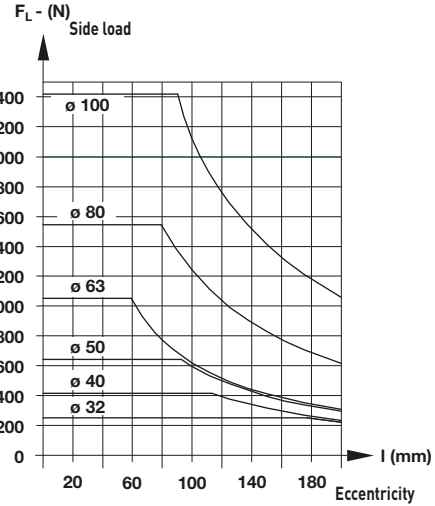
Stroke: 75 mm

Stroke: 100 mm



M/61000/MR
Used as lifting cylinder

Max. side load (F_L) depending on the eccentricity (l), cylinder with roller bearings.


Stroke: 25 mm

Stroke: 50 mm

Stroke: 75 mm

Stroke: 100 mm


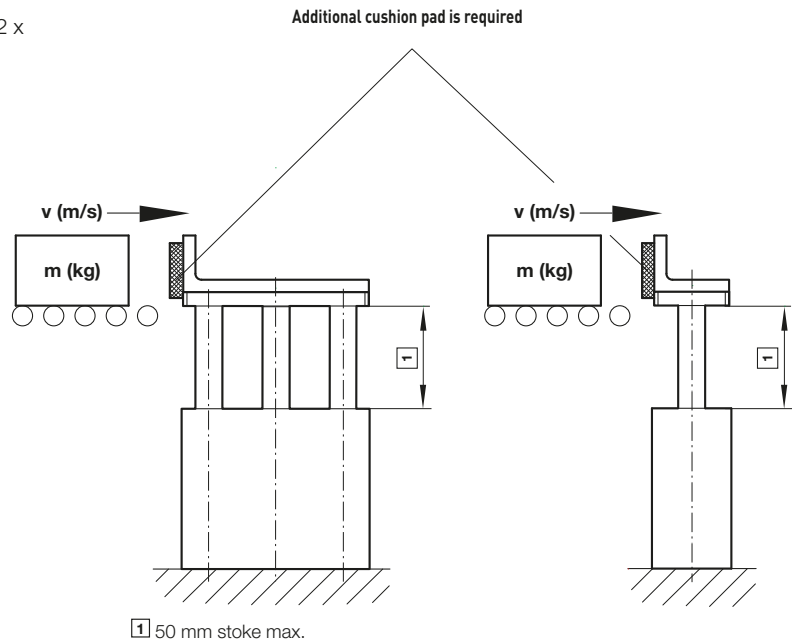
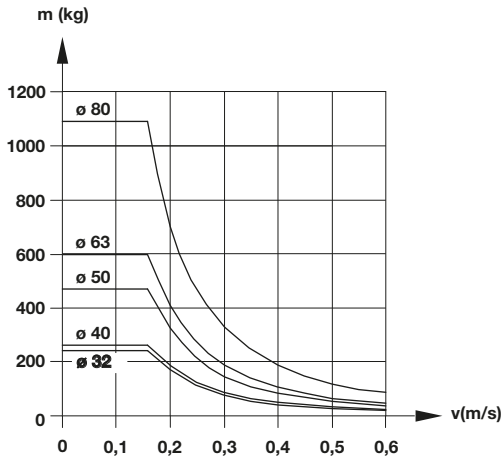
Application: M/61000/M used as Stopper Cylinder

Max. impact energy (Nm)

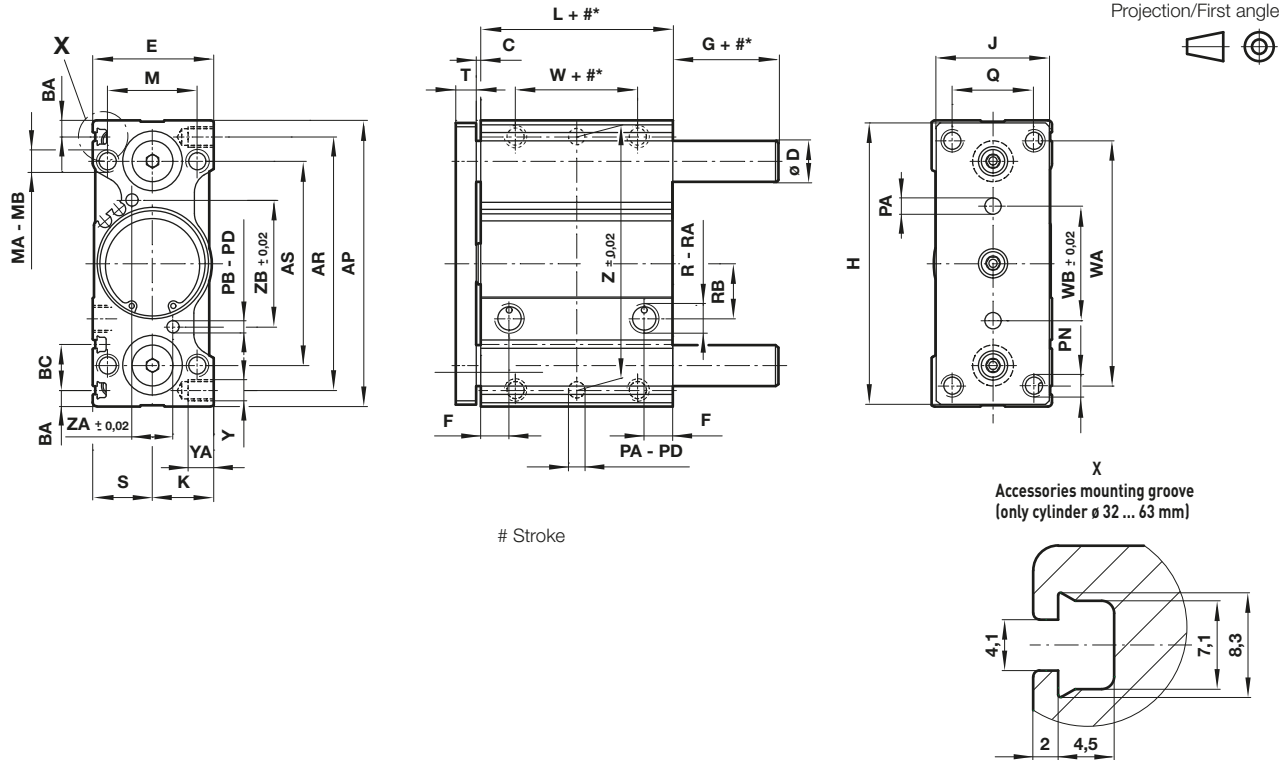
Use only cylinders with plain bearings as stopper. The diagram mass vs. speed is based on a cushion stroke of 2,5 mm at the front plate provided e.g. by an additional cushion pad.

Insert mounting screws at the rear side of the cylinder at least 2 x diameter deep.

Dimensions in mm
Projection/First angle



Dimensions

 Dimensions in mm
 Projection/First angle


Ø	AP	AR	AS	BA	BC	C	D *1)	D *2)	E	F	G *3)	H	J	K	L *3)	M	MA	MB*4)	Model
32	114	100	80	7	22	1,5	16	20	51	11,5	8,5	112	48	26	38	38	M8x1,25	20	M/61032/..
40	124	110	90	7	22	2	16	20	51	13,5	2	122	48	26	44	38	M8x1,25	20	M/61040/..
50	140	124	100	8	22,5	2	20	25	59	14	7	138	56	30	44	44	M10x1,5	25	M/61050/..
63	150	132	110	8	22,5	2	20	25	72	25	2	148	69	36,5	49	44	M10x1,5	25	M/61063/..
80	188	166	140	-	-	1,5	25	30	92	17,5	2	185	88	46,5	57	56	M12x1,75	30	M/61080/..
100	224	200	170	-	-	2	30	-	112	21	2	221	108	56,5	66	62	M14x2	35	M/61100/..

Ø	PA	PB	PD *4)	PN	Q	R	RA *4)	RB	S	T	W *3)	WA	WB	Z	Y	YA	ZA	ZB	Model
32	6H7	6H7	8	M8x1,25	30	G1/8	7,5	15	25	8	5	96	46	100	M8x1,25	11	14	44	M/61032/..
40	6H7	6H7	8	M8x1,25	30	G1/8	7,5	21	25	8	10	106	50	110	M8x1,25	12,5	14	54	M/61040/..
50	8H7	6H7	11	M10x1,5	40	G1/4	11	27	29	10	10	120	56	124	M10x1,5	12,5	20	62	M/61050/..
63	8H7	8H7	11	M10x1,5	50	G1/4	11	33	35,5	10	10	130	66	132	M10x1,5	15	30	74	M/61063/..
80	10H7	10H7	13	M12x1,75	60	G1/4	11	37	45,5	16	15	160	84	166	M12x1,75	18	36	94	M/61080/..
100	10H7	10H7	13	M14x2	80	G1/4	11	40	55,5	16	15	190	110	200	M14x2	21	40	116	M/61100/..

*1) = M/61000/MR cylinder ball bearing

*2) = M/61000/M cylinder with plain bearings

*3) The dimensions of M/61100 with 25 mm of stroke are identical with 50 mm of stroke!

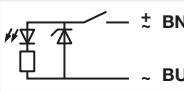
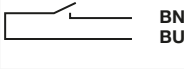
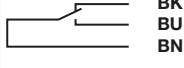
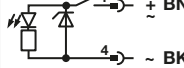
Cylinders with non-standard strokes have the dimensions of the cylinder with the next longer standard stroke

*4) Deep

Service kit


Slide unit	Service kit
M/61032/M, .../MR	QM/61032/00
M/61040/M, .../MR	QM/61040/00
M/61050/M, .../MR	QM/61050/00
M/61063/M, .../MR	QM/61063/00
M/61080/M, .../MR	QM/61080/00
M/61100/MR	QM/61100/00

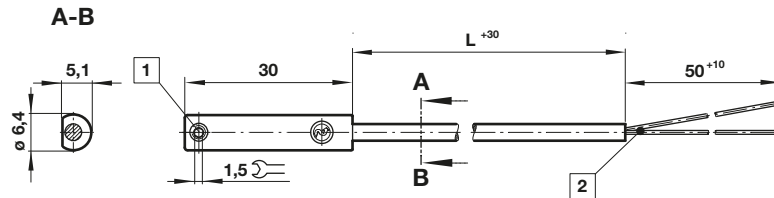
Technical data - Reed switches - additional informations see data sheet N/en 4.3.005

Symbol	Voltage		Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Plug	Cable length (m)	Cable type	Weight (g)	Model
	(V a.c.)	(V d.c.)										
	10 ... 240	10 ... 170	180	Closer	-25 ... +80	•	IP66	—	2, 5 or 10	PVC 2 x 0,25	37	M/50/LSU/*V
	10 ... 240	10 ... 170	180	Closer	-25 ... +80	•	IP66	—	5	PUR 2 x 0,25	37	M/50/LSU/5U
	10 ... 240	10 ... 170	180	Closer	-25 ... +150	—	IP66	—	2	Silicon 2 x 0,25	37	TM/50/RAU/2S
	10 ... 240	10 ... 170	180	Changeover	-25 ... +80	—	IP66	—	5	PVC 3 x 0,25	37	M/50/RAC/5V
	10 ... 60	10 ... 60	180	Closer	-25 ... +80	•	IP66	M8 x 1	0,3	PVC 3 x 0,25	16	M/50/LSU/CP *1)

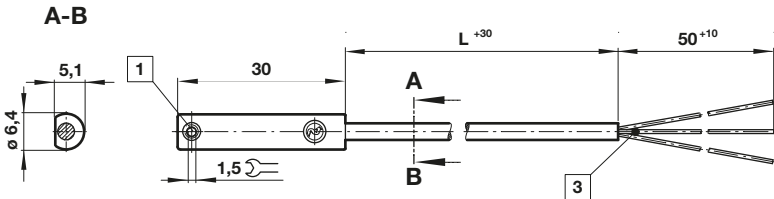
* Insert cable length; *1) Plug-in connector see page 11; Color code: BK = black, BN = brown, BU = blue

Drawings

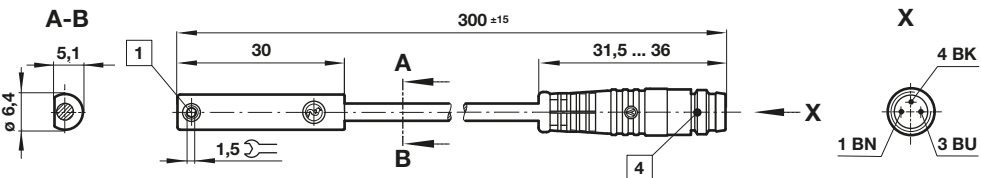
M/50/LSU/*V, M/50/LSU/5U,
TM/50/RAU/2S
Cable length L = 2, 5 or 10 m



M/50/RAC/5V
Cable length L = 5 m



M/50/LSU/CP



- 1 Fixing screw
- 2 + BN = brown; - BU = blue (output)
- 3 - BK = black; + BN = brown; - ≠BU = blue
- 4 Plug M8 x 1, color code: BK = black; BN = brown; BU = blue

Dimensions in mm
Projection/First angle



Accessories

Plug-in connector cable with nut



Outer cover	Cable length (m)	Weight (kg)	Connector	Connector
PVC 3 x 0,25	5 m	0,18	M8 x 1	M/P73001/5
PUR 3 x 0,25	5 m	0,18	M8 x 1	M/P73002/5
PUR 3 x 0,34	5 m	0,21	M12 x 1	M/P34594/5

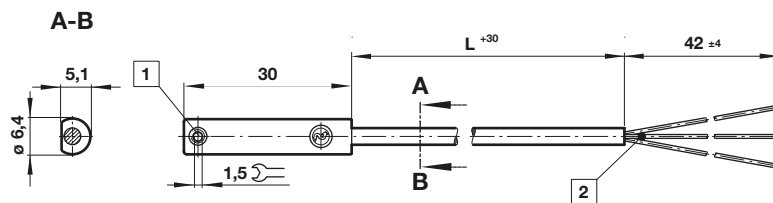
Technical data - Solid state - additional informations see data sheet N/en 4.3.007

Symbol	Voltage (V d.c.)	Current maximum (mA)	Function	Operating temperature (°C)	LED	Protection class	Plug	Cable length (m)	Cable type	Weight (g)	Model
	10 ... 30	150	PNP	-40 ... +80	•	IP67	—	2, 5 or 10	PVC 3 x 0,12	37	M/50/EAP/*V
	10 ... 30	150	PNP	-40 ... +80	•	IP68	—	5	PUR 3 x 0,14	37	M/50/EAP/5U
	10 ... 30	150	PNP	-40 ... +80	•	IP67	M8 x 1	0,3	PVC 3 x 0,14	16	M/50/EAP/CP *1)
	10 ... 30	150	PNP	-40 ... +80	•	IP67	M12 x 1	0,3	PVC 3 x 0,14	16	M/50/EAP/CC *1)
	10 ... 30	150	NPN	-40 ... +80	•	IP67	—	2, 5 or 10	PVC 3 x 0,12	37	M/50/EAN/*V
	10 ... 30	150	Closer	-40 ... +80	•	IP67	M8 x 1	0,3	PVC 3 x 0,14	16	M/50/EAN/CP *1)

* Insert cable length; *1) Plug-in connector below; Color code: BK = black, BN = brown, BU = blue

Drawings

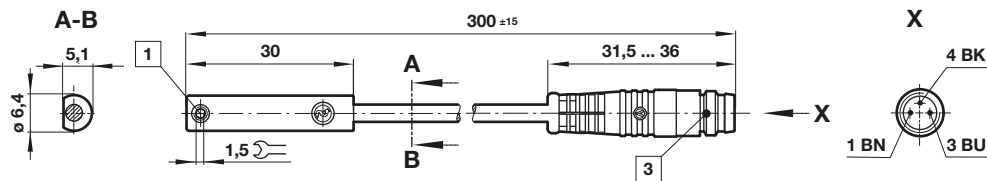
M/50/EAP/*V,
M/50/EAN/*V
Cable length L = 2, 5 or 10 m



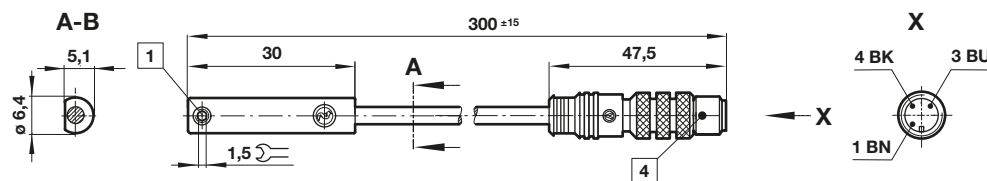
Dimensions in mm
Projection/First angle



M/50/EAP/CP,
M/50/EAN/CP



M/50/EAP/CC



- 1 Fixing screw
- 2 Color code: BK = black; BN = brown; BU = blue
- 3 Plug M8 x 1
- 4 Plug M12 x 1

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 IMI Precision Engineering, 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.