

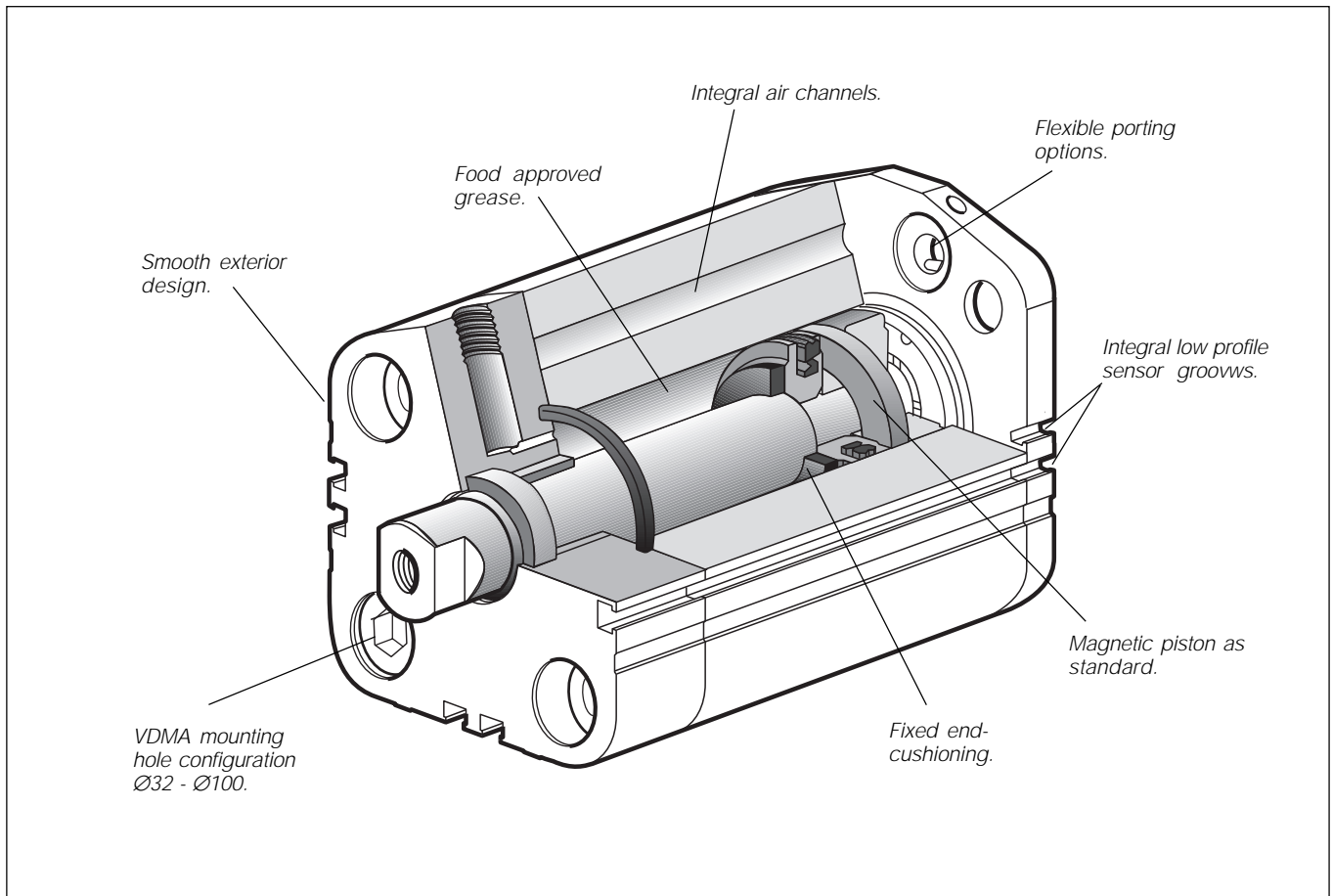


Short Build Pneumatic Cylinders

P1M Series

Catalogue 9127007612GB-ul





Short Build Cylinders

Parker Pneumatic's versatile range of Short Build Cylinders, with unique porting options, integral sensor grooves and one of the shortest overall lengths on the market is suitable for a wide range of applications.

The range comprises ten cylinder bore sizes, 12 - 100 mm diameter, with stroke lengths from 5 to 500 mm and, as with other Parker cylinders, Short Build Cylinders are factory-lubricated with food grade grease (USDA).

The extremely small overall dimensions have been achieved through an entirely new design. Channels in the body supply air to either end of the cylinder. Ports positions can be specified to suit the customer's requirements - radial in the front plate, radial or axial in the rear end plate.

The flexible porting option, together with a choice of mounting methods, ensures that this range of cylinders can be used in variety of applications. It is especially suitable for use in applications where space is limited as, for example, in the packaging or electronic industries.

Options

In addition to the basic version with stainless steel piston rod, magnetic piston and fixed end cushioning, the range will include several standard options that provide a wide range of choices.

Options include single acting cylinders, externally guided versions, through rod and hollow through rod, male or female threaded rods and high-temperature versions.

Sensors and accessories

The P1M-series incorporates a further unique feature: integral sensor grooves. The grooves are recessed into the barrel, enabling sensors to be quickly and easily fitted without increasing external dimensions. Double grooves allow sensors to be grouped together.

Hole patterns for the mountings, as for all the mounts in the complete range of mountings, comply with the VDMA-standards.

Fixed-cushioning

Buffers in Polyurethane as standard.

Smooth external design

The end plates have no recesses or other grooves that could collect dirt or liquid. Cleaning is easy and effective.

Position sensing

All cylinders in normal temperature design are fitted with a magnet for position sensing. Electronic type sensors and reed switches are available. They are supplied with either flying lead or cable plug connector.

Complete range of mountings

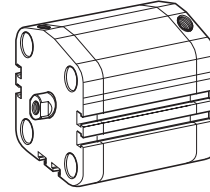
A complete range of mounting accessories is available.

Variants

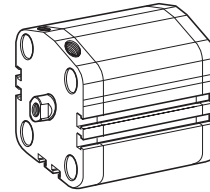
In addition to the basic design, several standard variants of these Short Built Cylinders are available to fulfill more demanding requirements in terms of performance and environmental conditions:

- Cylinders with special stroke lengths
- Cylinders with extended piston rods
- Cylinders with male piston rod thread
- Through piston rods
- Through hollow piston rods
- Single-acting cylinders with spring return, push and pull
- Cylinders with external guiding device
- High-temperature versions for operation in temperature range from -10 °C to +150 °C (not magnetic pistons)

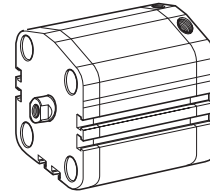
Double acting, ports in front and rear plate



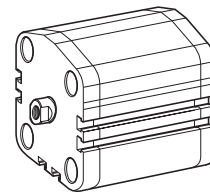
Double acting, both ports in front plate



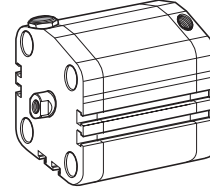
Double acting, both ports in rear plate radially



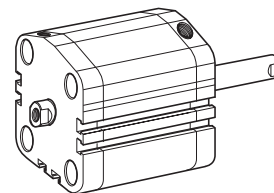
Double acting, both ports in rear plate axially



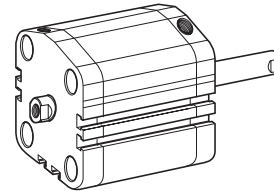
Single acting



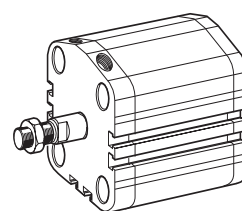
Through piston rod



Through hollow piston rod



Male rod end



Main data: P1M-

Cylinder designation	Cylinder		Piston rod		thread (female)	thread (male)	Total mass		Moving mass		Air consumption	Conn. thread
	bore	area	bore	area			at 0 mm stroke	addition per 10 mm stroke	at 0 mm stroke	addition per 10 mm stroke		
	mm	cm ²	mm	cm ²			kg	kg	kg	kg	litres	
P1M 012	12	1,13	6	0,28	M3	M6	0,060	0,016	0,010	0,002	0,0139 ¹⁾	M5
P1M 016	16	2,01	8	0,50	M4	M8	0,090	0,022	0,015	0,004	0,0246 ¹⁾	M5
P1M 020	20	3,14	10	0,78	M5	M10x1,25	0,150	0,032	0,025	0,006	0,0385 ¹⁾	M5
P1M 025	25	4,91	10	0,78	M5	M10x1,25	0,170	0,034	0,030	0,006	0,0633 ¹⁾	M5
P1M 032	32	8,0	12	1,1	M6	M10x1,25	0,260	0,044	0,050	0,009	0,1050 ¹⁾	G1/8
P1M 040	40	12,6	16	2,0	M6	M12x1,25	0,370	0,060	0,090	0,016	0,1620 ¹⁾	G1/8
P1M 050	50	19,6	20	3,1	M8	M16x1,5	0,570	0,085	0,140	0,025	0,2530 ¹⁾	G1/8
P1M 063	63	31,2	20	3,1	M8	M16x1,5	0,860	0,098	0,220	0,025	0,4140 ¹⁾	G1/8
P1M 080	80	50,3	25	4,9	M10	M20x1,5	1,460	0,146	0,380	0,039	0,6690 ¹⁾	G1/4
P1M 100	100	78,5	25	4,9	M12	M20x1,5	2,390	0,155	0,650	0,039	1,0430 ¹⁾	G1/4

1) Free air consumption per 10 mm stroke length for a double stroke at 600 kPa (6 bar)

Material specification

Piston rod	Stainless steel, DIN X 10 CrNiS 18 9
Piston rod seal	Polyurethane
Piston rod bearing	Multilayer PTFE/steel
End plates	Anodised aluminium
End cap screws	Zink plated steel
O-ring, internal	Nitrile rubber, NBR
Cylinder barrel	Anodised aluminium
Piston	Aluminium
Piston seal	Nitrile rubber, NBR
Piston bearing	UHMWPE-plastic
Magnet	Plastic-bound magnetic material
Bumpers	Polyurethane
Return spring	Surface-treated steel

Variants:

High-temperature version, type F

Piston rod seal	Fluorocarbon rubber, FPM
Piston seal	Fluorocarbon rubber, FPM
O-ring	Fluorocarbon rubber, FPM

Additional data

Working pressure	max 1000 kPa (10 bar)
Working temperature	max +80 °C min -20 °C

High-temperature version	max +150 °C min -10 °C
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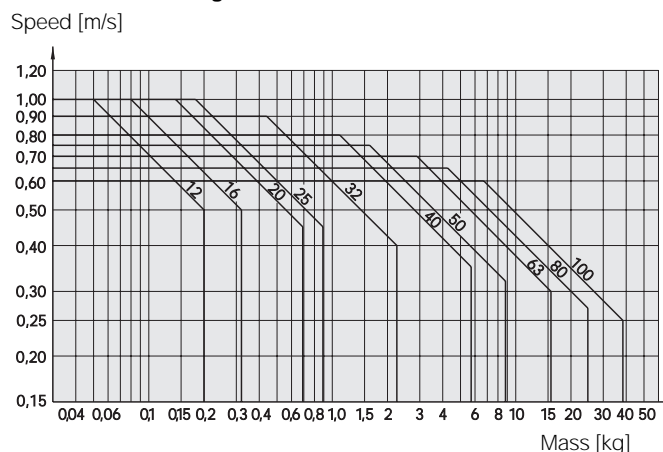
Cushioning diagram

Use the diagram below to determine the necessary size of cylinder to provide the requisite cushioning performance. The maximum cushioning performance, as indicated in the diagram, is based on the following assumptions:

- Low load, i.e. low pressure drop across the piston
- Steady-state piston speed

The load is the sum of the internal and external friction, together with any gravity forces. At high relative loading it is recommended that, for a given speed, the load should be reduced by a factor of 2.5, or that, for a given mass, the speed should be reduced by a factor of 1.5. These factors apply in relation to the maximum performance as shown in the diagram.

Fixed end-cushioning



Cylinder forces

Indicated cylinder forces are theoretical and should be reduced according to the working conditions.

Cylinder designation	Cylinder bore mm	Theoretical cylinder force at 600 kPa (6 bar)	
		exp. stroke N	retraction stroke N
Double acting			
P1M 012 VD	12	67	50
P1M 016 VD	16	120	91
P1M 020 VD	20	188	142
P1M 025 VD	25	294	247
P1M 032 VD	32	482	414
P1M 040 VD	40	754	633
P1M 050 VD	50	1178	989
P1M 063 VD	63	1870	1681
P1M 080 VD	80	3016	2721
P1M 100 VD	100	4712	4417

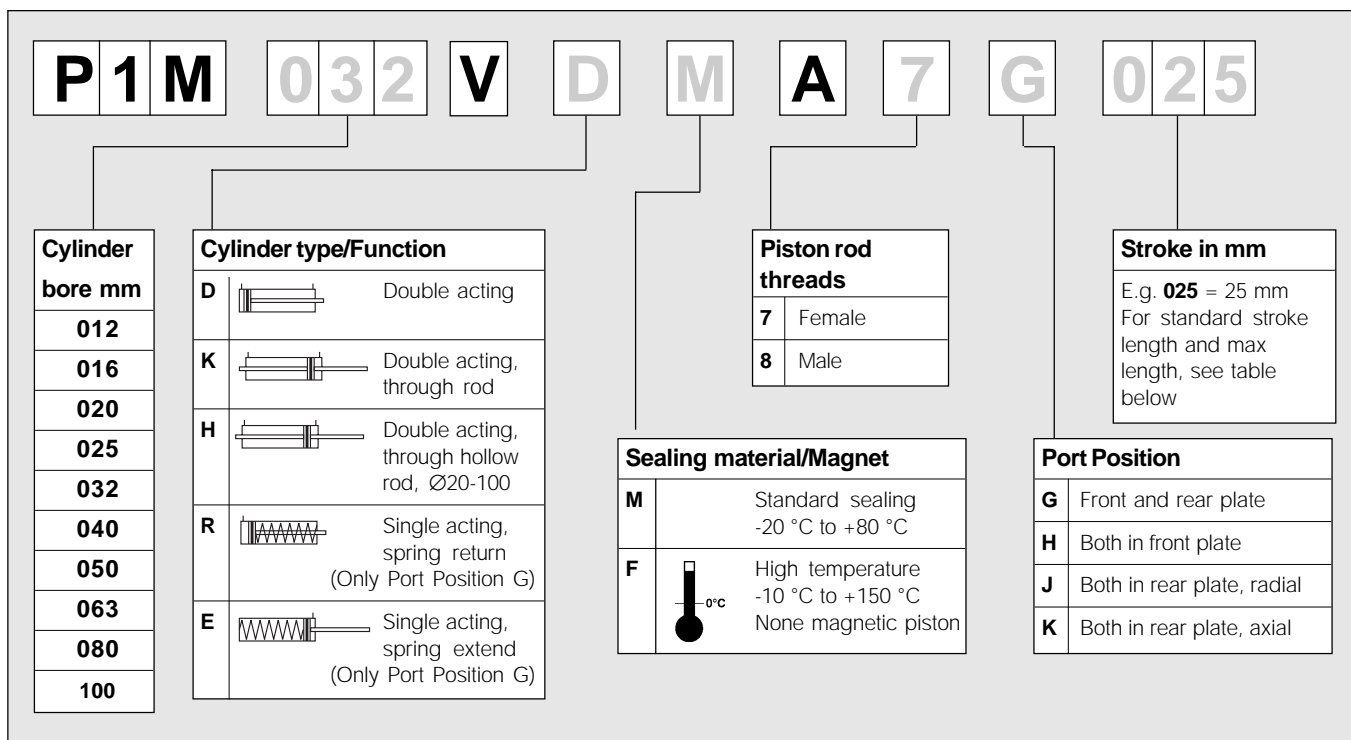
Cylinder designation	Theoretical cylinder force at 600 kPa (6 bar)			
	expanding stroke		spring retraction	
	Nmax	Nmin	Nmax	Nmin

Single acting, spring return for retract stroke

P1M 012 VR•A•• 005	59	55	12	8
P1M 012 VR•A•• 010	63	55	12	4
P1M 016 VR•A•• 005	107	102	18	13
P1M 016 VR•A•• 010	111	102	18	9
P1M 020 VR•A•• 005	176	169	17	12
P1M 020 VR•A•• 010	180	169	17	8
P1M 025 VR•A•• 005	276	271	23	18
P1M 025 VR•A•• 010	281	271	23	13
P1M 032 VR•A•• 005	464	453	29	18
P1M 032 VR•A•• 010	469	453	29	13
P1M 040 VR•A•• 005	726	720	34	28
P1M 040 VR•A•• 010	732	720	34	22
P1M 050 VR•A•• 010	1126	1115	63	52
P1M 050 VR•A•• 025	1141	1105	73	37
P1M 063 VR•A•• 010	1818	1807	63	52
P1M 063 VR•A•• 025	1833	1797	73	37
P1M 080 VR•A•• 010	2910	2888	128	106
P1M 080 VR•A•• 025	2942	2888	128	74
P1M 100 VR•A•• 010	4606	4548	128	106
P1M 100 VR•A•• 025	4638	4548	128	74

Cylinder designation	Theoretical cylinder force at 600 kPa (6 bar)			
	expanding stroke		spring retraction	
	Nmax	Nmin	Nmax	Nmin
Single acting, spring return for advanced stroke				
P1M 012 VE•A•• 005	43	36	14	7
P1M 012 VE•A•• 010	45	40	10	5
P1M 016 VE•A•• 005	80	69	22	11
P1M 016 VE•A•• 010	84	75	16	7
P1M 020 VE•A•• 005	129	123	19	13
P1M 020 VE•A•• 010	130	119	23	12
P1M 025 VE•A•• 005	232	224	23	15
P1M 025 VE•A•• 010	233	217	30	14
P1M 032 VE•A•• 005	387	379	35	27
P1M 032 VE•A•• 010	395	379	35	19
P1M 040 VE•A•• 005	587	577	56	46
P1M 040 VE•A•• 010	598	577	56	35
P1M 050 VE•A•• 010	951	928	61	38
P1M 050 VE•A•• 025	947	901	88	42
P1M 063 VE•A•• 010	1643	1625	56	38
P1M 063 VE•A•• 025	1639	1593	88	42
P1M 080 VE•A•• 010	2593	2525	196	128
P1M 080 VE•A•• 025	2621	2531	190	100
P1M 100 VE•A•• 010	4289	4221	196	128
P1M 100 VE•A•• 025	4317	4227	190	100

Order key



Standard stroke length in mm

Cylinder designation Cylinder bore Standard stroke lengths in mm according to ISO 4393

Double acting

Cylinder designation	Cylinder bore	5	10	25	50	80	100	125	160	200	250	320	400	500
P1M 012 VD	12	•	•	•	•	•	•	•	•	•				
P1M 016 VD	16	•	•	•	•	•	•	•	•	•				
P1M 020 VD	20	•	•	•	•	•	•	•	•	•				
P1M 025 VD	25	•	•	•	•	•	•	•	•	•				
P1M 032 VD	32	•	•	•	•	•	•	•	•	•	•	•		
P1M 040 VD	40	•	•	•	•	•	•	•	•	•	•	•		
P1M 050 VD	50	•	•	•	•	•	•	•	•	•	•	•		
P1M 063 VD	63	•	•	•	•	•	•	•	•	•	•	•	•	•
P1M 080 VD	80	•	•	•	•	•	•	•	•	•	•	•	•	•
P1M 100 VD	100	•	•	•	•	•	•	•	•	•	•	•	•	•

Single acting, spring return

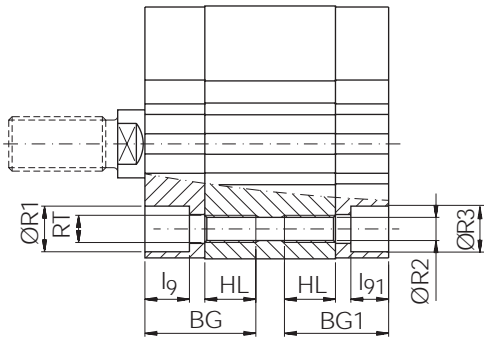
P1M 012 VR	12	•	•											
P1M 016 VR	16	•	•											
P1M 020 VR	20	•	•											
P1M 025 VR	25	•	•											
P1M 032 VR	32	•	•											
P1M 040 VR	40	•	•											
P1M 050 VR	50			•	•									
P1M 063 VR	63			•	•									
P1M 080 VR	80			•	•									
P1M 100 VR	100			•	•									

Single acting, spring extended

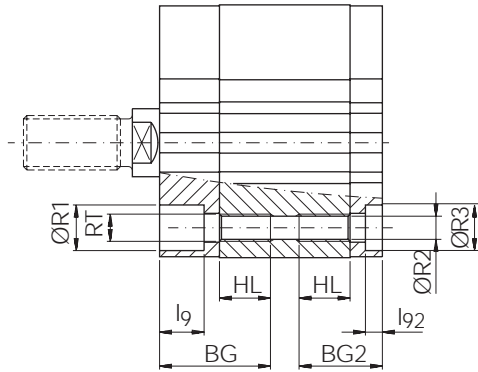
P1M 012 VE	12	•	•											
P1M 016 VE	16	•	•											
P1M 020 VE	20	•	•											
P1M 025 VE	25	•	•											
P1M 032 VE	32	•	•											
P1M 040 VE	40	•	•											
P1M 050 VE	50			•	•									
P1M 063 VE	63			•	•									
P1M 080 VE	80			•	•									
P1M 100 VE	100			•	•									

Dimensions

Port Position G, J, K



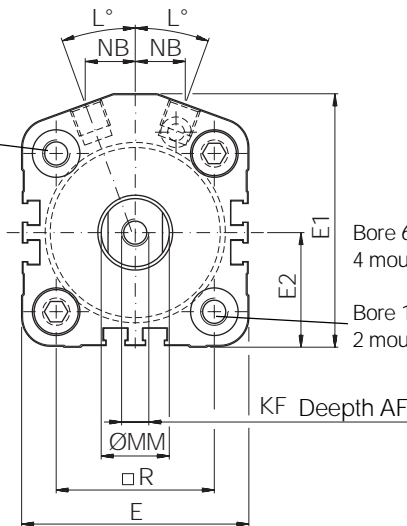
Port Position H



Port Position G, H, J, K

Measure NB and angle L valid for position G, H and J only

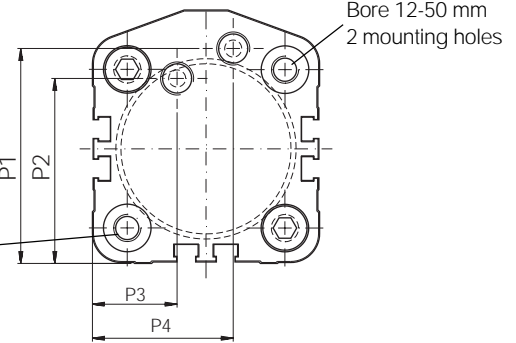
Bore 12-50 mm
2 mounting holes



Bore 63-100 mm
4 mounting holes

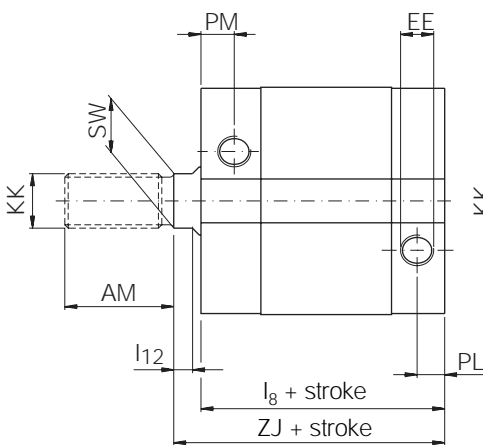
Bore 12-50 mm
2 mounting holes

Port Position K

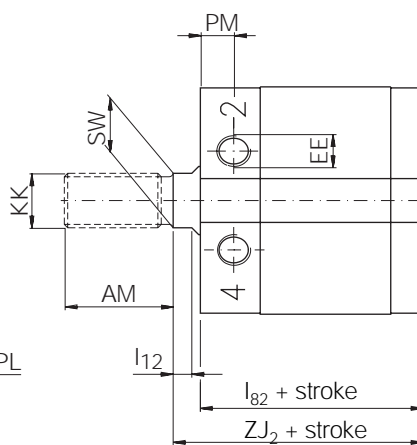


Bore 12-50 mm
2 mounting holes

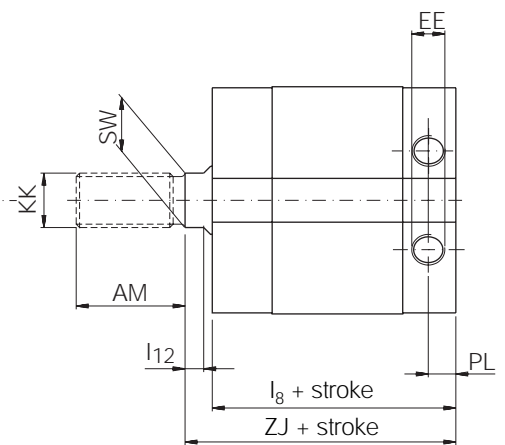
Port Position G



Port Position H



Port Position J



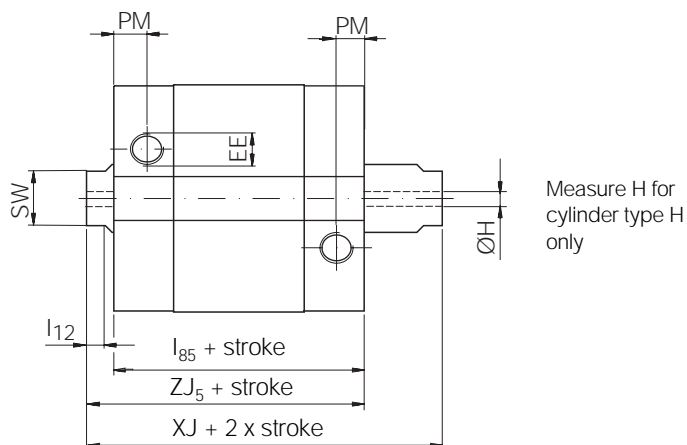
Dimensions

Cylinder designation	AF mm	AM mm	BG mm	BG1 mm	BG2 mm	E mm	E1 mm	E2 mm	EE	H mm	HL mm	I8 mm	I9 mm	I12 mm	I82 mm	I85 mm	I91 mm	I92 mm	KF	KK
P1M 012	6	16	25,5	20,5	15,5	27,0	31,0	14,0	M5	-	12	40,0	3,5	3,0	35,0	46,0	3,5	3,5	M3	M6
P1M 016	8	20	26,0	21,0	15,5	31,5	35,0	16,0	M5	-	12	41,5	5,5	3,0	36,5	47,5	3,0	4,0	M4	M6
P1M 020	10	22	32,5	27,0	22,0	38,5	42,5	19,5	M5	3	18	42,5	10,5	4,0	37,5	49,5	5,0	4,5	M5	M8
P1M 025	12	22	32,5	29,0	23,0	41,5	45,5	21,0	M5	3	18	44,5	10,5	4,0	38,5	49,5	7,0	5,0	M6	M10X1,25
P1M 032	12	22	41,5	39,0	31,0	48,0	56,0	24,0	G1/8	3	24	49,0	14,5	5,0	41,0	51,5	12,5	4,0	M6	M10X1,25
P1M 040	12	24	41,5	39,5	31,0	56,0	62,5	28,0	G1/8	4	24	50,5	14,0	5,5	42,5	52,5	12,0	4,0	M6	M12X1,25
P1M 050	12	32	42,5	40,5	34,5	67,0	74,5	33,5	G1/8	5	25	51,0	13,0	5,5	44,5	53,0	11,0	5,0	M8	M16X1,5
P1M 063	12	32	43,5	40,5	35,0	82,0	86,0	40,5	G1/8	5	25	55,5	6,5	5,5	50,0	58,5	6,5	6,5	M8	M16X1,5
P1M 080	14	40	51,0	51,0	42,0	98,0	106,5	48,5	G1/4	6	30	63,5	9,5	6,0	54,5	63,5	9,5	8,5	M10	M20X1,5
P1M 100	16	40	52,0	52,0	43,5	119,0	126,5	59,5	G1/4	6	30	72,5	9,5	6,0	64,0	72,5	9,5	8,5	M12	M20X1,5

Cylinder designation	L	MM mm	NB mm	P1 mm	P2 mm	P3 mm	P4 °	PL mm	PM mm	R mm	R1 mm	R2 mm	R3 mm	RT mm	SW mm	XJ mm	ZJ mm	ZJ2 mm	ZJ5 mm
P1M 012	26°	6	5,5	25,0	9,5	13,5	13,5	5,0	8,0	15,5	6,0	3,5	6,0	M4	5	54,0	43,5	38,5	50,0
P1M 016	20°	8	6,5	29,5	9,5	15,5	18,0	5,0	9,0	20,0	7,5	3,5	6,0	M4	7	54,5	45,0	40,0	51,5
P1M 020	20°	10	7,5	35,0	13,5	24,5	21,5	5,0	9,0	25,5	10,5	5,0	9,0	M6	9	58,5	47,0	42,0	54,0
P1M 025	20°	10	8,5	38,5	14,0	27,5	24,5	7,0	9,0	28,0	10,5	5,0	9,0	M6	9	60,0	49,5	43,5	55,0
P1M 032	25°	12	9,5	45,5	16,5	31,5	28,5	8,0	10,5	32,5	10,5	5,0	10,5	M6	10	67,5	57,0	48,5	59,5
P1M 040	20°	16	11,5	51,0	12,0	23,0	33,0	7,5	9,5	38,0	10,5	5,0	10,5	M6	13	69,0	58,5	50,5	60,5
P1M 050	20°	20	14,5	63,0	54,5	25,0	41,5	8,0	10,0	46,5	13,5	7,0	13,5	M8	16	69,0	59,0	52,5	61,0
P1M 063	20°	20	17,5	73,5	64,0	30,0	53,0	8,0	11,0	56,5	10,5	7,0	10,5	M8	16	75,0	63,5	58,0	66,5
P1M 080	20°	25	25,5	92,0	81,5	33,0	69,5	11,5	11,5	72,0	14,0	8,5	14,0	M10	21	84,0	73,5	64,5	73,5
P1M 100	20°	25	31,5	111,5	97,5	36,5	87,5	12,0	12,0	89,0	14,0	8,5	14,0	M10	21	97,0	84,5	76,0	84,5

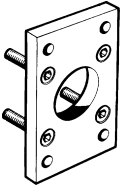
Length tolerances ± 1 mm
Stroke length tolerances $+1,5/0$ mm

Cylinder type K and H



Cylinder mountings

Type	Description	Cyl. bore Ø mm	Order code	Mass kg
Flange MF1/MF2	Intended for fixed mounting of cylinder. Flange can be fitted to front- or rear end-plates of cylinder. Materials Flange: Surface-treated steel, black Mounting screws according to DIN 6912: Zinc-plated steel 8.8 Supplied complete with mounting screws for attachment to cylinder.	12	P1M-4DMB	0,08
		16	P1M-4FMB	0,10
		20	P1M-4HMB	0,16
		25	P1M-4JMB	0,20
		32	P1C-4KMB	0,23
		40	P1C-4LMB	0,28
		50	P1C-4MMB	0,53
		63	P1C-4NMB	0,71
		80	P1C-4PMB	1,59
		100	P1C-4QMB	2,19

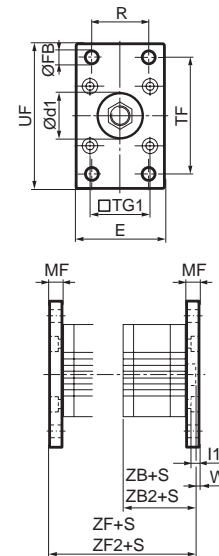


Ø32-100 according to ISO MF1/MF2, VDMA, AFNOR

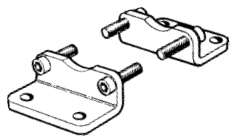
Cyl. bore mm	d1 mm	FB mm	TG1 mm	E mm	R mm	MF JS14	TF JS14	UF JS14	l1 mm	W mm	ZF* mm	ZB* mm	ZF2* mm	ZB2* mm
12	9	4,5	15,5	25	-	5,5	45	55	3	2	44	38,5	49	43,5
16	11,5	4,5	20	30	-	5,5	45	55	3	2	45,5	40	50,5	45
20	14	6,6	25,5	39	-	8	50,5	62	4,2	4,5	49	41	54	46
25	14	6,6	28	42	-	8	53	65	4,2	3	51,5	43,5	56,5	49,5
32	30	7	32,5	45	32	10	64	80	5	2	58,5	48,5	67	57
40	35	9	38	52	36	10	72	90	5	2	60,5	50,5	68,5	58,5
50	40	9	46,5	65	45	12	90	110	6,5	4	64,5	52,5	71	59
63	45	9	56,5	75	50	12	100	120	6,5	4	70	58	75,5	63,5
80	45	12	72	95	63	16	126	150	8	6	80,5	64,5	89,5	73,5
100	55	14	89	115	75	16	150	170	8	4	92	76	100,5	84,5

S = Stroke length

* ZF, ZB for cylinders with both ports in front end (type H)
ZF2, ZB2 for all other cylinders (type G, J, K)



Angle bracket MS1



Intended for fixed mounting of cylinder. Angle bracket can be fitted to front- and rear end-plates of cylinder.

Materials
Angle bracket:
Bore 12-25 mm, Zinc-plated steel
Bore 32-50 mm, Surface-treated aluminium, black
Bore 63-100 mm, Surface-treated steel, black
Mounting screws:
according to DIN 912: Zinc-plated steel 8.8

Supplied in pairs with mounting screws for attachment to cylinder.

12	P1M-4DMF	0,02*
16	P1M-4FMF	0,02*
20	P1M-4HMF	0,04*
25	P1M-4JMF	0,05*
32	P1C-4KMZ	0,06*
40	P1C-4LMZ	0,08*
50	P1C-4MMZ	0,16*
63	P1C-4NMF	0,25*
80	P1C-4PMF	0,50*
100	P1C-4QMF	0,85*

* Weight per item

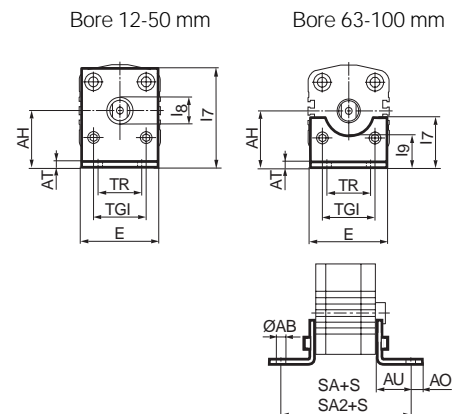
Ø32-100 according to ISO MS1, VDMA, AFNOR

Cyl. bore mm	AB mm	TG1 mm	E mm	TR JS14	AO mm	AU mm	AH JS15	I7 mm	AT mm	I9 mm	I8 mm	SA* mm	SA2* mm
12	4,5	15,5	44	35	5,5	8	17	29,5	2	-	8	51	56
16	4,5	20	48	39	6	8	19	33,5	2	-	10	52,5	57,5
20	6,6	25,5	62	50	7,5	9	24	42	3,2	-	12	59,5	64,5
25	6,6	28	66	52	7,5	10,5	26	46	3,2	-	12	59,5	65,5
32	7	32,5	45	32	11	24	32	54,5	8	-	30	88,5	97
40	9	38	52	36	7	28	36	62	8	-	35	98,5	106,5
50	9	46,5	65	45	13	32	45	77,5	10	-	40	108,5	115
63	9	56,5	75	50	13	32	50	35	5,5	27,5	-	114	119,5
80	12	72	95	63	14	41	63	49	6,5	40,5	-	136,5	145,5
100	14	89	115	75	15	41	71	54	6,5	43,5	-	146	154,5

S = Stroke length

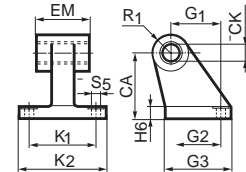
* SA for cylinders with both ports in front end (type H)

* SA2 for all other cylinders (type G, J, K)



Cylinder mountings

Type	Description	Cyl. bore Ø mm	Order code	Mass kg
Pivot bracket with rigid bearing	Intended for flexible mounting of cylinder. The pivot bracket can be combined with clevis bracket MP2. Materials Pivot bracket: Surface-treated aluminium, black Bearing: Sintered oil-bronze bushing	32	P1C-4KMD	0,06
		40	P1C-4LMD	0,08
		50	P1C-4MMD	0,15
		63	P1C-4NMD	0,20
		80	P1C-4PMD	0,33
		100	P1C-4QMD	0,49



Ø32-100 according to CETOP RP 107 P, VDMA, AFNOR

Cyl. bore mm	CK mm	S5 mm	K1 mm	K2 mm	G1 mm	G2 mm	EM mm	G3 mm	CA mm	H6 mm	R1 mm
32	10	6,6	38	51	21	18	25,5	31	32	8	10
40	12	6,6	41	54	24	22	27	35	36	10	11
50	12	9	50	65	33	30	31	45	45	12	13
63	16	9	52	67	37	35	39	50	50	12	15
80	16	11	66	86	47	40	49	60	63	14	15
100	20	11	76	96	55	50	59	70	71	15	19

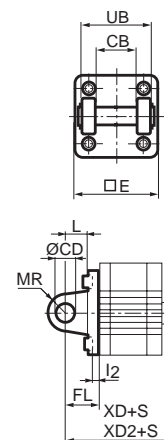
Clevis bracket MP2

	Intended for flexible mounting of cylinder. Clevis bracket MP2 can be combined with clevis bracket MP4. Materials Clevis bracket: Surface-treated aluminium, black Mounting screws according to DIN 912: Zinc-plated steel 8.8 Pin: surface treated steel Supplied complete with mounting screws for attachment to cylinder.	12	P1M-4DMT	0,02
		16	P1M-4FMT	0,03
		20	P1M-4HMT	0,05
		25	P1M-4JMT	0,06
		32	P1C-4KMT	0,08
		40	P1C-4LMT	0,11
		50	P1C-4MMT	0,14
		63	P1C-4NMT	0,29
		80	P1C-4PMT	0,36
		100	P1C-4QMT	0,64

Ø32-100 according to ISO MP2, VDMA, AFNOR

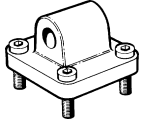
Cyl. bore mm	E mm	UB mm	CB mm	FL mm	L mm	I2 mm	CD mm	MR mm	XD* mm	XD2* mm
12	27	20	10	14	7	-	5	6	52,5	57,5
16	31,5	24	12	15	10	-	5	6	55	60
20	38,5	30	16	18	12	-	8	9	59	65
25	41	34	20	20	14	-	10	10	63,5	69,5
32	45	45	26	22	13	5,5	10	10	70,5	79
40	52	52	28	25	16	5,5	12	12	75,5	83,5
50	65	60	32	27	16	6,5	12	12	79,5	86
63	75	70	40	32	21	6,5	16	16	90	95,5
80	95	90	50	36	22	10	16	16	100,5	109,5
100	115	110	60	41	27	10	20	20	117	125,5

S = Stroke length



* XD for cylinders with both ports in front end (type H)
XD2 for all other cylinders (type G, J, K)

Cylinder mountings

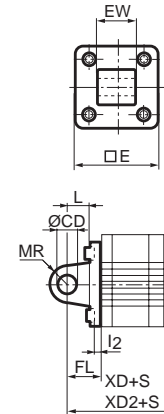
Type	Description	Cyl. bore Ø mm	Order code	Mass kg
Clevis bracket MP4 	Intended for flexible mounting of cylinder. Clevis bracket MP4 can be combined with clevis bracket MP2. Materials Clevis bracket: Surface-treated aluminium, black Mounting screws according to DIN 912: Zinc-plated steel 8.8 Supplied complete with mounting screws for attachment to cylinder.	12	P1M-4DME	0,02
		16	P1M-4FME	0,03
		20	P1M-4HME	0,05
		25	P1M-4JME	0,07
		32	P1C-4KME	0,09
		40	P1C-4LME	0,13
		50	P1C-4MME	0,17
		63	P1C-4NME	0,36
		80	P1C-4PME	0,46
		100	P1C-4QME	0,83

Ø32-100 according to ISO MP4, VDMA, AFNOR

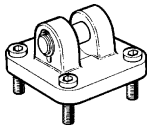
Cyl. bore mm	E mm	EW mm	FL mm ±0,2	L mm	I2 mm	CD mm H9	MR mm	XD* mm	XD2* mm
12	27	10	14	7	-	5	6	52,5	57,5
16	31,5	12	15	10	-	5	6	55	60
20	38,5	16	18	12	-	8	9	59	65
25	41	20	20	14	-	10	10	63,5	69,5
32	45	26	22	13	5,5	10	10	70,5	79
40	52	28	25	16	5,5	12	12	75,5	83,5
50	65	32	27	16	6,5	12	12	79,5	86
63	75	40	32	21	6,5	16	16	90	95,5
80	95	50	36	22	10	16	16	100,5	109,5
100	115	60	41	27	10	20	20	117	125,5

S = Stroke length

* XD for cylinders with both ports in front end (type H)
XD2 for all other cylinders (type G, J, K)



Clevis bracket GA



Intended for flexible mounting of cylinder. Clevis bracket GA can be combined with pivot bracket with swivel bearing, swivel eye bracket and swivel rod eye.

 Materials
 Clevis bracket: Surface-treated steel, black
 Mounting screws according to DIN 912: Zinc-plated steel 8.8

32	P1C-4KMC	0,22
40	P1C-4LMC	0,29
50	P1C-4MMC	0,48
63	P1C-4NMC	0,68
80	P1C-4PMC	1,39
100	P1C-4QMC	2,04

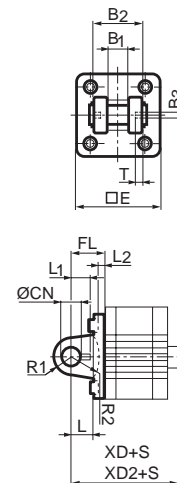
Supplied complete with mounting screws for attachment to cylinder.

According to VDMA, AFNOR

Cyl. bore mm	E mm	B2 mm d12	B1 mm H14	T mm	B3 mm	R2 mm	L1 mm	FL mm ±0,2	I2 mm	L mm	CN mm F7	R1 mm	XD* mm	XD2* mm
32	45	34	14	3	3,3	17	11,5	22	5,5	12	10	11	70,5	79
40	52	40	16	4	4,3	20	12	25	5,5	15	12	13	75,5	83,5
50	65	45	21	4	4,3	22	14	27	6,5	17	16	18	79,5	86
63	75	51	21	4	4,3	25	14	32	6,5	20	16	18	90	95,5
80	95	65	25	4	4,3	30	16	36	10	20	20	22	100,5	109,5
100	115	75	25	4	4,3	32	16	41	10	25	20	22	117	125,5

S = Stroke length

* XD for cylinders with both ports in front end (type H)
XD2 for all other cylinders (type G, J, K)



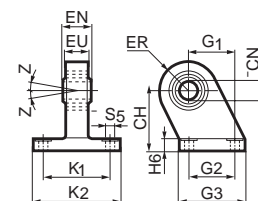
Cylinder mountings

Type	Description	Cyl. bore Ø mm	Order code	Mass kg
Pivot bracket with swivel bearing	Intended for use together with clevis bracket GA.	32	P1C-4KMA	0,18
		40	P1C-4LMA	0,25
	Material	50	P1C-4MMA	0,47
	Pivot bracket: Surface-treated steel, black	63	P1C-4NMA	0,57
	Swivel bearing according to DIN 648K: Hardened steel	80	P1C-4PMA	1,05
		100	P1C-4QMA	1,42



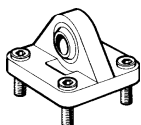
According to VDMA, AFNOR

Cyl. bore mm	CN H7 mm	S5 H13 mm	K1 JS14 mm	K2 mm	EU mm	G1 JS14 mm	G2 JS14 mm	EN mm	G3 mm	CH JS15 mm	H6 mm	ER mm	Z mm
32	10	6,6	38	51	10,5	21	18	14	31	32	10	16	4°
40	12	6,6	41	54	12	24	22	16	35	36	10	18	4°
50	16	9	50	65	15	33	30	21	45	45	12	21	4°
63	16	9	52	67	15	37	35	21	50	50	12	23	4°
80	20	11	66	86	18	47	40	25	60	63	14	28	4°
100	20	11	76	96	18	55	50	25	70	71	15	30	4°



Swivel eye bracket

Swivel eye bracket	Intended for use together with clevis bracket GA.	32	P1C-4KMS	0,20
		40	P1C-4LMS	0,30
	Material	50	P1C-4MMS	0,50
	Bracket: Surface-treated steel, black	63	P1C-4NMS	0,70
	Swivel bearing according to DIN 648K: Hardened steel	80	P1C-4PMS	1,20
		100	P1C-4QMS	1,60

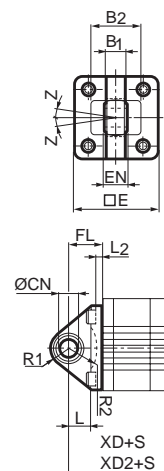


According to VDMA, AFNOR

Cyl. bore mm	E mm	B1 mm	B2 mm	EN mm	R1 mm	R2 mm	FL mm	I2 mm	L mm	CN H7 mm	XD* mm	XD2* mm	Z mm
32	45	10,5	38	14	16	14	22	5,5	12	10	70,5	79	4°
40	52	12	44	16	18	16	25	5,5	15	12	75,5	83,5	4°
50	65	15	51	21	21	19	27	6,5	15	16	79,5	86	4°
63	75	15	56	21	23	22	32	6,5	20	16	90	95,5	4°
80	95	18	72	25	29	25	36	10	20	20	100,5	109,5	4°
100	115	18	82	25	31	27	41	10	25	20	117	125,5	4°

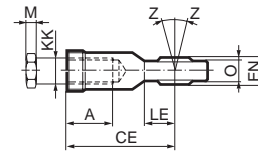
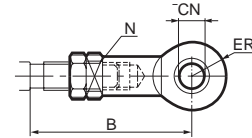
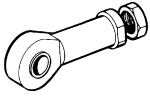
S=Stroke length

* XD for cylinders with both ports in front end (type H)
XD2 for all other cylinders (type G, J, K)



Cylinder mountings

Type	Description	Cyl. bore Ø mm	Order code	Mass kg
Swivel rod eye	Swivel rod eye for articulated mounting of cylinder. Swivel rod eye can be combined with clevis bracket GA. Maintenance-free. Materials Swivel rod eye, nut: Galvanized steel Swivel bearing according to DIN 648K: Hardened steel	12	P1A-4DRS	0,03
		16	P1A-4DRS	0,03
		20	P1A-4HRS	0,05
		25	P1A-4JRS	0,07
		32	P1C-4KRS	0,08
		40	P1C-4LRS	0,12
		50	P1C-4MRS	0,25
		63	P1C-4MRS	0,25
		80	P1C-4PRS	0,46
		100	P1C-4PRS	0,46



According to ISO 8139

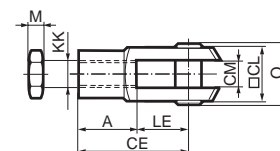
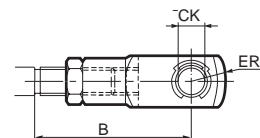
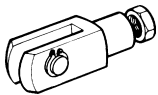
Cyl. bore mm	A mm	B min mm	B max mm	CE mm	CN H9 mm	EN h12 mm	ER mm	KK mm	LE min mm	M mm	N mm	O mm	Z °
12	9	37	40	30	6	9	10	M6	10	3,2	10	6,8	10°
16	9	37	40	30	6	9	10	M6	10	3,2	10	6,8	10°
20	12	44	48	36	8	12	12	M8	12	4	13	9	12°
25	15	48	55	43	10	14	14	M10x1,25	14	5	17	10,5	12°
32	20	48	55	43	10	14	14	M10x1,25	15	5	17	10,5	12°
40	22	56	62	50	12	16	16	M12x1,25	17	6	19	12	12°
50	28	72	80	64	16	21	21	M16x1,5	22	8	22	15	15°
63	28	72	80	64	16	21	21	M16x1,5	22	8	22	15	15°
80	33	87	97	77	20	25	25	M20x1,5	26	10	32	18	15°
100	33	87	97	77	20	25	25	M20x1,5	26	10	32	18	15°

Clevis

Clevis for articulated mounting of cylinder.

Material
Clevis, clip, nut: Galvanized steel
Pin: Hardened steel

12	P1A-4DRC	0,02
16	P1A-4DRC	0,02
20	P1A-4HRC	0,05
25	P1A-4JRC	0,09
32	P1C-4KRC	0,09
40	P1C-4LRC	0,15
50	P1C-4MRC	0,35
63	P1C-4MRC	0,35
80	P1C-4PRC	0,75
100	P1C-4PRC	0,75

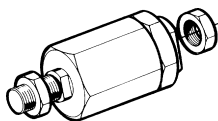


According to ISO 8140

Cyl. bore mm	A mm	B min mm	B max mm	CE mm	CK h11/E9 mm	CL mm	CM mm	ER mm	KK mm	LE mm	M mm	O mm
12	12	28	34	24	6	12	6	7	M6	12	3,2	17
16	12	28	34	24	6	12	6	7	M6	12	3,2	17
20	16	37	44	32	8	16	8	10	M8	16	4	22
25	20	45	52	40	10	20	10	12	M10x1,25	20	5	28
32	20	45	52	40	10	20	10	16	M10x1,25	20	5	28
40	24	54	60	48	12	24	12	19	M12x1,25	24	6	32
50	32	72	80	64	16	32	16	25	M16x1,5	32	8	41,5
63	32	72	80	64	16	32	16	25	M16x1,5	32	8	41,5
80	40	90	100	80	20	40	20	32	M20x1,5	40	10	50
100	40	90	100	80	20	40	20	32	M20x1,5	40	10	50

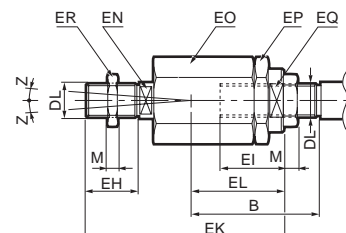
Cylinder mountings

Type	Description	Cyl. bore Ø mm	Order code	Mass kg
Flexocoupling	Flexocoupling for articulated mounting of piston rod. Flexocoupling is intended to take up axial angle errors within a range of $\pm 4^\circ$.	32	P1C-4KRF	0,21
		40	P1C-4LRF	0,22
		50	P1C-4MRF	0,67
		63	P1C-4MRF	0,67
		80	P1C-4PRF	0,72
		100	P1C-4PRF	0,72



Material
Flexocoupling, nut: Galvanized steel
Socket: Hardened steel

Supplied complete with galvanized adjustment nut.

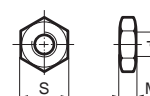


Cyl. bore mm	B min mm	B max mm	DL	EH	EI	EK	EL	EN	EO	EP	EQ	M	Z
				mm	mm	mm	mm	mm	mm	mm	mm	mm	
32	36	43	M10x1,25	20	23	70	31	12	30	30	19	5	4°
40	37	43	M12x1,25	23	23	67	31	12	30	30	19	6	4°
50	53	61	M16x1,5	40	32	112	45	19	41	41	30	8	4°
63	53	61	M16x1,5	40	32	112	45	19	41	41	30	8	4°
80	57	67	M20x1,5	39	42	122	56	19	41	41	30	10	4°
100	57	67	M20x1,5	39	42	122	56	19	41	41	30	10	4°

Nut	Intended for fixed mounting of accessories to the piston rod.	12	0261 2108-00	0,002		
			16	0261 2108-00	0,002	
	Material: Galvanized steel	20	0261 2110-00	0,005		
		25	9128 9856-01	0,007		
		32	9128 9856-01	0,007		
		40	0261 1099-10	0,010		
		50	9128 9856-03	0,021		
		63	9128 9856-03	0,021		
		80	0261 1099-11	0,040		
		100	0261 1099-11	0,040		
		(Cylinders supplied with galvanized nut)				

According to DIN 439 B

Cyl. bore mm	d	M	S
		mm	mm
12	M6	3,2	10
16	M6	3,2	10
20	M8	4	13
25	M10x1,25	5	17
32	M10x1,25	5	17
40	M12x1,25	6	19
50	M16x1,5	8	24
63	M16x1,5	8	24
80	M20x1,5	10	30
100	M20x1,5	10	30



Reed switch sensors

The reed switch sensors incorporate a well-proven, universal-voltage, compact reed switch element, making them suitable for a wide range of applications. They can work with electronic control systems or conventional relay systems. No environment is too severe.

Technical data

Design	Reed
Output	Making
Voltage range	10 to 120 VAC/VDC
Max permissible ripple	10%
Max voltage drop	3 V
Max load current	100 mA
Max breaking power (resistive)	10 W
Min actuating distance	5 mm
Hysteresis	≤1,0 mm
Repeatability accuracy	≤0,2 mm
Max on/off switching frequency	400 Hz
Max on/off switching time	1 ms
Encapsulation	IP 67
Temperature range	-25 °C to +75 °C
Indication	LED, yellow
Shock resistance	30 g
Material, housing	PA 12
Material, mould	Epoxy
Cable	PVC 3x0,14 mm ²
Cable incl. female part connector	PVC 3x0,14 mm ²
Mounting	T slot
Connector	Diam. 8 mm snap on

Electronic sensors

These sensors are of solid-state type, with no moving parts. Short-circuit and transient protection is incorporated as standard. The integral electronics make these sensors suitable for applications with very high switching frequencies.

Technical data

Design	Hall element
Output	PNP resp. NPN, N.O.
Voltage range	10-30 VDC
Max permissible ripple	10%
Max voltage drop	≤2 V
Max load current	150 mA
Max breaking power (resistive)	6 W
Internal consumption	15 mA
Min actuating distance	5 mm
Hysteresis	≤1,5 mm
Repeatability accuracy	≤0,2 mm
Max on/off switching frequency	
P1M 2XHL, -HT, -JH, EL, -ET, -FH	5 kHz
P1M 2XML, -MT, -PH	50 Hz
Max on/off switching time	0,8/3,0 ms
Encapsulation	IP 67
Temperature range	-25 °C to +75 °C
Indication	LED, yellow
Shock resistance	30 g
Material, housing	PA 12
Material, mould	Epoxy
Cable	PVC 3x0,14 mm ²
Cable incl. female part connector	PVC 3x0,14 mm ²
Connector	Diam. 8 mm snap on
Mounting	T slot

Ordering data

Order code	Output	Cable connection	Cable length	Weight kg
Reed sensors				
P8S-TRFLX	making	straight	3 m	0,030
P8S-TRFTX	making	straight	10 m	0,110
P8S-TRSHX	making	straight	0,3 m*	0,005
P8S-SRELX	making	90°	3 m	0,030
P8S-SRETX	making	90°	10 m	0,110
P8S-SRTHX	making	90°	0,3 m*	0,005
Cable for sensors				
9126 3443-41**			3 m	0,055
9126 3443-42**			10 m	0,175

*) Cable shall be ordered separately.

**) Cable including female part connector, for sensor.

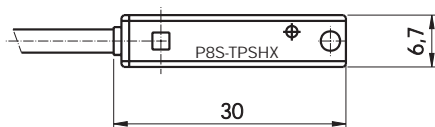
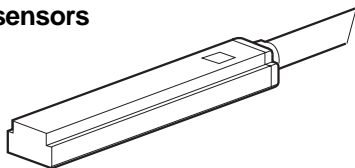
Ordering data

Order code	Output	Cable connection	Cable length	Weight kg
Electronic sensors				
P8S-TPFLX	PNP, N.O.	straight	3 m	0,030
P8S-TPFTX	PNP, N.O.	straight	10 m	0,110
P8S-TPSHX	PNP, N.O.	straight	0,3 m*	0,005
P8S-TNFLX	NPN, N.O.	straight	3 m	0,030
P8S-TNFTX	NPN, N.O.	straight	10 m	0,110
P8S-TNSHX	NPN, N.O.	straight	0,3 m*	0,005
P8S-SPELXD	PNP, N.O.	90°	3 m	0,030
P8S-SPETXD	PNP, N.O.	90°	10 m	0,110
P8S-SPTHXD	PNP, N.O.	90°	0,3 m*	0,005
P8S-SNELX	NPN, N.O.	90°	3 m	0,030
P8S-SNETX	NPN, N.O.	90°	10 m	0,110
P8S-SNTHX	NPN, N.O.	90°	0,3 m*	0,005
Cable for sensors				
9126 3443-41**			3 m	0,055
9126 3443-42**			10 m	0,175

Dimensions

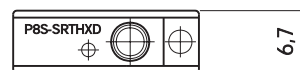
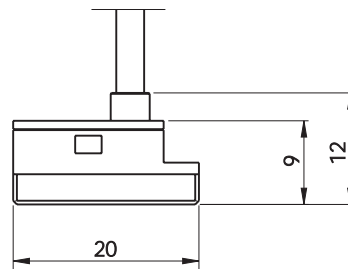
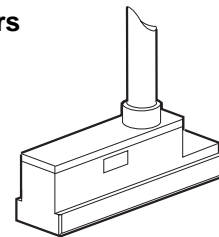
Reed and electronic sensors

- P8S-TRFLX
- P8S-TRFTX
- P8S-TRSHX
- P8S-TPFLX
- P8S-TPFTX
- P8S-TPSHX
- P8S-TNFLX
- P8S-TNFTX
- P8S-TNSHX

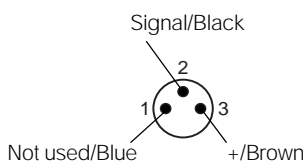
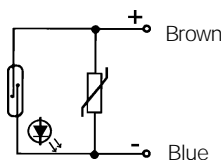


Reed and electronic sensors

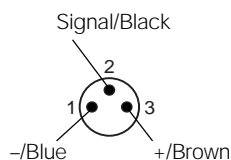
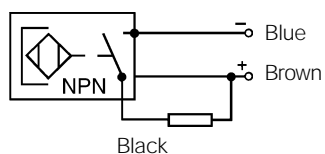
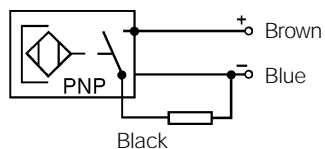
- P8S-SPELXD
- P8S-SPETXD
- P8S-SPTHXD
- P8S-SRELX
- P8S-SRETX
- P8S-SRTHX
- P8S-SNELX
- P8S-SNETX
- P8S-SNTHX



Reed sensor symbol



Electronic sensor symbol



Colours according to cable	9126 3443-41
	9126 3443-42