


B
Actuator Products

Actuator Products

Tie Rod Cylinders

3MA Series - Economy NFPA Cylinder



- Bore sizes 1-1/2 through 5 inch
- 18 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B6

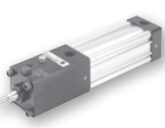
4MA / 4ML Series - Flexible NFPA Cylinder



- Bore sizes 1-1/2 through 8 inch
- 20 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -50°F to 250°F
- Aluminum body construction

B16

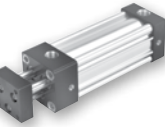
3MAJ / 4MAJ - Rodlock Cylinder



- Bore sizes 1-1/2 through 8 inch
- 17 standard mounting styles
- Pressures up to 100 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B40

4MNR Series - Non-Rotating Cylinder



- Bore sizes 1-1/8 through 4 inch
- 14 standard mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Aluminum body construction

B58

P1D Series - ISO 15552 / ISO 6431



- 6 available for maximum flexibility
- Bore sizes 32mm through 200mm
- 10 standard mounting styles
- Pressures up to 145 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B65

Round Body Cylinders


SR / SRM / SRD / SRDM Series - Non-Repairable



- Bore sizes 5/16 through 3 inch
- 28 mounting styles
- Pressures up to 250 PSIG
- Temperatures -10°F to 165°F
- Stainless steel body construction

B83


SRX Series - Position Feedback



- Bore sizes 1-1/16 through 3 inch
- Continuous position feedback
- Pressures up to 150 PSIG
- Temperatures 40°F to 165°F
- Stainless steel body construction

B109

P1L Series - Repairable



- Bore sizes 20mm through 100mm
- 9 mounting styles
- Pressures up to 145 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B117


P1A Series - ISO Non-Repairable



- Bore sizes 10mm through 25mm
- 5 mounting styles
- Pressures up to 145 PSIG
- Temperatures -40°F to 302°F
- Stainless steel body construction

B132

P Series - Repairable



- Bore sizes 1-1/8 through 4 inch
- 4 mounting styles
- Pressures up to 150 PSIG
- Temperatures -10°F to 250°F
- Aluminum body construction

B136

Compact Cylinders


P1Q Series - Economy Compact Cylinder



- Bore sizes 12mm through 100mm
- 4 flexible mounting options
- Pressures up to 10 PSIG
- Temperatures 23°F to 158°F
- Aluminum body construction

B143

P1M Series - Compact Cylinder



- Bore sizes 12mm through 100mm
- 6 mounting options
- Pressures up to 145 PSIG
- Temperatures -4°F to 250°F
- Aluminum body construction

B151

LP / LPM Series - Compact Cylinder




- Bore sizes 9/16 through 4 inch
- 6 mounting styles
- Pressures up to 150 PSIG
- Temperatures -10°F to 200°F
- Aluminum body construction

B163

Guided Cylinders


P5T Series - Compact Guided



- Bore sizes 16mm through 100mm
- Pressures up to 145 PSIG
- Temperatures 0°F to 250°F
- Aluminum body construction
- Flexible porting: top, rear, side

B169

P5L Series - Guided



- Bore sizes 20mm through 100mm
- Direct mounting
- Pressures up to 145 PSIG
- Temperatures 0°F to 250°F
- Extruded aluminum body construction

B176


HB Series - Heavy Duty Guided



- Bore sizes 1-1/2 through 2-1/2 inch
- Thrust, reach and compact versions available
- Air service pressure up to 250 PSIG, hydraulic service up to 750 PSIG
- Temperatures 0°F to 250°F
- Aluminum body construction
- Rod lock version available

B202

P5E Series - P1D ISO Guided



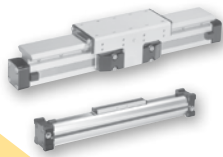
- Bore sizes 32mm through 100mm
- Pressures up to 145 PSIG
- Temperatures 14°F to 165°F
- Aluminum body construction
- Rod lock version available

B210

B
 Pictorial Index
 Actuator Products

Rodless Cylinders

OSP-P Series - Band Type Rodless



- Bore sizes 10mm through 80mm
- Pressures to max. 8 bar
- Temperatures -10°F to 80°F
- Aluminum body construction

B216

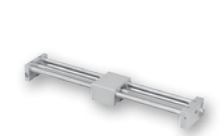
P1X Series - Band Type Rodless



- 7 bore sizes 16mm through 63mm
- Integral sensor mounting rail
- Pressures 7 to 100 PSIG
- Temperatures 40°F to 140°F
- Aluminum body construction

B234

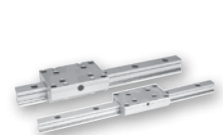
P1Z Series - Magnetically Coupled Rodless



- 3 bore sizes 16mm, 20mm & 32mm
- Pressures 29 to 100 PSIG
- Temperatures 15°F to 140°F
- Stainless steel body construction

B246

GDL Series - Rails & Cassettes



- 6 sizes available
- Speed up to 10m/s (33 ft/s)
- Temperatures -10°C to 80°C
- Aluminum alloy rail
- Aluminum body construction

B258

Rotary Actuators

PV Series - Vane Rotary



- 8 model sizes
- Single or double vane models
- Pressures to 150 PSIG
- Temperatures 30°F to 250°F
- 7 to 1800 lb-in output torque

B263

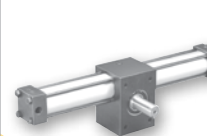
PRN(A) Series - Vane Rotary



- 5 miniature and 4 standard models
- Temperatures -23°F to 176°F
- 1.33 to 2355 in-lb torque at 100 PSIG

B267

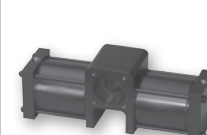
PTR Series - Rack & Pinion Rotary



- Bore sizes 1 through 3-1/4 inch
- Pressures to 250 PSIG
- Temperatures 0°F to 250°F
- 39 to 2281 lb-in output torque

B272

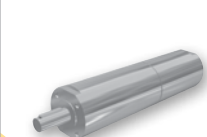
HP Series - Large Rack & Pinion Rotary



- 2 large bore models
- 3 standard rotations
- Pressures to 100 PSIG
- Temperatures 0°F to 250°F
- 4500 and 10,000 lb-in output at 100 PSIG

B275

P1V-S Series - Air Motors



- Power from 20 through 1200 watts
- Speeds 5 to 24,000 RPM
- Pressures to max. 7 bar
- Temperatures -30°C to 100°C

B278

Automation Products

Grippers



- Grip forces to 44,000N
- Parallel or Angular
- 2 or 3 jaw
- Pneumatic or electric
- Temperature to 300°F
- Magnetic piston standard
- Clean room

B281

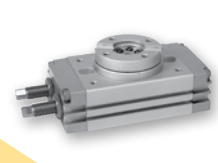
Slide Tables



- 6 bore sizes: 6mm to 25mm
- Strokes to 150mm
- Integration of linear rail and dual bore cylinder
- Available with adjustable stroke and shock absorbers
- Magnetic piston standard

B314

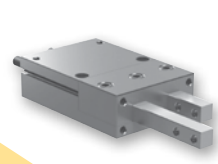
Rotary Tables



- 4 bore sizes: 16mm to 32mm
- Dual rack and pinion with integrated bearing
- Adjustable rotation standard 0 to 190 degrees
- Available with optional shock absorbers

B326

Escapements

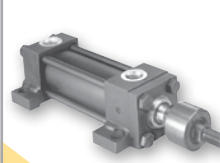


- 3 bore sizes: 14mm to 27mm
- Locking key ensures part separation and eliminates jams
- Adjustable retract stops
- Sealed design repels contaminants
- Dowel holes in body for precision applications

B328

Actuator Accessories

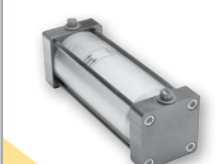
Linear Alignment Couplers



- 12 standard thread sizes
- Maximum reliability for trouble-free operation, long life and lower operating costs
- Increased cylinder life by reducing wear on piston and rod bearings
- Stainless steel versions available

B335

4TK Series - Air Oil Tanks



- 6 standard bore sizes
- Lightweight aluminum / fiberglass design
- 2 fluid flow baffles reduce agitation and aeration
- 8 standard mounting styles

B336

PRL Series - Stand Alone Rodlock



- 5 different sizes
- Large holding forces
- 2 different mounting styles
- Case-hardened rod material available

B337

Electronic Sensors

Sensors



- Solid state
- Reed
- NAMUR
- Proximity

B339

Shock Absorbers

Shock Absorbers

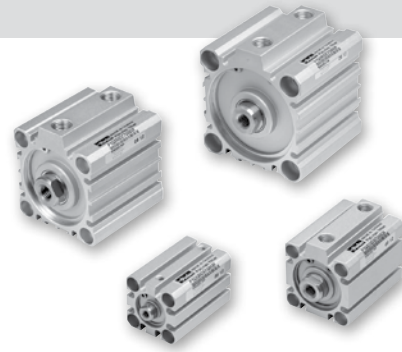


- Miniature - self-compensating
- Heavyweight - soft contact and self-compensating
- Miniature - soft contact and self-compensating
- Magnum series - adjustable
- Heavy - self-compensating
- Heavy - adjustable

B361

P1Q Series

- Economical square body compact cylinder
- 10 bore sizes available 12mm - 100mm
- 4 flexible mounting options
- Female and male rod ends available
- Bumpers standard on all models
- Magnetic and non-magnetic construction available



Operating information

Operating pressure:	10 bar (145 PSIG) maximum
Temperature range:	-5°C to 60°C (23°F to 140°F)
Filtration requirements:	40 micron, dry filtered air

Metric Double Acting / Magnetic - Female Threaded Piston Rod

12mm

Stroke (mm)	Order Code
5	P1QS012DC7G0005
10	P1QS012DC7G0010
15	P1QS012DC7G0015
25	P1QS012DC7G0025
30	P1QS012DC7G0030

16mm

5	P1QS016DC7G0005
10	P1QS016DC7G0010
15	P1QS016DC7G0015
25	P1QS016DC7G0025
30	P1QS016DC7G0030

20mm

10	P1QS020DC7G0010
15	P1QS020DC7G0015
25	P1QS020DC7G0025
30	P1QS020DC7G0030
40	P1QS020DC7G0040
50	P1QS020DC7G0050

25mm

10	P1QS025DC7G0010
15	P1QS025DC7G0015
25	P1QS025DC7G0025
30	P1QS025DC7G0030
40	P1QS025DC7G0040
50	P1QS025DC7G0050

32mm

10	P1QS032DC7N0010
15	P1QS032DC7N0015
25	P1QS032DC7N0025
30	P1QS032DC7N0030
40	P1QS032DC7N0040
50	P1QS032DC7N0050
75	P1QS032DC7N0075
100	P1QS032DC7N0100

40mm

15	P1QS040DC7N0015
25	P1QS040DC7N0025
30	P1QS040DC7N0030
40	P1QS040DC7N0040
50	P1QS040DC7N0050
75	P1QS040DC7N0075
100	P1QS040DC7N0100

50mm

15	P1QS050DC7N0015
25	P1QS050DC7N0025
30	P1QS050DC7N0030
40	P1QS050DC7N0040
50	P1QS050DC7N0050
75	P1QS050DC7N0075
100	P1QS050DC7N0100

63mm

15	P1QS063DC7N0015
25	P1QS063DC7N0025
30	P1QS063DC7N0030
40	P1QS063DC7N0040
50	P1QS063DC7N0050
75	P1QS063DC7N0075

80mm

15	P1QS080DC7N0015
25	P1QS080DC7N0025
30	P1QS080DC7N0030
40	P1QS080DC7N0040
50	P1QS080DC7N0050
75	P1QS080DC7N0075

100mm

15	P1QS100DC7N0015
25	P1QS100DC7N0025
30	P1QS100DC7N0030
40	P1QS100DC7N0040
50	P1QS100DC7N0050
75	P1QS100DC7N0075

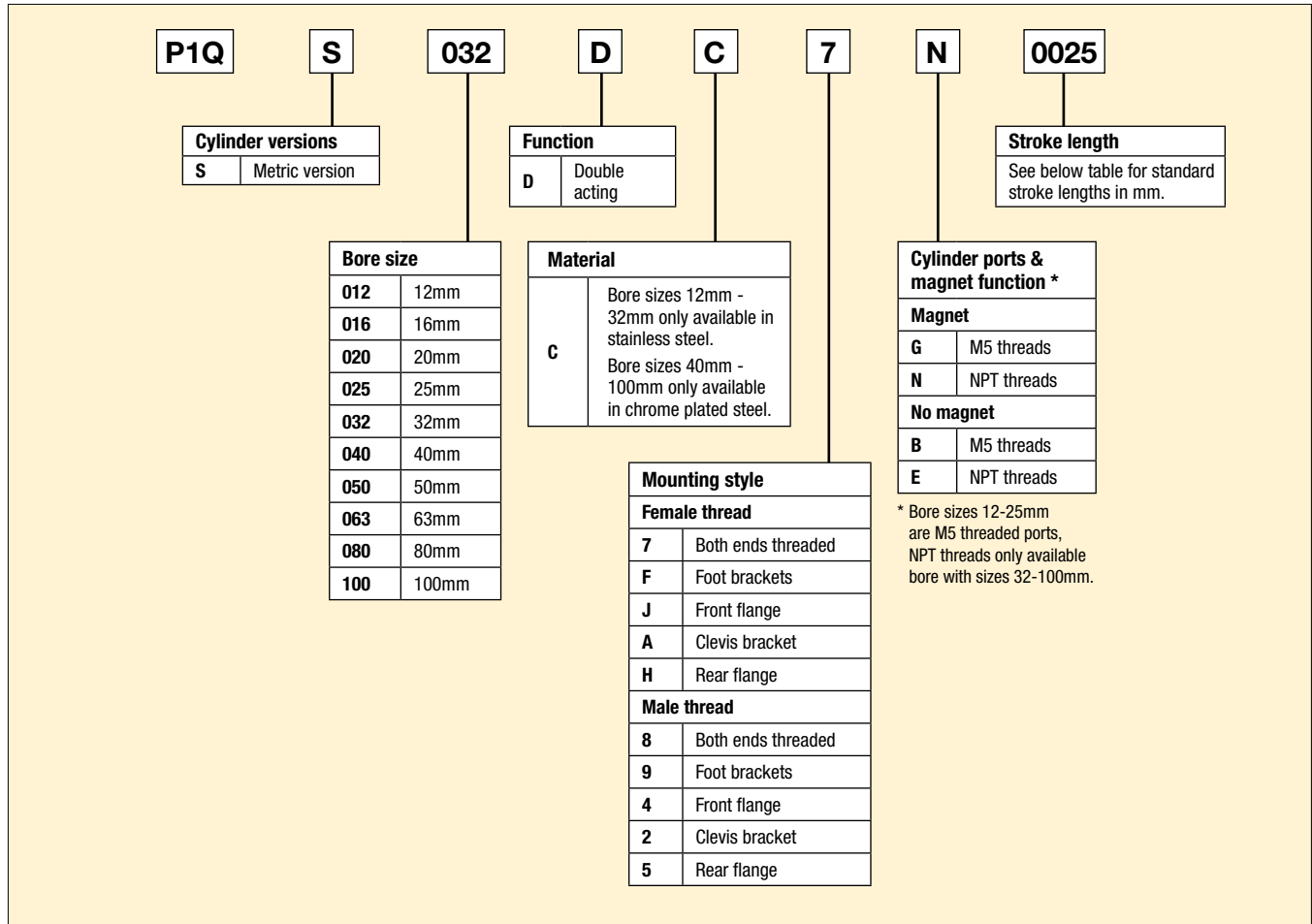
Most popular.

Sensors

For sensors see page B339.



Ordering information



B
 Compact Cylinders
 Actuator Products
 P1Q Series
 P1M Series
 LP/LPM Series

Standard strokes

Bore size	5	10	15	25	30	40	50	75	100
12 - 16	•	•	•	•	•				
20 - 25		•	•	•	•	•	•		
32		•	•	•	•	•	•	•	•
40 - 50			•	•	•	•	•	•	•
63 - 100			•	•	•	•	•	•	•

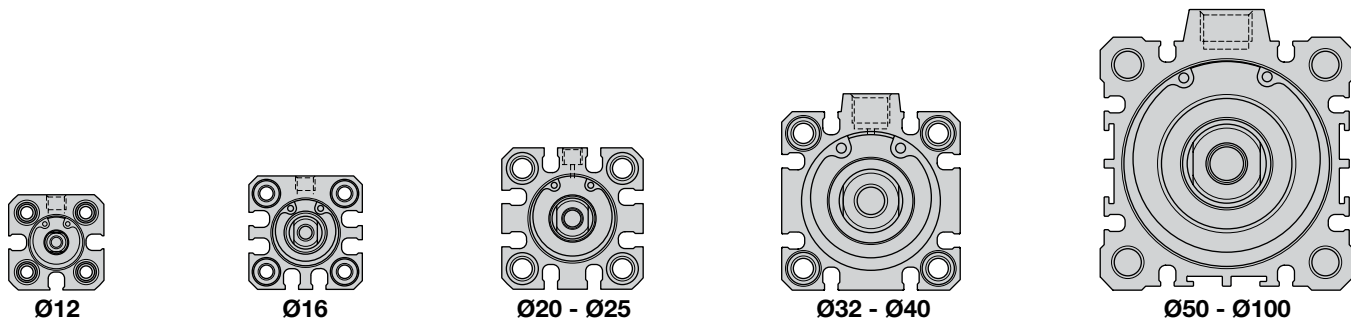
Cylinder forces, double acting variants

Cyl. bore/ pist. rod mm	Stroke piston area	cm ²	Max theoretical force in N (bar)								
			1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
12/6	+	1.1	11	23	34	45	57	68	79	90	102
	-	0.8	8	17	25	34	42	51	59	68	76
16/8	+	2.0	20	40	60	80	101	121	141	161	181
	-	1.5	15	30	45	60	75	90	106	121	136
20/10	+	3.1	31	63	94	126	157	188	220	251	283
	-	2.4	24	47	71	94	118	141	165	188	212
25/12	+	4.9	49	98	147	196	245	295	344	393	442
	-	3.8	38	76	113	151	189	227	264	302	340
32/16	+	8.0	80	161	241	322	402	483	563	643	724
	-	6.0	60	121	181	241	302	362	422	483	543
40/16	+	12.6	126	251	377	503	628	754	880	1005	1131
	-	10.6	106	211	317	422	528	633	739	844	950
50/20	+	19.6	196	393	589	785	982	1178	1374	1571	1767
	-	16.5	165	330	495	660	825	990	1155	1319	1484
63/20	+	31.2	312	623	935	1247	1559	1870	2182	2494	2806
	-	28.0	280	561	841	1121	1402	1682	1962	2242	2523
80/25	+	50.3	503	1005	1508	2011	2513	3016	3519	4021	4524
	-	45.4	454	907	1361	1814	2268	2721	3175	3629	4082
100/32	+	78.5	785	1571	2356	3142	3927	4712	5498	6283	7069
	-	70.5	705	1410	2115	2820	3525	4230	4936	5640	6345

+ = Outward stroke
 - = Return stroke

Note:
 Select a theoretical force 50-100% larger than the force required

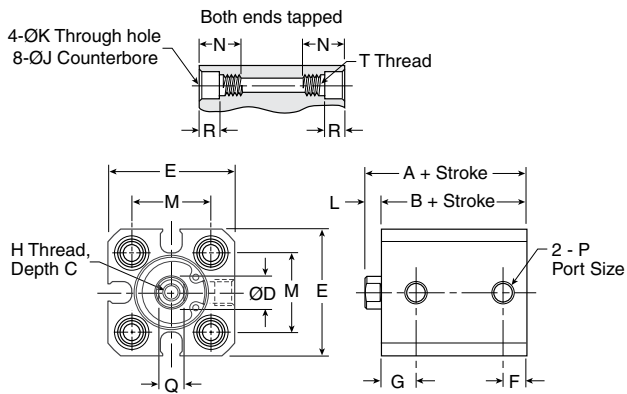
Front profiles by bore size



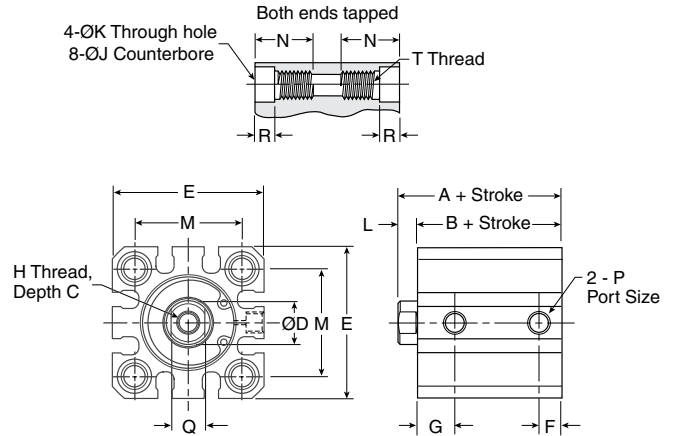
B
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Magnet Dimensions

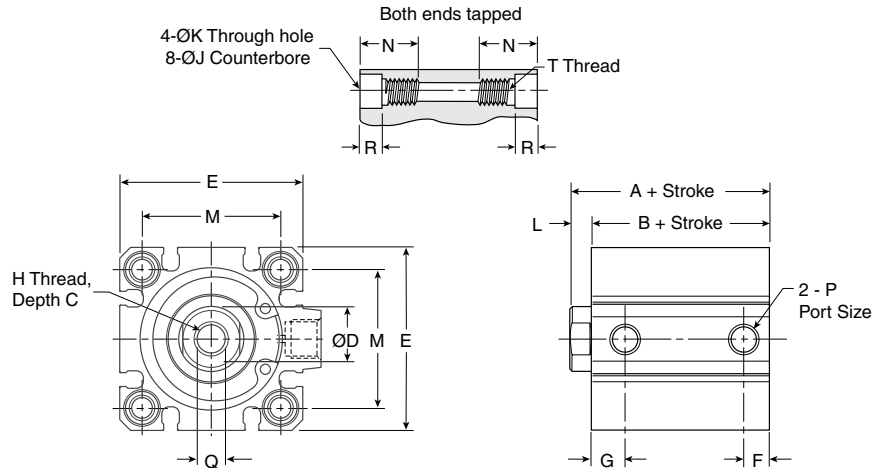
Ø12 - Ø16



Ø20 - Ø25



Ø32 - Ø100

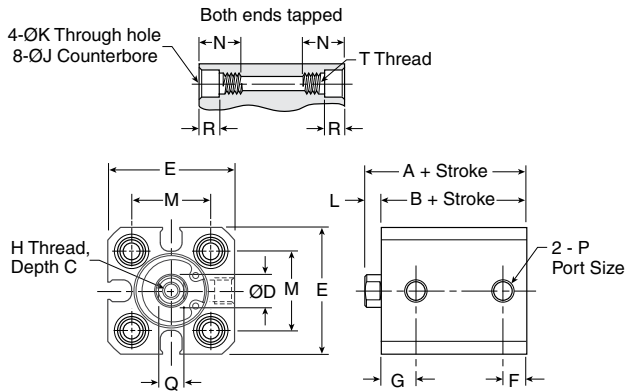


Bore size	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H	J mm	K mm	L mm	M mm	N mm	P	Q mm	R mm	T
12	25.5	22	6	6	25	5	7.5	M3x0.5	6.5	3.5	3.5	15.5	11	M5x0.8	5	4	M4x0.7
16	25.5	22	8	8	29	5	7.5	M4x0.7	6.5	3.5	3.5	20	11	M5x0.8	6	4	M4x0.7
20	34	29.5	7	10	36	5.5	9	M5x0.8	9	5.4	4.5	25.5	17	M5x0.8	8	7	M6x1.0
25	37.5	32.5	12	12	40	5.5	11	M6x1.0	9	5.4	5	28	17	M5x0.8	10	7	M6x1.0
32	40	33	13	16	45	7.5	10.5	M8x1.25	9	5.5	7	34	17	1/8"	14	7	M6x1.0
40	46.5	39.5	13	16	52	8	11	M8x1.25	9	5.5	7	40	17	1/8"	14	7	M6x1.0
50	48.5	40.5	15	20	64	10.5	10.5	M10x1.5	11	6.6	8	50	22	1/4"	17	8	M8x1.25
63	54	46	15	20	77	10.5	15	M10x1.5	14	9	8	60	28.5	1/4"	17	10.5	M10x1.5
80	63.5	53.5	21	25	98	12.5	16	M16x2.0	17.5	11	10	77	35.5	3/8"	22	13.5	M12x1.75
100	75	63	27	30	117	13	23	M20x2.5	17.5	11	12	94	35.5	3/8"	27	13.5	M12x1.75

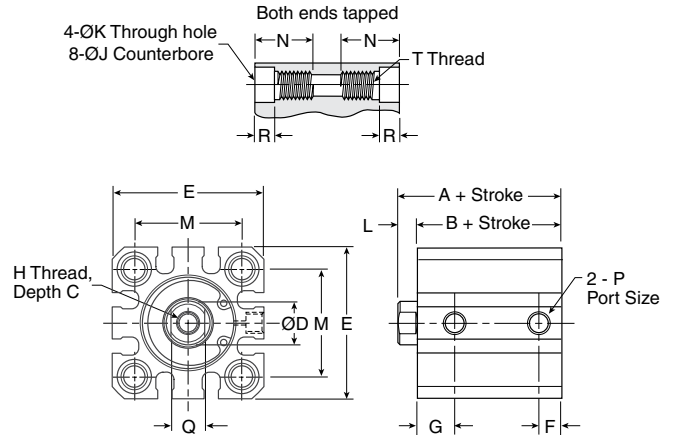
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Non-magnet Dimensions

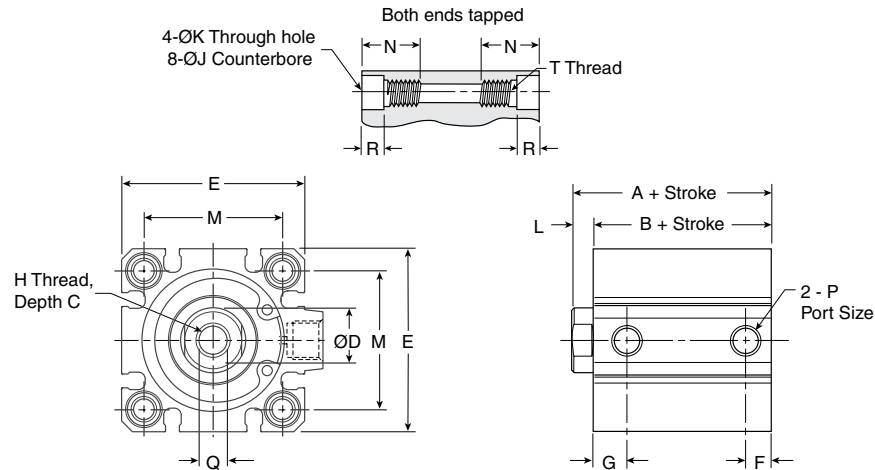
Ø12 - Ø16



Ø20 - Ø25



Ø32 - Ø100



Bore size	A		B		C mm	D mm	E mm	F mm	G mm	H	J mm	K mm	L mm	M mm	N mm	P	Q mm	R mm	T
	5 to 50mm	75 to 100mm	5 to 50mm	75 to 100mm															
12	20.5	-	17	-	6	6	25	5	7.5	M3x0.5	6.5	3.5	3.5	15.5	11	M5x0.8	5	4	M4x0.7
16	20.5	-	17	-	8	8	29	5	7.5	M4x0.7	6.5	3.5	3.5	20	11	M5x0.8	6	4	M4x0.7
20	24	-	19.5	-	7	10	36	5.5	9	M5x0.8	9	5.4	4.5	25.5	17	M5x0.8	8	7	M6x1.0
25	27.5	-	22.5	-	12	12	40	5.5	11	M6x1.0	9	5.4	5	28	17	M5x0.8	10	7	M6x1.0
32	30	40	23	33	13	16	45	7.5	10.5	M8x1.25	9	5.5	7	34	17	1/8"	14	7	M6x1.0
40	36.5	46.5	29.5	39.5	13	16	52	8	11	M8x1.25	9	5.5	7	40	17	1/8"	14	7	M6x1.0
50	38.5	48.5	30.5	40.5	15	20	64	10.5	10.5	M10x1.5	11	6.6	8	50	22	1/4"	17	8	M8x1.25
63	44	54	36	46	15	20	77	10.5	15	M10x1.5	14	9	8	60	28.5	1/4"	17	10.5	M10x1.5
80	53.5	63.5	43.5	53.5	21	25	98	12.5	16	M16x2.0	17.5	11	10	77	35.5	3/8"	22	13.5	M12x1.75
100	65	75	53	63	27	30	117	13	23	M20x2.5	17.5	11	12	94	35.5	3/8"	27	13.5	M12x1.75

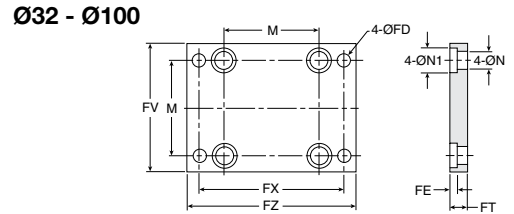
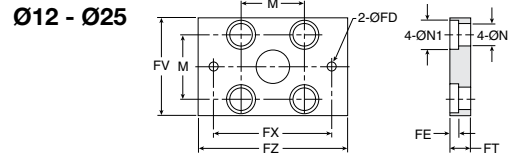
B
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 LP/LPM Series

Flange Mounting – Style J, H, 4, 5



Intended for fixed mounting of cylinder.
 Flange can be fitted to front or rear of cylinder.

Material
 Flange: surface treated steel, black
 Supplied complete with mounting screws for attachment to cylinder.



Bore size	FD mm	FT mm	FV mm	FX mm	FZ mm	M mm	N mm	N1 mm	Mass kg	Part number
12	4.5	5.5	25	45	55	15.5	4.5	7.5	0.08	P1Q-4DMB
16	4.5	5.5	30	45	55	20	4.5	7.5	0.10	P1Q-4FMB
20	6.5	8	39	48	60	25.5	6.5	10.5	0.16	P1Q-4HMB
25	6.5	8	42	52	64	28	6.5	10.5	0.20	P1Q-4JMB
32	5.5	8	48	56	65	34	6.5	10.5	0.23	P1Q-4KMB
40	5.5	8	54	62	72	40	6.5	10.5	0.28	P1Q-4LMB
50	6.5	9	67	76	89	50	8.5	13.5	0.53	P1Q-4MMB
63	9	9	80	92	108	60	10.5	16.5	0.71	P1Q-4NMB
80	11	11	99	116	134	77	12.5	18.5	1.59	P1Q-4PMB
100	11	11	117	136	154	94	12.5	18.5	2.19	P1Q-4QMB

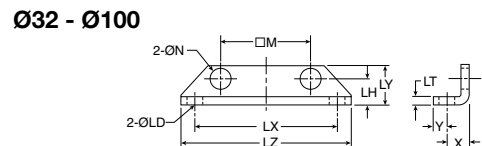
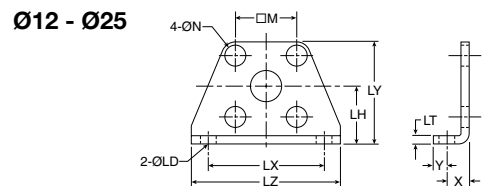
Foot Mounting – Style F, 9



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

Material
 Angle bracket: surface treated steel, black
 Supplied in pairs with mounting screws for attachment to cylinder.

* Weight per item



Bore size	LD mm	LH mm	LT mm	LX mm	LY mm	LZ mm	X mm	Y mm	M mm	N mm	Mass kg	Part number
12	4.5	17	2	34	29.5	44	8	4.5	15.5	4.5	0.02*	P1Q-4DMF
16	4.5	19	2	38	33.5	48	8	5	20	4.5	0.02*	P1Q-4FMF
20	6.5	24	3.2	48	42	62	9.2	5.8	25.5	6.5	0.04*	P1Q-4HMF
25	6.5	26	3.2	52	46	66	10.7	5.8	28	6.5	0.05*	P1Q-4JMF
32	6.5	13	3.2	57	20	71	11.2	5.8	34	6.5	0.06*	P1Q-4KMF
40	6.5	13	3.2	64	20	78	11.2	7	40	6.5	0.08*	P1Q-4LMF
50	8.5	14	3.2	79	22	95	12.2	8	50	8.5	0.16*	P1Q-4MMF
63	10.5	16	3.2	95	26	113	13.7	9	60	10.5	0.25*	P1Q-4NMF
80	13	20.5	4.5	118	32	140	16.5	11	77	13	0.50*	P1Q-4PMF
100	13	24	6	137	36	162	23	11.5	94	13	0.85*	P1Q-4QMF

B
 Compact Cylinders
 Actuator Products
 P1Q Series
 P1M Series
 LP/LPM Series

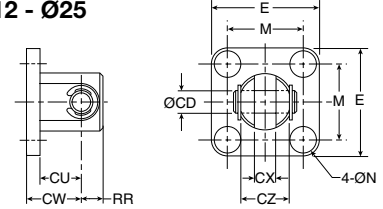
Clevis Mounting – Style A, 2



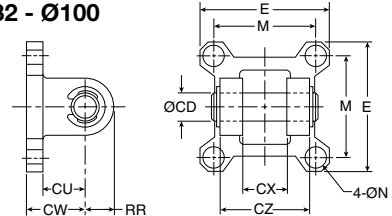
Intended for flexible mounting of cylinder. Clevis bracket can be fitted to the rear of cylinder.

Material
 Clevis bracket: surface treated steel, black
 Supplied complete with mounting screws for attachment to cylinder.

Ø12 - Ø25



Ø32 - Ø100



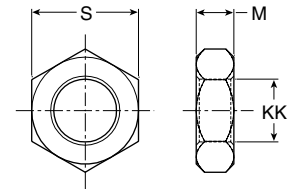
Bore size	CD mm	CU mm	CW mm	CX mm	CZ mm	N mm	RR mm	M mm	E mm	Mass kg	Part number
12	5	9.5	14	5.3	9.8	4.5	6	15.5	25	0.02	P1Q-4DMT
16	5	10.5	15	6.8	11.8	4.5	6	20	29	0.03	P1Q-4FMT
20	8	12.5	18	8.3	15.8	6.5	9	25.5	36	0.05	P1Q-4HMT
25	10	14.5	20	10.3	19.8	6.5	10	28	40	0.06	P1Q-4JMT
32	10	14.5	20	18.3	35.8	6.5	10	34	45.5	0.08	P1Q-4KMT
40	10	15	22	18.3	35.8	6.5	10	40	53.5	0.11	P1Q-4LMT
50	14	20	28	22.3	43.8	8.5	14	50	64.5	0.14	P1Q-4MMT
63	14	21	30	22.3	43.8	10.5	14	60	77.5	0.29	P1Q-4NMT
80	18	28	38	28.3	55.8	12.5	18	77	98.5	0.36	P1Q-4PMT
100	22	32	45	32.3	63.8	12.5	22	94	117.5	0.64	P1Q-4QMT

Jam Nut



Intended for fixed mounting of accessories to the piston rod.

Materials
 Galvanized steel
 Cylinders supplied with galvanized nut.



Bore size	KK	M	S	Mass kg	Part number
12	M5x0.8	2.7	18	0.002	L075540005
16	M6x1.0	3.2	10	0.002	L075540006
20	M8x1.25	4	13	0.005	L075540008
25	M10x1.25	5	17	0.007	L075540010
32	M14x1.5	7	22	0.010	L075540014
40	M14x1.5	7	22	0.010	L075540014
50	M18x1.5	8	27	0.021	L075540018
63	M18x1.5	8	27	0.021	L075540018
80	M22x1.5	11	32	0.040	L075540022
100	M26x1.5	16	41	0.040	L075540026

B

Compact Cylinders
 Actuator Products

P1Q
 Series

P1M
 Series

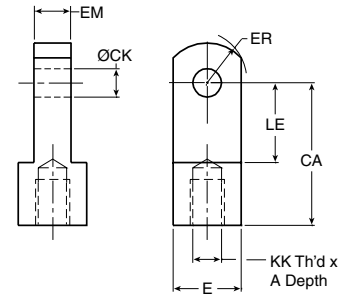
LP/LPM
 Series

Rod Eye



Rod eye for articulated mounting of cylinder.
 Rod eye can be combined with clevis bracket.
 Maintenance-free.

Material
 Rod eye, nut: galvanized steel



Bore size	A	E	CA	KK	ER	LE	CK	EM	Mass kg	Part number
12	7	9.5 Sq.	16	M5x0.8	6.5	7	5	5	0.03	P1M-4DRE
16	8	11 Sq.	25	M6x1.0	8	14	5	6.5	0.03	P1M-4FRE
20	8.5	16 Sq.	25	M8x1.25	10.5	11.5	8	8	0.05	P1M-4HRE
25	10.5	19 Sq.	30	M10x1.25	13	14	10	10	0.07	P1M-4JRE
32	14	22 Dia.	30	M14x1.5	12	14	10	18	0.08	P1M-4LRE
40	14	22 Dia.	30	M14x1.5	12	14	10	18	0.12	P1M-4LRE
50	18.5	28 Dia.	40	M18x1.5	16	20	14	22	0.25	P1M-4MRE
63	18.5	28 Dia.	40	M18x1.5	16	20	14	22	0.25	P1M-4MRE
80	22	38 Dia.	50	M22x1.5	21	27	18	28	0.25	P1M-4PRE

B
 Compact Cylinders
 Actuator Products

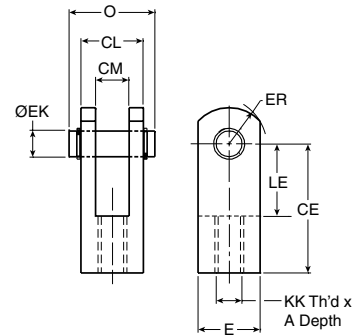
P1Q
 Series

Rod Clevis



Clevis for articulated mounting of cylinder.

Material
 Clevis, clip, nut: galvanized steel
 Pin: hardened steel



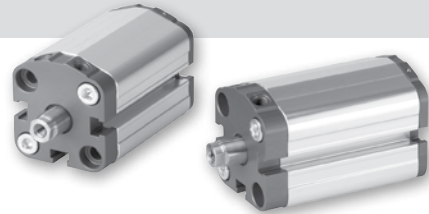
Bore size	A	E	CE	KK	ER	LE	EK (h9)	CM	CL	O	Mass kg	Part number
12	7	9.5	16	M5x0.8	6.5	7	5	5	9.5	14.5	0.02	P1M-4DRC
16	11	11	21	M6x1.0	8	10	5	6.5	11	16.5	0.02	P1M-4FRC
20	8.5	16	25	M8x1.25	10.5	11.5	8	8	16	21	0.05	P1M-4HRC
25	10.5	19	30	M10x1.25	13	14	10	10	19	25.5	0.09	P1M-4JRC
32	16	22 Dia.	30	M14x1.25	12	14	10	18	36	41.5	0.09	P1M-4LRC
40	16	22 Dia.	30	M14x1.25	12	14	10	18	36	41.5	0.15	P1M-4LRC
50	20	28 Dia.	40	M18x1.5	16	20	14	22	44	50.5	0.35	P1M-4MRC
63	20	28 Dia.	40	M18x1.5	16	20	14	22	44	50.5	0.35	P1M-4MRC
80	23	38 Dia.	50	M22x1.5	21	27	18	28	56	64	0.75	P1M-4PRC

P1M
 Series

LP/LPM
 Series

P1M Series

- Versatile range of square body style compact cylinder
- Available in Low Profile Version or Long Bearing Version for enhanced rod bearing support
- 10 bore sizes: 12mm through 100mm
- Single and double acting versions available
- Four flexible port configurations available
- Recessed, flush position piston sensing available



Operating information

Operating pressure:	145 PSIG (10 bar) maximum air
Temperature range:	Standard: -4°F to 176°F (-20°C to 80°C) High: 14°F to 250°F (-10°C to 121°C)
Filtration requirements:	40 micron, dry filtered air

Ordering information

P1M	032	C	/	D	C	P	6	G	012
------------	------------	----------	----------	----------	----------	----------	----------	----------	------------

Bore size	
012	12mm
016	16mm
020	20mm
025	25mm
032	32mm
040	40mm
050	50mm
063	63mm
080	80mm
100	100mm

Function	
D	Double acting
K	Double rod
R	Single acting spring return ⁶
E	Single acting spring extend ⁴

Piston/seal material	
Without magnet ²	
C	No bumpers class 1 std. temp. seals
G	No bumpers class 5 fluorocarbon seals
B	With bumpers class 1 std. temp. seals ⁷
With magnet ⁵ (Not available on spring extend models)	
N	No bumpers class 1 std. temp. seals
M	With bumpers class 1 std. temp. seals ⁷

Cylinder style	
C	Basic no mtgs.
A	Double rear clevis ^{1,3}
B	Single rear clevis ^{1,3}
F	Foot mount ^{1,4}
J	Front flange ¹
H	Rear flange ^{1,3}

Stroke length	
Specify stroke length required in mm.	

Piston rod & bearings	
Extra low profile rod bearing	
P	Chrome plated steel rod not available on 12-25mm bores
Y	Stainless steel rod standard on 12-25mm bores and spring extend models
Long rod bearing ²	
C	Chrome plated steel rod not available on 12-25mm bores
A	Stainless steel rod standard on 12-25mm bores and spring extend models

Ports	
Bspp	
G	Ported each end
H	Both ports head
J	Both ports cap
K	Both ports cap face ³
NPTF (Not available on 12-25mm bores)	
N	Ported each end
M	Both ports head
L	Both ports cap
P	Both ports cap face ³

Rod threads	
Inch	
4	Male
9	Female
Metric	
5	Male
6	Female
3	Special rod end

Maximum stroke lengths					
Bore	ELP bearing version		Long bearing version		Single acting version
	Min. stroke*	Max. stroke	Min. stroke*	Max. stroke	Standard stroke
12	3	50	4	200	5,10
16	3	50	4	200	5,10
20	3	50	8	200	5,10
25	3	50	8	200	5,10
32	3	100	9	320	5,10
40	3	100	7	320	5,10
50	3	100	13	320	10, 20, 25
63	3	100	18	500	10, 20, 25
80	3	150	23	500	10, 20, 25
100	3	150	18	500	10, 20, 25

* Minimum stroke for double rod cylinders: 12-63mm bores is 5mm
80 & 100mm bores is 10mm

NOTES:

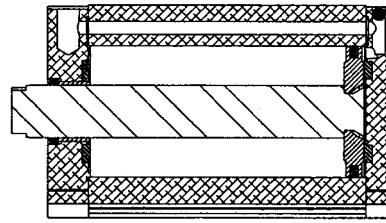
- ¹ Fitted with Mounting Accessory
- ² Magnetic Piston Option must be specified along with Long Rod Bearing option to achieve Long Bearing Version
- ³ Porting Options 'K' and 'P' (Both ports cap face) not available with rear mountings
- ⁴ Single Acting Spring Extend available with stainless steel rod only.
- ⁵ For information regarding sensors, please refer to Electronic Sensors section.
- ⁶ Spring return is short bearing version only.
- ⁷ Bumper only available on head end for spring extend. Bumper only available on cap end for spring return.

Sensors
For sensors see page B339.

For ordering purposes, when special options or common modifications are requested, the factory will assign a sequential part number in place of the model number.

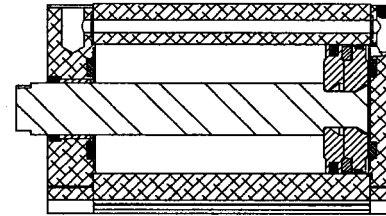
Extra Low Profile Version

The Extra Low Profile Bearing Version provides the most compact cylinder possible. This bearing version is recommended for applications that require shorter stroke lengths or that are light duty. It is available in stroke lengths up to 50mm in the smaller bore sizes and 150 mm in the larger bore sizes.

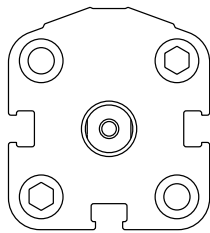


Long Bearing Version

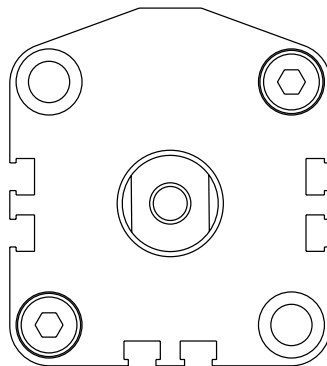
The Long Bearing Version provides additional rod bearing and piston bearing support and also includes a magnetic piston with bearing strip for greater piston bearing support. This Long Bearing version is required for stroke lengths beyond the Extra Low Profile maximum stroke length and is recommended for higher duty applications.



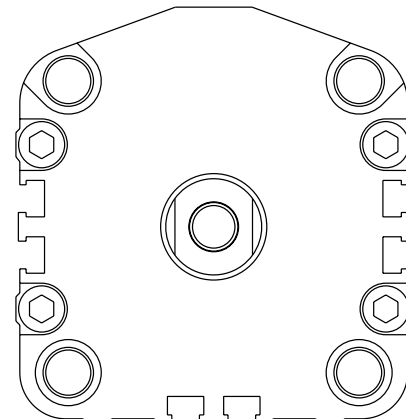
Front profiles by bore size



Bores 12-25mm



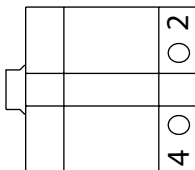
Bores 32-50mm



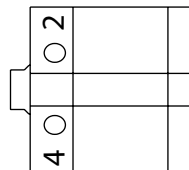
Bores 63-100mm

Porting configurations

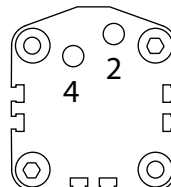
Both Ports Cap



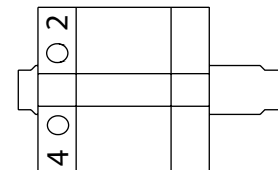
Both Ports Head*



Both Ports Cap Face



Double Rod Both Ports One End



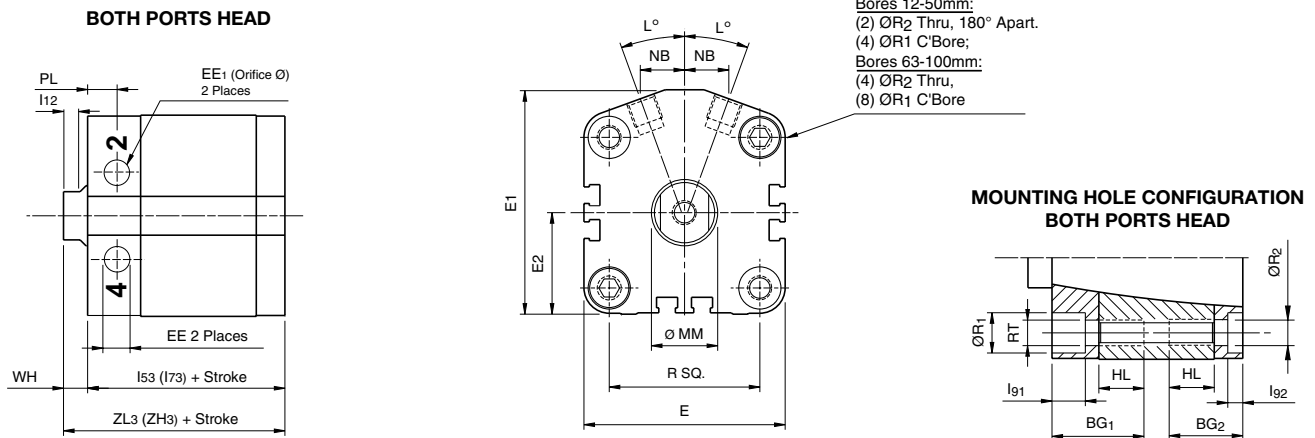
To retract cylinder apply air to port #2
 To extend cylinder apply air to port #4

For a double rod cylinder, pressurize port #2 to retract the piston rod into the head containing the ports.

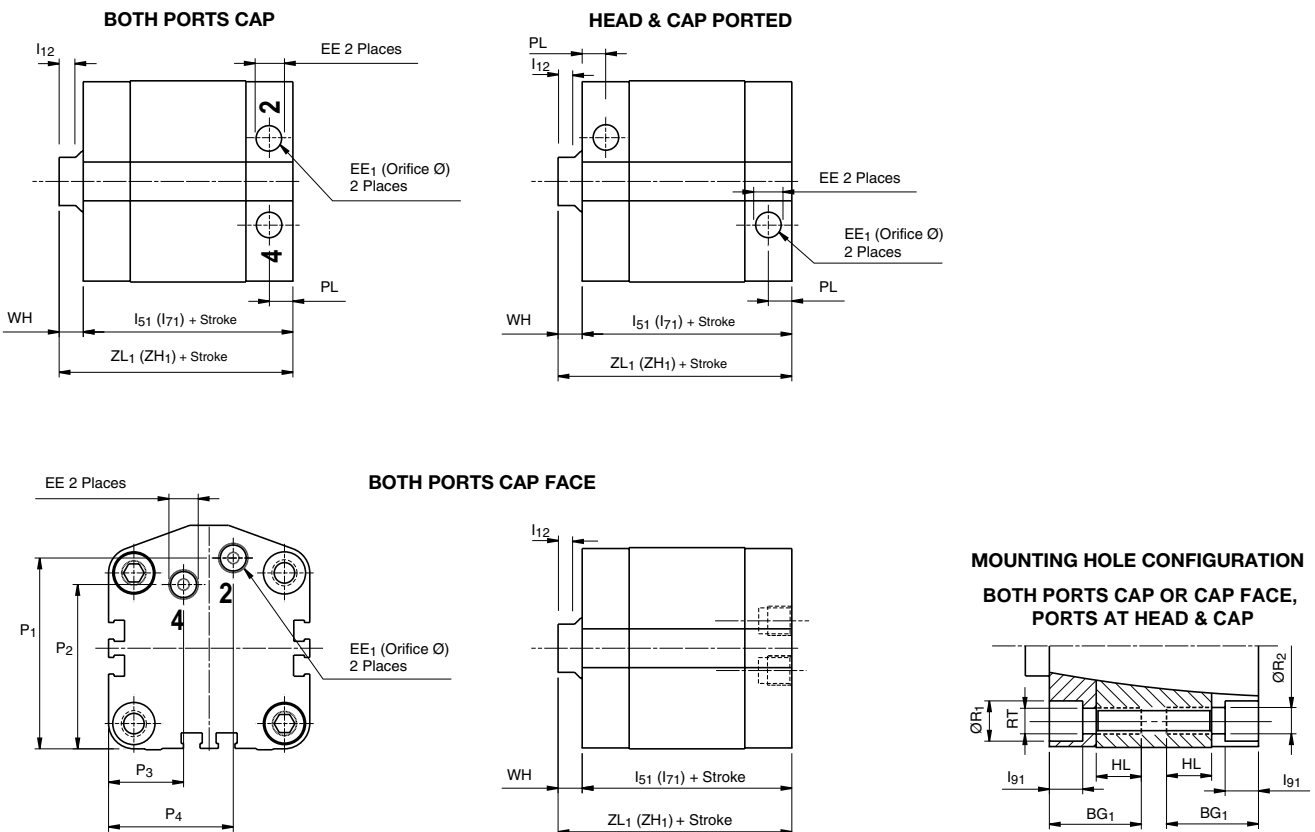
* For 12mm to 16mm bores, although the location of ports #2 and #4 are reversed, porting functions shown above apply.

B
 Compact Cylinders
 Actuator Products
 P1Q Series
 P1M Series
 LP/LPM Series

All porting configurations



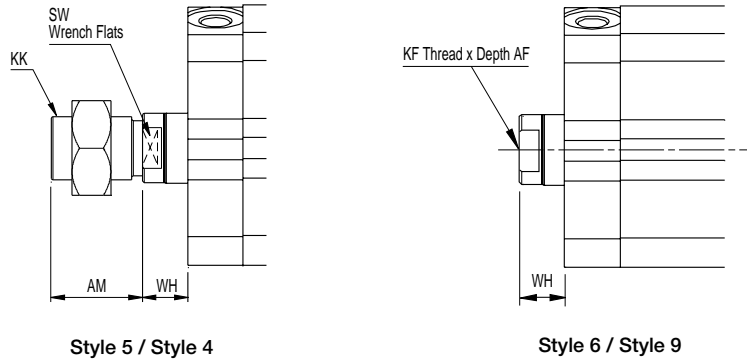
Optional porting configurations



Note: Magnetic Dimensions in Parentheses

For special rod ends, specify “3” in model number and give desired WH, AM or AF and KK or KF (length dimensions in millimeters).

Jam nut is supplied when cylinder is ordered with Style 4 or Style 5 rod end.



B
 Compact Cylinders
 Actuator Products
 P1Q Series
 P1M Series
 LP/MP Series

Bore size	Rod	AF		AM		KF		KK		WH		I12	SW
		Style 6	Style 9	Style 5	Style 4	Style 6	Style 9	Style 5	Style 4	Style 4, 9 & 6	Style 5		
12	6	6	5.4	9	8	M3x0.5	#8-32	M5x0.8	#8-32	3.5	5	3	5
16	8	8	5.4	10	8	M4x0.7	#8-32	M6x1.0	#8-32	3.5	5.5	3	7
20	10	7	7	12	8	M5x0.8	#10-32	M8x1.25	#10-32	4.5	6.5	4	9
25	10	12	10	15	9.5	M6x1.0	1/4-28	M10x1.25	1/4-28	5	7.5	4	9
32	12	13	13.3	20.5	12.7	M8x1.25	5/16-24	M12x1.25	5/16-24	7	8	5	10
40	16	13	18.3	20.5	16	M8x1.25	3/8-24	M14x1.5	3/8-24	7	8	5.5	13
50	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
63	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
80	25	21	24.3	32.5	25.5	M16x2.0	5/8-18	M22x1.5	5/8-18	10	11	6	21
100	25	27	27	32.5	28.5	M20x2.5	3/4-16	M22x1.5	3/4-16	12	11	6	21

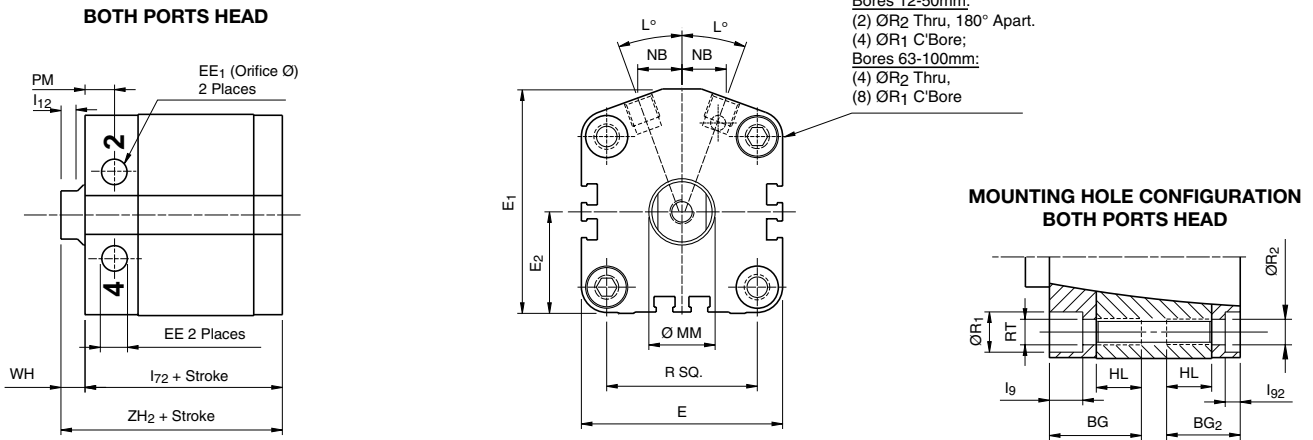
Bore size	BG1	BG2	E	E1	E2	EE		HL	I91	I92	L	NB	P1	P2	
						BSPP	NPTF								
12	16.5	11.5	27	31	14	M5	-	1	8	3.5	3.5	26	5.5	25	9.5
16	17	12	31.5	35	16	M5	-	1.2	8	4	4	20	7	29.5	9.5
20	19	14.5	38.5	42.5	19.5	M5	-	1.3	10	4.5	4.5	20	8	35	13.5
25	21	15	41.5	45.5	21	M5	-	1.8	10	5	5	20	8.5	38.5	14
32	25	17	48	56	24	G1/8	1/8	2.7	10	4	4	25	9.5	45.5	16.5
40	25.5	17.5	56	62.5	28	G1/8	1/8	3.4	10	4	4	20	11.5	51	12
50	29.5	23.5	67	74.5	33.5	G1/8	1/8	4	14	5	5	20	14.5	63	54.5
63	34	28	82	86	40.5	G1/8	1/8	5	18	6.5	8	20	17.5	73.5	64
80	43	34	98	106.5	48.5	G1/4	1/4	5.5	22	8.5	10	20	25.5	92	79.5
100	44	35.5	119	126.5	59.5	G1/4	1/4	6	22	8.5	10	20	31.5	111.5	97.5

Bore size	P3	P4	PL	PM	R	R1	R2*	RT	Non-magnetic				Magnetic				ELP Max stroke
									I51	I53	ZL1	ZL3	I71	I73	ZH1	ZH3	
12	13.5	13.5	5	8.5	15.5	5.8	3.5	M4	22	17	25.5	20.5	33	28	36.5	31.5	50
16	15.5	18	5	9	20	7.4	3.5	M4	23.5	18.5	27	22	34.5	29.5	38	33	50
20	24.5	21.5	5	9	25.5	9	5.5	M6	24	19.5	28.5	24	34	29.5	38.5	34	50
25	27.5	24.5	7	9	28	9	5.5	M6	28.5	22.5	33.5	27.5	38.5	32.5	43.5	37.5	50
32	31.5	28.5	8	10.5	34	10.5	5.5	M6	36.5	28.5	43.5	35.5	46	37.5	53	44.5	100
40	23	33	7.5	9.5	40	10.5	5.5	M6	38.5	29.5	44.5	36.5	47.5	39.5	54.5	46.5	100
50	25	41.5	8	10	50	13.5	7.5	M8	38.5	32.5	46.5	40.5	47.5	41.5	55.5	49.5	100
63	30	53	8	11	60	13.5	9.5	M10	39.5	34	47.5	42	51.5	46	59.5	54	100
80	33	69.5	11.5	11.5	77	16.5	11	M12	52	43	62	53	62.5	53.5	72.5	63.5	150
100	36.5	87.5	12	12	94	17	11	M12	57	48.5	69	60.5	71.5	63	83.5	75	150

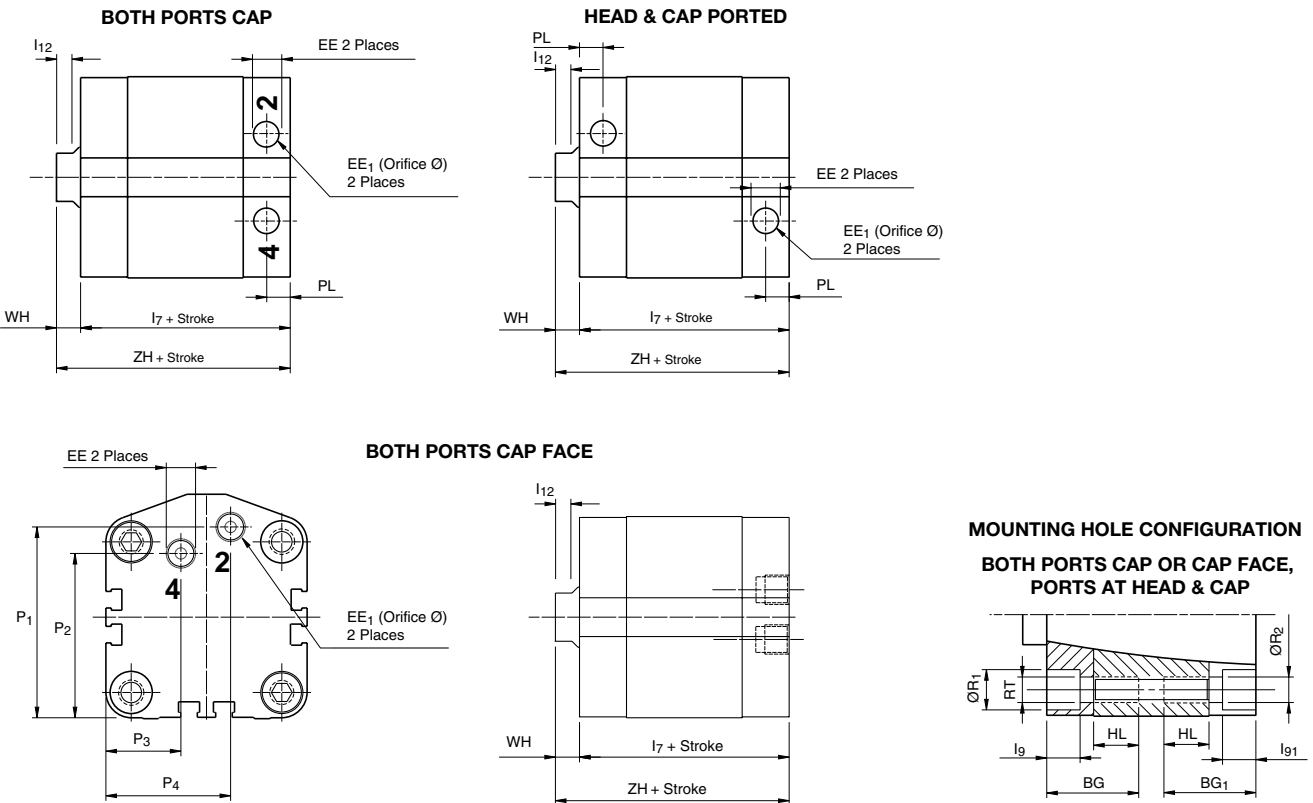
**R2 thru” not available on 12mm and 16mm bores.



All porting configurations



Optional porting configurations

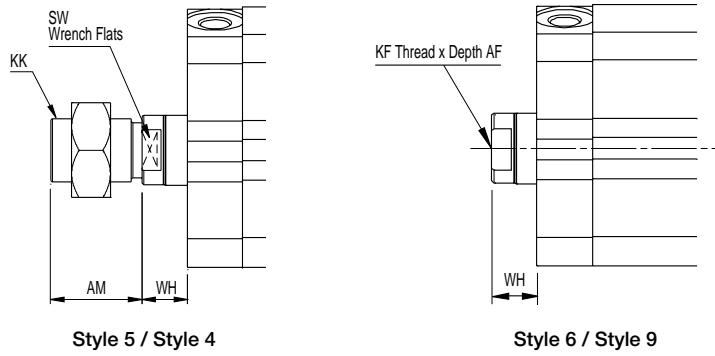


Note: Magnetic Dimensions in Parentheses

For special rod ends, specify “3” in model number and give desired WH, AM or AF and KK or KF (length dimensions in millimeters).

Jam nut is supplied when Style 4 or Style 5 rod end is specified.

Note: Magnetic piston and longer rod bearing are standard with Long Bearing Version.



B
Compact Cylinders
Actuator Products
P1Q
Series
P1M
Series
LP/LPM
Series

Bore size	Rod MM	AF		AM		KF		KK		WH		I12	SW
		Style 6	Style 9	Style 5	Style 4	Style 6	Style 9	Style 5	Style 4	Style 4, 9 & 6	Style 5		
12	6	6	5.4	9	8	M3x0.5	#8-32	M5x0.8	#8-32	3.5	5	3	5
16	8	8	5.4	10	8	M4x0.7	#8-32	M6x1.0	#8-32	3.5	5.5	3	7
20	10	7	7	12	8	M5x0.8	#10-32	M8x1.25	#10-32	4.5	6.5	4	9
25	10	12	10	15	9.5	M6x1.0	1/4-28	M10x1.25	1/4-28	5	7.5	4	9
32	12	13	13.3	20.5	12.7	M8x1.25	5/16-24	M12x1.25	5/16-24	7	8	5	10
40	16	13	18.3	20.5	16	M8x1.25	3/8-24	M14x1.5	3/8-24	7	8	5.5	13
50	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
63	20	15	17.6	26	19.5	M10x1.5	1/2-20	M18x1.5	1/2-20	8	7.5	5.5	16
80	25	21	24.3	32.5	25.5	M16x2.0	5/8-18	M22x1.5	5/8-18	10	11	6	21
100	25	27	27	32.5	28.5	M20x2.5	3/4-16	M22x1.5	3/4-16	12	11	6	21

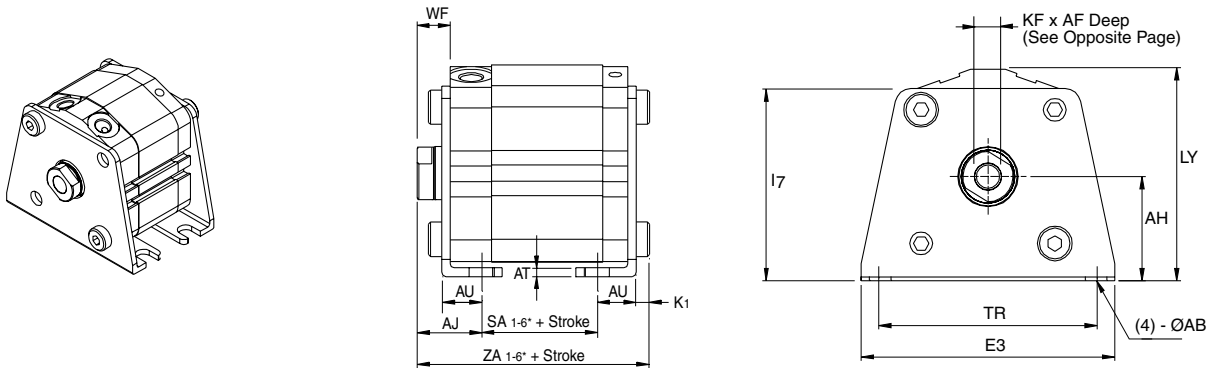
Bore size	EE															
	BG	BG1	BG2	E	E1	E2	BSPP	NPTF	EE1	HL	I7	I72	I9	I91	I92	L
12	21.5	16.5	11.5	27	31	14	M5	–	1	8	38.5	33.5	3.5	3.5	3.5	26
16	22	17	12	31.5	35	16	M5	–	1.2	8	40.5	35.5	5.5	4	4	20
20	24.5	19	14.5	38.5	42.5	19.5	M5	–	1.3	10	40	35.5	10.5	4.5	4.5	20
25	24.5	21	15	41.5	45.5	21	M5	–	1.8	10	42.5	36.5	10.5	5	5	20
32	27.5	25	17	48	56	24	G1/8	1/8	2.7	10	48	40	14	4	4	25
40	27.5	25.5	17.5	56	62.5	28	G1/8	1/8	3.4	10	49.5	41.5	14	4	4	20
50	31.5	29.5	23.5	67	74.5	33.5	G1/8	1/8	4	14	49.5	43.5	13	5	5	20
63	37	34	28	82	86	40.5	G1/8	1/8	5	18	54.5	49	6.5	6.5	8	20
80	43	43	34	98	106.5	48.5	G1/4	1/4	5.5	22	62.5	53.5	9.5	8.5	10	20
100	44	44	35.5	119	126.5	59.5	G1/4	1/4	6	22	71.5	63	9.5	8.5	10	20

Bore size	P												Min stroke	Max stroke
	NB	P1	P2	P3	P4	PM	R	R1	R2*	RT	ZH	ZH2		
12	5.5	25	9.5	13.5	13.5	8.5	15.5	5.8	3.5	M4	42	37	4	200
16	7	29.5	9.5	15.5	18	9	20	7.4	3.5	M4	44	39	4	200
20	8	35	13.5	24.5	21.5	9	25.5	9	5.5	M6	44.5	40	8	200
25	8.5	38.5	14	27.5	24.5	9	28	9	5.5	M6	47.5	41.5	8	200
32	9.5	45.5	16.5	31.5	28.5	10.5	34	10.5	5.5	M6	55	47	9	320
40	11.5	51	12	23	33	9.5	40	10.5	5.5	M6	56.5	48.5	7	320
50	14.5	63	54.5	25	41.5	10	50	13.5	7.5	M8	57.5	51.5	13	320
63	17.5	73.5	64	30	53	11	60	13.5	9.5	M10	62.5	57	18	500
80	25.5	92	79.5	33	69.5	11.5	77	16.5	11	M12	72.5	62.5	23	500
100	31.5	111.5	97.5	36.5	87.5	12	94	17	11	M12	83.5	75	18	500

* “R2 thru” not available on 12mm and 16mm bores.



Foot Mounting – Style F



Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	AB	AH	AJ	AT	AU	E ₃	l ₇	K ₁	LY	TR	Part number
12	4.5	17	19.5	2	8	44	29.5	2.8	34	35	P1M-4DMF
16	4.5	19	19.5	2	8	48	33.5	2.8	38	39	P1M-4FMF
20	6.5	24	20.5	3.2	9.2	62	42	4	47	50	P1M-4HMF
25	6.5	26	22.5	3.2	10.7	66	46	4	50.5	52	P1M-4JMF
32	6.5	30	25	3.2	11.2	71	54	4	62	60	P1M-4KMF
40	6.5	33	25	3.2	11.2	78	61	4	67.5	67	P1M-4LMF
50	9	39	29.5	3.2	14.7	95	72.5	5	80	82	P1M-4MMF
63	11	46	31	3.2	16.2	113	32	5	91.5	100	P1M-4NMF
80	13	59	35	4.5	19.5	140	42	7	117	118	P1M-4PMF
100	13	71	39	6	23	162	53	7	138	139	P1M-4QMF

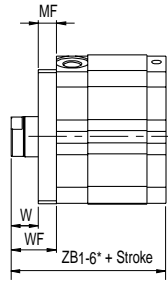
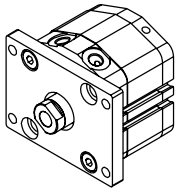
Bore size	ELP version non-magnetic					ELP version magnetic					Long bearing version					
	Both ports head		Optional porting		Min. ** stroke	Both ports head		Optional porting		Min.** stroke	Both ports head		Optional porting		Min.** stroke	Style 5 end length adjustment
	SA ₁	ZA ₁ *	SA ₂ *	ZA ₂ *		SA ₃	ZA ₃ *	SA ₄	ZA ₄ *		SA ₅	ZA ₅ *	SA ₆	ZA ₆ *		
12	5	35.3	10	40.3	15	16	46.3	21	51.3	4	21.5	51.8	26.5	56.8	4	1.5
16	6.5	36.8	11.5	41.8	14	17.5	47.8	22.5	52.8	4	23.5	53.8	28.5	58.8	4	2
20	7.5	41.2	12	45.7	18	17.5	51.2	22	55.7	8	23.5	57.2	28	61.9	8	2
25	7.5	44.7	13.5	50.7	18	17.5	54.7	23.5	60.7	8	21.5	58.7	27.5	64.7	8	2.5
32	12.5	52.5	20.5	60.7	18	21.5	61.7	29.5	69.9	9	24	64	32	72.2	9	1
40	13.5	53.7	21.5	61.9	17	23.5	63.7	31.5	71.9	7	25.5	65.7	33.5	73.9	7	1
50	9.5	58.7	15.5	64.9	22	18.5	67.7	24.5	73.9	13	20.5	69.7	26.5	75.9	13	-0.5
63	8	60.2	13.5	65.7	30	20	72.2	25.5	77.7	18	23	75.2	28.5	80.7	18	-0.5
80	13	74.5	22	83.5	33	23.5	85	32.5	94	23	23.5	85	32.5	94	23	1
100	14.5	83.5	23	92	33	29	98	37.5	106.5	18	29	98	37.5	106.5	18	-1

* For strokes less than 'min. stroke', only one bracket will be supplied at rod end.

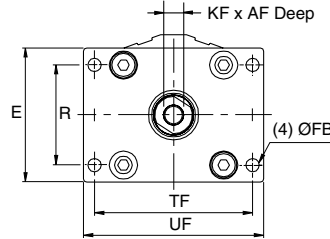
** Dimensions shown apply only for rod end styles 4, 6 and 9. For rod end style 5, please include the above length adjustment.

Note: Foot bracket mounting is not available with cap face porting

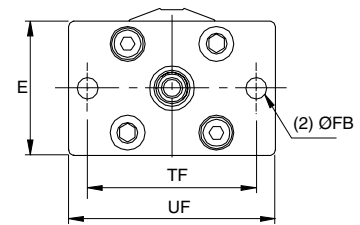
Front Flange Mounting – Style J



Bores 32-100mm



Bores 12-25mm



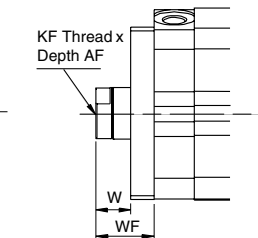
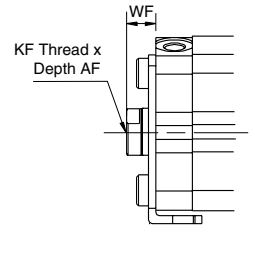
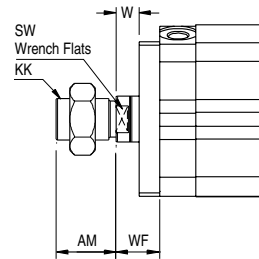
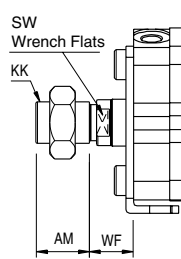
Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	ELP version Non-magnetic						ELP version Magnetic				Long bearing Version		Style 5 rod end length adjustment	Part number
	E	FB	MF	R	TF	UF	Both ports head	Optional Porting	Both ports head	Optional porting	Both ports head	Optional porting		
12	25	4.5	5.5	-	45	55	ZB1*	ZB2*	ZB3*	ZB4*	ZB5*	ZB6*	1.5	P1M-4DMB
16	30	4.5	5.5	-	45	55	32	37	43	48	49	54	2	P1M-4FMB
20	39	6.5	8	-	50.5	62	34	38.5	44	48.5	50	54.5	2	P1M-4HMB
25	42	6.5	8	-	53	65	37.5	43.5	47.5	53.5	51.5	57.5	2.5	P1M-4JMB
32	48	5.5	8	34	58	68	45.5	53.5	54.5	62.5	57	65	1	P1M-4KMB
40	54	5.5	8	40	66	76	46.5	54.5	56.5	64.5	58.5	66.5	1	P1M-4LMB
50	67	6.5	9	50	79	90	50.5	56.5	59.5	65.5	61.5	67.5	-0.5	P1M-4MMB
63	80	9	9	60	97	112	52	57.5	64	69.5	67	72.5	-0.5	P1M-4NMB
80	99	11	11	77	116	134	63	72	73.5	82.5	73.5	82.5	1	P1M-4PMB
100	117	11	11	94	137	154	70.5	79	85	93.5	85	93.5	-1	P1M-4QMB

* Dimensions shown apply only for Rod End Styles 4, 6 and 9. For Rod End Style 5, please include the above length adjustment.

Rod End Front Mounts F & J

For special rod threads, specify "3" in model number and give desired AM or AF, WF and KK or KF.



Foot Mounting - Style F

Foot Flange Mounting - Style J

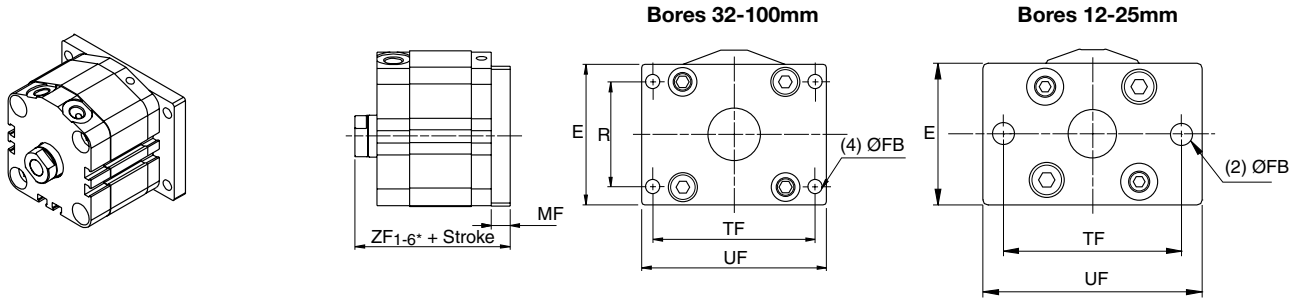
Foot Mounting - Style F

Foot Flange Mounting - Style J

Bore size	AF		AM		KF		KK		W		WF		SW
	Style 9	Style 6	Style 4	Style 5	Style 9	Style 6	Style 4	Style 5	Styles 9, 6, 4	Style 5	Styles 9, 6, 4	Style 5	
12	5.4	6	8	9	#8-32	M3X0.5	#8-32	M5X0.8	8	9.5	13.5	15	5
16	5.4	8	8	10	#8-32	M4x0.7	#8-32	M6x1.0	8	10	13.5	15.5	7
20	7	7	8	12	#10-32	M5x0.8	#10-32	M8x1.25	6.5	8.5	14.5	16.5	9
25	10	12	9.5	15	1/4-28	M6x1.0	1/4-28	M10x1.25	7	9.5	15	17.5	9
32	13.3	13	12.7	20.5	5/16-24	M8x1.25	5/16-24	M12x1.25	9	10	17	18	10
40	18.3	13	16	20.5	3/8-24	M8x1.25	3/8-24	M14x1.5	9	10	17	18	13
50	17.6	15	19.5	26	1/2-20	M10x1.5	1/2-20	M18x1.5	9	8.5	18	17.5	16
63	17.6	15	19.5	26	1/2-20	M10x1.5	1/2-20	M18x1.5	9	8.5	18	17.5	16
80	24.3	21	25.5	32.5	5/8-18	M16x2.0	5/8-18	M22x1.5	9	10	20	21	21
100	27	27	28.5	32.5	3/4-16	M20x2.5	3/4-16	M22x1.5	11	10	22	21	21



Rear Flange Mounting – Style H



Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	E	FB	MF	R	TF	UF	Part number
12	25	4.5	5.5	–	45	55	P1M-4DMB
16	30	4.5	5.5	–	45	55	P1M-4FMB
20	39	6.5	8	–	50.5	62	P1M-4HMB
25	42	6.5	8	–	53	65	P1M-4JMB
32	48	5.5	8	34	58	68	P1M-4KMB
40	54	5.5	8	40	66	76	P1M-4LMB
50	67	6.5	9	50	79	90	P1M-4MMB
63	80	9	9	60	97	112	P1M-4NMB
80	99	11	11	77	116	134	P1M-4PMB
100	117	11	11	94	137	154	P1M-4QMB

Bore size	ELP version non-magnetic		ELP version magnetic		Long bearing version		Style 5 rod end length adjustment
	Both ports head ZF1*	Optional porting ZF2*	Both ports head ZF3*	Optional porting ZF4*	Both ports head ZF5*	Optional porting ZF6*	
12	26	31	37	42	42.5	47.5	1.5
16	27.5	32.5	38.5	43.5	44.5	49.5	2
20	32	36.5	42	46.5	48	52.5	2
25	35.5	41.5	45.5	51.5	49.5	55.5	2.5
32	43.5	51.5	52.5	60.5	55	63	1
40	44.5	52.5	54.5	62.5	56.5	64.5	1
50	49.5	55.5	58.5	64.5	60.5	66.5	-0.5
63	51	57.5	63	68.5	66	71.5	-0.5
80	64	73	74.5	83.5	74.5	83.5	1
100	71.5	80	86	94.5	86	94.5	-1

Note: Rear Flange mounting is not available with cap face porting.

* Dimensions shown apply only for Rod End Styles 4, 6 and 9.

For Rod End Style 5, please include the above length adjustment.

B

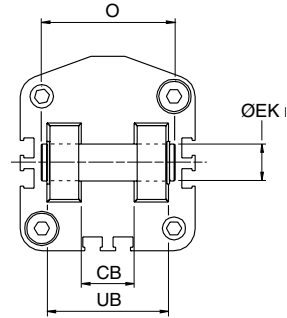
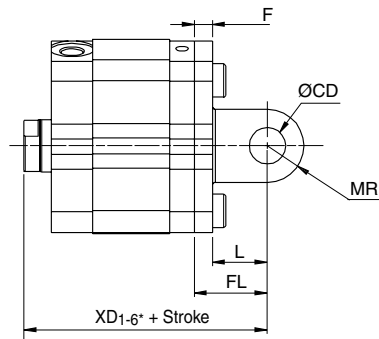
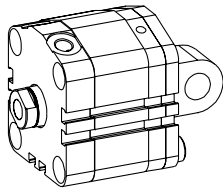
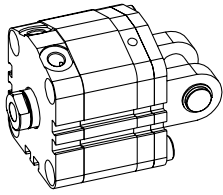
Compact Cylinders
 Actuator Products

P1Q
 Series

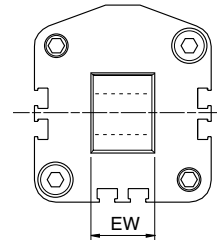
P1M
 Series

LP/LPM
 Series

Rear Clevis Mounts – Styles A & B



Style A



Style B

Please note bearing, piston and porting configuration for selecting proper dimensions.

Bore size	CB	CD/EK	EW	F	FL	L	MR	O	UB	Double clevis kit part number	Single clevis kit part number**
12	5	5	5	4	14	10	6.5	14.5	10	P1M-4DMT	P1M-4DME
16	6.5	5	6.5	4	15	11	6.5	16.5	12	P1M-4FMT	P1M-4FME
20	8	8	8	5	18	13	10	21	16	P1M-4HMT	P1M-4HME
25	10	10	10	5	20	15	11	25.5	20	P1M-4JMT	P1M-4JME
32	18	10	18	5	20	15	10	41.5	36	P1M-4KMT	P1M-4KME
40	18	10	18	6	22	16	10	41.5	36	P1M-4LMT	P1M-4LME
50	22	14	22	7	28	21	14	50.5	44	P1M-4MMT	P1M-4MME
63	22	14	22	8	30	22	14	50.5	44	P1M-4NMT	P1M-4NME
80	28	18	28	10	38	28	18	64	56	P1M-4PMT	P1M-4PME
100	32	22	32	13	45	32	22	72	64	P1M-4QMT	P1M-4QME

Bore size	ELP version non-magnetic		ELP version magnetic		Long bearing version		Style 5 rod end length adjustment
	Both ports head XD1*	Optional porting XD2*	Both ports head XD3*	Optional porting XD4*	Both ports head XD5*	Optional porting XD6*	
12	34.5	39.5	45.5	50.5	51	56	1.5
16	37	42	48	53	54	59	2
20	42	46.5	52	56.5	58	62.5	2
25	47.5	53.5	57.5	63.5	61.5	67.5	2.5
32	55.5	63.5	64.5	72.5	67	75	1
40	59.5	66.5	68.5	76.5	70.5	78.5	1
50	68.5	74.5	77.5	83.5	79.5	85.5	-0.5
63	72	78.5	84	89.5	87	92.5	-0.5
80	91	100	101.5	110.5	101.5	110.5	1
100	105.5	114	120	128.5	120	128.5	-1

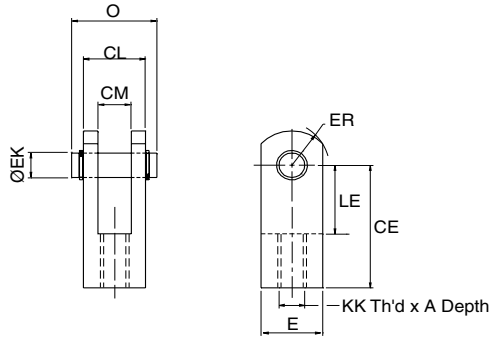
* Dimensions shown apply only for Rod End Styles 4, 6 and 9. For Rod End Style 5, please include the above length adjustment.

** Single Clevis Kit can be used as mounting bracket for double clevis cylinders. Double Clevis Kit can be used as mounting kit for single clevis cylinders.

Note: Rear Clevis mounts are not available with cap face port.

B
 Compact Cylinders
 Actuator Products
 Series P1Q
 Series P1M
 Series LP/LPM

Rod Clevis



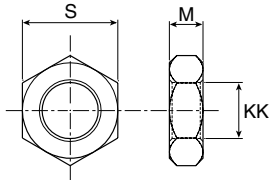
Metric

Bore size	A	E	CE	KK	ER	LE	EK (h9)	CM	CL	O	Part number
12	7	9.5	16	M5x0.8	6.5	7	5	5	9.5	14.5	P1M-4DRC
16	11	11	21	M6x1.0	8	10	5	6.5	11	16.5	P1M-4FRC
20	8.5	16	25	M8x1.25	10.5	11.5	8	8	16	21	P1M-4HRC
25	10.5	19	30	M10x1.25	13	14	10	10	19	25.5	P1M-4JRC
32	16	22 Dia.	30	M12x1.25	12	14	10	18	36	41.5	P1M-4KRC
40	16	22 Dia.	30	M14x1.5	12	14	10	18	36	41.5	P1M-4LRC
50/63	20	28 Dia.	40	M18x1.5	16	20	14	22	44	50.5	P1M-4MRC
80	23	38 Dia.	50	M22x1.5	21	27	18	28	56	64	P1M-4PRC
100	24	44 Dia.	55	M22x1.5	24	31	22	32	64	72	P1M-4QRC

Inch

Bore size	A	E	CE	KK	ER	LE	EK (inch) +0, -0.002	CM	CL (inch)	O (inch)	Part number
12	6	9.5	16	#8-32	6.5	7	3/16	5	0.375	0.563	P1M-4DRC-T
16	6	11	21	#8-32	8	10	3/16	6.5	0.437	0.625	P1M-4FRC-T
20	6	16	25	#10-32	10.5	11.5	5/16	8	0.625	0.875	P1M-4HRC-T
25	8	19	30	1/4-28	13	14	3/8	10	0.750	1.031	P1M-4JRC-T
32	16	22 Dia.	30	5/16-24	12	14	3/8	18	1.437	1.687	P1M-4KRC-T
40	16	22 Dia.	30	3/8-24	12	14	3/8	18	1.437	1.687	P1M-4LRC-T
50/63	20	28 Dia.	40	1/2-20	16	20	1/2	22	1.750	2.125	P1M-4MRC-T
80	23	38 Dia.	50	5/8-18	21	27	3/4	28	2.250	2.625	P1M-4PRC-T
100	24	44 Dia.	55	3/4-16	24	31	7/8	32	2.500	2.875	P1M-4QRC-T

Jam Nuts



Style 4

Bore size	KK	M	S	Part number
12	#8-32	1/8	11/32	L073800080
16	#8-32	1/8	11/32	L073800080
20	#10-32	1/8	3/8	L073800100
25	1/4-28	5/32	7/16	L073800200
32	5/16-24	3/16	1/2	L073800300
40	3/8-24	7/32	9/16	L073800400
50	1/2-20	5/16	3/4	L073800600
63	1/2-20	5/16	3/4	L073800600
80	5/8-18	3/8	15/16	L073800800
100	3/4-16	27/64	1-1/8	L073800900

Dimensions in inches

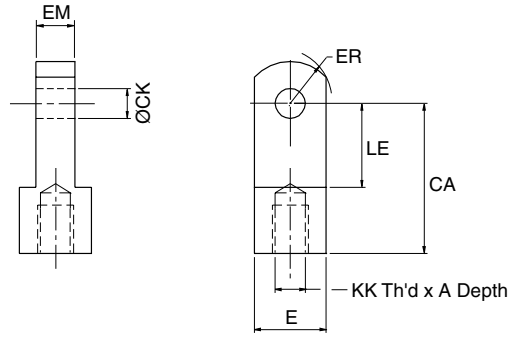
Style 5

Bore size	KK	M	S	Part number
12	M5x0.8	2.7	18	L075540005
16	M6x1.0	3.2	10	L075540006
20	M8x1.25	4	13	L075540008
25	M10x1.25	5	17	L075540010
32	M12x1.25	6	19	L075540012
40	M14x1.5	7	22	L075540014
50	M18x1.5	8	27	L075540018
63	M18x1.5	8	27	L075540018
80	M22x1.5	11	32	L075540022
100	M22x1.5	11	32	L075540022

Dimensions in mm



Rod Eye



Metric

Bore size	A	E	CA	KK	ER	LE	CK	EM	Part number
12	7	9.5 Sq.	16	M5x0.8	6.5	7	5	5	P1M-4DRE
16	8	11 Sq.	25	M6x1.0	8	14	5	6.5	P1M-4FRE
20	8.5	16 Sq.	25	M8x1.25	10.5	11.5	8	8	P1M-4HRE
25	10.5	19 Sq.	30	M10x1.25	13	14	10	10	P1M-4JRE
32	15	22 Dia.	30	M12x1.25	12	14	10	18	P1M-4KRE
40	14	22 Dia.	30	M14x1.5	12	14	10	18	P1M-4LRE
50/63	18.5	28 Dia.	40	M18x1.5	16	20	14	22	P1M-4MRE
80	22	38 Dia.	50	M22x1.5	21	27	18	28	P1M-4PRE
100	22	44 Dia.	55	M22x1.5	24	31	22	32	P1M-4QRE

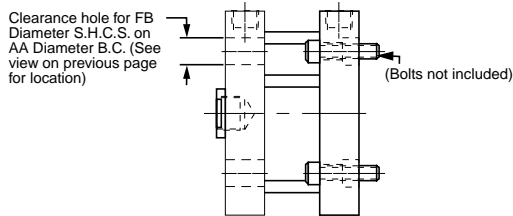
Inch

Bore size	A	E	CA	KK	ER	LE	CK (inch)	EM	Part number
12	6	9.5 Sq.	16	#8-32	6.5	7	3/16	5	P1M-4DRE-T
16	6	11 Sq.	25	#8-32	8	14	3/16	6.5	P1M-4FRE-T
20	6	16 Sq.	25	#10-32	10.5	11.5	5/16	8	P1M-4HRE-T
25	8	19 Sq.	30	1/4-28	13	14	3/8	10	P1M-4JRE-T
32	12	22 Dia.	30	5/16-24	12	14	3/8	18	P1M-4KRE-T
40	11	22 Dia.	30	3/8-24	12	14	3/8	18	P1M-4LRE-T
50/63	18	28 Dia.	40	1/2-20	16	20	1/2	22	P1M-4MRE-T
80	21	38 Dia.	50	5/8-18	21	27	3/4	28	P1M-4PRE-T
100	21	44 Dia.	55	3/4-16	24	31	7/8	32	P1M-4QRE-T

B
 Compact Cylinders
 Actuator Products
 P1Q Series
 P1M Series
 LP/LPM Series

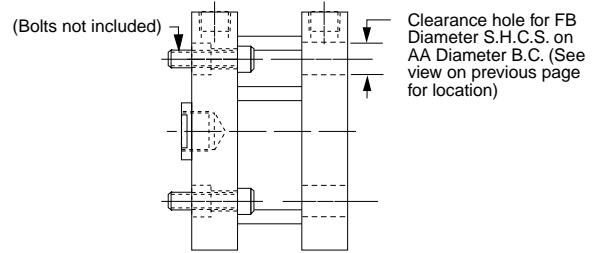
Head Bolt Clearance Holes

Mounting Style 4F
 Available Head End



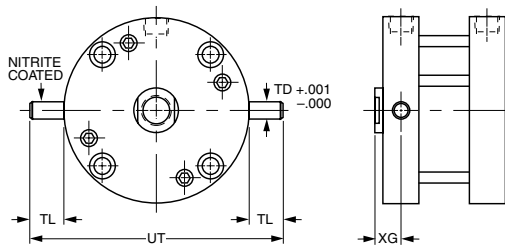
Cap Bolt Clearance Holes

Mounting Style 4R
 Available Cap End



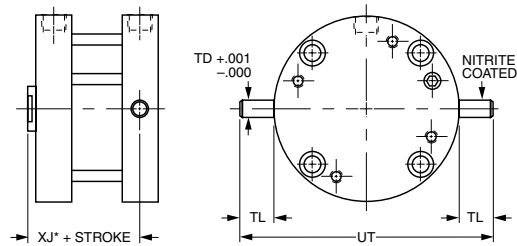
Head Trunnion

Mounting Style 2F (9/16" bore not available)



Cap Trunnion

Mounting Style 2R (9/16" bore not available)

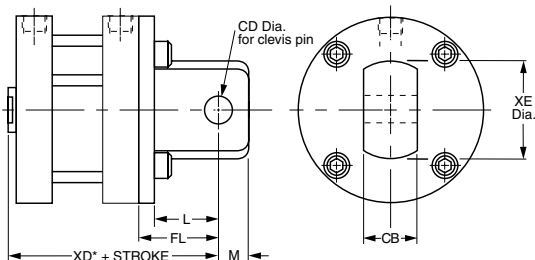


Bore size	TD	TL	UT	XG	XJ*
3/4	0.125	5/16	2-1/8	5/16	19/32
1-1/8	0.250	1/2	3	3/8	51/64
1-1/2	0.250	1/2	3-5/8	3/8	7/8
2	0.250	1/2	4-1/8	3/8	15/16
2-1/2	0.312	5/8	5	29/64	1-3/64
3	0.312	5/8	5-1/2	15/32	1-1/16
4	0.375	3/4	7	35/64	1-17/64

* These dimensions are for the LP Series with standard piston.

Cap Pivot Eye

Mounting Style 1



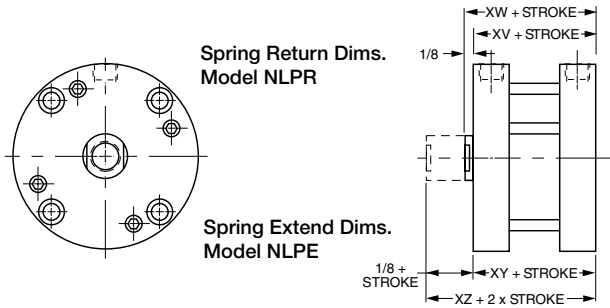
Bore size	L	M	CB	CD	FL	XD*	XE
9/16	1/2	1/4	3/8	3/16	21/32	1-13/32	19/32
3/4	1/2	1/4	3/8	3/16	21/32	1-7/16	3/4
1-1/8	1/2	1/4	3/8	3/16	49/64	1-13/16	3/4
1-1/2	13/16	7/16	3/4	3/8	1-1/16	2-3/16	1-3/8
2	13/16	7/16	3/4	3/8	1-1/8	2-5/16	1-3/8
2-1/2	13/16	7/16	3/4	3/8	1-1/4	2-5/8	1-3/8
3	1-9/32	9/16	1	5/8	1-21/32	3-1/16	1-7/8
4	1-9/32	9/16	1	5/8	1-11/16	3-7/16	1-7/8

Order clevis pin from accessories when required.

* These dimensions are for the LP Series with standard piston. See table on the previous page for dimensions for the lipseal piston or LPM options.

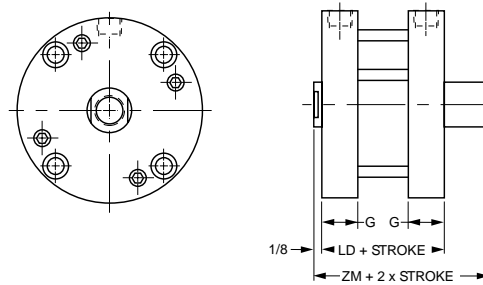
Spring Extend & Spring Return Cylinders

(Available through 2" stroke)



Double Rod Spring Extend & Spring Return Cylinders

(Available through 2" stroke)



B
 Compact Cylinders
 Actuator Products
 Series P1Q
 Series P1M
 Series LP/LPM

Bore size	1/8" to 1" stroke				Over 1" to 2" stroke				Add this length to XV, XW, XY, XZ for Lipseal Piston
	XV	XW	XY	XZ	XV	XW	XY	XZ	
9/16	1	1-1/8	57/64	1-1/64	1-11/16	1-13/16	1-37/64	1-45/64	9/32
3/4	1-1/64	1-9/64	59/64	1-3/64	1-45/64	1-53/64	1-39/64	1-47/64	9/32
1-1/8	1-23/64	1-31/64	1-9/32	1-13/32	1-63/64	2-7/64	1-29/32	2-1/32	1/4
1-1/2	1-25/64	1-33/64	1-11/32	1-15/32	2-1/64	2-9/64	1-31/32	2-3/32	5/16
2	1-11/64	1-19/64	1-13/32	1-17/32	1-51/64	1-59/64	2-1/32	2-5/32	25/64
2-1/2	1-3/8	1-1/2	1-23/32	1-27/32	2	2-1/8	2-11/32	2-15/64	3/8
3	1-1/2	1-5/8	1-55/64	1-63/64	2-1/8	2-1/4	2-31/64	2-39/64	7/16
4	1-27/32	1-31/32	2-13/64	2-21/64	2-15/32	2-19/32	2-53/64	2-61/64	13/32

Bore size	Spring return/extend – LP						Spring return/extend – LPM					
	≥ 1/8", ≤ 1"			<1", ≤ 2"			≥ 1/8", >1"			>1", ≤ 2"		
	G	LD	ZM	Min.* stroke	LD	ZM	LD	ZM	Min.* stroke	LD	ZM	
9/16	23/64	1-1/8	1-3/8	5/16	1-13/16	2-1/16	1-23/32	1-27/32	3/16	2-13/32	2-17/32	
3/4	23/64	1-11/64	1-27/64	1/8	1-55/64	2-7/64	1-49/64	1-57/64	3/16	2-29/64	2-37/64	
1-1/8	1/2	1-1/2	1-3/4	1/8	2-1/8	2-3/8	2-1/16	2-3/16	1/8	2-11/16	2-13/16	
1-1/2	1/2	1-11/16	1-15/16	1/8	2-5/16	2-9/16	2-5/16	2-7/16	1/4	2-15/16	3-1/16	
2	1/2	1-31/64	1-47/64	1/8	2-7/64	2-23/64	2-13/64	2-21/64	1/4	2-53/64	2-61/64	
2-1/2	5/8	1-3/4	2	1/8	2-3/8	2-5/8	2-29/64	2-37/64	3/16	3-5/64	3-13/64	
3	43/64	1-29/32	2-5/32	1/8	2-17/32	2-25/32	2-43/64	2-51/64	1/8	3-19/64	3-27/64	
4	27/32	2-1/4	2-1/2	1/8	2-7/8	3-1/8	2-63/64	3-7/64	1/8	3-39/64	3-47/64	

* Note minimum strokes for LPM option.

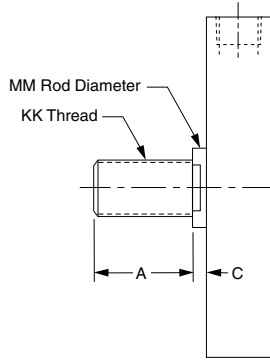
Spring force data

1/8" to 1" stroke			Over 1" to 2" stroke		
Bore size	Max. Spring force (lbs)	Spring rate (lb/in)	Bore dia.	Max. Spring force (lbs)	Spring rate (lb/in)
9/16	5.7	4.25	9/16	5.7	1.75
3/4	9	6	3/4	9	2.5
1-1/8	10	6	1-1/8	10	2.5
1-1/2	13	5.5	1-1/2	12	2.25
2	13	5.5	2	12	2.25
2-1/2	17.5	6	2-1/2	16	2.5
3 & 4	24	6.5	3 & 4	23	2.75



Optional Male Rod End

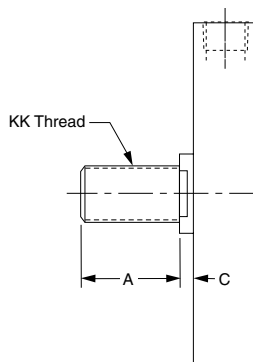
Specify #4



Bore size	A	C	KK	MM
9/16	0.38	1/8	#8-32	1/4
3/4	0.50	1/8	#10-32	5/16
1-1/8	0.50	1/8	5/16-24	1/2
1-1/2	0.50	1/8	3/8-24	5/8
2	0.62	1/8	1/2-20	3/4
2-1/2	0.62	1/8	1/2-20	3/4
3	0.75	1/8	5/8-18	7/8
4	0.75	1/8	3/4-16	1

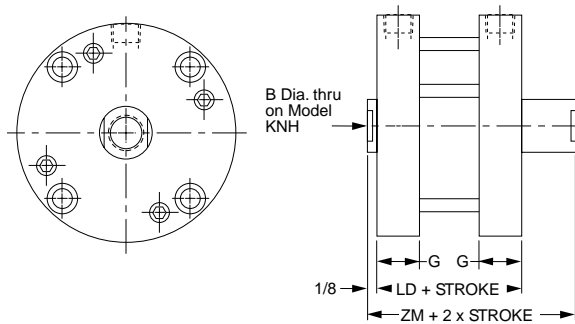
Non-standard Rods

For non-standard rod ends, please specify rod thread style 3 and provide the KK, A, and C dimensions as needed.



Double or Hollow Rod Cylinders

Note: Cylinders with hollow rod option should not be bottomed out during stroke.



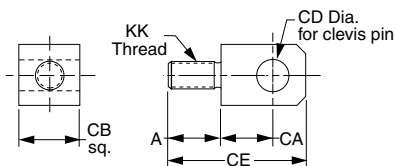
LP double or hollow rod option, LPM, lipseal piston

Bore size	B	G	Standard double rod end or with hollow rod		LPM option		LP with lipseal piston option	
			LD	ZM	LD	ZM	LD	ZM
9/16	*	23/64	3/4	1	1-11/32	1-15/32	1-1/32	1-9/32
3/4	9/64	23/64	13/16	1-1/16	1-13/32	1-17/32	1-3/32	1-11/32
1-1/8	7/32	1/2	1-3/16	1-7/16	1-3/4	1-7/8	1-7/16	1-11/16
1-1/2	9/32	1/2	1-19/64	1-35/64	1-59/64	2-3/64	1-39/64	1-55/64
2	3/8	1/2	1-3/8	1-5/8	2-3/32	2-7/32	1-49/64	2-1/64
2-1/2	3/8	5/8	1-5/8	1-7/8	2-21/64	2-29/64	2	2-1/4
3	7/16	43/64	1-11/16	1-15/16	2-29/64	2-37/64	2-1/8	2-3/8
4	1/2	27/32	2-1/32	2-9/32	2-49/64	2-57/64	2-7/16	2-11/16

*Hollow rod not available on 9/16" bore.



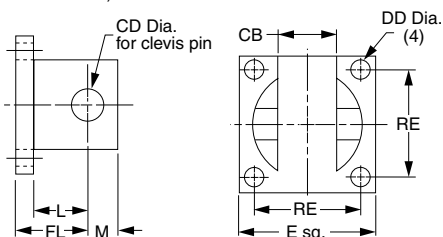
Rod Eye



Bore size	A	CA	CB	CD	CE	KK	Part number
9/16	3/8	15/32	3/8	3/16	1-3/32	#8-32	L073810008
3/4	3/8	15/32	3/8	3/16	1-3/32	#10-32	L073810010
1-1/8	9/16	15/32	3/8	3/16	1-9/32	5/16-24	L073810020
1-1/2	5/8	23/32	3/4	3/8	1-25/32	3/8-24	L073810024
2-2-1/2	21/32	23/32	3/4	3/8	1-27/32	1/2-20	L073810032
3	21/32	1	1	5/8	2-3/8	5/8-18	L073810040
4	21/32	1	1	5/8	2-3/8	3/4-16	L073810048

Clevis Bracket

(Supplied with Pin)

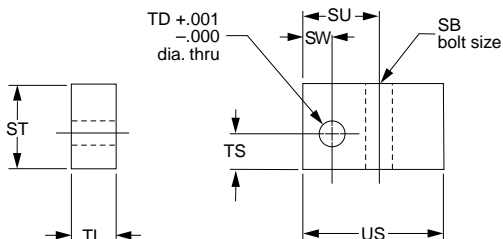


E	L	M	CB	CD	DD	FL	RE	Part number
1	13/32	7/32	25/64	3/16	9/64	9/16	3/4	L073820012
1-3/4	25/32	13/32	49/64	3/8	11/64	15/16	1-3/8	L073820024
2-1/2	1	9/16	1-1/64	5/8	17/64	1-1/4	2	L073820040

Use L073820012 on 9/16", 3/4" and 1-1/8" bore.
 Use L073820024 on 1-1/2", 2" and 2-1/2" bore.
 Use L073820040 on 3" and 4" bore.

Note: The Clevis Bracket is an accessory for the rod eye or the cap pivot eye and cannot be mounted directly to the cylinder.

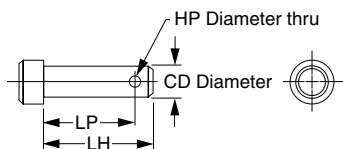
Trunnion Bracket



SB	ST	SU	SW	TD	TL	TS	US	Part number
1/4	7/8	13/16	5/16	.252	1/2	3/8	1-1/2	L073840016
5/16	1	15/16	3/8	.314	5/8	29/64	1-5/8	L073840020
3/8	1-1/4	1-1/16	7/16	.377	3/4	35/64	1-7/8	L073840024

Use L073840016 on 1-1/8", 1-1/2" and 2" bore.
 Use L073840020 on 2-1/2" and 3" bore.
 Use L073840024 on 4" bore.

Clevis Pin



CD	HP	LH	LP	Part number
3/16	3/32	1	29/32	L073830012
3/8	5/32	1-5/8	1-15/32	L073830024
5/8	5/32	2	1-27/32	L073830040

Service Kits

Bore size	Rod dia.	Standard piston, single rod cylinders		Lipseal piston, single rod cylinders	
		Class 1 seals part number	Class 5 seals part number	Class 1 seals part number	Class 5 seals part number
9/16	1/4"	SKS05LP251	SKS05LP255	KS05LPL251	KS05LPL255
3/4	5/16"	SKS07LP311	SKS07LP315	KS07LPL311	KS07LPL315
1-1/8	1/2"	SKS12LP501	SKS12LP505	KS12LPL501	KS12LPL505
1-1/2	5/8"	SKS15LP621	SKS15LP625	KS15LPL621	KS15LPL625
2	3/4"	SKS20LP751	SKS20LP755	KS20LPL751	KS20LPL755
2-1/2	3/4"	SKS25LP751	SKS25LP755	KS25LPL751	KS25LPL755
3	7/8"	SKS30LP871	SKS30LP875	KS30LPL871	KS30LPL875
4	1"	SKS40LP101	SKS40LP105	KS40LPL101	KS40LPL105



B
 Compact Cylinders
 Actuator Products
 P1Q Series
 P1M Series
 LP/LPM Series