

Series 90000 Compact Actuators

Single and Double Acting 1/2" to 4" bore sizes

Series 92000 Double Acting Compact Cylinder Features	ACT-1-2
Technical Information	ACT-1-3
Type /M Basic	ACT-1-4
Rear Flange Mount 'B', Front Flange Mount 'G' and Foot Mount 'C'	ACT-1-6
Piston Rod Clevis Mount 'F', Back to Back Mounting Kit, How to Order Mounts	ACT-1-7
Type /JM Double Ended Piston Rod	ACT-1-8
Type /N2 Internal Non-rotating Piston Rod	ACT-1-9
Type /N4 External Non-rotating Guidance	ACT-1-10
How to Order Double Acting Compact Cylinders	ACT-1-11
Spares Kits	ACT-1-11
Series 91000 and Series 93000 Single Acting Compact Cylinder Features	ACT-1-12
Technical Information	ACT-1-13
Type /M Basic Single Acting Spring Return and Spring Extend	ACT-1-14
Rear Flange Mount 'B', Front Flange Mount 'G' and Foot Mount 'C'	ACT-1-16
Piston Rod Clevis Mount 'F', Back to Back Mounting Kit, How to Order Mounts	ACT-1-17
Type /N2 Spring Return and Spring Extend Non-rotating Piston Rods	ACT-1-18
How to Order Single Acting Compact Cylinders	ACT-1-19
Spares Kits	ACT-1-19
M/40 Magnetically Operated Reed Switches	ACT-1-20
M/41, M/42 Magnetically Operated Solid State Switches	ACT-1-22



**ACT-1-4 – Basic Double Acting
– 92000/M**



**ACT-1-8 – Double Acting with Double
Ended Piston Rod – 92000/JM**



**ACT-1-9 – Double Acting with Internal
Non-rotating Piston Rod – 92000/N2**



**ACT-1-10 – Double Acting with External
Non-rotating Guidance – 92000/N4**



**ACT-1-14 – Basic Single Acting
Spring Return – 91000/M**



**ACT-1-14 – Basic Single Acting
Spring Extend – 93000/M**



**ACT-1-18 – Single Acting Spring Return
with Non-rotating Piston Rod – 91000/N2**



**ACT-1-18 – Single Acting Spring Extend
with Non-rotating Piston Rod – 93000/N2**



The finest materials for each Series 92000 component!

1 Rod Seal Wiper:

Polyurethane pressure energized and wear-compensating.

2 Rod Bearing:

Short Stroke version with integrated bearing made of anodized aluminum. Long Stroke version incorporates a heavy duty polyamide bearing.

3 Piston Rod:

303 stainless steel, ground and polished, hard chrome plated for excellent protection against wear and corrosion.

4 Tube Body:

6063 extruded aluminum alloy, ideally suited for air service, clear coat anodized corrosion resistant surface.

5 Piston:

Specially formulated polyacetal on the smaller bore sizes and solid aluminum on the larger bore sizes for added strength and longevity.

6 Head/Cap:

Anodized aluminum for corrosion resistance.

7 Extrusion:

Complete with integral slots for low profile position sensing switches.

8 Piston Magnet:

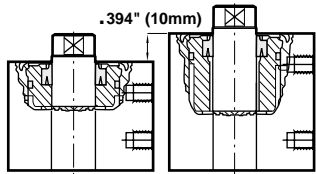
All cylinders are supplied with a specially molded piston magnet; switches can be added later.

9 Piston Seal:

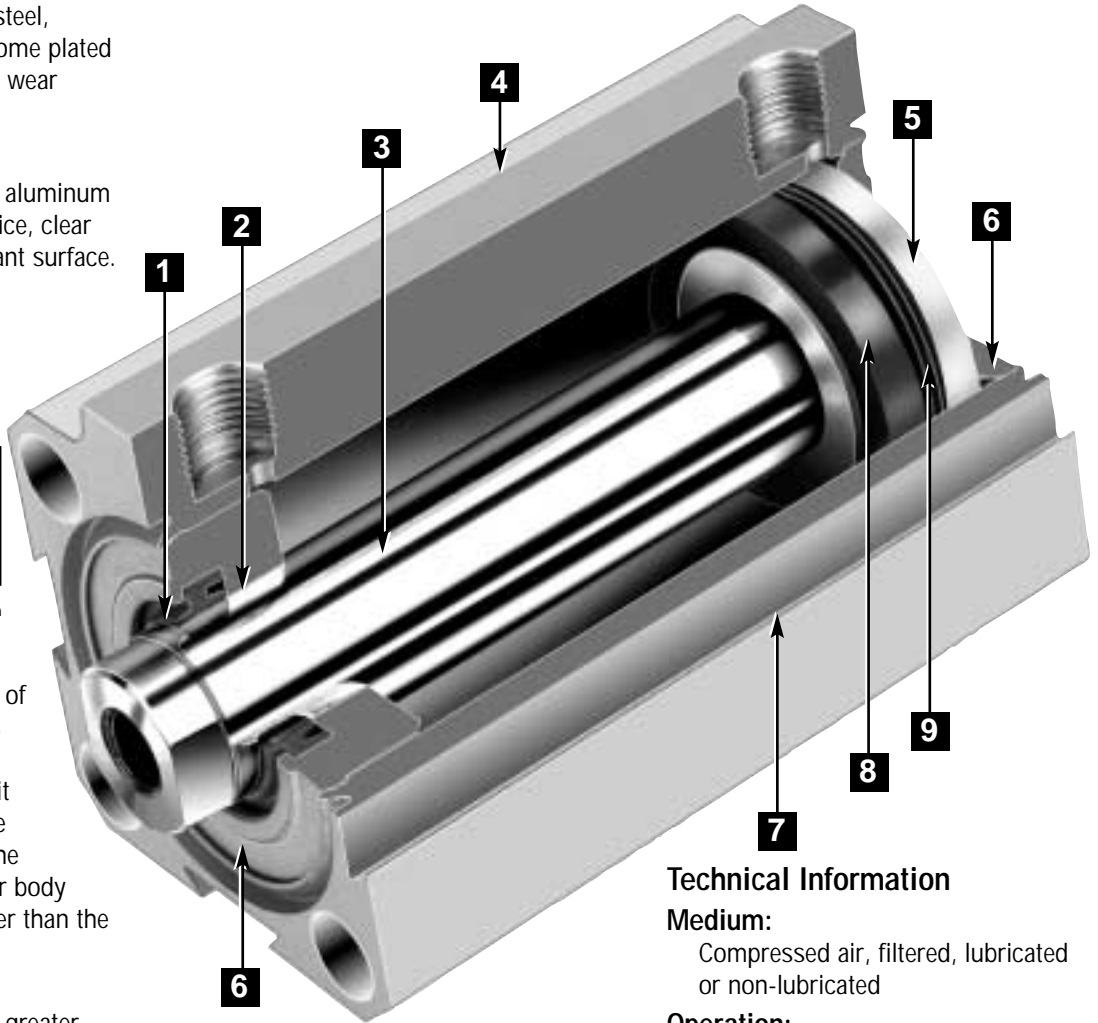
Z-Seal is a pressure energized bidirectional seal compounded with nitrile rubber for excellent wear.

10 Prelubricated:

All cylinders are prelubricated for dry air service.



Short Stroke Version Long Stroke Version



Short Stroke Version:

Designed for stroke lengths of 2" (50mm) and shorter, this cylinder incorporates an integrated bearing to make it as compact as possible. The integrated bushing makes the overall length of the cylinder body exactly .394" (10mm) shorter than the Long Stroke version.

Long Stroke Version:

Designed for stroke lengths greater than 2" (50mm), cylinder incorporates a longer bearing housing with a heavy duty Polyamide rod bearing for increased stability. The housing increases the overall length of the cylinder body .394" (10mm) longer than the Short Stroke version.

Non-rotating Piston Rod Version:

/N2/ cylinder has a special non-rotating bearing housing. As a result, the cylinder overall body length is .394" (10mm) longer.

Non-rotating Guidance Version:

/N4/ cylinder utilizes the Short Stroke version and Long Stroke version cylinders depending on stroke length.

High Temperature Version:

Available on bore sizes 1 1/4" to 4" (32 to 100mm) double acting cylinders. Pistons are made from brass or solid aluminum and seals are changed to fluorocarbon for temperatures up to 302°F (150°C). High temperature reed switch TM/40 is available for position sensing.

Technical Information

Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

Double acting with magnetic piston

Operating Pressure:

14.5 to 145 PSI (1 to 10 bar)

Operating Temperature:

23°* to 176°F (-5°* to 80°C)

*Consult Technical Service for use below 35°F (2°C)

Cylinder Diameters:

Nominal Inch:

1/2", 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3 1/8", 4", 12, 16, 20, 25, 32, 40, 50, 63, 80, 100mm



Cylinder Variations

Symbol	Model (magnetic piston)	Description
	DC/92000/JM inch cylinder DM/92000/JM metric cylinder	Double ended piston rod See ACT-1-8 for dimensional and stroke length information Ø 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3 1/8", 4" (Ø 16, 20, 25, 32, 40, 50, 63, 80, 100 mm)
	RC/92000/N2 inch cylinder RM/92000/N2 metric cylinder	Internal non-rotating piston rod See ACT-1-9 for dimensional and stroke length information Ø 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3 1/8", 4" (Ø 16, 20, 25, 32, 40, 50, 63, 80, 100 mm)
	DC/92000/N4 inch cylinder DM/92000/N4 metric cylinder	External non-rotating guidance See ACT-1-10 for dimensional and stroke length information Ø 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3 1/8", 4" (Ø 16, 20, 25, 32, 40, 50, 63, 80, 100 mm)

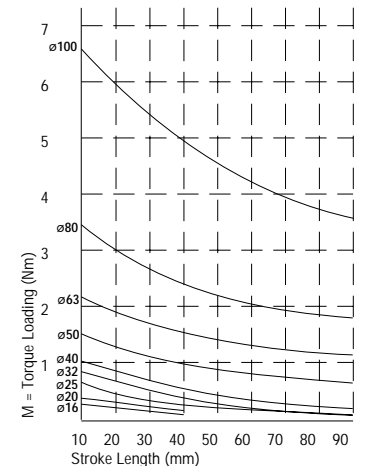
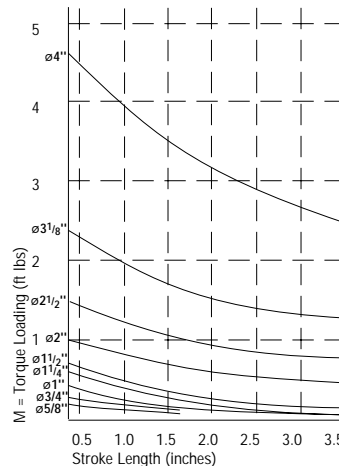
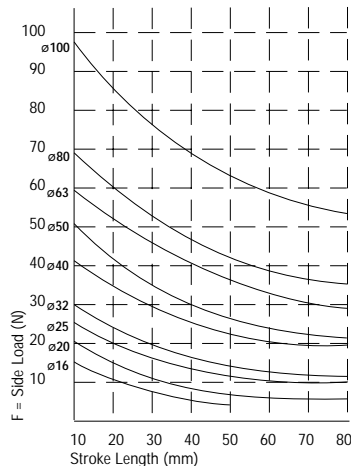
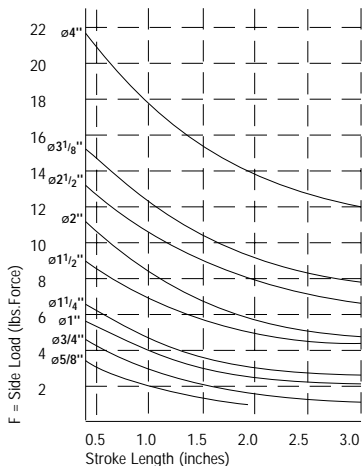
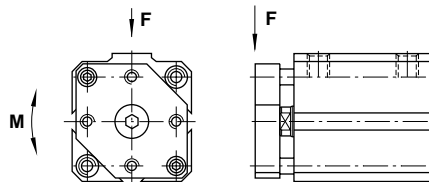
Theoretical Forces • Air Consumption • Torque for /N2 Cylinders

Ø Bore Nominal Inch	Ø Bore mm	DC/92000/M inch, DM/92000/M metric Theoretical forces at 87 PSI (6 bar)				DC/92000/M inch, DM/92000/M metric Air consumption cubic inches/inch of stroke (Liters/cm of stroke)				Non-rotating piston rod permissible torque RC/92000/N2 inch, RM/92000/N2 metric Torque at 87 PSI (6 bar)	
		Extend lbs. Force	Newtons	Retract lbs. Force	Newtons	Extend Inch³	Liters	Retract Inch³	Liters	Model	Max Torque Inch lbs. Nm
1/2"	(12)	15.3	(68)	11.5	(51)	1.240	(0.008)	1.085	(0.007)	-	-
5/8"	(16)	27.2	(121)	20.2	(90)	2.170	(0.014)	1.705	(0.011)	RC/92016/N2, RM/92016/N2	1.33 (0.15)
3/4"	(20)	42.3	(188)	31.7	(141)	3.410	(0.022)	2.635	(0.017)	RC/92020/N2, RM/92020/N2	2.21 (0.25)
1"	(25)	66.3	(295)	51.0	(227)	5.425	(0.035)	4.185	(0.027)	RC/92025/N2, RM/92025/N2	3.54 (0.40)
1 1/4"	(32)	108.6	(483)	81.4	(362)	8.680	(0.056)	6.510	(0.042)	RC/92032/N2, RM/92032/N2	6.64 (0.75)
1 1/2"	(40)	169.5	(754)	142.3	(633)	13.640	(0.088)	11.470	(0.074)	RC/92040/N2, RM/92040/N2	6.64 (0.75)
2"	(50)	264.8	(1178)	222.6	(990)	21.390	(0.138)	17.980	(0.116)	RC/92050/N2, RM/92050/N2	13.28 (1.50)
2 1/2"	(63)	420.4	(1870)	378.1	(1682)	33.790	(0.218)	30.380	(0.196)	RC/92063/N2, RM/92063/N2	13.28 (1.50)
3 1/8"	(80)	678.0	(3016)	611.7	(2721)	54.560	(0.352)	49.290	(0.318)	RC/92080/N2, RM/92080/N2	22.13 (2.50)
4"	(100)	1059.3	(4712)	993.2	(4418)	85.250	(0.550)	79.825	(0.515)	RC/92100/N2, RM/92100/N2	22.13 (2.50)

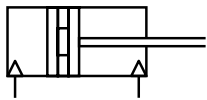
Weights of Cylinders and Mountings

Ø Bore Nominal Inch	Ø Bore mm	DC/92000/M inch DM/92000/M metric Weight at zero stroke		DC/92000/N4 inch DM/92000/N4 metric Weight at zero stroke		Style 'B', 'G' lbs kg	Style 'C' lbs kg	Style 'F' lbs kg	Nut lbs kg	Stud or Adaptor lbs kg
		Weight at zero stroke lbs kg	Weight per inch 25mm lbs kg	Weight at zero stroke lbs kg	Weight per inch 25mm lbs kg					
1/2"	(12)	0.132 (0.060)	0.088 (0.040)	-	-	0.044 (0.020)	0.044 (0.020)	0.022 (0.010)	0.002 (0.001)	0.002 (0.001)
5/8"	(16)	0.176 (0.080)	0.088 (0.040)	0.243 (0.110)	0.110 (0.050)	0.044 (0.020)	0.044 (0.020)	0.022 (0.010)	0.002 (0.001)	0.004 (0.002)
3/4"	(20)	0.220 (0.100)	0.132 (0.060)	0.287 (0.130)	0.154 (0.070)	0.044 (0.020)	0.044 (0.020)	0.022 (0.010)	0.002 (0.001)	0.007 (0.003)
1"	(25)	0.331 (0.150)	0.154 (0.070)	0.375 (0.170)	0.220 (0.100)	0.088 (0.040)	0.088 (0.040)	0.022 (0.010)	0.004 (0.002)	0.011 (0.005)
1 1/4"	(32)	0.551 (0.250)	0.265 (0.120)	0.617 (0.280)	0.287 (0.130)	0.132 (0.060)	0.088 (0.040)	0.044 (0.020)	0.007 (0.003)	0.022 (0.010)
1 1/2"	(40)	0.838 (0.380)	0.331 (0.150)	0.970 (0.440)	0.331 (0.150)	0.331 (0.150)	0.220 (0.100)	0.044 (0.020)	0.007 (0.003)	0.022 (0.010)
2"	(50)	0.992 (0.450)	0.397 (0.180)	1.102 (0.500)	0.441 (0.200)	0.375 (0.170)	0.243 (0.110)	0.088 (0.040)	-	0.044 (0.020)
2 1/2"	(63)	1.808 (0.820)	0.573 (0.260)	1.984 (0.900)	0.661 (0.300)	0.728 (0.330)	0.287 (0.130)	0.198 (0.090)	-	0.077 (0.035)
3 1/8"	(80)	2.646 (1.200)	0.728 (0.330)	2.976 (1.350)	0.772 (0.350)	0.904 (0.410)	0.397 (0.180)	0.485 (0.220)	-	0.165 (0.075)
4"	(100)	4.034 (1.830)	0.926 (0.420)	4.850 (2.200)	1.323 (0.600)	1.587 (0.720)	1.058 (0.480)	0.485 (0.220)	-	0.165 (0.075)

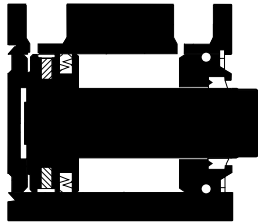
External Non-rotating Guidance
DC/92000/N4 inch, DM/92000/N4 metric
Permissible Load and Torque



- Very compact – approximately one third the basic length of a corresponding conventional cylinder
- Entirely manufactured from corrosion resistant materials
- Standard magnetic piston provides a wide range of control options
- \varnothing 1/2" to 4" (\varnothing 12 to 100 mm)



Magnetic piston


Ordering Information

To order a basic 3 1/8" bore cylinder with a 2 inch stroke and magnetic piston, specify: DC/92080/M/2.0

To order a basic 63 mm bore cylinder with a 100 mm stroke and magnetic piston, specify: DM/92063/M/100

To order mounting accessories, refer to appropriate cylinder mounting table on pages 6 and 7.

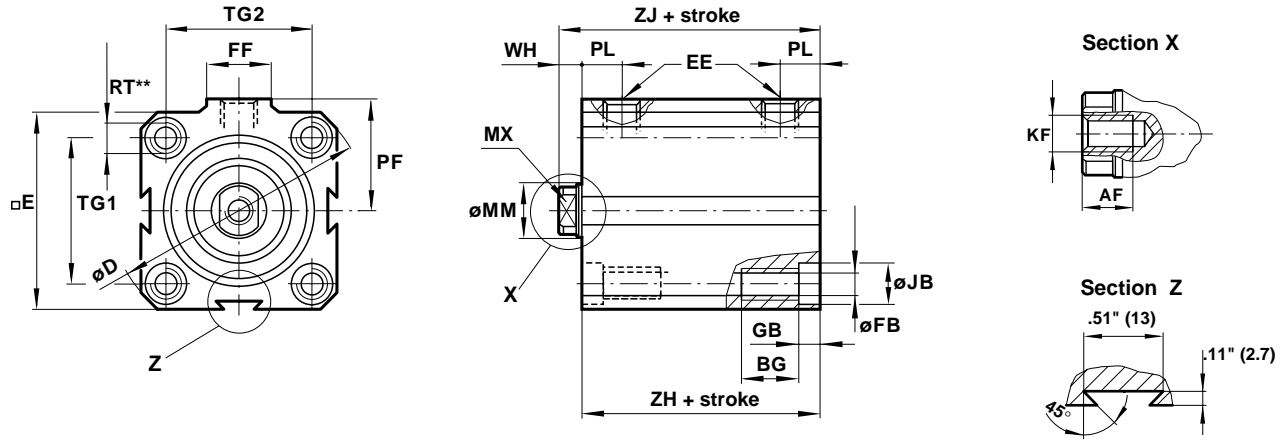
Order magnetically operated switches M/40, M/41 and M/42 separately. See pages ACT-1-20/23.

Non-Standard Options

- Hollow piston rod for blow-off or vacuum
- Additional mountings
- Force multiplication tandems
- Multi-position duplex
- Integrated control valve

Cylinder Order Information

<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="font-size: 24px; margin: 0 10px;">-</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">9</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">2</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="font-size: 24px; margin: 0 10px;">-</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">■</div> <div style="font-size: 24px; margin: 0 10px;">M</div> <div style="font-size: 24px; margin: 0 10px;">-</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">*</div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">1</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">2</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">3</div> <div style="font-size: 24px; margin: 0 10px;">-</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">4</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">5</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">6</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">7</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">8</div> <div style="font-size: 24px; margin: 0 10px;">-</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">9</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">10</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">11</div> </div>																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">T</td><td>High Temperature</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Piston Rod Material</th></tr> <tr><td>D</td><td>Chrome Plated Stainless Steel</td></tr> <tr><td>R</td><td>Stainless Steel (N2/ only)</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Inch Cylinder</th></tr> <tr><td>C</td><td>NPT ports, inch threads, stroke in inches</td></tr> <tr><th colspan="2">Metric Cylinder</th></tr> <tr><td>M</td><td>ISO G ports, metric threads, stroke in mm</td></tr> </table>	T	High Temperature	Piston Rod Material		D	Chrome Plated Stainless Steel	R	Stainless Steel (N2/ only)	Inch Cylinder		C	NPT ports, inch threads, stroke in inches	Metric Cylinder		M	ISO G ports, metric threads, stroke in mm	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Stroke Length</th></tr> <tr><td colspan="2">In Inches for inch cylinder</td></tr> <tr><td colspan="2">In (mm) for metric cylinder</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Cylinder Options</th></tr> <tr><td>M</td><td>Magnetic Piston</td></tr> <tr><td>JM</td><td>Double ended piston rod with magnetic piston</td></tr> <tr><td>N2</td><td>Internal non-rotating piston rod with magnetic piston</td></tr> <tr><td>N4</td><td>External non-rotating guidance with magnetic piston</td></tr> </table>	Stroke Length		In Inches for inch cylinder		In (mm) for metric cylinder		Cylinder Options		M	Magnetic Piston	JM	Double ended piston rod with magnetic piston	N2	Internal non-rotating piston rod with magnetic piston	N4	External non-rotating guidance with magnetic piston
T	High Temperature																																
Piston Rod Material																																	
D	Chrome Plated Stainless Steel																																
R	Stainless Steel (N2/ only)																																
Inch Cylinder																																	
C	NPT ports, inch threads, stroke in inches																																
Metric Cylinder																																	
M	ISO G ports, metric threads, stroke in mm																																
Stroke Length																																	
In Inches for inch cylinder																																	
In (mm) for metric cylinder																																	
Cylinder Options																																	
M	Magnetic Piston																																
JM	Double ended piston rod with magnetic piston																																
N2	Internal non-rotating piston rod with magnetic piston																																
N4	External non-rotating guidance with magnetic piston																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 20px;">9</td><td>Series 90000</td></tr> </table>	9	Series 90000	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="4">Piston Diameters Nominal Inch (mm)</th></tr> <tr><td>012</td><td>\varnothing 1/2" 12 mm</td><td>040</td><td>\varnothing 1 1/2" 40 mm</td></tr> <tr><td>016</td><td>\varnothing 5/8" 16 mm</td><td>050</td><td>\varnothing 2" 50 mm</td></tr> <tr><td>020</td><td>\varnothing 3/4" 20 mm</td><td>063</td><td>\varnothing 2 1/2" 63 mm</td></tr> <tr><td>025</td><td>\varnothing 1" 25 mm</td><td>080</td><td>\varnothing 3 1/8" 80 mm</td></tr> <tr><td>032</td><td>\varnothing 1 1/4" 32 mm</td><td>100</td><td>\varnothing 4" 100 mm</td></tr> </table>	Piston Diameters Nominal Inch (mm)				012	\varnothing 1/2" 12 mm	040	\varnothing 1 1/2" 40 mm	016	\varnothing 5/8" 16 mm	050	\varnothing 2" 50 mm	020	\varnothing 3/4" 20 mm	063	\varnothing 2 1/2" 63 mm	025	\varnothing 1" 25 mm	080	\varnothing 3 1/8" 80 mm	032	\varnothing 1 1/4" 32 mm	100	\varnothing 4" 100 mm						
9	Series 90000																																
Piston Diameters Nominal Inch (mm)																																	
012	\varnothing 1/2" 12 mm	040	\varnothing 1 1/2" 40 mm																														
016	\varnothing 5/8" 16 mm	050	\varnothing 2" 50 mm																														
020	\varnothing 3/4" 20 mm	063	\varnothing 2 1/2" 63 mm																														
025	\varnothing 1" 25 mm	080	\varnothing 3 1/8" 80 mm																														
032	\varnothing 1 1/4" 32 mm	100	\varnothing 4" 100 mm																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">Cylinder Version</th></tr> <tr><td>2</td><td>Double Acting</td></tr> </table>	Cylinder Version		2	Double Acting																													
Cylinder Version																																	
2	Double Acting																																



** Only the 4 front holes are tapped on stroke lengths of less than:
 ø 1" and 1 1/4" (ø 25 and 32 mm) .197" (5 mm)
 ø 1 1/2" and 2 1/2" (ø 40 and 63 mm) .591" (15 mm) .../N2 .197" (5 mm)
 ø 2" and 3" (ø 50 and 80 mm) .394" (10 mm)
 ø 4" (ø 100 mm) .984" (25 mm) .../N2 .591" (15 mm)

NOTE: ø 1/2" to 3/4" (ø 12 to 20 mm) have only two side dovetails.

ø Bore	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)	inch (mm)
	1/2" (12)	5/8" (16)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2 1/2" (63)	3 1/8" (80)	4" (100)	
Inch Cylinder	DC/92012/M	DC/92016/M	DC/92020/M	DC/92025/M	DC/92032/M	DC/92040/M	DC/92050/M	DC/92063/M	DC/92080/M	DC/92100/M	
Metric Cylinder	DM/92012/M	DM/92016/M	DM/92020/M	DM/92025/M	DM/92032/M	DM/92040/M	DM/92050/M	DM/92063/M	DM/92080/M	DM/92100/M	
AF	.24 (6)	.28 (7)	.31 (8)	.35 (9)	.47 (12)	.47 (12)	.55 (14)	.63 (16)	.87 (22)	.87 (22)	
BG	.35 (9)	.35 (9)	.35 (9)	.47 (12)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)	
ø D	1.28 (32.5)	1.44 (36.5)	1.63 (41.5)	1.89 (48)	2.28 (58)	2.81 (71.5)	3.19 (81)	4.09 (104)	4.72 (120)	5.85 (148.5)	
□ E	.98 (25)	1.10 (28)	1.26 (32)	1.46 (37)	1.77 (45)	2.17 (55)	2.48 (63)	3.15 (80)	3.70 (94)	4.59 (116.5)	
EE	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/4NPT (G 1/4)	1/4NPT (G 1/4)	1/4NPT (G 1/4)	
ø FB	.13 (3.3)	.13 (3.3)	.13 (3.3)	.17 (4.2)	.17 (4.2)	.27 (6.8)	.27 (6.8)	.33 (8.5)	.33 (8.5)	.40 (10.2)	
FF	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.71 (18)	.71 (18)	.71 (18)	.87 (22)	.87 (22)	.87 (22)	
GB	.14 (3.5)	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)	.33 (8.5)	.41 (10.5)	
ø JB	.24 (6)	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.53 (13.5)	.53 (13.5)	.65 (16.5)	
KF	4-40 (M 3)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)	1/2-20 (M 16)	1/2-20 (M 16)	
ø MM	.24 (6)	.31 (8)	.39 (10)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)	.98 (25)	
MX	.19 (5)	.25 (6)	.31 (8)	.38 (10)	.50 (13)	.50 (13)	.66 (17)	.66 (17)	.81 (22)	.81 (22)	
PF	.59 (15)	.67 (17)	.77 (19.5)	.87 (22)	1.08 (27.5)	1.24 (31.5)	1.46 (37)	1.89 (48)	2.24 (57)	2.64 (67)	
PL	.28 (7)	.30 (7.5)	.30 (7.5)	.31 (8)	.35 (9)	.39 (10)	.41 (10.5)	.51 (13)	.57 (14.5)	.63 (16)	
RT	8-32 (M 4)	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	10-32 (M 5)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	3/8-24 (M 10)	7/16-20 (M 12)	
TG 1	.67 (17)	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)	
TG 2	.51 (13)	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)	
WH	.18 (4.5)	.22 (5.5)	.24 (6)	.26 (6.5)	.26 (6.5)	.26 (6.5)	.31 (8)	.31 (8)	.35 (9)	.39 (10)	
ZH	.94 (24)	.96 (24.5)	1.02 (26)	1.12 (28.5)	1.14 (29)	1.24 (31.5)	1.38 (35)	1.67 (42.5)	1.85 (47)	1.90 (48.5)	
ZH Long Stroke	-	1.36 (34.5)	1.42 (36)	1.52 (38.5)	1.54 (39)	1.63 (41.5)	1.77 (45)	2.07 (52.5)	2.24 (57)	2.30 (58.5)	
ZJ	1.12 (28.5)	1.18 (30)	1.26 (32)	1.38 (35)	1.40 (35.5)	1.50 (38)	1.69 (43)	1.99 (50.5)	2.20 (56)	2.30 (58.5)	
ZJ Long Stroke	-	1.57 (40)	1.65 (42)	1.77 (45)	1.79 (45.5)	1.89 (48)	2.09 (53)	2.38 (60.5)	2.60 (66)	2.70 (68.5)	

Long Stroke versions, >2" (>50mm), incorporate a longer rod bearing. This increases the overall body by .394" (10mm). Explanation on ACT-1-2.

Maximum Stroke for 92000/M Double Acting Cylinders

DC/92000/M inch cylinder

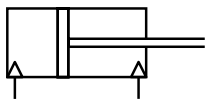
Nominal Diameter

Maximum Stroke

DM/92000/M metric cylinder

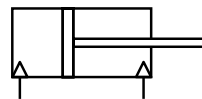
Diameter

Maximum Stroke



- ø 1/2"
- ø 5/8", 3/4", 1"
- ø 1 1/4", 1 1/2"
- ø 2", 2 1/2", 3 1/8", 4"

- 2"
- 8"
- 10"
- 12"



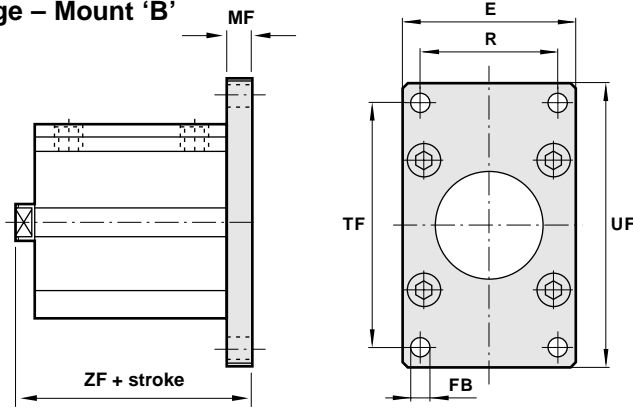
- ø 12 mm
- ø 16, 20, 25 mm
- ø 32, 40 mm
- ø 50, 63, 80, 100 mm

- 50 mm
- 200 mm
- 250 mm
- 300 mm

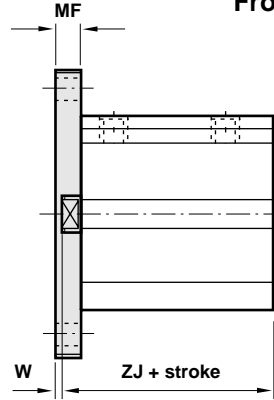


Series 90000 Compact Actuators

Rear Flange – Mount ‘B’



Front Flange – Mount ‘G’



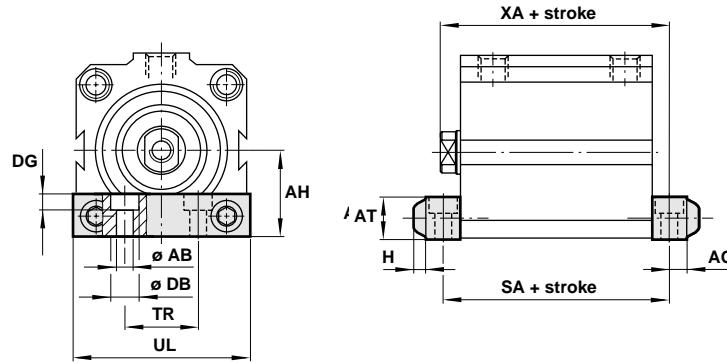
∅ Bore	inch (mm)		inch (mm)		inch (mm)		inch (mm)		inch (mm)		inch (mm)	
	1/2" (12)	5/8" (16)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2 1/2" (63)	3 1/8" (80)	4" (100)		
Inch Cylinder	QC/90012/22	QC/90016/22	QC/90020/22	QC/90025/22	QC/90032/22	QC/90040/22	QC/90050/22	QC/90063/22	QC/90080/22	QC/90100/22		
Metric Cylinder	QM/90012/22	QM/90016/22	QM/90020/22	QM/90025/22	QM/90032/22	QM/90040/22	QM/90050/22	QM/90063/22	QM/90080/22	QM/90100/22		
E	.98 (26)	1.18 (30)	1.30 (33)	1.50 (38)	1.81 (46)	2.24 (57)	2.52 (64)	3.19 (81)	3.74 (95)	4.65 (118)		
∅ FB	.14 (3.5)	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)	.33 (8.5)	.43 (11)		
MF	.20 (5)	.20 (5)	.20 (5)	.26 (6.5)	.26 (6.5)	.37 (9.5)	.37 (9.5)	.49 (12.5)	.49 (12.5)	.49 (12.5)		
R	.71 (18)	.87 (22)	.98 (25)	1.10 (28)	1.42 (36)	1.69 (43)	1.97 (50)	2.48 (63)	3.03 (77)	3.86 (98)		
TF	1.50 (38)	1.65 (42)	1.89 (48)	2.13 (54)	2.60 (66)	3.07 (78)	3.54 (90)	4.33 (110)	5.04 (128)	6.14 (156)		
UF	1.81 (46)	1.97 (50)	2.20 (56)	2.52 (64)	2.99 (76)	3.62 (92)	4.09 (104)	5.04 (128)	5.75 (146)	6.93 (176)		
W	-.02 (-0.5)	.02 (0.5)	.04 (1)	0 (0)	0 (0)	-.12 (-3)	-.04 (-1)	-.18 (-4.5)	-.14 (-3.5)	-.10 (-2.5)		
ZF	1.32 (33.5)	1.38 (35)	1.46 (37)	1.63 (41.5)	1.65 (42)	1.87 (47.5)	2.07 (52.5)	2.50 (63.5)	2.70 (68.5)	2.81 (71.5)		
ZF Long Stroke*	-	1.77 (45)	1.85 (47)	2.03 (51.5)	2.05 (52)	2.26 (57.5)	2.46 (62.5)	2.89 (73.5)	3.09 (78.5)	3.21 (81.5)		
ZJ	1.12 (28.5)	1.18 (30)	1.26 (32)	1.38 (35)	1.40 (35.5)	1.50 (38)	1.69 (43)	1.99 (50.5)	2.20 (56)	2.30 (58.5)		

NOTE: Dimension 'W' negative figures indicate that the piston rod is below the mounting face.

*For non-rotating rod cylinders RC/92000/N2 and RM/92000/N2, use long stroke dimensions.

Long Stroke versions, >2" (>50mm), incorporate a longer rod bearing. This increases the overall body by .394" (10mm). Explanation on ACT-1-2.

Foot Mount – Style ‘C’



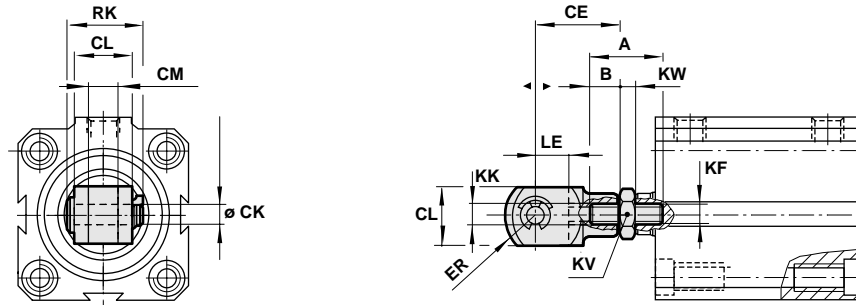
∅ Bore	inch (mm)		inch (mm)		inch (mm)		inch (mm)		inch (mm)		inch (mm)	
	1/2" (12)	5/8" (16)	3/4" (20)	1" (25)	1 1/4" (32)	1 1/2" (40)	2" (50)	2 1/2" (63)	3 1/8" (80)	4" (100)		
Inch Cylinder	QC/90012/21	QC/90016/21	QC/90020/21	QC/90025/21	QC/90032/21	QC/90040/21	QC/90050/21	QC/90063/21	QC/90080/21	QC/90100/21		
Metric Cylinder	QM/90012/21	QM/90016/21	QM/90020/21	QM/90025/21	QM/90032/21	QM/90040/21	QM/90050/21	QM/90063/21	QM/90080/21	QM/90100/21		
∅ AB	.13 (3.4)	.13 (3.4)	.13 (3.4)	.17 (4.3)	.17 (4.3)	.25 (6.4)	.25 (6.4)	.33 (8.4)	.33 (8.4)	.41 (10.5)		
AH	.53 (13.5)	.59 (15)	.65 (16.5)	.79 (20)	.91 (23)	1.12 (28.5)	1.26 (32)	1.63 (41.5)	1.93 (49)	2.34 (59.5)		
AO	.16 (4)	.16 (4)	.16 (4)	.20 (5)	.20 (5)	.26 (6.5)	.26 (6.5)	.31 (8)	.31 (8)	.37 (9.5)		
AT	.37 (9.5)	.37 (9.5)	.37 (9.5)	.49 (12.5)	.49 (12.5)	.63 (16)	.63 (16)	.87 (22)	1.00 (25.5)	1.12 (28.5)		
∅ DB	.24 (6)	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.53 (13.5)	.53 (13.5)	.65 (16.5)		
DG	.14 (3.5)	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)	.33 (8.5)	.41 (10.5)		
H	.08 (2)	.08 (2)	.08 (2)	.12 (3)	.12 (3)	.18 (4.5)	.18 (4.5)	.22 (5.5)	.22 (5.5)	.26 (6.5)		
SA	1.26 (32)	1.28 (32.5)	1.34 (34)	1.50 (38)	1.52 (38.5)	1.75 (44.5)	1.87 (47.5)	2.30 (58.5)	2.46 (62.5)	2.66 (67.5)		
SA Long Stroke*	-	1.67 (42.5)	1.73 (44)	1.89 (48)	1.91 (48.5)	2.15 (54.5)	2.26 (57.5)	2.70 (68.5)	2.85 (72.5)	3.05 (77.5)		
TR	.98 (25)	1.26 (32)	1.38 (35)	1.61 (41)	.75 (19)	.83 (21)	1.06 (27)	1.34 (34)	1.73 (44)	2.20 (56)		
UL	1.30 (33)	1.57 (40)	1.69 (43)	2.01 (51)	1.81 (46)	2.20 (56)	2.52 (64)	3.19 (81)	3.74 (95)	4.65 (118)		
XA	1.28 (32.5)	1.34 (34)	1.42 (36)	1.55 (39.5)	1.57 (40)	1.75 (44.5)	1.93 (49)	2.30 (58.5)	2.52 (64)	2.68 (68)		
XA Long Stroke*	-	1.73 (44)	1.81 (46)	1.95 (49.5)	1.97 (50)	2.15 (54.5)	2.32 (59)	2.70 (68.5)	2.91 (74)	3.07 (78)		

*For non-rotating rod cylinders RC/92000/N2 and RM/92000/N2, use long stroke dimensions.

Long Stroke versions, >2" (>50mm), incorporate a longer rod bearing. This increases the overall body by .394" (10mm). Explanation on ACT-1-2.



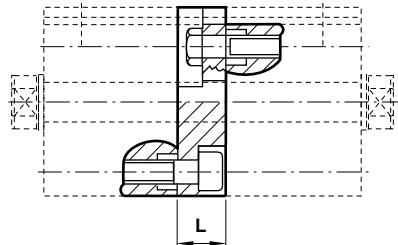
Piston Rod Clevis – Mount ‘F’



∅ Bore	inch (mm) 1/2" (12)	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)	inch (mm) 3 1/8" (80)	inch (mm) 4" (100)
Clevis	Inch RC-12	Inch RC-16	Inch RC-20	Inch RC-25	Inch RC-32	Inch RC-32	Inch RC-50	Inch RC-63	Inch RC-80	Inch RC-80
	Metric QM/57008/25	Metric QM/8010/25	Metric QM/92020/25	Metric QM/57016/25	Metric QM/57020/25	Metric QM/57020/25	Metric QM/57025/25	Metric QM/57040/25	Metric QM/57063/25	Metric QM/57063/25
Stud	Inch C-653-24-00J	Inch C-653-04-00M	Inch C-653-05-00P	Inch C-653-08-01A	Inch C-653-11-01A	Inch C-653-11-01A	Inch C-653-14-01E	Inch C-653-16-01P	Inch C-653-18-01J	Inch C-653-18-01J
	Metric M/P1710/18	Metric M/P1710/19	Metric M/P1710/20	Metric M/P1710/21	Metric M/P1710/22	Metric M/P1710/22	-	-	-	-
Nut	Inch C-76-36	Inch C-76-37	Inch C-76-225	Inch C-76-03A	Inch C-76-04A	Inch C-76-04A	Inch C-76-05A	Inch C-76-065A	Inch C-76-12A	Inch C-76-12A
	Metric M/P1500/111	Metric M/P1501/80	Metric M/P1501/109	Metric M/P1501/79	Metric M/P1501/60	Metric M/P1501/60	-	-	-	-
Adaptor	Metric -	Metric -	Metric -	Metric -	Metric -	Metric -	Metric M/P71470/1	Metric M/P71470/2	Metric M/P71470/3	Metric M/P71470/3
A	.50 (12)	.63 (16)	.75 (20)	1.00 (25)	1.00 (25)	1.00 (25)	1.25 (29)	1.50 (35)	1.75 (45)	1.75 (45)
B	-	-	-	-	-	-	.47 (12)	.59 (15)	.79 (20)	.79 (20)
CE	.63 (11)	.63 (16)	.75 (20)	.94 (20)	.94 (24)	.94 (24)	1.31 (26)	1.31 (40)	1.31 (56)	1.31 (56)
∅ CK	.19 (3)	.19 (4)	.19 (5)	.25 (5)	.25 (6)	.25 (6)	.38 (8)	.38 (10)	.38 (14)	.38 (14)
CL	.31 (6)	.31 (8)	.38 (10)	.50 (10)	.50 (12)	.50 (12)	.75 (14)	.75 (20)	.75 (27)	.75 (27)
CM	.16 (3)	.16 (4)	.20 (5)	.26 (5)	.26 (6)	.26 (6)	.38 (7)	.38 (10)	.38 (14)	.38 (14)
ER	- (4.5)	- (6.5)	- (8)	- (8)	- (9.5)	- (9.5)	- (11.5)	- (16)	- (21)	- (21)
KF	4-40 (M 3)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)	1/2-20 (M 16)	1/2-20 (M 16)
KK	4-40 (M 3)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M10x1.25)	7/16-20 (M12x1.25)	1/2-20 (M16x1.5)	1/2-20 (M16x1.5)
KV (A/F)	.25 (6)	.31 (7)	.38 (8)	.44 (10)	.50 (13)	.50 (13)	.56 (12)	.69 (13)	.75 (17)	.75 (17)
KW	.09 (2)	.13 (2)	.13 (2.5)	.17 (3)	.19 (4)	.19 (4)	.22 (5)	.22 (5)	.31 (5)	.31 (5)
LE	.22 (5)	.22 (8)	.37 (10)	.44 (10)	.44 (12)	.44 (12)	.56 (12)	.56 (20)	.56 (28)	.56 (28)
RK	.50 (10)	.50 (11.5)	.66 (14.5)	.85 (14.5)	.85 (17.5)	.85 (17.5)	1.13 (20.5)	1.13 (29)	1.13 (36.5)	1.13 (36.5)

NOTE: Clevis includes Pin. To order a complete piston rod clevis mount: ∅ 1/2" to 4" or (∅ 12 to 40mm) = Clevis plus Stud and Nut. ∅ 50 to 100mm = Clevis plus Adaptor. Piston Rod Clevis will vary in design. Inch clevis and metric clevis are dimensionally different.

Back to Back Mounting Kit



∅ Bore	inch (mm) 1/2" (12)	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)	inch (mm) 3 1/8" (80)	inch (mm) 4" (100)
Inch	QC/92012/55	QC/92016/55	QC/92020/55	QC/92025/55	QC/92032/55	QC/92040/55	QC/92050/55	QC/92063/55	QC/92080/55	QC/92100/55
Metric	QM/92012/55	QM/92016/55	QM/92020/55	QM/92025/55	QM/92032/55	QM/92040/55	QM/92050/55	QM/92063/55	QM/92080/55	QM/92100/55
L	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.59 (15)	.59 (15)	.79 (20)	.79 (20)	1.00 (25)

Mounting Order Information

All Mountings are ordered separately and are normally mounted to the cylinder by the customer.

Flange Mount – Style ‘B’ and ‘G’ Mounting Kit

Inch Cylinder: QC/90 _ _ _ /22
Includes the flange and the inch mounting screws to mount the flange to the Inch version cylinder.

Metric Cylinder: QM/90 _ _ _ /22
Includes the flange and the metric mounting screws to mount the flange to the Metric version cylinder.

Foot Mount – Style ‘C’ Mounting Kit

Inch Cylinder: QC/90 _ _ _ /21
Includes the two foot mounts and the inch mounting screws to mount the feet to the Inch version cylinder.

Metric Cylinder: QM/90 _ _ _ /21
Includes two foot mounts and the metric mounting screws to mount the feet to the Metric version cylinder.

Piston Rod Clevis Mount – Style ‘F’ Mounting Kit

Inch Cylinder:
Clevis RC- _ _ _
Stud C-653- _ _ _ _ _
Nut C-76- _ _ _

To order a piston rod clevis mounting complete for Inch cylinders = Clevis plus Stud and Nut. (Clevis includes pivot pin.)

Metric Cylinder:

Clevis QM/ _ _ _ _ _ /25
Stud M/P1710/_ _
Nut M/P1501/_ _ _
Adaptor M/P71470/_

To order a piston rod clevis mounting complete for a Metric cylinder for: ∅ 12 to 40mm = Clevis plus Stud and Nut. ∅ 50 to 100mm = Clevis and Adaptor. (Clevis includes pivot pin.)

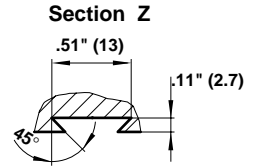
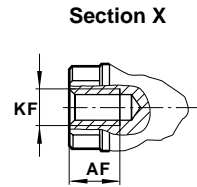
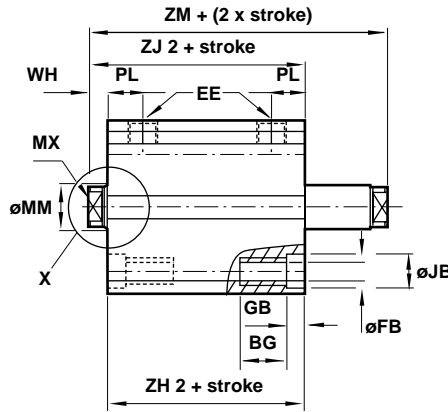
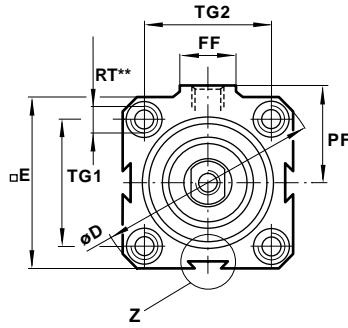
Back to Back Mounting Kit

Inch cylinders: QC/ 92- _ _ _ /55
Includes the mounting plate and the inch mounting screws to mount the two Inch version cylinders back to back.

Metric cylinders: QM/ 92- _ _ _ /55
Includes the mounting plate and the metric mounting screws to mount the two Metric version cylinders back to back.



Series 90000 Compact Actuators

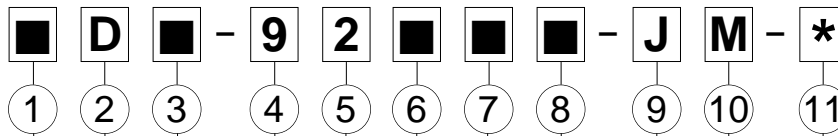


** Only the 4 front holes are tapped on stroke lengths of less than:
 ø 1" and 1 1/4" (ø 25 and 32 mm) .197" (5 mm)
 ø 1 1/2" and 2 1/2" (ø 40 and 63 mm) .591" (15 mm) .../N2 .197" (5 mm)
 ø 2" and 3" (ø 50 and 80 mm) .394" (10 mm)
 ø 4" (ø 100 mm) .984" (25 mm) .../N2 .591" (15 mm)

NOTE: ø 5/8" and 3/4" (ø 16 and 20 mm) have only two side dovetails.

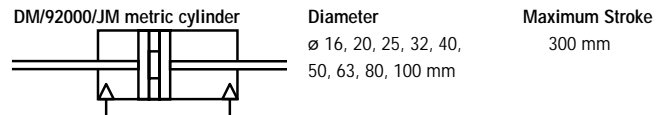
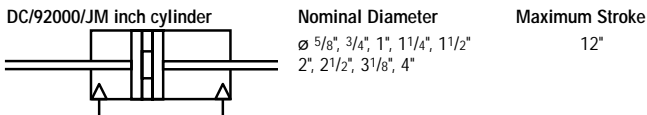
ø Bore	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)	inch (mm) 3 1/8" (80)	inch (mm) 4" (100)
Inch Cylinder	DC/92016/JM	DC/92020/JM	DC/92025/JM	DC/92032/JM	DC/92040/JM	DC/92050/JM	DC/92063/JM	DC/92080/JM	DC/92100/JM
Metric Cylinder	DM/92016/JM	DM/92020/JM	DM/92025/JM	DM/92032/JM	DM/92040/JM	DM/92050/JM	DM/92063/JM	DM/92080/JM	DM/92100/JM
AF	.28 (7)	.31 (8)	.35 (9)	.47 (12)	.47 (12)	.55 (14)	.63 (16)	.87 (22)	.87 (22)
BG	.35 (9)	.35 (9)	.47 (12)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)
ø D	1.44 (36.5)	1.63 (41.5)	1.89 (48)	2.28 (58)	2.81 (71.5)	3.19 (81)	4.09 (104)	4.72 (120)	5.85 (148.5)
□ E	1.10 (28)	1.26 (32)	1.46 (37)	1.77 (45)	2.17 (55)	2.48 (63)	3.15 (80)	3.70 (94)	4.59 (116.5)
EE	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/4NPT (G 1/4)	1/4NPT (G 1/4)	1/4NPT (G 1/4)
ø FB	.13 (3.3)	.13 (3.3)	.17 (4.2)	.17 (4.2)	.27 (6.8)	.27 (6.8)	.33 (8.5)	.33 (8.5)	.40 (10.2)
FF	.39 (10)	.39 (10)	.39 (10)	.71 (18)	.71 (18)	.71 (18)	.87 (22)	.87 (22)	.87 (22)
GB	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)	.33 (8.5)	.41 (10.5)
ø JB	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.53 (13.5)	.53 (13.5)	.65 (16.5)
KF	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)	1/2-20 (M 16)	1/2-20 (M 16)
ø MM	.31 (8)	.39 (10)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)	.98 (25)
MX	.24 (6)	.31 (8)	.39 (10)	.51 (13)	.51 (13)	.67 (17)	.67 (17)	.87 (22)	.87 (22)
PF	.67 (17)	.77 (19.5)	.87 (22)	1.08 (27.5)	1.24 (31.5)	1.46 (37)	1.89 (48)	2.24 (57)	2.64 (67)
PL	.30 (7.5)	.30 (7.5)	.31 (8)	.35 (9)	.39 (10)	.41 (10.5)	.51 (13)	.57 (14.5)	.63 (16)
RT	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	10-32 (M 5)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	3/8-24 (M 10)	7/16-20 (M 12)
TG 1	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)
TG 2	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)
WH	.22 (5.5)	.24 (6)	.26 (6.5)	.26 (6.5)	.26 (6.5)	.31 (8)	.31 (8)	.35 (9)	.39 (10)
ZH 2	1.16 (29.5)	1.24 (31.5)	1.36 (34.5)	1.44 (36.5)	1.56 (39.5)	1.65 (42)	2.04 (52)	2.20 (56)	2.28 (58)
ZJ 2	1.37 (35)	1.48 (37.5)	1.61 (41)	1.69 (43)	1.81 (46)	1.97 (50)	2.36 (60)	2.56 (65)	2.68 (68)
ZM	1.61 (41)	1.73 (44)	1.89 (48)	1.97 (50)	2.09 (53)	2.32 (59)	2.72 (69)	2.91 (74)	3.07 (78)

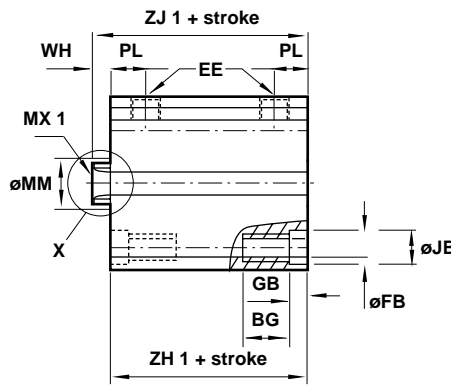
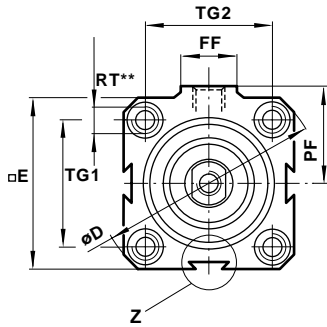
Cylinder Order Information



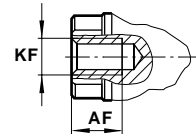
T High Temperature	Stroke Length In Inches for inch cylinder In (mm) for metric cylinder
D Piston Rod Material Chrome Plated Stainless Steel	Cylinder Options JM Double Ended Piston Rod with Magnetic Piston
Inch Cylinder C NPT ports, inch threads, stroke in inches	Piston Diameters Nominal Inch (mm)
Metric Cylinder M ISO G ports, metric threads, stroke in mm	012 N/A 040 ø 1 1/2" 40 mm
9 Series 90000	016 ø 5/8" 16 mm 050 ø 2" 50 mm
Cylinder Version 2 Double Acting	020 ø 3/4" 20 mm 063 ø 2 1/2" 63 mm
	025 ø 1" 25 mm 080 ø 3 1/8" 80 mm
	032 ø 1 1/4" 32 mm 100 ø 4" 100 mm

Maximum Stroke for 92000/JM Double Ended Piston Rod Cylinders

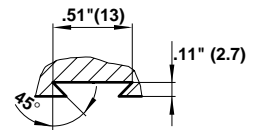




Section X



Section Z



** Only the 4 front holes are tapped on stroke lengths of less than:
 ø 1" and 1 1/4" (ø 25 and 32 mm) .197" (5 mm)
 ø 1 1/2" and 2 1/2" (ø 40 and 63 mm) .197" (5 mm)
 ø 2" and 3" (ø 50 and 80 mm) .394" (10 mm)
 ø 4" (ø 100 mm) .591" (15 mm)



NOTE: ø 5/8" and 3/4" (ø 16 and 20 mm) have only two side dovetails.

ø Bore	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)	inch (mm) 3 1/8" (80)	inch (mm) 4" (100)
Inch Cylinder	RC/92016/N2	RC/92020/N2	RC/92025/N2	RC/92032/N2	RC/92040/N2	RC/92050/N2	RC/92063/N2	RC/92080/N2	RC/92100/N2
Metric Cylinder	RM/92016/N2	RM/92020/N2	RM/92025/N2	RM/92032/N2	RM/92040/N2	RM/92050/N2	RM/92063/N2	RM/92080/N2	RM/92100/N2
AF	.28 (7)	.31 (8)	.35 (9)	.47 (12)	.47 (12)	.55 (14)	.63 (16)	.87 (22)	.87 (22)
BG	.35 (9)	.35 (9)	.47 (12)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)
ø D	1.44 (36.5)	1.63 (41.5)	1.89 (48)	2.28 (58)	2.81 (71.5)	3.19 (81)	4.09 (104)	4.72 (120)	5.85 (148.5)
□ E	1.10 (28)	1.26 (32)	1.46 (37)	1.77 (45)	2.17 (55)	2.48 (63)	3.15 (80)	3.70 (94)	4.59 (116.5)
EE	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/4NPT (G 1/4)	1/4NPT (G 1/4)	1/4NPT (G 1/4)
ø FB	.13 (3.3)	.13 (3.3)	.17 (4.2)	.17 (4.2)	.27 (6.8)	.27 (6.8)	.33 (8.5)	.33 (8.5)	.40 (10.2)
FF	.39 (10)	.39 (10)	.39 (10)	.71 (18)	.71 (18)	.71 (18)	.87 (22)	.87 (22)	.87 (22)
GB	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)	.33 (8.5)	.41 (10.5)
ø JB	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.53 (13.5)	.53 (13.5)	.65 (16.5)
KF	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)	1/2-20 (M 16)	1/2-20 (M 16)
ø MM	.31 (8)	.39 (10)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)	.98 (25)
MX 1	.24 (6)	.31 (8)	.39 (10)	.51 (13)	.51 (13)	.63 (16)	.63 (16)	.83 (21)	.83 (21)
PF	.67 (17)	.77 (19.5)	.87 (22)	1.08 (27.5)	1.24 (31.5)	1.46 (37)	1.89 (48)	2.24 (57)	2.64 (67)
PL	.30 (7.5)	.30 (7.5)	.31 (8)	.35 (9)	.39 (10)	.41 (10.5)	.51 (13)	.57 (14.5)	.63 (16)
RT	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	10-32 (M 5)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	3/8-24 (M 10)	7/16-20 (M 12)
TG 1	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)
TG 2	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)
WH	.22 (5.5)	.24 (6)	.26 (6.5)	.26 (6.5)	.26 (6.5)	.31 (8)	.31 (8)	.35 (9)	.39 (10)
ZH 1	1.36 (34.5)	1.42 (36)	1.52 (38.5)	1.54 (39)	1.63 (41.5)	1.77 (45)	2.07 (52.5)	2.24 (57)	2.30 (58.5)
ZJ 1	1.57 (40)	1.65 (42)	1.77 (45)	1.79 (45.5)	1.89 (48)	2.09 (53)	2.38 (60.5)	2.60 (66)	2.70 (68.5)

Cylinder Order Information

D **■** - **9** **2** **■** **■** **■** - **N** **2** - *****

2 3 4 5 6 7 8 9 10 11

Piston Rod Material	D Chrome Plated Stainless Steel	R Stainless Steel
---------------------	---------------------------------	-------------------

Inch Cylinder	C NPT ports, inch threads, stroke in inches
Metric Cylinder	M ISO G ports, metric threads, stroke in mm

9 Series 90000

Cylinder Version	2 Double Acting
------------------	-----------------

Stroke Length	In Inches for inch cylinder	In (mm) for metric cylinder
---------------	-----------------------------	-----------------------------

Cylinder Options	N2 Internal Non-rotating Piston Rod with Magnetic Piston
------------------	--

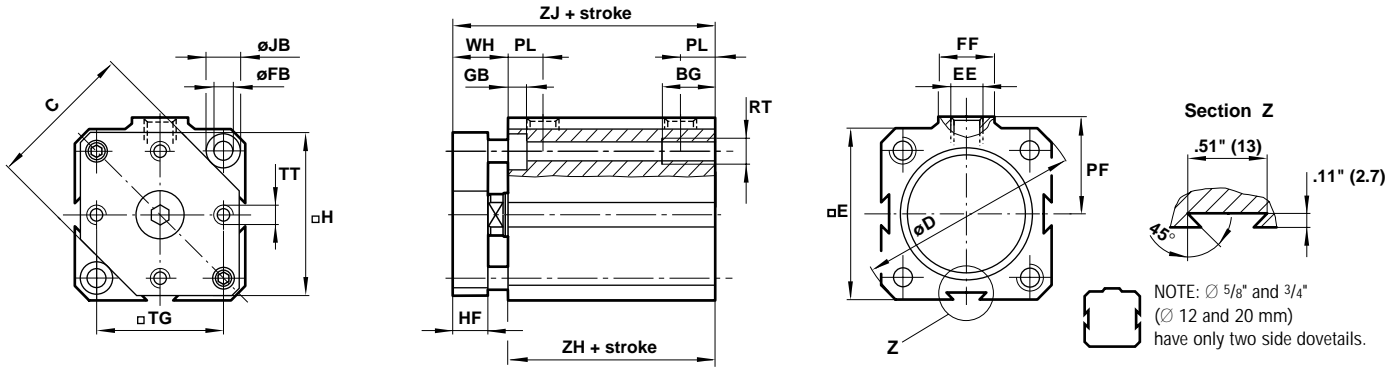
Piston Diameters	Nominal Inch (mm)
012	N/A
016	ø 5/8" 16 mm
020	ø 3/4" 20 mm
025	ø 1" 25 mm
032	ø 1 1/4" 32 mm
040	ø 1 1/2" 40 mm
050	ø 2" 50 mm
063	ø 2 1/2" 63 mm
080	ø 3 1/8" 80 mm
100	ø 4" 100 mm

Maximum Stroke for 92000/N2 Internal Non-rotating Piston Rod

RC/92000/N2 inch cylinder	Nominal Diameter	Maximum Stroke	RM/92000/N2 metric cylinder	Diameter	Maximum Stroke
	ø 5/8", 3/4", 1"	8"		ø 16, 20, 25 mm	200 mm
	ø 1 1/4", 1 1/2"	10"		ø 32, 40 mm	250 mm
	ø 2", 2 1/2", 3 1/8", 4"	12"		ø 50, 63, 80, 100 mm	300 mm



Series 90000 Compact Actuators



∅ Bore	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)	inch (mm) 3 1/8" (80)	inch (mm) 4" (100)
Inch Cylinder	DC/92016/N4	DC/92020/N4	DC/92025/N4	DC/92032/N4	DC/92040/N4	DC/92050/N4	DC/92063/N4	DC/92080/N4	DC/92100/N4
Metric Cylinder	DM/92016/N4	DM/92020/N4	DM/92025/N4	DM/92032/N4	DM/92040/N4	DM/92050/N4	DM/92063/N4	DM/92080/N4	DM/92100/N4
BG	.35 (9)	.35 (9)	.47 (12)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)	.98 (25)
C	.83 (21)	.98 (25)	1.16 (29.5)	1.50 (38)	1.83 (46.5)	2.22 (56.5)	2.80 (71)	3.50 (89)	4.33 (110)
∅ D	1.44 (36.5)	1.63 (41.5)	1.89 (48)	2.28 (58)	2.81 (71.5)	3.19 (81)	4.09 (104)	4.72 (120)	5.85 (148.5)
□ E	1.10 (28)	1.26 (32)	1.46 (37)	1.77 (45)	2.17 (55)	2.48 (63)	3.15 (80)	3.70 (94)	4.59 (116.5)
EE	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/4NPT (G 1/4)	1/4NPT (G 1/4)	1/4NPT (G 1/4)
∅ FB	.13 (3.3)	.13 (3.3)	.17 (4.2)	.17 (4.2)	.27 (6.8)	.27 (6.8)	.33 (8.5)	.33 (8.5)	.40 (10.2)
FF	.39 (10)	.39 (10)	.39 (10)	.71 (18)	.71 (18)	.71 (18)	.87 (22)	.87 (22)	.87 (22)
GB	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)	.33 (8.5)	.41 (10.5)
□ H	1.02 (26.5)	1.18 (30)	1.38 (35)	1.69 (43)	2.05 (52)	2.36 (60)	2.99 (76)	3.54 (90)	4.45 (113)
HF	.24 (6)	.31 (8)	.31 (8)	.39 (10)	.39 (10)	.47 (12)	.47 (12)	.63 (16)	.79 (20)
∅ JB	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.53 (13.5)	.53 (13.5)	.65 (16.5)
PF	.67 (17)	.77 (19.5)	.87 (22)	1.08 (27.5)	1.24 (31.5)	1.46 (37)	1.89 (48)	2.24 (57)	2.64 (67)
PL	.30 (7.5)	.30 (7.5)	.31 (8)	.35 (9)	.39 (10)	.41 (10.5)	.51 (13)	.57 (14.5)	.63 (16)
RT	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	10-32 (M 5)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	3/8-24 (M 10)	7/16-20 (M 12)
□ TG	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)	2.87 (73)	3.56 (90.5)
TT	4-40 (M 3)	4-40 (M 3)	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)
WH	.45 (11.5)	.55 (14)	.57 (14.5)	.65 (16.5)	.65 (16.5)	.79 (20)	.79 (20)	.98 (25)	1.18 (30)
ZH	.96 (24.5)	1.02 (26)	1.12 (28.5)	1.14 (29)	1.24 (31.5)	1.38 (35)	1.67 (42.5)	1.85 (47)	1.91 (48.5)
ZH Long Stroke	-	1.42 (36)	1.52 (38.5)	1.54 (39)	1.63 (41.5)	1.77 (45)	2.07 (52.5)	2.24 (57)	2.30 (58.5)
ZJ	1.42 (36)	1.57 (40)	1.69 (43)	1.79 (45.5)	1.89 (48)	2.17 (55)	2.46 (62.5)	2.83 (72)	3.09 (78.5)
ZJ Long Stroke	-	1.97 (50)	2.09 (53)	2.19 (55.5)	2.28 (58)	2.56 (65)	2.85 (72.5)	3.23 (82)	3.48 (88.5)

Long Stroke versions, > 2" (>50mm), incorporate a longer rod bearing. This increases the overall body by .394" (10mm). Explanation on ACT-1-2.

Cylinder Order Information

■
D
-
9
2
-
N
4
-
*

1 T High Temperature

2 D Piston Rod Material
Chrome Plated Stainless Steel

3 C Inch Cylinder
NPT ports, inch threads, stroke in inches
Metric Cylinder
M ISO G ports, metric threads, stroke in mm

4 9 Series 90000

5 2 Cylinder Version
Double Acting

6 N4 External Non-rotating Guidance with Magnetic Piston

7 N4 External Non-rotating Guidance with Magnetic Piston

8 N4 External Non-rotating Guidance with Magnetic Piston

9 N4 External Non-rotating Guidance with Magnetic Piston

10 N4 External Non-rotating Guidance with Magnetic Piston

11 * Stroke Length
In Inches for inch cylinder
In (mm) for metric cylinder

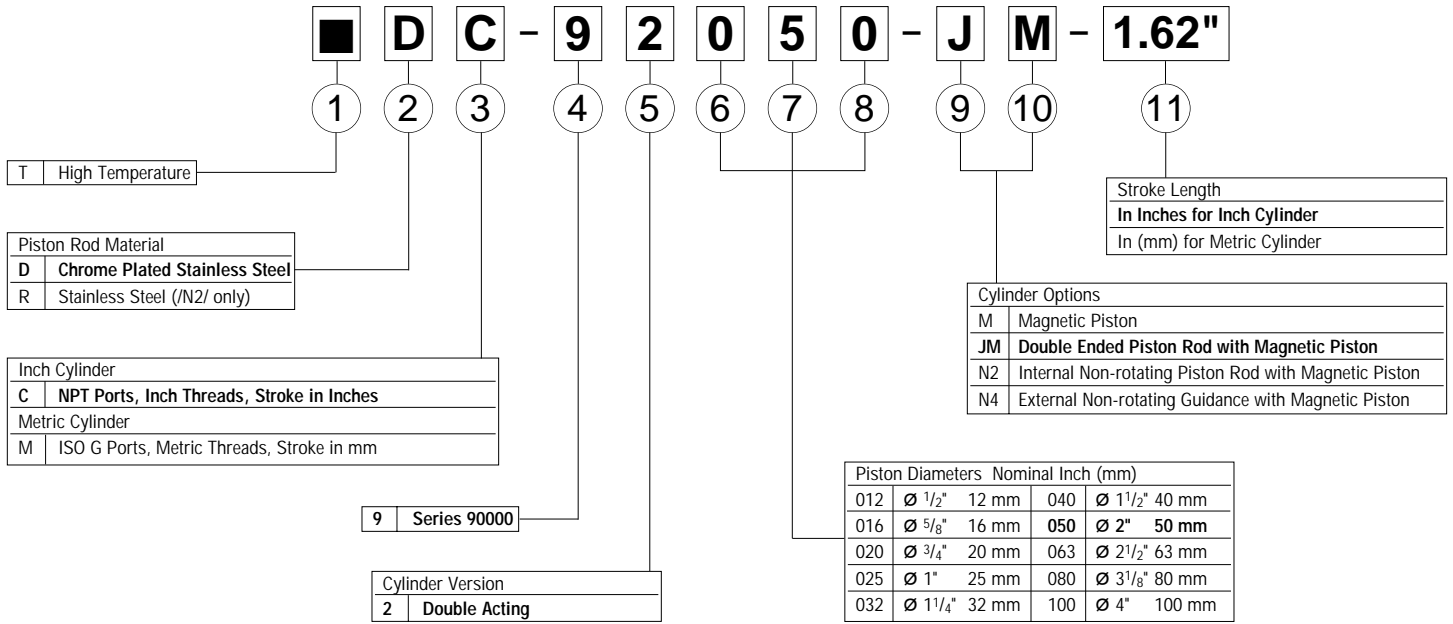
Piston Diameters Nominal Inch (mm)	
012	N/A
016	∅ 5/8" 16 mm
020	∅ 3/4" 20 mm
025	∅ 1" 25 mm
032	∅ 1 1/4" 32 mm
040	∅ 1 1/2" 40 mm
050	∅ 2" 50 mm
063	∅ 2 1/2" 63 mm
080	∅ 3 1/8" 80 mm
100	∅ 4" 100 mm

Maximum Stroke for 92000/N4 External Non-rotating Guidance

DC/92000/N4 inch cylinder	Nominal Diameter	Maximum Stroke	DM/92000/N4 metric cylinder	Diameter	Maximum Stroke
	∅ 5/8"	2"		∅ 16 mm	50 mm
	∅ 3/4", 1"	3"		∅ 20, 25 mm	80 mm
	∅ 1 1/4", 1 1/2", 2", 2 1/2", 3 1/8", 4"	4"		∅ 32, 40, 50, 63, 80, 100 mm	100 mm



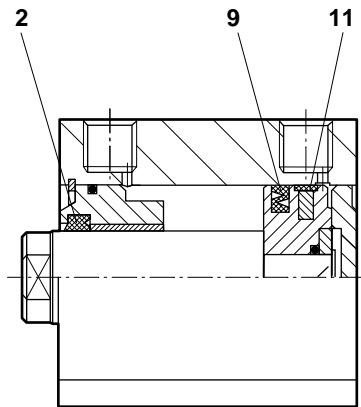
Cylinder Order Information



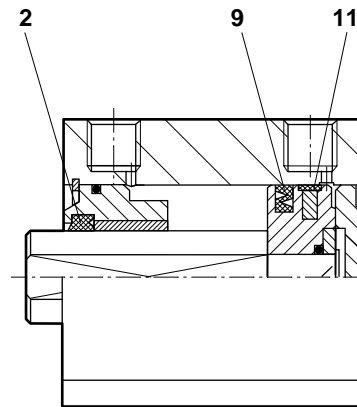
NOTE: 012 not available in /JM/, /N2/, /N4/.

EXAMPLE: Chrome plated stainless steel – inch threads – Series 90000 – double acting – 2" diameter – double ended piston rod with magnetic piston – 1.62 inch stroke length.

Spares Kits



DC/92000/M, DM/92000/M



RC/92000/N2, RM/92000/N2

Model	Spares kits ∅ 2" to 4" (∅ 50 to 100 mm)	Consisting of Item	Description	Quantity
DC/92050/M, DM/92050/M, DC/92050/N4, DM/92050/N4, TDC/92050/M, TDM/92050/M	QM/92050/00, TQM/92050/00	2	Piston rod seal	1
RC/92050/N2, RM/92050/N2	QM/92050/N2/00	9	Piston seal	1
DC/92063/M, DM/92063/M, DC/92063/N4, DM/92063/N4, TDC/92063/M, TDM/92063/M	QM/92063/00, TQM/92063/00	11	Wear ring	1
RC/92063/N2, RM/92063/N2	QM/92063/N2/00		Grease	1
DC/92080/M, DM/92080/M, DC/92080/N4, DM/92080/N4, TDC/92080/M, TDM/92080/M	QM/92080/00, TQM/92080/00			
DC/92100/M, DM/92100/M, DC/92100/N4, DM/92100/N4, TDC/92100/M, TDM/92100/M	QM/92100/00, TQM/92100/00			

NOTE: Please specify the cylinder number when ordering spare parts. Spares are not available for ∅ 1/2" to 1 1/2" (∅ 12 to 40 mm) models.



The finest materials for each Series 91000 & 93000 component!

1 Rod Seal Wiper:

Polyurethane pressure energized and wear-compensating.

2 Rod Bearing:

Short Stroke version with integrated bearing made of anodized aluminum. Long Stroke version incorporates a heavy duty polyamide bearing.

3 Piston Rod:

303 stainless steel, ground and polished, hard chrome plated for excellent protection against wear and corrosion.

4 Tube Body:

6063 extruded aluminum alloy, ideally suited for air service, clear coat anodized corrosion resistant surface.

5 Piston:

Specially formulated polyacetal on the smaller bore sizes and solid aluminum on the larger bore sizes for added strength and longevity.

6 Head/Cap:

Anodized aluminum for corrosion resistance.

7 Springs:

Premium quality spring steel is used to create the force for single acting cylinders.

8 Extrusion:

Complete with integral slots for low profile position sensing switches.

9 Piston Magnet:

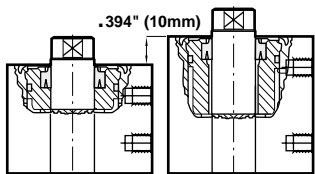
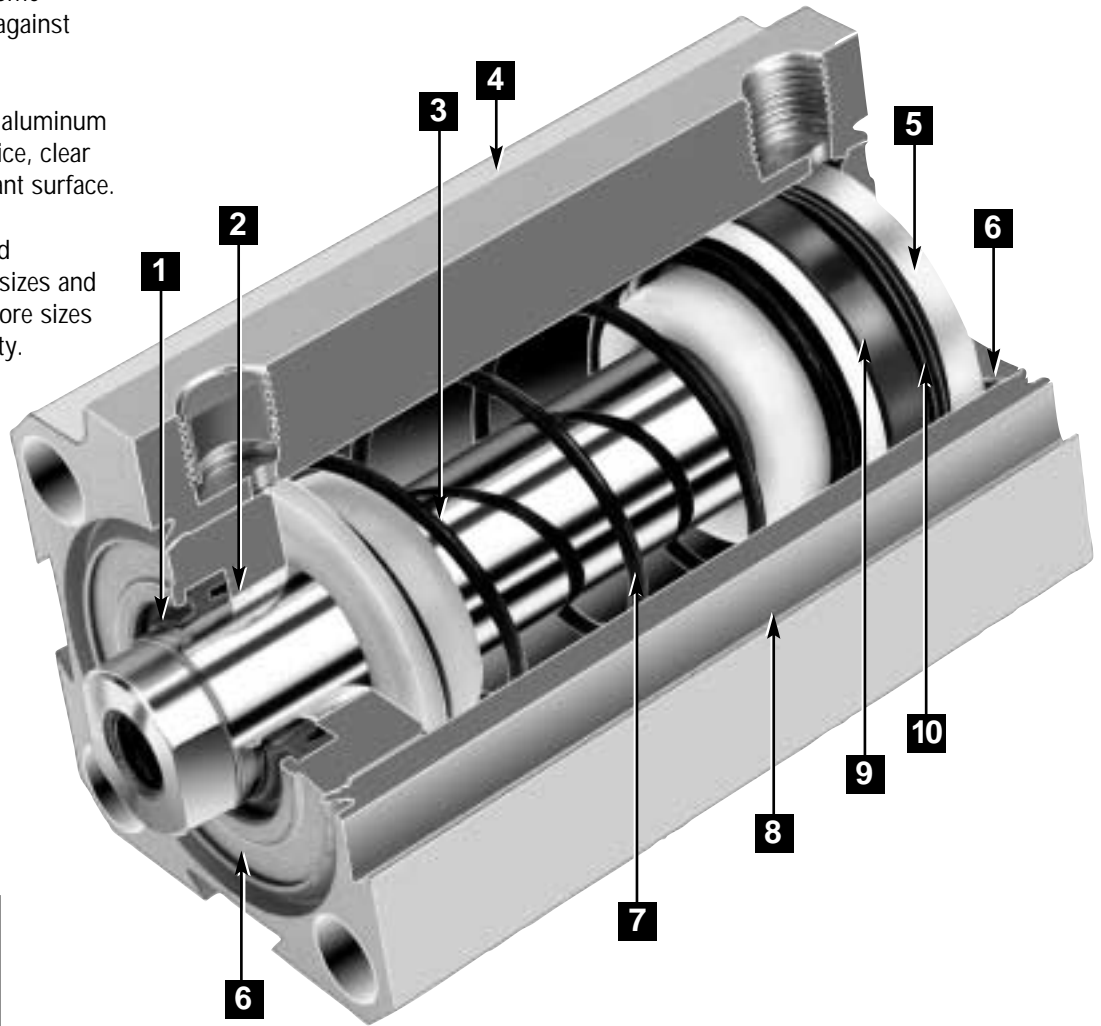
All cylinders are supplied with a specially molded piston magnet; switches can be added later.

10 Piston Seal:

Z-Seal is a pressure energized bidirectional seal compounded with nitrile rubber for excellent wear.

11 Prelubricated:

All cylinders are prelubricated for dry air service.



Short Stroke Version Long Stroke Version

Short Stroke Version:

Designed for stroke lengths of 2" (50mm) and shorter, this cylinder incorporates an integrated bearing to make it as compact as possible. The integrated bushing makes the overall length of the cylinder body exactly .394" (10mm) shorter than the Long Stroke version.

Long Stroke Version:

Designed for stroke lengths greater than 2" (50mm), cylinder incorporates a longer bearing housing with a heavy duty Polyamide rod bearing for increased stability. The housing increases the overall length of the cylinder body .394" (10mm) longer than the Short Stroke version.

Non-rotating Piston Rod Version:

/N2/ cylinder has a special non-rotating bearing housing. As a result, the cylinder overall body length is .394" (10mm) longer.



Medium:

Compressed air, filtered, lubricated or non-lubricated

Operation:

91000/M Single acting, non-cushioned, magnetic, spring return
93000/M Single acting, non-cushioned, magnetic, spring extend

Operating Pressure:

29 to 145 PSI (2 to 10 bar)

Operating Temperature:

23°F* to 176°F (-5°C* to +80°C)

*Consult Technical Service for use below +35°F (+2°C)

Cylinder Diameters:

Nominal Inch

1/2", 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2"
12, 16, 20, 25, 32, 40, 50, 63 mm

Torque for /N2 Cylinders

Ø Bore Nominal Inch	Ø Bore mm	Non-rotating piston rod permissible torque RC/91000/N2, RC/93000/N2 inch cylinders, RM/91000/N2, RM/93000/N2 metric cylinders	
		Torque at 87 PSI (6 bar) Model	Max Torque Inch lbs. (Nm)
1/2"	(12)	-	-
5/8"	(16)	RC/91016/N2, RC/93016/N2, RM/91016/N2, RM/93016/N2	1.33 (0.15)
3/4"	(20)	RC/91020/N2, RC/93020/N2, RM/91020/N2, RM/93020/N2	2.21 (0.25)
1"	(25)	RC/91025/N2, RC/93025/N2, RM/91025/N2, RM/93025/N2	3.54 (0.40)
1 1/4"	(32)	RC/91032/N2, RC/93032/N2, RM/91032/N2, RM/93032/N2	6.64 (0.75)
1 1/2"	(40)	RC/91040/N2, RC/93040/N2, RM/91040/N2, RM/93040/N2	6.64 (0.75)
2"	(50)	RC/91050/N2, RC/93050/N2, RM/91050/N2, RM/93050/N2	13.28 (1.50)
2 1/2"	(63)	RC/91063/N2, RC/93063/N2, RM/91063/N2, RM/93063/N2	13.28 (1.50)

Cylinder Variations

Symbol	Model (magnetic piston)	Description	
	RC/91000/N2, RM/91000/N2	Non-rotating piston rod ø 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2" spring retract (ø 16, 20, 25, 32, 40, 50, 63 mm) spring retract	See ACT-1-18 for dimensional and stroke length information.
	RC/93000/N2, RM/93000/N2	Non-rotating piston rod ø 5/8", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2" spring extend (ø 16, 20, 25, 32, 40, 50, 63 mm) spring extend	See ACT-1-18 for dimensional and stroke length information.

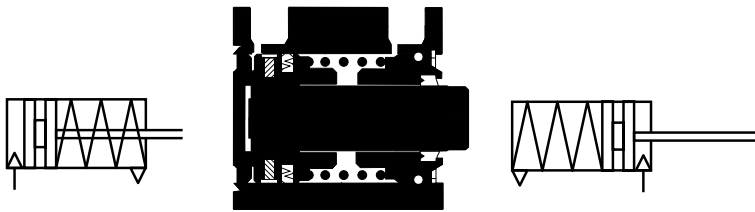
Theoretical Forces • Air Consumption

Ø Bore Nominal Inch	Ø Bore mm	DC/91000/M inch cylinder DM/91000/M metric cylinder Theoretical forces at 87 PSI (6 bar)		DC/93000/M inch cylinder DM/93000/M metric cylinder Theoretical forces at 87 PSI (6 bar)		DC/91000/M, DC/93000/M inch Air consumption DM/91000/M, DM/93000/M metric inches ³ /inch (Liters/cm)							
		Extend lbs Force	(N)	Return force of spring lbs Force	(N)	Retract lbs Force	(N)	Return force of spring lbs Force	(N)	Extend Inch ³	Liters	Retract Inch ³	Liters
1/2"	(12)	12.8	(57)	1.57	(7)	9.0	(40)	1.57	(7)	1.240	(0.008)	1.085	(0.007)
5/8"	(16)	23.2	(103)	2.81	(12.5)	16.2	(72)	2.81	(12.5)	2.170	(0.014)	1.705	(0.011)
3/4"	(20)	36.2	(161)	3.26	(14.5)	26.8	(119)	3.26	(14.5)	3.410	(0.022)	2.635	(0.017)
1"	(25)	59.3	(264)	4.50	(20)	44.3	(197)	4.50	(20)	5.425	(0.035)	4.185	(0.027)
1 1/4"	(32)	97.1	(432)	7.19	(32)	70.0	(311)	7.19	(32)	8.680	(0.056)	6.510	(0.042)
1 1/2"	(40)	154.4	(687)	9.89	(44)	127.3	(566)	9.89	(44)	13.640	(0.088)	11.470	(0.074)
2"	(50)	245.9	(1094)	12.70	(56.5)	203.7	(906)	12.70	(56.5)	21.390	(0.138)	17.980	(0.116)
2 1/2"	(63)	397.9	(1770)	16.75	(74.5)	355.6	(1582)	16.75	(74.5)	33.790	(0.218)	30.380	(0.196)

Weights of Cylinders and Mountings

Ø Bore Nominal Inch	Ø Bore mm	Weight at zero stroke lbs	kg	Weight per 1/4 inch 5mm	lbs	kg	Style 'B', 'G'	Style 'C'	Style 'F'	Nut		Stud or Adaptor	
										lbs	kg	lbs	kg
1/2"	(12)	0.154	(0.070)	0.044	(0.020)	0.044	(0.020)	0.044	(0.020)	0.022	(0.010)	0.002	(0.001)
5/8"	(16)	0.198	(0.090)	0.044	(0.020)	0.044	(0.020)	0.044	(0.020)	0.022	(0.010)	0.002	(0.001)
3/4"	(20)	0.265	(0.120)	0.044	(0.020)	0.044	(0.020)	0.044	(0.020)	0.022	(0.010)	0.002	(0.001)
1"	(25)	0.375	(0.170)	0.066	(0.030)	0.088	(0.040)	0.088	(0.040)	0.022	(0.010)	0.004	(0.002)
1 1/4"	(32)	0.617	(0.280)	0.110	(0.050)	0.132	(0.060)	0.088	(0.040)	0.044	(0.020)	0.007	(0.003)
1 1/2"	(40)	0.970	(0.440)	0.132	(0.060)	0.331	(0.150)	0.220	(0.100)	0.044	(0.020)	0.007	(0.003)
2"	(50)	1.102	(0.500)	0.176	(0.080)	0.375	(0.170)	0.243	(0.110)	0.088	(0.040)	-	-
2 1/2"	(63)	1.984	(0.900)	0.243	(0.110)	0.728	(0.330)	0.287	(0.130)	0.198	(0.090)	-	-

- **Very compact** – approximately one third the basic length of a corresponding conventional model
- **Entirely manufactured from corrosion resistant materials**
- **Standard magnetic piston provides a wide range of control options**
- **Ø 1/2" to 2 1/2" (Ø 12 to 63 mm)**



Magnetic, spring return

Magnetic, spring extend


Ordering Information

To order a basic 2 1/2" bore cylinder, spring return with a 1 inch stroke and magnet piston, specify: DC/91063/M/1.0

To order a basic 16 mm bore cylinder, spring extend with a 5 mm stroke and magnet piston, specify: DM/93016/M/5

To order mounting accessories, refer to appropriate cylinder mounting table on pages ACT-1-16/17.

Order magnetically operated switches M/40, M/41 and M/42 separately. See pages ACT-1-20/23.

Non-Standard Options

- Hollow piston rod for blow-off or vacuum
- Additional mountings
- Force multiplication tandems
- Multi-position duplex
- Integrated control valve

Cylinder Order Information

D	■	-	9	■	■	■	■	-	■	M	-	*
1	2	3	4	5	6	7	8	9	10			

Piston Rod Material	
D	Chrome Plated Stainless Steel
R	Stainless Steel (N2/ only)

Inch Cylinder	
C	NPT ports, inch threads, stroke in inches
Metric Cylinder	
M	ISO G ports, metric threads, stroke in mm

9	Series 90000
---	--------------

Cylinder Version	
1	Single Acting Spring Return
3	Single Acting Spring Extend

Stroke Length	
In Inches for inch cylinder	
In (mm) for metric cylinder	

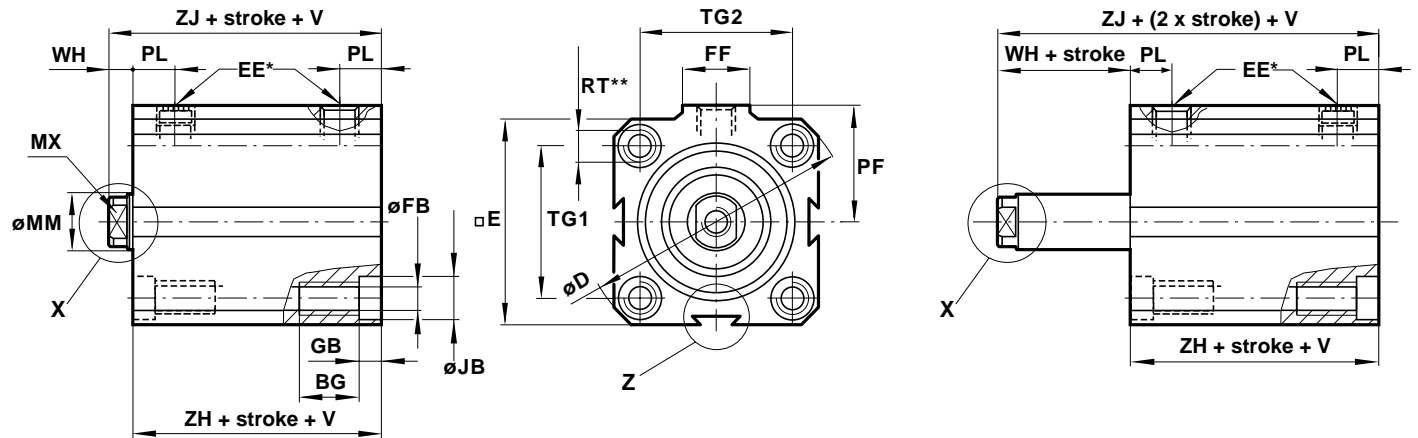
Cylinder Options	
M	Magnetic Piston
N2	Internal non-rotating piston rod with magnetic piston

Piston Diameters				Nominal Inch (mm)				
012	Ø 1/2"	12 mm	032	Ø 1 1/4"	32 mm	040	Ø 1 1/2"	40 mm
016	Ø 5/8"	16 mm	050	Ø 2"	50 mm	025	Ø 1"	25 mm
020	Ø 3/4"	20 mm	063	Ø 2 1/2"	63 mm			



DC/91000/M, DM/91000/M

DC/93000/M, DM/93000/M

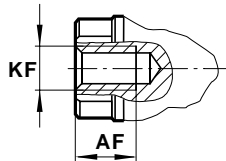
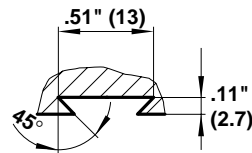


Section Z

Section X



NOTE: \varnothing 1/2" to 3/4" (\varnothing 12 to 20 mm) have only two side dovetails.



* Port thread with inserted filter, do not obstruct
 ** Only the 4 front holes are tapped on stroke lengths of less than:
 \varnothing 1" and 1 1/4" (\varnothing 25 and 32 mm) .197" (5 mm)
 \varnothing 1 1/2" and 2 1/2" (\varnothing 40 and 63 mm) .591" (15 mm) .../N2 .197" (5 mm)
 \varnothing 2" (\varnothing 50 mm) .394" (10 mm)

\varnothing Bore	Inch (mm) 1/2" (12)	Inch (mm) 5/8" (16)	Inch (mm) 3/4" (20)	Inch (mm) 1" (25)	Inch (mm) 1 1/4" (32)	Inch (mm) 1 1/2" (40)	Inch (mm) 2" (50)	Inch (mm) 2 1/2" (63)
Inch Cylinder	DC/91012/M	DC/91016/M	DC/91020/M	DC/91025/M	DC/91032/M	DC/91040/M	DC/91050/M	DC/91063/M
Metric Cylinder	DM/91012/M	DM/91016/M	DM/91020/M	DM/91025/M	DM/91032/M	DM/91040/M	DM/91050/M	DM/91063/M
Inch Cylinder	DC/93012/M	DC/93016/M	DC/93020/M	DC/93025/M	DC/93032/M	DC/93040/M	DC/93050/M	DC/93063/M
Metric Cylinder	DM/93012/M	DM/93016/M	DM/93020/M	DM/93025/M	DM/93032/M	DM/93040/M	DM/93050/M	DM/93063/M
AF	.24 (6)	.28 (7)	.31 (8)	.35 (9)	.47 (12)	.47 (12)	.55 (14)	.63 (16)
BG	.35 (9)	.35 (9)	.35 (9)	.47 (12)	.47 (12)	.63 (16)	.63 (16)	.79 (20)
\varnothing D	1.28 (32.5)	1.44 (36.5)	1.63 (41.5)	1.89 (48)	2.28 (58)	2.81 (71.5)	3.19 (81)	4.09 (104)
\square E	.98 (25)	1.10 (28)	1.26 (32)	1.46 (37)	1.77 (45)	2.17 (55)	2.48 (63)	3.15 (80)
EE	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/4NPT (G 1/4)
\varnothing FB	.13 (3.3)	.13 (3.3)	.13 (3.3)	.17 (4.2)	.17 (4.2)	.27 (6.8)	.27 (6.8)	.33 (8.5)
FF	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.71 (18)	.71 (18)	.71 (18)	.87 (22)
GB	.14 (3.5)	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)
\varnothing JB	.24 (6)	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.41 (13.5)
KF	4-40 (M 3)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)
\varnothing MM	.24 (6)	.31 (8)	.39 (10)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)
MX	.20 (5)	.24 (6)	.31 (8)	.39 (10)	.51 (13)	.51 (13)	.67 (17)	.67 (17)
PF	.59 (15)	.67 (17)	.77 (19.5)	.87 (22)	1.08 (27.5)	1.24 (31.5)	1.46 (37)	1.89 (48)
PL	.28 (7)	.30 (7.5)	.30 (7.5)	.31 (8)	.35 (9)	.39 (10)	.41 (10.5)	.51 (13)
RT	8-32 (M 4)	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	10-32 (M 5)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)
TG 1	.67 (17)	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)
TG 2	.51 (13)	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)
V strokes 0 - 1" (25)	.55 (14)	.59 (15)	.67 (17)	.71 (18)	.75 (19)	.79 (20)	1.18 (30)	1.18 (30)
strokes > 1" (25)	-	-	1.34 (34)	1.42 (36)	1.50 (38)	1.57 (40)	2.36 (60)	2.36 (60)
WH	.18 (4.5)	.22 (5.5)	.24 (6)	.26 (6.5)	.26 (6.5)	.26 (6.5)	.31 (8)	.31 (8)
ZH	.94 (24)	.96 (24.5)	1.02 (26)	1.12 (28.5)	1.14 (29)	1.24 (31.5)	1.38 (35)	1.67 (42.5)
ZJ	1.12 (28.5)	1.18 (30)	1.26 (32)	1.38 (35)	1.40 (35.5)	1.50 (38)	1.69 (43)	1.99 (50.5)

Maximum Stroke for 91000/M & 93000/M Single Acting Cylinders

DC/91000/M spring return inch cylinder

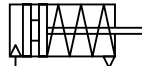
Nominal Diameter

Maximum Stroke

DM/91000/M spring return metric cylinder

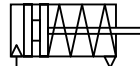
Diameter

Maximum Stroke



\varnothing 1/2", 5/8"
 \varnothing 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2"

3/8"
 2"

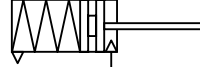


\varnothing 12, 16 mm
 \varnothing 20, 25, 32, 40, 50, 63 mm

10 mm
 50 mm

DC/93000/M spring extend inch cylinder

DM/93000/M spring extend metric cylinder





Series 90000 Compact Actuators

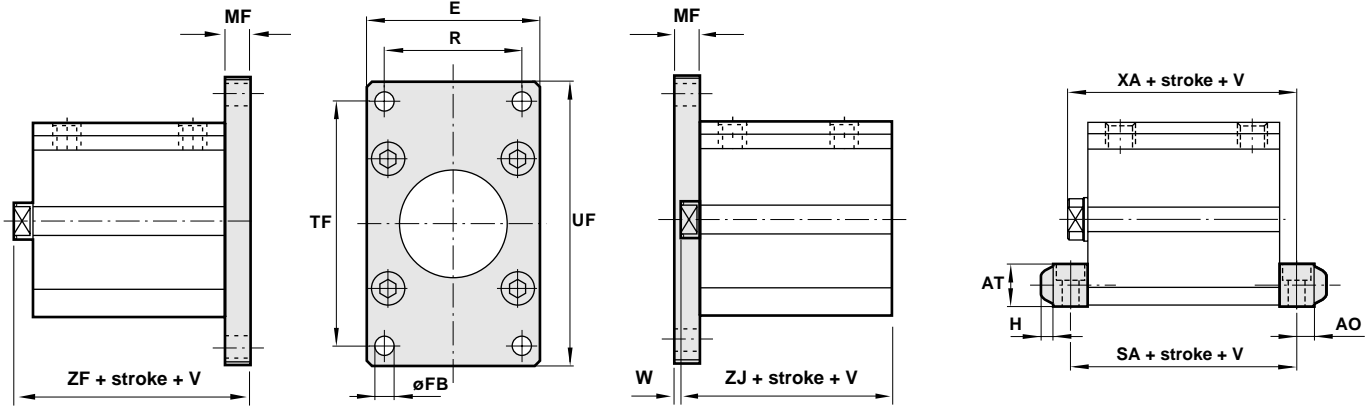
DC/91000/M, DM/91000/M, RC/91000/N2, RM/91000/N2

Rear Flange Mount 'B'

Front Flange Mount 'G'

DC/93000/M, DM/93000/M

RC/93000/N2, RM/93000/N2

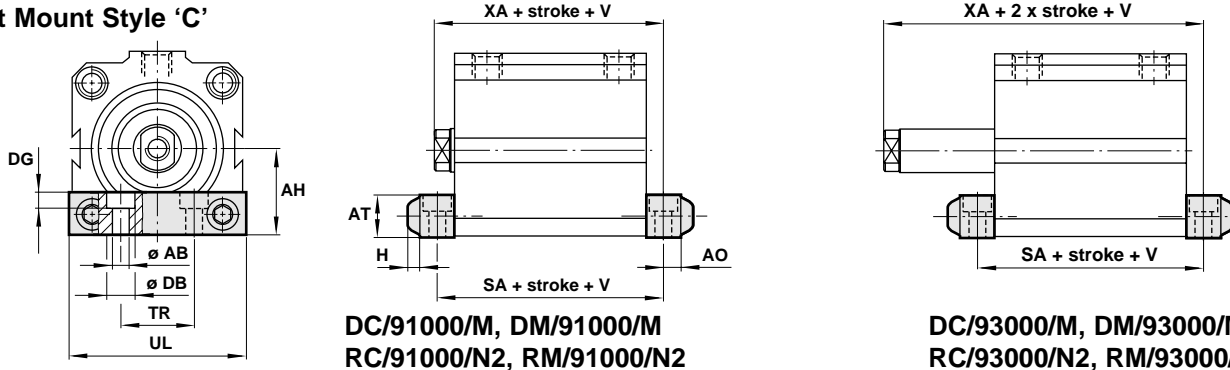


Ø Bore	Inch (mm) 1/2" (12)	Inch (mm) 5/8" (16)	Inch (mm) 3/4" (20)	Inch (mm) 1" (25)	Inch (mm) 1 1/4" (32)	Inch (mm) 1 1/2" (40)	Inch (mm) 2" (50)	Inch (mm) 2 1/2" (63)
Inch Cylinder	QC/90012/22	QC/90016/22	QC/90020/22	QC/90025/22	QC/90032/22	QC/90040/22	QC/90050/22	QC/90063/22
Metric Cylinder	QM/90012/22	QM/90016/22	QM/90020/22	QM/90025/22	QM/90032/22	QM/90040/22	QM/90050/22	QM/90063/22
E	1.02 (26)	1.18 (30)	1.30 (33)	1.50 (38)	1.81 (46)	2.24 (57)	2.52 (64)	3.19 (81)
Ø FB	.14 (3.5)	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)
MF	.20 (5)	.20 (5)	.20 (5)	.26 (6.5)	.26 (6.5)	.37 (9.5)	.37 (9.5)	.49 (12.5)
R	.71 (18)	.87 (22)	.98 (25)	1.10 (28)	1.42 (36)	1.69 (43)	1.97 (50)	2.48 (63)
TF	1.50 (38)	1.65 (42)	1.89 (48)	2.13 (54)	2.60 (66)	3.07 (78)	3.54 (90)	4.33 (110)
UF	1.81 (46)	1.97 (50)	2.20 (56)	2.52 (64)	2.99 (76)	3.62 (92)	4.09 (104)	5.04 (128)
V strokes 0 - 1" (25)	.55 (14)	.59 (15)	.67 (17)	.71 (18)	.75 (19)	.79 (20)	1.18 (30)	1.18 (30)
strokes > 1" (25)	-	-	1.34 (34)	1.42 (36)	1.50 (38)	1.57 (40)	2.36 (60)	2.36 (60)
W	-.02 (-0.5)	.02 (0.5)	.04 (1)	0 (0)	0 (0)	-.12 (-3)	-.04 (-1)	-.18 (-4.5)
ZF	1.32 (33.5)	1.38 (35)	1.46 (37)	1.63 (41.5)	1.77 (45)	1.87 (47.5)	2.07 (52.5)	2.50 (63.5)
ZF*	1.71 (43.5)	1.77 (45)	1.85 (47)	2.03 (51.5)	2.17 (55)	2.26 (57.5)	2.46 (62.5)	2.89 (73.5)
ZJ	1.12 (28.5)	1.18 (30)	1.26 (32)	1.38 (35)	1.40 (35.5)	1.50 (38)	1.69 (43)	1.99 (50.5)

NOTE: Dimension 'W' negative figures indicate that the piston rod is below the mounting face.

*Non-rotating rod cylinders RC/91000/N2, RM/91000/N2, RC/93000/N2 and RM/93000/N2 incorporate a longer rod bearing. This increases the overall body by .394" (10mm). See ACT-1-12.

Foot Mount Style 'C'



DC/91000/M, DM/91000/M
RC/91000/N2, RM/91000/N2

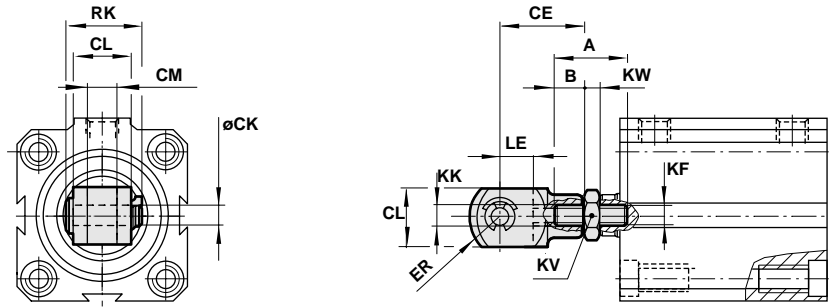
DC/93000/M, DM/93000/M
RC/93000/N2, RM/93000/N2

Ø Bore	Inch (mm) 1/2" (12)	Inch (mm) 5/8" (16)	Inch (mm) 3/4" (20)	Inch (mm) 1" (25)	Inch (mm) 1 1/4" (32)	Inch (mm) 1 1/2" (40)	Inch (mm) 2" (50)	Inch (mm) 2 1/2" (63)
Inch Cylinder	QC/90012/21	QC/90016/21	QC/90020/21	QC/90025/21	QC/90032/21	QC/90040/21	QC/90050/21	QC/90063/21
Metric Cylinder	QM/90012/21	QM/90016/21	QM/90020/21	QM/90025/21	QM/90032/21	QM/90040/21	QM/90050/21	QM/90063/21
Ø AB	.13 (3.4)	.13 (3.4)	.13 (3.4)	.17 (4.3)	.17 (4.3)	.25 (6.4)	.25 (6.4)	.33 (8.4)
AH	.53 (13.5)	.59 (15)	.65 (16.5)	.79 (20)	.94 (24)	1.12 (28.5)	1.26 (32)	1.63 (41.5)
AO	.16 (4)	.16 (4)	.16 (4)	.20 (5)	.20 (5)	.26 (6.5)	.26 (6.5)	.31 (8)
AT	.37 (9.5)	.37 (9.5)	.37 (9.5)	.49 (12.5)	.49 (12.5)	.63 (16)	.63 (16)	.87 (22)
Ø DB	.24 (6)	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.53 (13.5)
DG	.14 (3.5)	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)
H	.08 (2)	.08 (2)	.08 (2)	.12 (3)	.12 (3)	.18 (4.5)	.18 (4.5)	.22 (5.5)
SA	1.26 (32)	1.28 (32.5)	1.34 (34)	1.52 (38.5)	1.54 (39)	1.75 (44.5)	1.89 (48)	2.30 (58.5)
SA*	1.65 (42)	1.67 (42.5)	1.73 (44)	1.91 (48.5)	1.93 (49)	2.15 (54.5)	2.28 (58)	2.70 (68.5)
TR	.98 (25)	1.26 (32)	1.38 (35)	1.61 (41)	.75 (19)	.83 (21)	1.06 (27)	1.34 (34)
UL	1.30 (33)	1.57 (40)	1.69 (43)	2.01 (51)	1.81 (46)	2.20 (56)	2.52 (64)	3.19 (81)
XA	1.28 (32.5)	1.34 (34)	1.42 (36)	1.57 (40)	1.59 (40.5)	1.75 (44.5)	1.95 (49.5)	2.30 (58.5)
XA*	1.67 (42.5)	1.73 (44)	1.81 (46)	1.97 (50)	1.99 (50.5)	2.15 (54.5)	2.34 (59.5)	2.70 (68.5)

*Non-rotating rod cylinders RC/91000/N2, RM/91000/N2, RC/93000/N2 and RM/93000/N2 incorporate a longer rod bearing. This increases the overall body by .394" (10mm). See ACT-1-12.



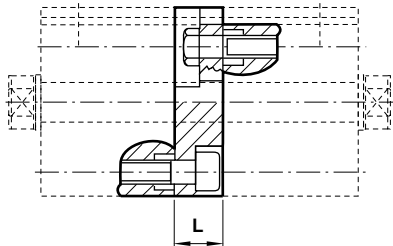
Piston Rod Clevis Mount 'F'



∅ Bore	inch (mm) 1/2" (12)	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)
Clevis Inch Metric	RC-12 QM/57008/25	RC-16 QM/8010/25	RC-20 QM/92020/25	RC-25 QM/57016/25	RC-32 QM/57020/25	RC-32 QM/57020/25	RC-50 QM/57025/25	RC-63 QM/57040/25
Stud Inch Metric	C-653-24-00J M/P1710/18	C-653-04-00M M/P1710/19	C-653-05-00P M/P1710/20	C-653-08-01A M/P1710/21	C-653-11-01A M/P1710/22	C-653-11-01A M/P1710/22	C-653-14-01E -	C-653-16-01P -
Nut Inch Metric	C-76-36 M/P1500/111	C-76-37 M/P1501/80	C-76-225 M/P1501/109	C-76-03A M/P1501/79	C-76-04A M/P1501/60	C-76-04A M/P1501/60	C-76-05A -	C-76-065A -
Adaptor Metric	-	-	-	-	-	-	M/P71470/1	M/P71470/2
A	.50 (12)	.63 (16)	.75 (20)	1.00 (25)	1.00 (25)	1.00 (25)	1.25 (29)	1.50 (35)
B	-	-	-	-	-	-	.47 (12)	.59 (15)
CE	.63 (11)	.63 (16)	.75 (20)	.94 (20)	.94 (24)	.94 (24)	1.31 (26)	1.31 (40)
∅ CK	.19 (3)	.19 (4)	.19 (5)	.25 (5)	.25 (6)	.25 (6)	.38 (8)	.38 (10)
□ CL	.31 (6)	.31 (8)	.38 (10)	.50 (10)	.50 (12)	.50 (12)	.75 (14)	.75 (20)
CM	.16 (3)	.16 (4)	.20 (5)	.26 (5)	.26 (6)	.26 (6)	.38 (7)	.38 (10)
ER	- (4.5)	- (6.5)	- (8)	- (8)	- (9.5)	- (9.5)	- (11.5)	- (16)
KF	4-40 (M 3)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)
KK	4-40 (M 3)	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10 x 1.25)	7/16-20 (M 12 x 1.25)
KV (A/F)	.25 (6)	.31 (7)	.38 (8)	.44 (10)	.50 (13)	.50 (13)	.56 (12)	.69 (13)
KW	.09 (2)	.13 (2)	.13 (2.5)	.17 (3)	.19 (4)	.19 (4)	.22 (5)	.22 (5)
LE	.22 (5)	.22 (5)	.37 (10)	.44 (10)	.44 (12)	.44 (12)	.56 (12)	.56 (20)
RK	.50 (10)	.50 (10)	.66 (14.5)	.85 (14.5)	.85 (17.5)	.85 (17.5)	1.13 (20.5)	1.13 (29)

NOTE: Clevis Includes Pin. To order a complete piston rod clevis mount: ∅ 1/2" to 2-1/2" (∅ 12 to 40mm) = Clevis plus Stud and Nut. ∅ 50 and 63mm = Clevis plus Adaptor. Piston Rod Clevis will vary in design. Inch clevis and metric clevis are dimensionally different.

Back to Back Mounting Kit



∅ Bore	inch (mm) 1/2" (12)	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)
Inch	QC/92012/55	QC/92016/55	QC/92020/55	QC/92025/55	QC/92032/55	QC/92040/55	QC/92050/55	QC/92063/55
Metric	QM/92012/55	QM/92016/55	QM/92020/55	QM/92025/55	QM/92032/55	QM/92040/55	QM/92050/55	QM/92063/55
L	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.39 (10)	.59 (15)	.59 (15)	.79 (20)

Mounting Order Information

All Mountings are ordered separately and are normally mounted to the cylinder by the customer.

Flange Mount – Style 'B' and 'G' Mounting Kit

Inch Cylinder: QC/90 _ _ _ /22
Includes the flange and the inch mounting screws to mount the flange to the Inch version cylinder.

Metric Cylinder: QM/90 _ _ _ /22
Includes the flange and the metric mounting screws to mount the flange to the Metric version cylinder.

Foot Mount – Style 'C' Mounting Kit

Inch Cylinder: QC/90 _ _ _ /21
Includes the two foot mounts and the inch mounting screws to mount the feet to the Inch version cylinder.

Metric Cylinder: QM/90 _ _ _ /21
Includes two foot mounts and the metric mounting screws to mount the feet to the Metric version cylinder.

Piston Rod Clevis Mount – Style 'F' Mounting Kit

Inch Cylinder:
Clevis RC- _ _
Stud C-653- _ _ _ _ _
Nut C-76- _ _ _

To order a piston rod clevis mounting complete for Inch cylinders = Clevis plus Stud and Nut. (Clevis includes pivot pin.)

Metric Cylinder:

Clevis QM/ _ _ _ _ _ /25
Stud M/P1710/_ _
Nut M/P1501/_ _ _
Adaptor M/P71470/_

To order a piston rod clevis mounting complete for a Metric cylinder for: ∅ 12 to 40mm = Clevis plus Stud and Nut. ∅ 50 and 63mm = Clevis and Adaptor. (Clevis includes pivot pin.)

Back to Back Mounting Kit

Inch cylinders: QC/ 92_ _ _ /55
Includes the mounting plate and the inch mounting screws to mount the two Inch version cylinders back to back.

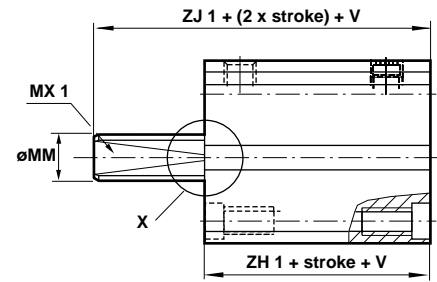
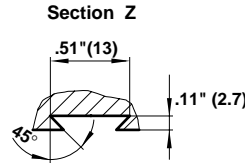
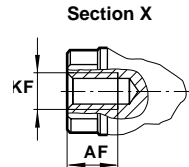
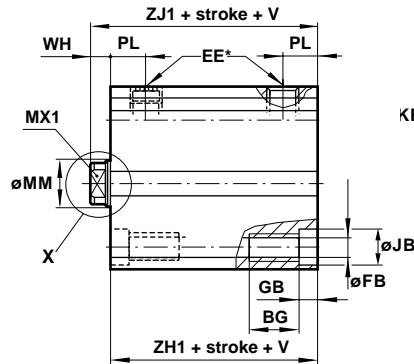
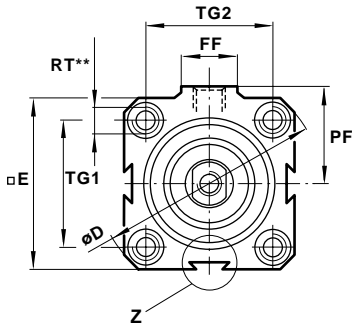
Metric cylinders: QM/ 92_ _ _ /55
Includes the mounting plate and the metric mounting screws to mount the two Metric version cylinders back to back.



Series 90000 Compact Actuators

DC/91000/N2, DM/91000/N2

DC/93000/N2, DM/93000/N2

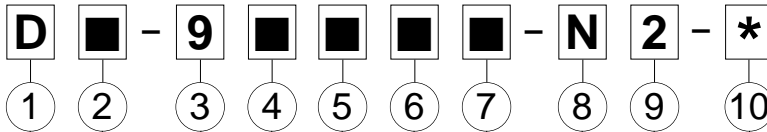


NOTE: Ø 5/8" and 3/4" (Ø 16 and 20 mm) have only two side dovetails

* Port thread with inserted filter, do not obstruct
 ** Only the 4 front holes are tapped on stroke lengths of less than:
 Ø 1", 1 1/4", 1 1/2" and 2 1/2" (Ø 25, 32, 40 and 63 mm) .197" (5 mm)
 Ø 2" (Ø 50 mm) .394" (10 mm)

Ø Bore	inch (mm) 5/8" (16)	inch (mm) 3/4" (20)	inch (mm) 1" (25)	inch (mm) 1 1/4" (32)	inch (mm) 1 1/2" (40)	inch (mm) 2" (50)	inch (mm) 2 1/2" (63)
Inch Cylinder	RC/91016/N2	RC/91020/N2	RC/91025/N2	RC/91030/N2	RC/91040/N2	RC/91050/N2	RC/91063/N2
Metric Cylinder	RM/91016/N2	RM/91020/N2	RM/91025/N2	RM/91030/N2	RM/91040/N2	RM/91050/N2	RM/91063/N2
Inch Cylinder	RC/93016/N2	RC/93020/N2	RC/93025/N2	RC/93030/N2	RC/93040/N2	RC/93050/N2	RC/93063/N2
Metric Cylinder	RM/93016/N2	RM/93020/N2	RM/93025/N2	RM/93030/N2	RM/93040/N2	RM/93050/N2	RM/93063/N2
AF	.28 (7)	.31 (8)	.35 (9)	.47 (12)	.47 (12)	.55 (14)	.63 (16)
BG	.35 (9)	.35 (9)	.47 (12)	.47 (12)	.63 (16)	.63 (16)	.79 (20)
Ø D	1.44 (36.5)	1.63 (41.5)	1.89 (48)	2.28 (58)	2.81 (71.5)	3.19 (81)	4.09 (104)
□ E	1.10 (28)	1.26 (32)	1.46 (37)	1.77 (45)	2.17 (55)	2.48 (63)	3.15 (80)
EE	10-32 (M 5)	10-32 (M 5)	10-32 (M 5)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/8NPT (G 1/8)	1/4NPT (G 1/4)
Ø FB	.13 (3.3)	.13 (3.3)	.17 (4.2)	.17 (4.2)	.27 (6.8)	.27 (6.8)	.33 (8.5)
FF	.39 (10)	.39 (10)	.39 (10)	.71 (18)	.71 (18)	.71 (18)	.87 (22)
GB	.14 (3.5)	.14 (3.5)	.18 (4.5)	.18 (4.5)	.26 (6.5)	.26 (6.5)	.33 (8.5)
Ø JB	.24 (6)	.24 (6)	.30 (7.5)	.30 (7.5)	.41 (10.5)	.41 (10.5)	.41 (13.5)
KF	8-32 (M 4)	10-32 (M 5)	1/4-28 (M 6)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)	7/16-20 (M 12)
Ø MM	.31 (8)	.39 (10)	.47 (12)	.63 (16)	.63 (16)	.79 (20)	.79 (20)
MX 1	.24 (6)	.31 (8)	.39 (10)	.51 (13)	.51 (13)	.63 (16)	.63 (16)
PF	.67 (17)	.77 (19.5)	.87 (22)	1.08 (27.5)	1.24 (31.5)	1.46 (37)	1.89 (48)
PL	.30 (7.5)	.30 (7.5)	.31 (8)	.35 (9)	.39 (10)	.41 (10.5)	.51 (13)
RT	8-32 (M 4)	8-32 (M 4)	10-32 (M 5)	10-32 (M 5)	5/16-24 (M 8)	5/16-24 (M 8)	3/8-24 (M 10)
TG 1	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)
TG 2	.79 (20)	.91 (23)	1.06 (27)	1.30 (33)	1.61 (41)	1.89 (48)	2.40 (61)
V strokes 0 to 1" (25)	.59 (15)	.67 (17)	.71 (18)	.75 (19)	.79 (20)	1.18 (30)	1.18 (30)
strokes > 1" (25)	-	1.34 (34)	1.42 (36)	1.50 (38)	1.57 (40)	2.36 (60)	2.36 (60)
WH	.22 (5.5)	.24 (6)	.26 (6.5)	.26 (6.5)	.26 (6.5)	.31 (8)	.31 (8)
ZH 1	1.36 (34.5)	1.42 (36)	1.52 (38.5)	1.54 (39)	1.63 (41.5)	1.77 (45)	2.07 (52.5)
ZJ 1	1.57 (40)	1.65 (42)	1.77 (45)	1.79 (45.5)	1.89 (48)	2.09 (53)	2.38 (60.5)

Cylinder Order Information



Piston Rod Material	
D	Hand Chrome Plated Stainless Steel
R	Stainless Steel

Inch Cylinder	
C	NPT Ports, Inch Threads, Stroke in Inches
Metric Cylinder	
M	ISO G Ports, Metric Threads, Stroke in mm

Stroke Length	
In Inches for Inch Cylinders	
In (mm) for Metric Cylinders	

Cylinder Options	
N2	Internal Non-rotating Piston Rod with Magnetic Piston

Piston Diameters Nominal Inch (mm)			
012	N/A	032	Ø 1 1/4" 32 mm
016	Ø 5/8" 16 mm	040	Ø 1 1/2" 40 mm
020	Ø 3/4" 20 mm	050	Ø 2" 50 mm
025	Ø 1" 25 mm	063	Ø 2 1/2" 63 mm

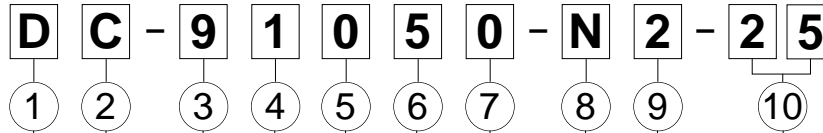
9	Series 90000
Cylinder Version	
1	Single Acting Spring Return
3	Single Acting Spring Extend

Maximum Stroke for 91000/N2 & 93000/N2 Single Acting Non-rotating Piston Rods

DC/91000/N2 spring return inch cylinder	Nominal Diameter	Maximum Stroke	DM/91000/N2 spring return metric cylinder	Diameter	Maximum Stroke
	Ø 5/8"	3/8"		Ø 16 mm	10 mm
	Ø 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2"	2"		Ø 20, 25, 32, 40, 50, 63 mm	50 mm
DC/93000/N2 spring extend inch cylinder			DM/93000/N2 spring extend metric cylinder		



Cylinder Order Information



Piston Rod Material	
D	Chrome Plated Stainless
R	Stainless Steel

Stroke Length	
In Inches for Inch Cylinder	
In (mm) for Metric Cylinder	

Inch Cylinder	
C	NPT Ports, Inch Threads, Stroke in Inches
Metric Cylinder	
M	ISO (Imperial) Metric Ports, Metric Threads, Stroke in mm

Cylinder Options	
M	Magnetic Piston
N2	Internal Non-rotating Piston Rod with Magnetic Piston

9 Series 90000

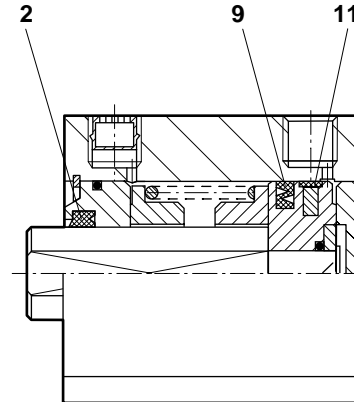
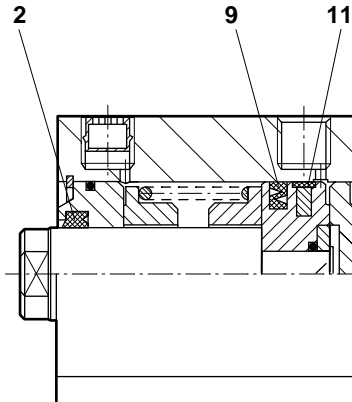
Cylinder Version	
1	Single Acting Spring Return
3	Single Acting Spring Extend

Piston Diameters Nominal Inch (mm)					
012	Ø 1/2"	12 mm	032	Ø 1 1/4"	32 mm
016	Ø 5/8"	16 mm	040	Ø 1 1/2"	40 mm
020	Ø 3/4"	20 mm	050	Ø 2"	50 mm
025	Ø 1"	25 mm	063	Ø 2 1/2"	63 mm

NOTE: Ø12 not available in /N2/

EXAMPLE: Stainless steel – metric threads – Series 90000 – single acting – spring return – 50 mm diameter – internal non-rotating piston rod with magnetic piston – 25 mm stroke length.

Spares Kits



DC/91000/M, DM/91000/M, DC/93000/M, DM/93000/M

RC/91000/N2, RM/91000/N2, RC/93000/N2, RM/93000/N2

Model	Spares kits Ø 2" & 2 1/2" (Ø 50 & 63 mm)	Comprising		
		Item	Description	Quantity
DC/91050/M, DM/91050/M, DC/93050/M, DM/93050/M	QM/92050/00	2	Piston rod seal	1
RC/91050/N2, RM/91050/N2, RC/93050/N2, RM/93050/N2	QM/92050/N2/00	9	Piston seal	1
DC/91063/M, DM/91063/M, DC/93063/M, DM/93063/M	QM/92063/00	11	Wear ring	1
RC/91063/N2, RM/91063/N2, RC/93063/N2, RM/93063/N2	QM/92063/N2/00		Grease	1

Note: Please specify the cylinder number when ordering spare parts. Spares are not available for Ø 1/2" to 1-1/2" (Ø 12 to 40 mm) models.

- Compact, low profile reed switches
- M/40, M/40/P, and TM/40 feature LED indicators
- Simple, reliable switching for fast response times
- TM/40 high temperature model
- M/40/P features a plug-in cable connection

Specifications

Form:

M/40 M/40/P – Normally open with LED
M/40/C – Normally open/normally closed
TM/40 – Normally open

Switching Voltage:

M/40, TM/40 – 240 VAC or 170 VDC maximum
M/40/C – 10 - 110 VAC or 10 - 175 VDC maximum
M/40/P – 60 VAC and 75 VDC maximum

Switching Current:

M/40, M/40/P – 180 mA (temperature dependent), see ACT-1-21.
M/40/C – 250 mA
TM/40 – 180 mA

Contact Rating:

M/40, TM/40, M/40/P – 10 VA
M/40/C – 5 VA

Response Time:

M/40, M/40/C, M/40/P – 1.8 ms
TM/40 – 1.0 ms

Operating Temperature:

-4° to 176°F (-20° to 80°C)
TM/40 – 32° to 302°F (0° to 150°C)

Protection Rating:

I.P.66

Vibration Resistance:

M/40, TM/40, M/40/P – 10 to 2000Hz 0.08 lbs. (35g)
(Resonant Frequency = 3 kHz)
M/40/C – 10 to 2000Hz 0.07 lbs. (30g)
(Resonant Frequency = 13 kHz)

Cable Length:

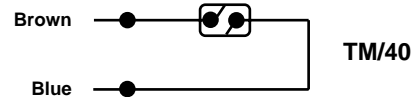
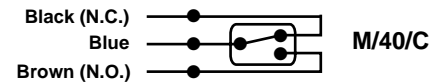
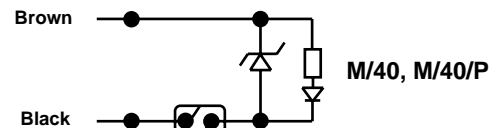
M/40 – 6.5' (2m), 16.25' (5m) of P.V.C. covered two core cable
M/40/C – 6.5' (2m) of P.V.C. covered three core cable
TM/40 – 6.5' (2m) of silicon rubber covered two core cable
M/40/P – 16.25' (5m) of P.V.C. or Polyurethane covered three core cable with plug-in connection

Materials

M/40, M/40/C, M/40/P – Nylon 66 body
TM/40 – 30% Glass filled Nylon 66 body

NOTE: When used to switch inductive loads such as solenoids, relays etc., arcing can occur across the switch contacts depending on the current and voltage involved. This arcing can be eliminated on d.c. loads by connecting a suitably rated diode across the load or switch.

On a.c. loads, arcing is more difficult to eliminate, but the contact life can be greatly extended by reducing the peak voltages by connecting a suitable non-linear resistor (V.D.R.) across the load or switch.



Alternative Models

M/41 Solid state model with hardwired cable – see ACT-1-22

M/42 Solid state model with hardwired cable – see ACT-1-22

M/42/P Solid state model with plug-in cable – see page ACT-1-22



General Information

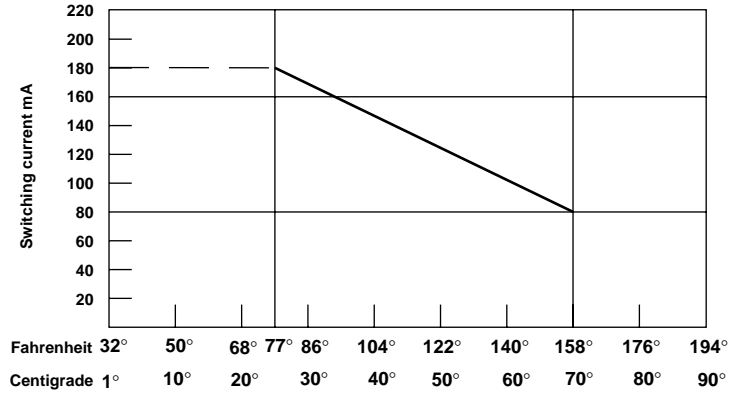
Model	Switch type	Cable length
M/40	LED, Normally open, hardwired	6.5' (2), 16.25' (5)
M/40/C	Normally open/Normally closed - changeover, hardwired	6.5' (2)
TM/40	Normally open, high temperature, hardwired	6.5' (2)
M/40/P	Normally open with LED, plug-in cable	16.25' (5)

NOTE: Switches are ordered separately.

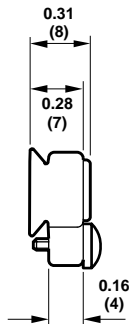
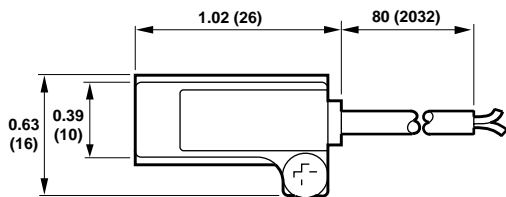
Effect of High Temperatures – M/40 and M/40/P with LED

When using a Reed Switch that incorporates an LED, the maximum switching current should be reduced in direct proportion to the rise in temperature above 77°F (25°C).

At maximum temperature of 158°F (70°C) the maximum switching current must be derated to 80mA.



M/40, M/40/C, TM/40 Magnetically Operated Switches, with hardwired cable



Switches are mounted in the integral slot of the extruded tube.

Polarity:

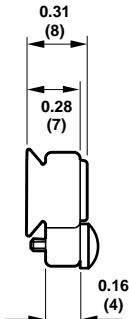
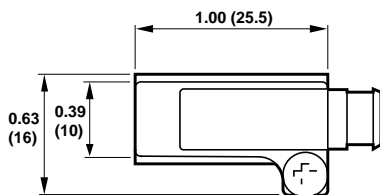
- Brown +
- Blue -

Polarity is important on the M/40.

Normally open/normally closed:

- Brown common
- Black normally closed
- Blue normally open

M/40/P Magnetically Operated Switches, with plug-in cable*



Switches are mounted in the integral slot of the extruded tube.

Polarity:

- Brown +
- Black -

Polarity is important.

Cable No.	Connector type	Outer cover
M/P34595/5	Straight	Polyurethane
M/P34596/5	Angled 90°	Polyurethane
M/P34614/5	Straight	P.V.C.
M/P34615/5	Angled 90°	P.V.C.

*Cable must be ordered separately.

- Compact, low profile solid state switches
- LED indicator is standard
- Simple, reliable switching with fast response times
- Particularly suited for use where high levels of vibration are present
- M/42/P features a plug-in cable connection
- CE – Marking



Specifications

Form:

M/41 – Solid state with LED (NPN, sinking, grounded emitter output)

M/42, M/42/P – Solid state with LED (PNP, sourcing, open collector output)

Switching Voltage:

10V to 30 VDC only

M/42/P – 10V to 30 VDC only

Switching Current:

M/41, M/42, M/42/P – 200 mA

Response Time:

0.5 ms

Operating Temperature:

-4° to 158°F (-20° to 70°C)

Protection Rating:

I.P.66

Cable Length:

M/41, M/42 – 6.5' (2m) of P.V.C. covered three core cable

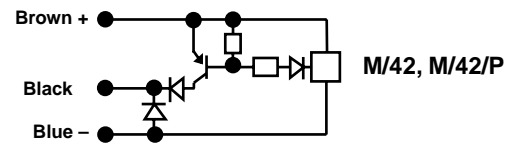
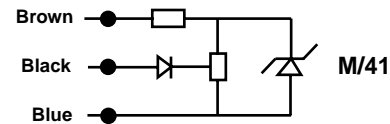
M/42/P – 16.25' (5m) of P.V.C. or Polyurethane covered three core cable with plug-in connection

Switch Protection:

Diode protection must be used with inductive loads

Materials

Nylon 66 body



Alternative Models

M/40 Hardwired cable model – see ACT-1-20

M/40/C Normally open/normally closed model with integral cable – see ACT-1-20

M/40/P Plug-in cable model – see ACT-1-20

TM/40 High temperature model – see ACT-1-20

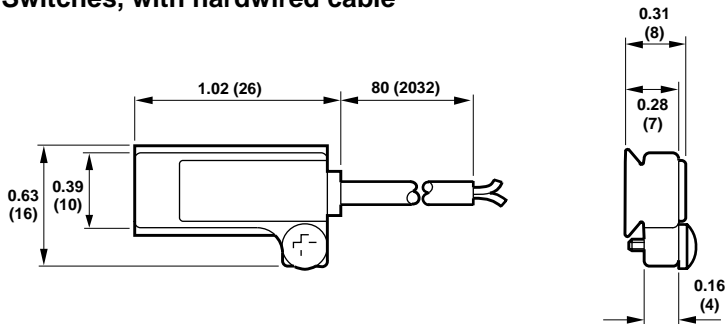


General Information

Model	Switch type	Cable length
M/41	Solid State with LED, sinking, NPN, hardwired cable	6.5' (2)
M/42	Solid State with LED, sourcing, PNP, hardwired cable	6.5' (2)
M/42/P	Solid State with LED, sourcing, PNP, plug-in cable	16.25' (5)

NOTE: Switches are ordered separately.

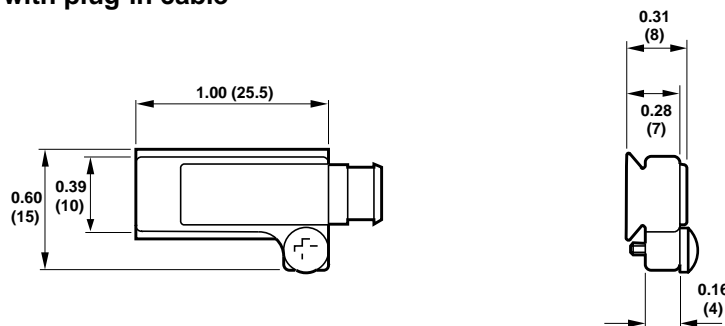
M/41, M/42 Magnetically Operated Switches, with hardwired cable



Switches are mounted in the integral slot of the extruded tube.

Polarity:
 Brown +
 Blue -
 Black Output
 Polarity is important.

M/42/P Magnetically Operated Switches, with plug-in cable*



Switches are mounted in the integral slot of the extruded tube.

Polarity:
 Brown +
 Blue -
 Black Output
 Polarity is important.

*Cable must be ordered separately.

Cable No.	Connector type	Outer cover
M/P34595/5	Straight	Polyurethane
M/P34596/5	Angled 90°	Polyurethane
M/P34614/5	Straight	P.V.C.
M/P34615/5	Angled 90°	P.V.C.