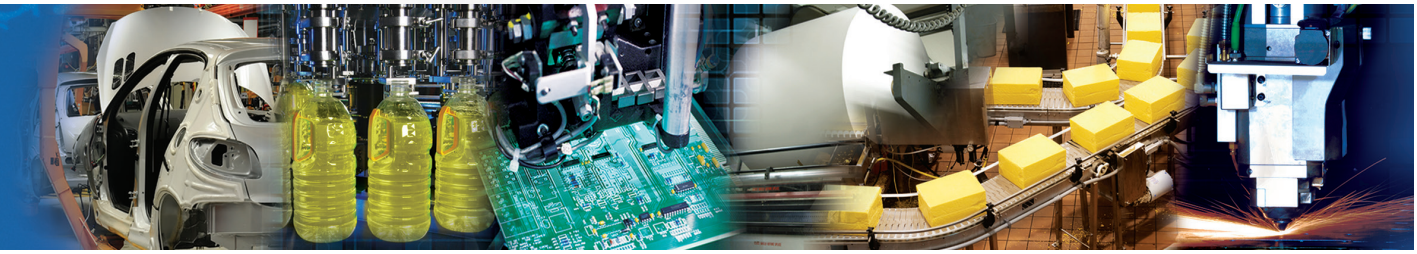
numatics®

Universal Series

Metric Compact Interchangeable Cylinder Line



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EMERSON
Industrial Automation

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Universal Series

The **Universal Series** is a compact, extruded aluminum body air cylinder line that is designed to meet all of your international compact cylinder requirements. The Universal Series minimizes overall space requirements through enabling precise, direct mounting in the smallest amount of space possible. The Universal Series includes a multitude of value-added standard design features, i.e., hard anodized extruded aluminum tubing, hard chrome plated stainless steel piston rods, an extra long high performance composite rod bushing, etc. These are just a sample of things that make the Universal Series the Superior Interchangeable metric, compact air cylinder line.

Standard Specifications:

- Bore sizes from 12 mm through 100 mm
- Strokes from 5 mm to 300 mm
- Maximum pressure rating is 10 bar (150 psi)
- 3 port choices:
  - NPT
  - BSP Parallel
  - BSP Tapered
- Flexible rod end options:
  - Female with wrench flats
  - Male rod with wrench flats and jam nut
- Metric or Inch rod threads and mounting threads
- Multitude of different actuation options:
  - Double acting, single rod
  - Double acting, double rod
  - Non-rotating, double acting, single rod
  - Non-rotating, double acting, double rod
  - Single acting, single rod, spring return
  - Single acting, single rod, spring extended
- Magnetic piston option
- Complete range of mounting accessories:
  - Flange mounts
    Head and cap
  - Clevis mounts
    Rear clevis, Rod clevis, Rod eye
  - Boss mounts
    Head and Cap
  - Foot mounts
- Adjustable stroke models
- 3-position and 4-position models
- Bumper option
- Seal material deviation

How To Order

U N D - S E 020 - 010 D - M

Series
U = Universal Series
Metric Compact Interchangeable

Port
G = BSP Parallel Ports, Metric Rod Thread
N = NPT Ports, Inch Rod Thread
P = BSPT Taper Ports, Metric Rod Thread

Body
D* = With Magnetic Piston
N = Without Magnetic Piston
*Adds to the OAL of the cylinder.

Model
A = Adjustable Stroke Extend
AK = Adjustable Stroke Extend Non-Rotating Rod
K = Non-Rotating Single Rod
L = Non-Rotating Double Rod
M = Non-Rotating Double Rod Hole Through
S = Single Rod
T = Double Rod Hole Through
W = Double Rod

Mounting
A = Tapped Both Ends
B = Through Hole
C = Rear Clevis
D = Flange Rod End
E = Flange Cap End
F = Flange Cap End
G = ISO Flange Rod End
H = ISO Flange Cap End
L = Foot Mount

Options
(Leave blank if no options are desired.)
B = Bumpers, Both Ends
E = Boss, Rod End
F = Boss, Cap End
M = Male Rod, Rod End
N = Male Rod, Cap End
P = Male Rod, Both Ends
RS* = Adjustable Stroke, Retract
V = High Temperature Seals
XC10= Back-to-Back
XC11= Tandem (Mounting at Rod End)
XC12= Tandem (Mounting at Cap End)
*Not valid with A or AK models or double rod models

Actuation
D = Double Acting
S = Single Acting, Spring Retract (12 mm through 50 mm bores only)
T = Single Acting, Spring Extend (12mm through 50mm bores only)

Stroke
005 = 5 mm
010 = 10 mm
100 = 100 mm
150 = 150 mm
300 = 300 mm

Standard Stroke Chart

12 mm - 25 mm Bore	= 5 mm to 100 mm Stroke
32 mm and 40 mm Bore	= 5 mm to 150 mm Stroke
50 mm - 100 mm Bore	= 10 mm to 150 mm Stroke

Bore

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

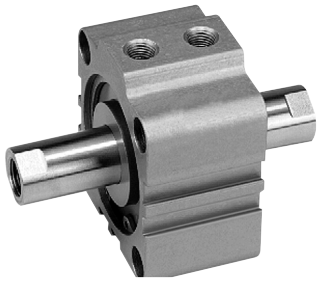
NOTE: See next page for stroke and bore compatibility information.

Standard Stroke

Features and Options

Bore Size (mm)	Stroke (mm)																		Mounting Options						Cylinder Options			
	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	250	300	Standard Series	Magnetic Piston Series	Tapped Hole	Flange	Foot	Rear Clevis	Front Boss	Rear Boss	Male Rod End	Adjustable Stroke	High Temp Seals	Bumpers
DOUBLE ACTING SINGLE ROD																			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
12	◆	◆	◆	◆	◆	◆					◆	◆	◆																	
16	◆	◆	◆	◆	◆	◆					◆	◆	◆																	
20	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆																	
25	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆																	
32	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
40	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
50	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
63	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
80	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
100	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															

DOUBLE ACTING DOUBLE ROD																			◆	◆	◆	◆	◆		◆	◆	◆		◆	◆
12	◆	◆	◆	◆	◆	◆					◆	◆	◆																	
16	◆	◆	◆	◆	◆	◆					◆	◆	◆																	
20	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆																	
25	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆																	
32	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
40	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
50		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
63		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
80		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
100		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															



DOUBLE ACTING SINGLE ROD NON-ROTATING																			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
DOUBLE ACTING DOUBLE ROD NON-ROTATING																			◆	◆	◆	◆	◆		◆	◆	◆		◆	◆
12	◆	◆	◆	◆	◆	◆					◆	◆	◆																	
16	◆	◆	◆	◆	◆	◆					◆	◆	◆																	
20	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆																	
25	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆																	
32	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
40	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
50		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
63		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
80		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															
100		◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆															

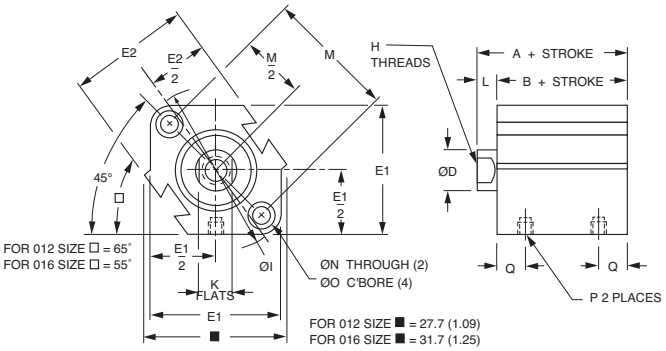
SINGLE ACTING SPRING RETRACT																			◆		◆	◆	◆	◆			◆		◆	
12	◆	◆																												
16	◆	◆																												
20	◆	◆																												
25	◆	◆																												
32	◆	◆																												
40	◆	◆																												
50		◆		◆																										

SINGLE ACTING SPRING EXTEND																			◆		◆	◆	◆	◆			◆		◆	
12	◆	◆																												
16	◆	◆																												
20	◆	◆																												
25	◆	◆																												
32	◆	◆																												
40	◆	◆																												
50		◆		◆																										

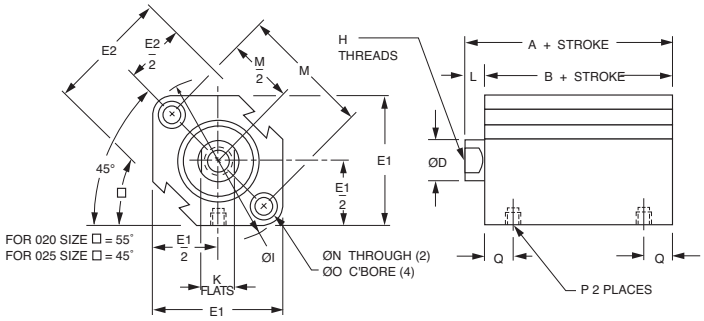
Dimensions: mm (inches)

Double Acting, Single Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	37.3 (1.47)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	39.7 (1.56)	36.2 (1.42)	10.2 (0.40)
20	–	–	–	–	75, 100	46.1 (1.82)	41.6 (1.64)	12.1 (0.48)
25	–	–	–	–	75, 100	52.5 (2.07)	47.5 (1.87)	12.7 (0.50)
32	75, 100	40.0 (1.57)	33.0 (1.30)	8.7 (0.34)	125, 150	54.8 (2.16)	47.8 (1.88)	12.7 (0.50)
40	75, 100	46.5 (1.83)	39.5 (1.56)	9.2 (0.36)	125, 150	62.5 (2.46)	55.5 (2.19)	12.7 (0.50)
50	75, 100	48.5 (1.91)	40.5 (1.59)	10.5 (0.41)	125, 150	67.3 (2.65)	59.3 (2.33)	13.2 (0.52)
63	75, 100	54.0 (2.13)	46.0 (1.81)	11.5 (0.45)	125, 150	72.6 (2.86)	64.6 (2.54)	18.5 (0.73)
80	75, 100	63.5 (2.50)	53.5 (2.11)	14.0 (0.55)	125, 150	79.5 (3.13)	69.5 (2.74)	14.0 (0.55)
100	75, 100	75.0 (2.95)	63.0 (2.48)	18.0 (0.71)	125, 150	88.7 (3.49)	76.7 (3.02)	18.0 (0.71)

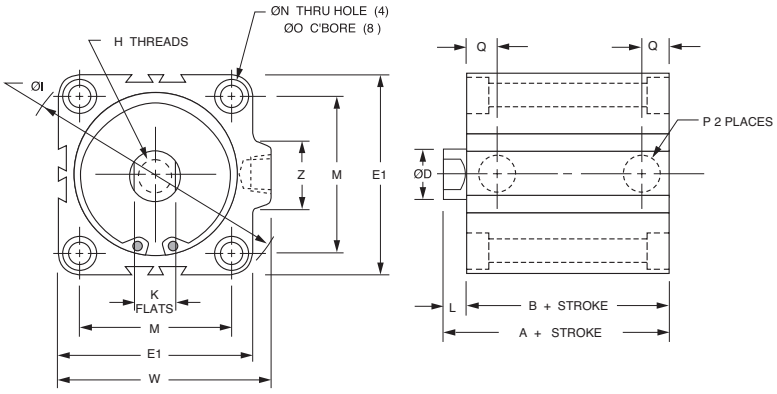
NOTE: See previous page for complete stroke availability.

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	20.5 (0.81)	17.0 (0.67)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	22.0 (0.87)	18.5 (0.73)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	24.0 (0.94)	19.5 (0.77)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	27.5 (1.08)	22.5 (0.89)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5 only (0.20) 10-50 (0.39-2.0)	30.0 (1.18) 30.0 (1.18)	23.0 (0.91) 23.0 (0.91)	16.0 (0.63) 16.0 (0.63)	44.5 (1.75) 44.5 (1.75)	— —	5/16-24 X 0.50dp (M8 x 1.25 - 12dp) 5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32) 58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	36.5 (1.44)	29.5 (1.16)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	38.5 (1.52)	30.5 (1.20)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	44.0 (1.73)	36.0 (1.42)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	53.5 (2.11)	43.5 (1.71)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	65.0 (2.56)	53.0 (2.09)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)

Dimensions: Inches (mm)

Double Acting, Single Rod continued

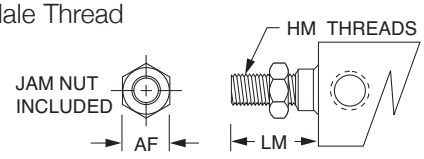
Ø32 - Ø100 mm Bores



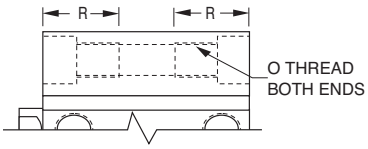
Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

Rod End Male Thread



Tapped Hole Mounting



NOTE: Inch threads for 'N' port code. Metric threads for 'G' and 'P' port codes. Metric for foot, flange, and clevis mount.

Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

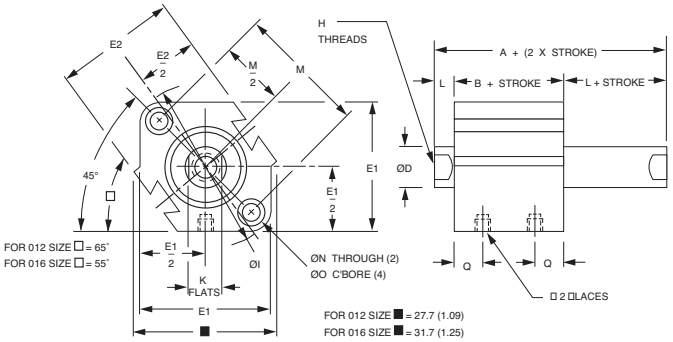
Bore mm	O (Threads) Inch (mm)	R Inch (mm)
12	#8-32 (M4 x 0.7)	0.43 (11.0)
16	#8-32 (M4 x 0.7)	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	1.13 (29.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55) 14.0 (0.55)	7.0 (0.28) 7.0 (0.28)	34.0 (1.34) 34.0 (1.34)	5.5 (0.22) 5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp) 9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8 1/8*	8.7 (0.34) 8.7 (0.34)	49.3 (1.94) 49.3 (1.94)	21.4 (0.84) 21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)

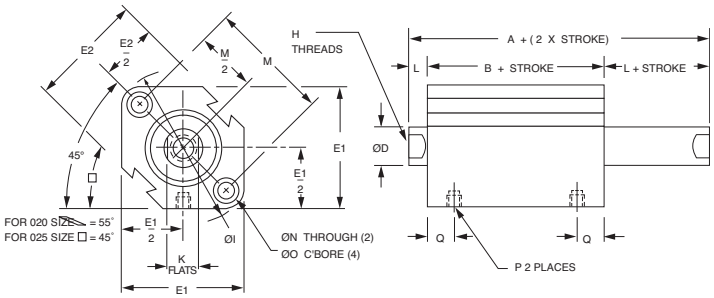
Dimensions: mm (inches)

Double Acting, Double Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Model Code "T"	
Bore	Hole Size
12	N/A (N/A)
16	1.5 (0.06)
20	1.5 (0.06)
25	3.1 (0.13)
32	3.1 (0.13)
40	3.1 (0.13)
50	4.0 (0.16)
63	4.0 (0.16)
80	6.3 (0.25)
100	6.3 (0.25)

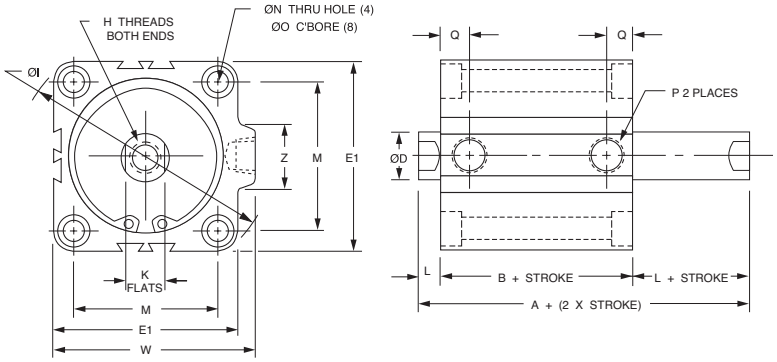
Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	40.8 (1.61)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	43.2 (1.70)	36.2 (1.42)	10.2 (0.40)
20	–	–	–	–	75, 100	50.6 (1.99)	41.6 (1.64)	12.1 (0.48)
25	–	–	–	–	75, 100	57.5 (2.26)	47.5 (1.87)	12.7 (0.50)
32	75, 100	61.8 (2.43)	47.8 (1.88)	12.7 (0.50)	125, 150	61.8 (2.43)	47.8 (1.88)	12.7 (0.50)
40	75, 100	69.5 (2.74)	55.5 (2.19)	12.7 (0.50)	125, 150	69.5 (2.74)	55.5 (2.19)	12.7 (0.50)
50	75, 100	75.3 (2.96)	59.3 (2.33)	13.2 (0.52)	125, 150	75.3 (2.96)	59.3 (2.33)	13.2 (0.52)
63	75, 100	80.6 (3.17)	64.6 (2.54)	18.5 (0.73)	125, 150	80.6 (3.17)	64.6 (2.54)	18.5 (0.73)
80	75, 100	89.5 (3.52)	69.5 (2.74)	14.0 (0.55)	125, 150	89.5 (3.52)	69.5 (2.74)	14.0 (0.55)
100	75, 100	100.7 (3.96)	76.7 (3.02)	18.0 (0.71)	125, 150	100.7 (3.96)	76.7 (3.02)	18.0 (0.71)

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	32.2 (1.27)	25.2 (0.99)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	33.0 (1.30)	26.0 (1.02)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	35.0 (1.38)	26.0 (1.02)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	39.0 (1.54)	29.0 (1.14)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5 only (0.20) 10-50 (0.39-2.0)	44.5 (1.75) 44.5 (1.75)	30.5 (1.20) 30.5 (1.20)	16.0 (0.63) 16.0 (0.63)	44.5 (1.75) 44.5 (1.75)	— —	5/16-24 X 0.50dp (M8 x 1.25 - 12dp) 5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32) 58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	54.0 (2.13)	40.0 (1.57)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	56.5 (2.22)	40.5 (1.59)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	58.0 (2.28)	42.0 (1.65)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	71.0 (2.80)	51.0 (2.01)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	84.5 (3.33)	60.5 (2.38)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)

Dimensions: Inches (mm)

Double Acting, Double Rod continued

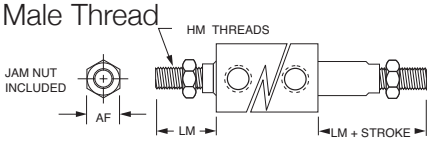
Ø32 - Ø100 mm Bores



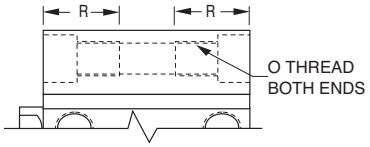
Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

Rod End Male Thread



Tapped Hole Mounting



NOTE: Inch threads for 'N' port code.
Metric threads for 'G' and 'P' port codes.
Metric for foot, flange, and clevis mount.

Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

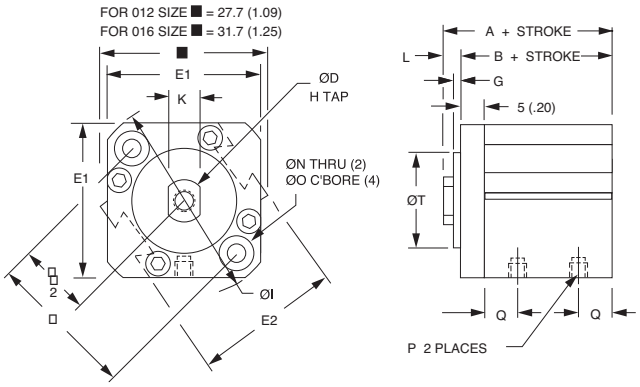
Bore mm	O (Threads) Inch (mm)	R Inch (mm)
12	#8-32 (M4 x 0.7)	0.43 (11.0)
16	#8-32 (M4 x 0.7)	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	1.13 (29.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55) 14.0 (0.55)	7.0 (0.28) 7.0 (0.28)	34.0 (1.34) 34.0 (1.34)	5.5 (0.22) 5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp) 9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8 1/8*	8.7 (0.34) 8.7 (0.34)	49.3 (1.94) 49.3 (1.94)	21.4 (0.84) 21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)

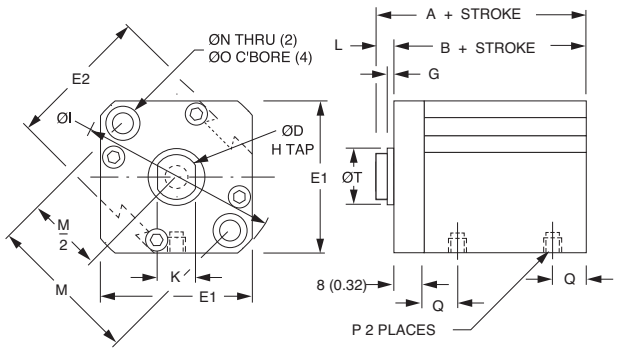
Dimensions: mm (inches)

Double Acting, Double Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Rod flats (Dim. K) nominally in-line with ports.

Bore mm	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	42.3 (1.67)	38.8 (1.53)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	44.7 (1.76)	41.2 (1.62)	10.2 (0.40)
20	–	–	–	–	75, 100	54.1 (2.13)	49.6 (1.95)	12.1 (0.48)
25	–	–	–	–	75, 100	60.5 (2.38)	55.5 (2.19)	12.7 (0.50)
32	75, 100	49.0 (1.93)	42.0 (1.65)	8.7 (0.34)	125, 150	63.8 (2.51)	56.8 (2.24)	12.7 (0.50)
40	75, 100	46.5 (1.83)	39.5 (1.56)	9.2 (0.36)	125, 150	62.5 (2.46)	55.5 (2.19)	12.7 (0.50)
50	75, 100	48.5 (1.91)	40.5 (1.59)	10.5 (0.41)	125, 150	67.3 (2.65)	59.3 (2.33)	13.2 (0.52)
63	75, 100	54.0 (2.13)	46.0 (1.81)	11.5 (0.45)	125, 150	72.6 (2.86)	64.6 (2.54)	18.5 (0.73)
80	75, 100	63.5 (2.50)	53.5 (2.11)	14.0 (0.55)	125, 150	79.5 (3.13)	69.5 (2.74)	14.0 (0.55)
100	75, 100	75.0 (2.95)	63.0 (2.48)	18.0 (0.71)	125, 150	88.7 (3.49)	76.7 (3.02)	18.0 (0.71)

NOTE: See page 5 for complete stroke availability.

Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port with accept #10-32 male thread fittings.

WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT scratch or dent shaft.

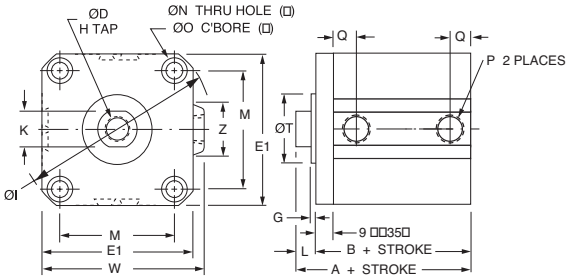
Bore Size	12	16	20	25	32	40	50	63	80	100
Non-Rotating Rod Accuracy	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	25.5 (1.00)	22.0 (0.87)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	27.0 (1.06)	23.5 (0.93)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	32.0 (1.26)	27.5 (1.08)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	35.5 (1.40)	30.5 (1.20)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5 only (0.20) 10-50 (0.39-2.0)	39.0 (1.54) 39.0 (1.54)	32.0 (1.26) 32.0 (1.26)	16.0 (0.63) 16.0 (0.63)	44.5 (1.75) 44.5 (1.75)	— —	5/16-24 X 0.50dp (M8 x 1.25 - 12dp) 5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32) 58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	36.5 (1.44)	29.5 (1.16)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	38.5 (1.52)	30.5 (1.20)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	44.0 (1.73)	36.0 (1.42)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	53.5 (2.11)	43.5 (1.71)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	65.0 (2.56)	53.0 (2.09)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)

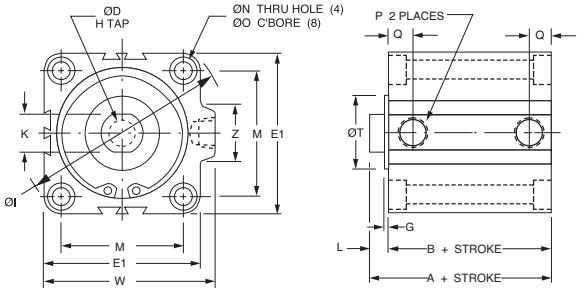
Dimensions: mm (inches) *unless otherwise noted

Double Acting, Non-Rotating Piston Rod continued

Ø32 mm Bores

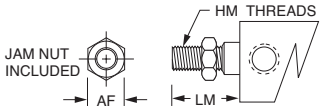


Ø40 - Ø100 mm Bores



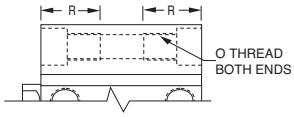
Rod flats (Dim. K) nominally in-line with ports.

Rod End Male Thread



Tapped Hole Mounting

NOTE: Inch threads for 'N' port code.
Metric threads for 'G' and 'P' port codes.
Metric for foot, flange, and clevis mount.



Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

Bore mm	O (Threads) Inch (mm)	Places Front	RF Inch (mm)	Places Rear	RR Inch (mm)
12	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
16	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	2	1.02 (26.0)	2	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	4	0.75 (19.0)	4	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	4	0.75 (19.0)	4	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	4	0.87 (22.0)	4	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)

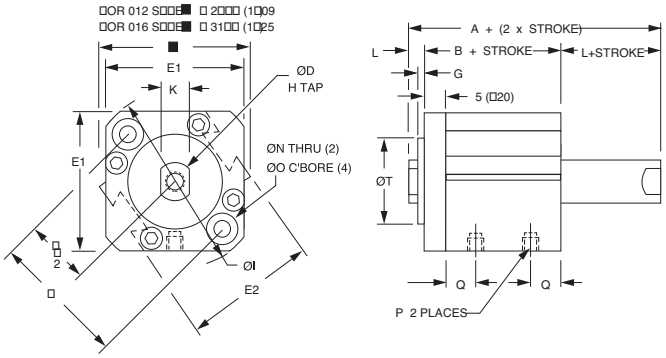
Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55) 14.0 (0.55)	7.0 (0.28) 7.0 (0.28)	34.0 (1.34) 34.0 (1.34)	5.5 (0.22) 5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp) 9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8 1/8*	8.7 (0.34) 8.7 (0.34)	49.3 (1.94) 49.3 (1.94)	21.4 (0.84) 21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)

Bore	ØT	G
12 (1/2)	15 +0/-0.043 (0.591 +0/-0.002)	1.5 (0.06)
16 (5/8)	20 +0/-0.052 (0.787 +0/-0.002)	1.5 (0.06)
20 (3/4)	13 +0/-0.043 (0.512 +0/-0.002)	2.0 (0.08)
25 (1)	15 +0/-0.043 (0.591 +0/-0.002)	2.0 (0.08)
32 (1-1/4)	21 +0/-0.062 (0.827 +0/-0.002)	2.0 (0.08)
40 (1-1/2)	28 +0/-0.062 (1.102 +0/-0.002)	2.0 (0.08)
50 (2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
63 (2-1/2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
80 (3-1/4)	43 +0/-0.062 (1.693 +0/-0.002)	2.0 (0.08)
100 (4)	59 +0/-0.074 (2.323 +0/-0.003)	2.0 (0.08)

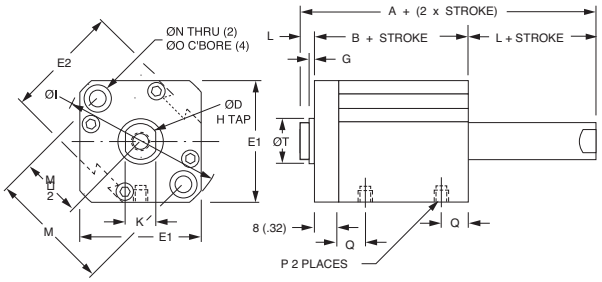
Dimensions: mm (inches)

Double Acting, Double Rod, Non-Rotating Piston Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT scratch or dent shaft.

Model Code "M"	
Bore	Hole Size
12	N/A (N/A)
16	1.5 (0.06)
20	1.5 (0.06)
25	3.1 (0.13)
32	3.1 (0.13)
40	3.1 (0.13)
50	4.0 (0.16)
63	4.0 (0.16)
80	6.3 (0.25)
100	6.3 (0.25)

Rod flats (Dim. K) nominally in-line with ports.

Bore Size	12	16	20	25	32	40	50	63	80	100
Non-Rotating Rod Accuracy	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	45.8 (1.80)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	48.2 (1.90)	41.2 (1.62)	10.2 (0.40)
20	–	–	–	–	75, 100	58.6 (2.31)	49.6 (1.95)	12.1 (0.48)
25	–	–	–	–	75, 100	65.5 (2.58)	55.5 (2.19)	12.7 (0.50)
32	75, 100	70.8 (2.79)	56.8 (2.24)	12.7 (0.50)	125, 150	70.8 (2.79)	56.8 (2.24)	12.7 (0.50)
40	75, 100	69.5 (2.74)	55.5 (2.19)	12.7 (0.50)	125, 150	69.5 (2.74)	55.5 (2.19)	12.7 (0.50)
50	75, 100	75.3 (2.96)	59.3 (2.33)	13.2 (0.52)	125, 150	75.3 (2.96)	59.3 (2.33)	13.2 (0.52)
63	75, 100	80.6 (3.17)	64.6 (2.54)	18.5 (0.73)	125, 150	80.6 (3.17)	64.6 (2.54)	18.5 (0.73)
80	75, 100	89.5 (3.52)	69.5 (2.74)	14.0 (0.55)	125, 150	89.5 (3.52)	69.5 (2.74)	14.0 (0.55)
100	75, 100	100.7 (3.96)	76.7 (3.02)	18.0 (0.71)	125, 150	100.7 (3.96)	76.7 (3.02)	18.0 (0.71)

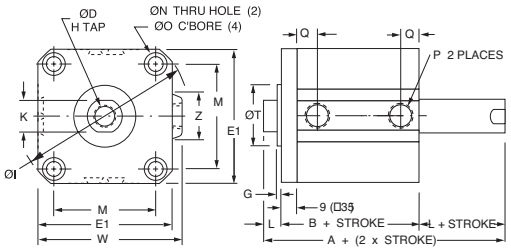
NOTE: See page 5 for complete stroke availability.

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	37.2 (1.46)	30.2 (1.19)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	38.0 (1.50)	31.0 (1.22)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	43.0 (1.69)	34.0 (1.34)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	47.0 (1.85)	37.0 (1.46)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5 only (0.20) 10-50 (0.39-2.0)	53.5 (2.11) 53.5 (2.11)	39.5 (1.56) 39.5 (1.56)	16.0 (0.63) 16.0 (0.63)	44.5 (1.75) 44.5 (1.75)	— —	5/16-24 X 0.50dp (M8 x 1.25 - 12dp) 5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32) 58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	54.0 (2.13)	40.0 (1.57)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	56.5 (2.22)	40.5 (1.59)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	58.0 (2.28)	42.0 (1.65)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	71.0 (2.80)	51.0 (2.01)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	84.5 (3.33)	60.5 (2.38)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)

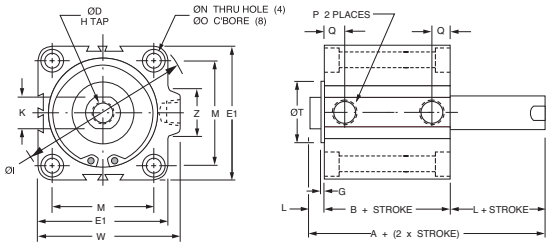
Dimensions: mm (inches) *unless otherwise noted

Double Acting, Double Rod, Non-Rotating Piston Rod continued

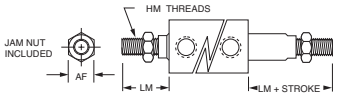
Ø32 mm Bores



Ø40 - Ø100 mm Bores



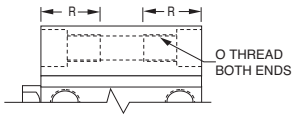
Rod End Male Thread



Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

Tapped Hole Mounting

NOTE: Inch threads for 'N' port code.
Metric threads for 'G' and 'P' port codes.
Metric for foot, flange, and clevis mount.



Bore mm	O (Threads) Inch (mm)	Places Front	RF Inch (mm)	Places Rear	RR Inch (mm)
12	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
16	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	2	1.02 (26.0)	2	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	4	0.75 (19.0)	4	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	4	0.75 (19.0)	4	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	4	0.87 (22.0)	4	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55) 14.0 (0.55)	7.0 (0.28) 7.0 (0.28)	34.0 (1.34) 34.0 (1.34)	5.5 (0.22) 5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp) 9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8 1/8*	8.7 (0.34) 8.7 (0.34)	49.3 (1.94) 49.3 (1.94)	21.4 (0.84) 21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)

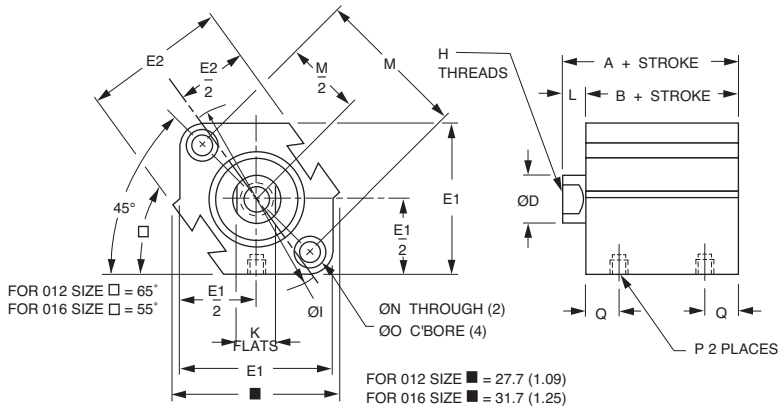
Bore	ØT	G
12 (1/2)	15 +0/-0.043 (0.591 +0/-0.002)	1.5 (0.06)
16 (5/8)	20 +0/-0.052 (0.787 +0/-0.002)	1.5 (0.06)
20 (3/4)	13 +0/-0.043 (0.512 +0/-0.002)	2.0 (0.08)
25 (1)	15 +0/-0.043 (0.591 +0/-0.002)	2.0 (0.08)
32 (1-1/4)	21 +0/-0.062 (0.827 +0/-0.002)	2.0 (0.08)
40 (1-1/2)	28 +0/-0.062 (1.102 +0/-0.002)	2.0 (0.08)
50 (2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
63 (2-1/2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
80 (3-1/4)	43 +0/-0.062 (1.693 +0/-0.002)	2.0 (0.08)
100 (4)	59 +0/-0.074 (2.323 +0/-0.003)	2.0 (0.08)

Dimensions: mm (inches)

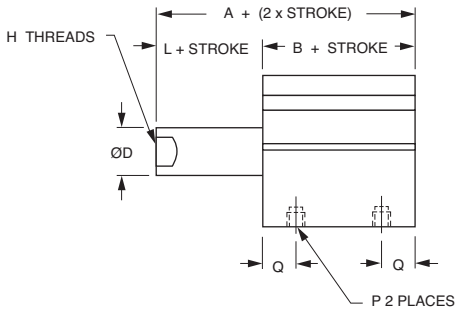
Single Acting, Spring Retract / Spring Extend

Ø12 - Ø16 mm Bores

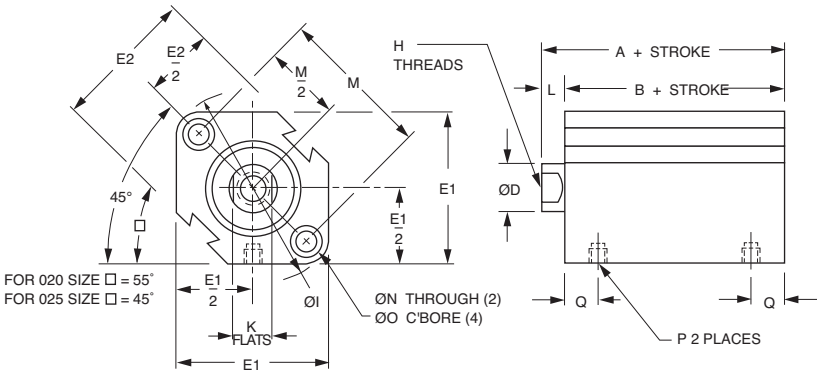
Spring Retract

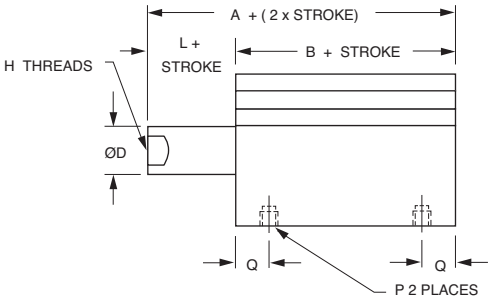


Spring Extend



Ø20 - Ø25 mm Bores





NOTE: See page 5 for complete stroke availability.

Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

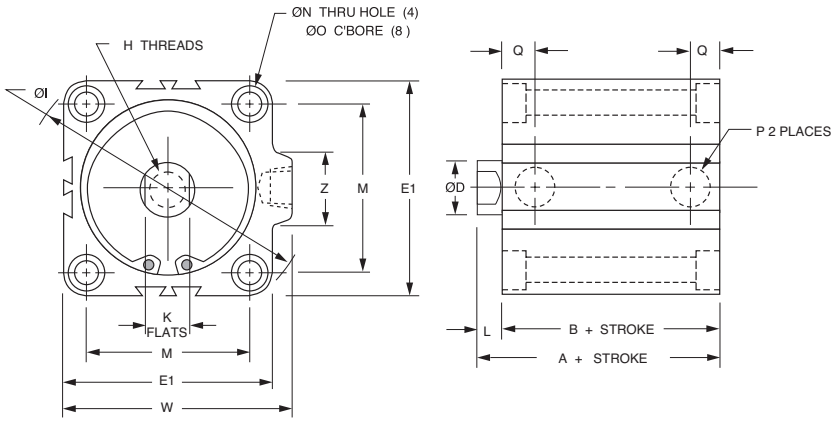
Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-10 (0.20~0.39)	20.5 (0.81)	17.0 (0.67)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-10 (0.20~0.39)	22.0 (0.87)	18.5 (0.73)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-10 (0.20~0.39)	24.0 (0.94)	19.5 (0.77)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-10 (0.20~0.39)	27.5 (1.08)	22.5 (0.86)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5 (0.20) 10 (0.39)	30.0 (1.18) 30.0 (1.18)	23.0 (0.91) 23.0 (0.91)	16.0 (0.63) 16.0 (0.63)	44.5 (1.75) 44.5 (1.75)	— —	5/16-24 X 0.50dp (M8 x 1.25 - 12dp) 5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32) 58.9 (2.32)
40 (1-1/2)	5-10 (0.20~0.39)	36.5 (1.44)	29.5 (1.16)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-20 (0.39~0.79)	38.5 (1.52)	30.5 (1.20)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)

Dimensions: mm (inches) *unless otherwise noted

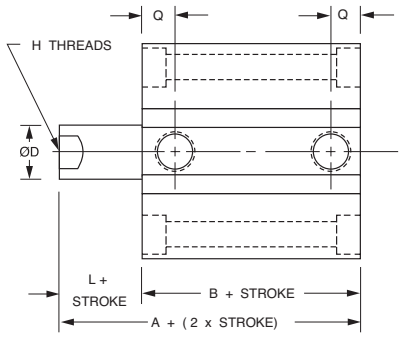
Single Acting, Spring Retract / Spring Extend continued

Ø32 - Ø50 mm Bores

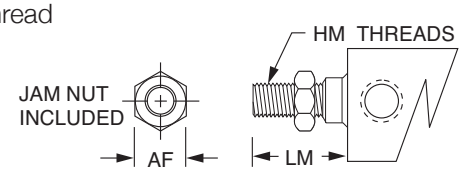
Spring Retract



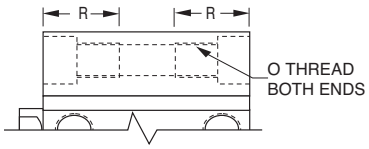
Spring Extend



Rod End Male Thread



Tapped Hole Mounting



NOTE: Inch threads for 'N' port code. Metric threads for 'G' and 'P' port codes. Metric for foot, flange, and clevis mount.

Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Retracted Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)

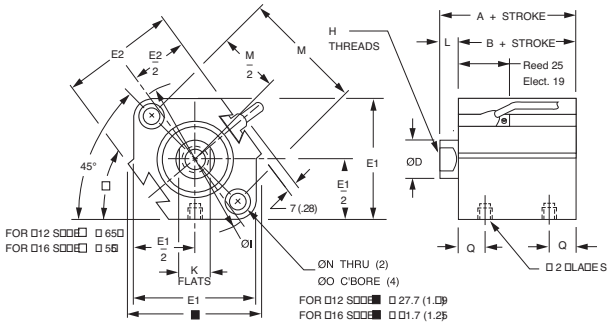
Bore mm	O (Threads) Inch (mm)	R Inch (mm)
12	#8-32 (M4 x 0.7)	0.43 (11.0)
16	#8-32 (M4 x 0.7)	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	0.75 (19.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55) 14.0 (0.55)	7.0 (0.28) 7.0 (0.28)	34.0 (1.34) 34.0 (1.34)	5.5 (0.22) 5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp) 9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8 1/8*	8.7 (0.34) 8.7 (0.34)	49.3 (1.94) 49.3 (1.94)	21.4 (0.84) 21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)

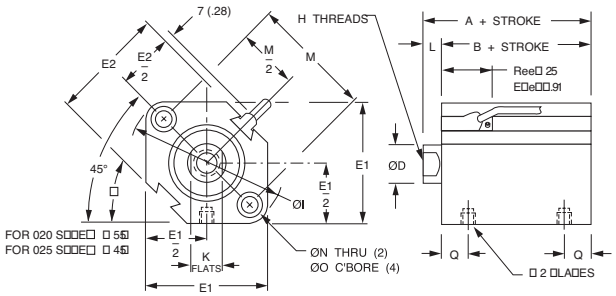
Dimensions: mm (inches)

Magnetic Piston, Double Acting, Single Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Sensors must be ordered separately, see Sensor section.

Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port with accept #10-32 male thread fittings.

Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	37.3 (1.47)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	39.7 (1.56)	36.2 (1.42)	10.2 (0.40)
20	–	–	–	–	75, 100	46.1 (1.82)	41.6 (1.64)	12.1 (0.48)
25	–	–	–	–	75, 100	52.5 (2.07)	47.5 (1.87)	12.7 (0.50)
32	75, 100	40.0 (1.57)	33.0 (1.30)	8.7 (0.34)	125, 150	54.8 (2.16)	47.8 (1.88)	12.7 (0.50)
40	75, 100	46.5 (1.83)	39.5 (1.56)	9.2 (0.36)	125, 150	62.5 (2.46)	55.5 (2.19)	12.7 (0.50)
50	75, 100	48.5 (1.91)	40.5 (1.59)	10.5 (0.41)	125, 150	67.3 (2.65)	59.3 (2.33)	13.2 (0.52)
63	75, 100	54.0 (2.13)	46.0 (1.81)	11.5 (0.45)	125, 150	72.6 (2.86)	64.6 (2.54)	18.5 (0.73)
80	75, 100	63.5 (2.50)	53.5 (2.11)	14.0 (0.55)	125, 150	79.5 (3.13)	69.5 (2.74)	14.0 (0.55)
100	75, 100	75.0 (2.95)	63.0 (2.48)	18.0 (0.71)	125, 150	88.7 (3.49)	76.7 (3.02)	18.0 (0.71)

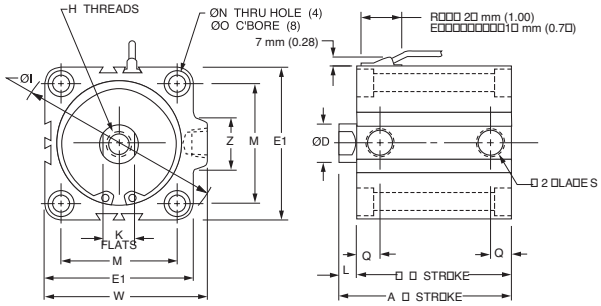
NOTE: See page 5 for complete stroke availability.

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	31.5 (1.24)	28.0 (1.10)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	34.0 (1.34)	30.5 (1.20)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	36.0 (1.42)	31.5 (1.24)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	37.5 (1.48)	32.5 (1.28)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5-50 (0.20-2.0)	40.0 (1.57)	33.0 (1.30)	16.0 (0.63)	44.5 (1.75)	—	5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	46.5 (1.83)	39.5 (1.56)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	48.5 (1.91)	40.5 (1.59)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	54.0 (2.13)	46.0 (1.81)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	63.5 (2.50)	53.5 (2.11)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	75.0 (2.95)	63.0 (2.48)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)
125 (4.9)	10-300 (0.39-12)	99.0 (3.90)	83.0 (3.27)	36.0 (1.42)	142.0 (5.59)	—	3/4-16 X 1.06dp (M22 x 2.5 - 27dp)	190.0 (7.48)
140 (5-1/2)	10-300 (0.39-12)	99.0 (3.90)	83.0 (3.27)	36.0 (1.42)	158.0 (6.22)	—	3/4-16 X 1.06dp (M22 x 2.5 - 27dp)	210.0 (8.27)
160 (6-1/4)	10-300 (0.39-12)	108.0 (4.25)	91.0 (3.58)	40.0 (1.58)	178.0 (7.01)	—	3/4-16 X 1.06dp (M24 x 3.0 - 27dp)	238.0 (9.37)

Dimensions: mm (inches) *unless otherwise noted

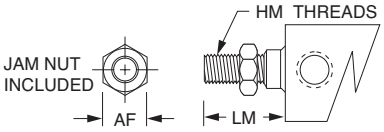
Magnetic Piston, Double Acting, Single Rod continued

Ø32 - Ø160 mm Bores

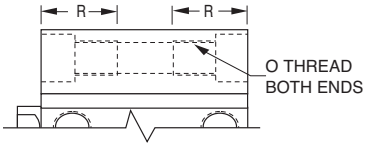


Sensors must be ordered separately, see Sensor section.

Rod End Male Thread



Tapped Hole Mounting



NOTE: Inch threads for 'N' port code. Metric threads for 'G' and 'P' port codes. Metric for foot, flange, and clevis mount.

Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)
125	1.13 (46.0)	3/4-16 X 1.12 lg (M30 x 1.5-42 lg)	1.75 (58.0)
140	1.13 (46.0)	3/4-16 X 1.12 lg (M30 x 1.5-42 lg)	1.75 (58.0)
160	1.13 (55.0)	3/4-16 X 1.12 lg (M36 x 1.5-47 lg)	1.79 (64.0)

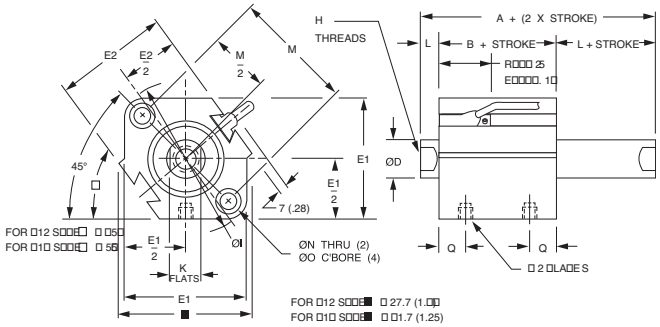
Bore mm	O (Threads) Inch (mm)	RR Inch (mm)
12	#8-32 (M4 x 0.7)	0.43 (11.0)
16	#8-32 (M4 x 0.7)	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	1.13 (29.0)
125	– (M14 x 2.0)	– (45.0)
140	– (M14 x 2.0)	– (45.0)
160	– (M16 x 2.0)	– (50.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55) 14.0 (0.55)	7.0 (0.28) 7.0 (0.28)	34.0 (1.34) 34.0 (1.34)	5.5 (0.22) 5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp) 9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8 1/8*	8.7 (0.34) 8.7 (0.34)	49.3 (1.94) 49.3 (1.94)	21.4 (0.84) 21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)
125 (4.9)	32.0 (1.26)	16.0 (0.63)	114.0 (4.49)	12.7 (0.50)	21.2 x 18.4dp (0.83 x 0.72 dp)	3/8*	24.5 (0.96)	153.0 (6.02)	39.0 (1.53)
140 (5-1/2)	32.0 (1.26)	16.0 (0.63)	128.0 (5.04)	12.7 (0.50)	21.2 x 18.4dp (0.83 x 0.72 dp)	3/8*	24.5 (0.96)	168.0 (6.61)	39.0 (1.53)
160 (6-1/4)	36.0 (1.42)	17.0 (0.67)	144.0 (5.67)	14.5 (0.57)	24.2 x 21.2dp (0.95 x 0.83 dp)	3/8*	27.5 (1.08)	188.0 (7.40)	39.0 (1.53)

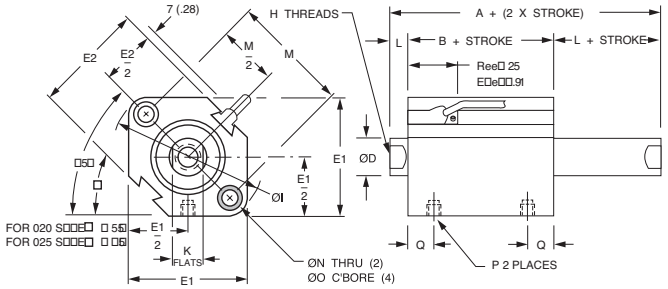
Dimensions: mm (inches)

Magnetic Piston, Double Acting, Double Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Model Code "T"	
Bore	**Hole Size**
12	N/A (N/A)
16	1.5 (0.06)
20	1.5 (0.06)
25	3.1 (0.13)
32	3.1 (0.13)
40	3.1 (0.13)
50	4.0 (0.16)
63	4.0 (0.16)
80	6.3 (0.25)
100	6.3 (0.25)
125	6.3 (0.25)
140	6.3 (0.25)
160	12.6 (0.50)

Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	37.3 (1.47)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	39.7 (1.56)	36.2 (1.42)	10.2 (0.40)
20	–	–	–	–	75, 100	46.1 (1.82)	41.6 (1.64)	12.1 (0.48)
25	–	–	–	–	75, 100	52.5 (2.07)	47.5 (1.87)	12.7 (0.50)
32	75, 100	61.8 (2.43)	47.8 (1.88)	12.7 (0.50)	125, 150	54.8 (2.16)	47.8 (1.88)	12.7 (0.50)
40	75, 100	69.5 (2.74)	55.5 (2.19)	12.7 (0.50)	125, 150	62.5 (2.46)	55.5 (2.19)	12.7 (0.50)
50	75, 100	75.3 (2.96)	59.3 (2.33)	13.2 (0.52)	125, 150	67.3 (2.65)	59.3 (2.33)	13.2 (0.52)
63	75, 100	80.6 (3.17)	64.6 (2.54)	18.5 (0.73)	125, 150	72.6 (2.86)	64.6 (2.54)	18.5 (0.73)
80	75, 100	89.5 (3.52)	69.5 (2.74)	14.0 (0.55)	125, 150	79.5 (3.13)	69.5 (2.74)	14.0 (0.55)
100	75, 100	100.7 (3.96)	76.7 (3.02)	18.0 (0.71)	125, 150	88.7 (3.49)	76.7 (3.02)	18.0 (0.71)

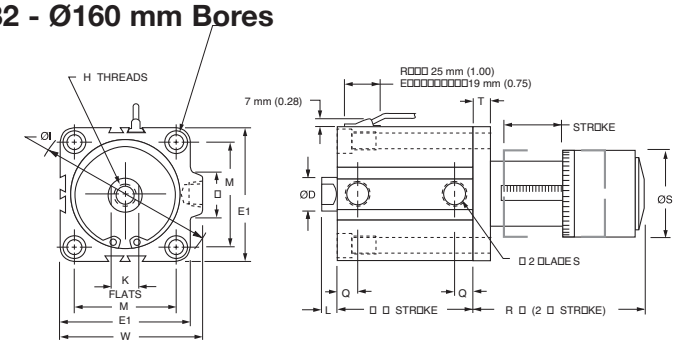
NOTE: See page 5 for complete stroke availability.

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	39.4 (1.55)	32.4 (1.28)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	43.0 (1.69)	36.0 (1.42)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	47.0 (1.85)	38.0 (1.50)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	49.0 (1.93)	39.0 (1.54)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5-50 (0.20-2.0)	54.5 (2.15)	40.5 (1.59)	16.0 (0.63)	44.5 (1.75)	—	5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	64.0 (2.52)	50.0 (1.97)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	66.5 (2.62)	50.5 (1.99)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	68.0 (2.68)	52.0 (2.05)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	81.0 (3.19)	61.0 (2.40)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	94.5 (3.72)	70.5 (2.78)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)
125 (4.9)	10-300 (0.39-12)	115.0 (4.53)	83.0 (3.27)	36.0 (1.42)	142.0 (5.59)	—	3/4-16 X 1.06dp (M22 x 2.5 - 27dp)	190.0 (7.48)
140 (5-1/2)	10-300 (0.39-12)	115.0 (4.53)	83.0 (3.27)	36.0 (1.42)	158.0 (6.22)	—	3/4-16 X 1.06dp (M22 x 2.5 - 27dp)	210.0 (8.27)
160 (6-1/4)	10-300 (0.39-12)	125.0 (4.92)	91.0 (3.58)	40.0 (1.58)	178.0 (7.01)	—	3/4-16 X 1.06dp (M24 x 3.0 - 27dp)	238.0 (9.37)

Dimensions: mm (inches) *unless otherwise noted

Magnetic Piston, Double Acting, Double Rod continued

Ø32 - Ø160 mm Bores

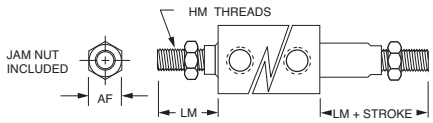


Sensors must be ordered separately, see Sensor section.

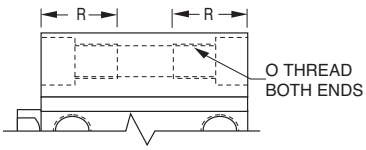
Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

Rod End Male Thread



Tapped Hole Mounting



NOTE: Inch threads for 'N' port code. Metric threads for 'G' and 'P' port codes. Metric for foot, flange, and clevis mount.

Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)
125	1.13 (46.0)	3/4-16 X 1.12 lg (M30 x 1.5-42 lg)	1.75 (58.0)
140	1.13 (46.0)	3/4-16 X 1.12 lg (M30 x 1.5-42 lg)	1.75 (58.0)
160	1.13 (55.0)	3/4-16 X 1.12 lg (M36 x 1.5-47 lg)	1.79 (64.0)

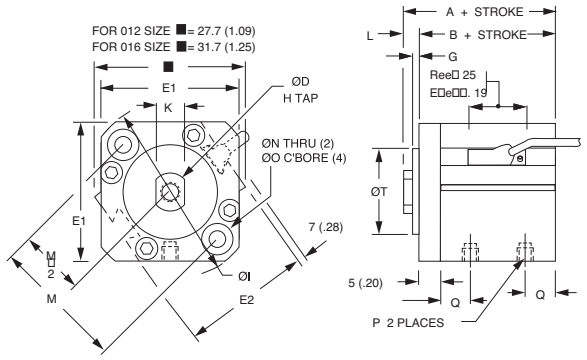
Bore mm	O (Threads) Inch (mm)	RR Inch (mm)
12	#8-32 (M4 x 0.7)	0.43 (11.0)
16	#8-32 (M4 x 0.7)	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	1.13 (29.0)
125	– (M14 x 2.0)	– (45.0)
140	– (M14 x 2.0)	– (45.0)
160	– (M16 x 2.0)	– (50.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55)	7.0 (0.28)	34.0 (1.34)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	8.7 (0.34)	49.3 (1.94)	21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)
125 (4.9)	32.0 (1.26)	16.0 (0.63)	114.0 (4.49)	12.7 (0.50)	21.2 x 18.4dp (0.83 x 0.72 dp)	3/8*	24.5 (0.96)	153.0 (6.02)	39.0 (1.53)
140 (5-1/2)	32.0 (1.26)	16.0 (0.63)	128.0 (5.04)	12.7 (0.50)	21.2 x 18.4dp (0.83 x 0.72 dp)	3/8*	24.5 (0.96)	168.0 (6.61)	39.0 (1.53)
160 (6-1/4)	36.0 (1.42)	17.0 (0.67)	144.0 (5.67)	14.5 (0.57)	24.2 x 21.2dp (0.95 x 0.83 dp)	3/8*	27.5 (1.08)	188.0 (7.40)	39.0 (1.53)

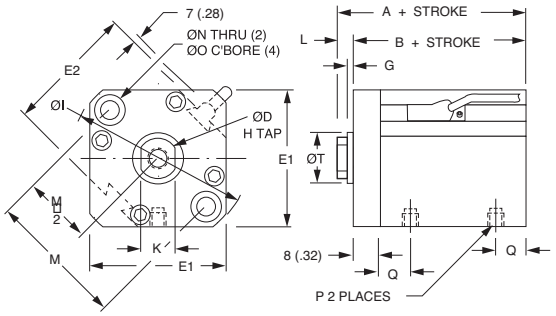
Dimensions: mm (inches)

Magnetic Piston, Double Acting, Non-Rotating Piston Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Rod flats (Dim. K) nominally in-line with ports.

Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT scratch or dent shaft.

Sensors must be ordered separately, see page 36.

Bore Size	12	16	20	25	32	40	50	63	80	100
Non-Rotating Rod Accuracy	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	42.3 (1.67)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	44.7 (1.76)	41.2 (1.62)	10.2 (0.40)
20	–	–	–	–	75, 100	54.1 (2.13)	49.6 (1.95)	12.1 (0.48)
25	–	–	–	–	75, 100	60.5 (2.38)	55.5 (2.19)	12.7 (0.50)
32	75, 100	49.0 (1.93)	42.0 (1.65)	8.7 (0.34)	125, 150	63.8 (2.51)	56.8 (2.24)	12.7 (0.50)
40	75, 100	46.5 (1.83)	39.5 (1.56)	9.2 (0.36)	125, 150	62.5 (2.46)	55.5 (2.19)	12.7 (0.50)
50	75, 100	48.5 (1.91)	40.5 (1.59)	10.5 (0.41)	125, 150	67.3 (2.65)	59.3 (2.33)	13.2 (0.52)
63	75, 100	54.0 (2.13)	46.0 (1.81)	11.5 (0.45)	125, 150	72.6 (2.86)	64.6 (2.54)	18.5 (0.73)
80	75, 100	63.5 (2.50)	53.5 (2.11)	14.0 (0.55)	125, 150	79.5 (3.13)	69.5 (2.74)	14.0 (0.55)
100	75, 100	75.0 (2.95)	63.0 (2.48)	18.0 (0.71)	125, 150	88.7 (3.49)	76.7 (3.02)	18.0 (0.71)

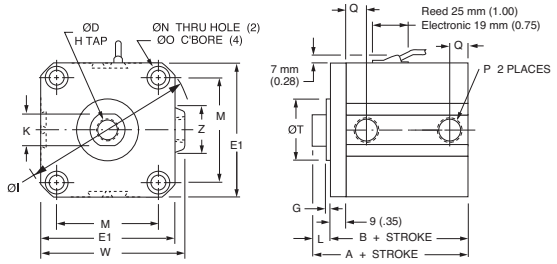
NOTE: See page 5 for complete stroke availability.

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	36.5 (1.44)	33.0 (1.30)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	39.0 (1.54)	35.5 (1.40)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	44.0 (1.73)	39.5 (1.56)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	45.5 (1.79)	40.5 (1.59)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5 only (0.20)	49.0 (1.93)	42.0 (1.65)	16.0 (0.63)	44.5 (1.75)	—	5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	46.5 (1.83)	39.5 (1.56)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	48.5 (1.91)	40.5 (1.59)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	54.0 (2.13)	46.0 (1.81)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	63.5 (2.50)	53.5 (2.11)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	75.0 (2.95)	63.0 (2.48)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)

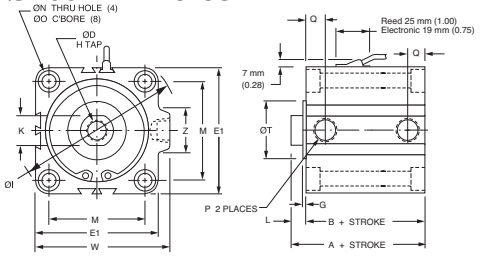
Dimensions: mm (inches) *unless otherwise noted

Magnetic Piston, Double Acting, Non-Rotating Piston Rod (continued)

Ø32 mm Bores

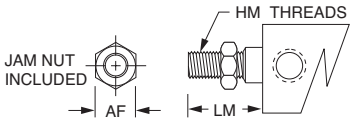


Ø40 - Ø100 mm Bores



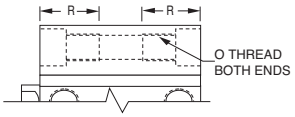
Rod flats (Dim. K) nominally in-line with ports.

Rod End Male Thread



Tapped Hole Mounting

NOTE: Inch threads for 'N' port code.
Metric threads for 'G' and 'P' port codes.
Metric for foot, flange, and clevis mount.



Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

Bore mm	O (Threads) Inch (mm)	Places Front	RF Inch (mm)	Places Rear	RR Inch (mm)
12	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
16	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	2	1.02 (26.0)	2	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	4	0.75 (19.0)	4	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	4	0.75 (19.0)	4	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	4	0.87 (22.0)	4	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)

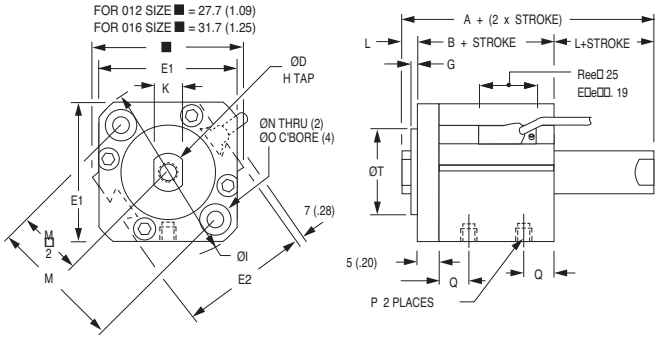
Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55)	7.0 (0.28)	34.0 (1.34)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	8.7 (0.34)	49.3 (1.94)	21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	17.0 (0.67)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	17.0 (0.67)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)

Bore	ØT	G
12 (1/2)	15 +0/-0.043 (0.591 +0/-0.002)	1.5 (0.06)
16 (5/8)	20 +0/-0.052 (0.787 +0/-0.002)	1.5 (0.06)
20 (3/4)	13 +0/-0.043 (0.512 +0/-0.002)	2.0 (0.08)
25 (1)	15 +0/-0.043 (0.591 +0/-0.002)	2.0 (0.08)
32 (1-1/4)	21 +0/-0.062 (0.827 +0/-0.002)	2.0 (0.08)
40 (1-1/2)	28 +0/-0.062 (1.102 +0/-0.002)	2.0 (0.08)
50 (2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
63 (2-1/2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
80 (3-1/4)	43 +0/-0.062 (1.693 +0/-0.002)	2.0 (0.08)
100 (4)	59 +0/-0.074 (2.323 +0/-0.003)	2.0 (0.08)

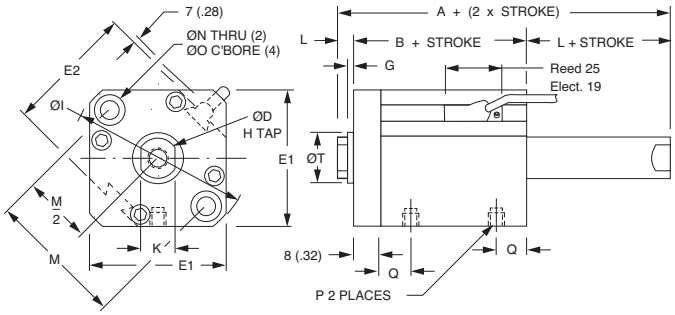
Dimensions: mm (inches)

Magnetic Piston, Double Acting, Double Rod, Non-Rotating Piston Rod

Ø12 - Ø16 mm Bores



Ø20 - Ø25 mm Bores



Rod flats (Dim. K) nominally in-line with ports.

Bore Size	12	16	20	25	32	40	50	63	80	100
Non-Rotating Rod Accuracy	±2°	±1°	±1°	±1°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°	±0.8°

Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

NOTE: M5 x 0.8 port will accept #10-32 male thread fittings.

WARNING: This cylinder has a non-rotating rod. To prevent internal damage hold rod by flats ONLY WHEN FULLY RETRACTED while installing or removing attachments. DO NOT scratch or dent shaft.

Model Code "M"	
Bore	Hole Size
12	N/A (N/A)
16	1.5 (0.06)
20	1.5 (0.06)
25	3.1 (0.13)
32	3.1 (0.13)
40	3.1 (0.13)
50	4.0 (0.16)
63	4.0 (0.16)
80	6.3 (0.25)
100	6.3 (0.25)

Bore mm	Long Stroke				Extended Stroke			
	Stroke mm	A	B	Q	Stroke mm	A	B	Q
12	–	–	–	–	50, 75, 100	45.8 (1.80)	33.8 (1.33)	8.9 (0.35)
16	–	–	–	–	50, 75, 100	48.2 (1.90)	41.2 (1.62)	10.2 (0.40)
20	–	–	–	–	75, 100	58.6 (2.31)	49.6 (1.95)	12.1 (0.48)
25	–	–	–	–	75, 100	65.5 (2.58)	55.5 (2.19)	12.7 (0.50)
32	75, 100	70.8 (2.79)	56.8 (2.24)	8.7 (0.34)	125, 150	70.8 (2.79)	56.8 (2.24)	12.7 (0.50)
40	75, 100	69.5 (2.74)	55.5 (2.19)	9.2 (0.36)	125, 150	69.5 (2.74)	55.5 (2.19)	12.7 (0.50)
50	75, 100	75.3 (2.96)	59.3 (2.33)	10.5 (0.41)	125, 150	75.3 (2.96)	59.3 (2.33)	13.2 (0.52)
63	75, 100	80.6 (3.17)	64.6 (2.54)	11.5 (0.45)	125, 150	80.6 (3.17)	64.6 (2.54)	18.5 (0.73)
80	75, 100	89.5 (3.52)	69.5 (2.74)	14.0 (0.55)	125, 150	79.5 (3.13)	69.5 (2.74)	14.0 (0.55)
100	75, 100	100.7 (3.96)	76.7 (3.02)	18.0 (0.71)	125, 150	88.7 (3.49)	76.7 (3.02)	18.0 (0.71)

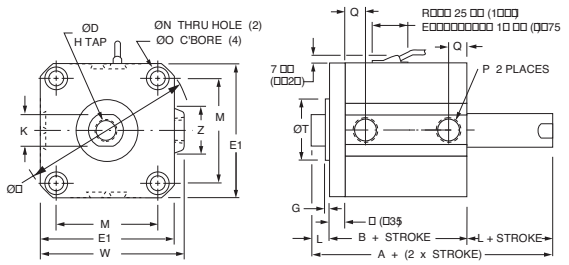
NOTE: See page 5 for complete stroke availability.

Bore	Stroke	A	B	ØD	E1	E2	H (Threads X dp min.)	ØI
12 (1/2)	5-30 (0.20-1.18)	44.4 (1.75)	37.4 (1.47)	6.0 (0.24)	25.0 (0.98)	23.0 (0.90)	#8-32 x 0.21dp (M3 x 0.5 - 5dp)	31.5 (1.24)
16 (5/8)	5-30 (0.20-1.18)	48.0 (1.89)	41.0 (1.61)	8.0 (0.32)	29.0 (1.14)	27.2 (1.07)	#8-32 X 0.21dp (M4 x 0.7 - 5dp)	37.1 (1.46)
20 (3/4)	5-50 (0.20-2.0)	55.0 (2.17)	46.0 (1.81)	10.0 (0.39)	36.0 (1.42)	31.2 (1.23)	#10-32 X 0.28dp (M5 x 0.8 - 7dp)	47.0 (1.85)
25 (1)	5-50 (0.20-2.0)	57.0 (2.24)	47.0 (1.85)	12.0 (0.47)	40.0 (1.57)	36.9 (1.45)	1/4-28 X 0.39dp (M6 x 1.0 - 10dp)	51.3 (2.02)
32 (1-1/4)	5-50 (0.20-2.0)	63.5 (2.50)	49.5 (1.95)	16.0 (0.63)	44.5 (1.75)	—	5/16-24 X 0.50dp (M8 x 1.25 - 12dp)	58.9 (2.32)
40 (1-1/2)	5-50 (0.20-2.0)	64.0 (2.52)	50.0 (1.97)	16.0 (0.63)	52.0 (2.05)	—	3/8-24 X 0.50dp (M8 x 1.25 - 12dp)	69.0 (2.72)
50 (2)	10-50 (0.39-2.0)	66.5 (2.62)	50.5 (1.99)	20.0 (0.79)	63.7 (2.51)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	84.9 (3.34)
63 (2-1/2)	10-50 (0.39-2.0)	68.0 (2.68)	52.0 (2.05)	20.0 (0.79)	76.7 (3.02)	—	1/2-20 X 0.50dp (M10 x 1.5 - 12dp)	101.8 (4.01)
80 (3-1/4)	10-50 (0.39-2.0)	81.0 (3.19)	61.0 (2.40)	25.0 (0.98)	97.8 (3.85)	—	5/8-18 X 0.88dp (M16 x 2.0 - 22dp)	129.8 (5.11)
100 (4)	10-50 (0.39-2.0)	94.5 (3.72)	70.5 (2.78)	30.0 (1.18)	115.3 (4.54)	—	3/4-16 X 0.88dp (M20 x 2.5 - 22dp)	153.9 (6.06)

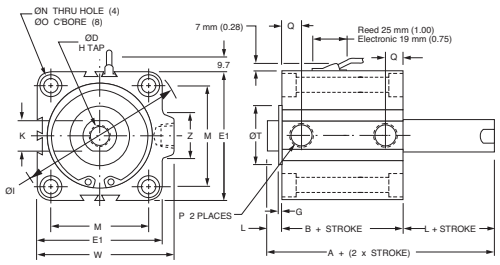
Dimensions: mm (inches) *unless otherwise noted

Magnetic Piston, Double Acting, Double Rod, Non-Rotating Piston Rod continued

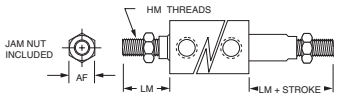
Ø32 mm Bores



Ø40 - Ø100 mm Bores

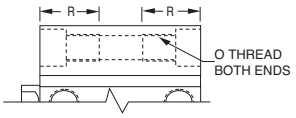


Rod End Male Thread



Tapped Hole Mounting

NOTE: Inch threads for 'N' port code.
Metric threads for 'G' and 'P' port codes.
Metric for foot, flange, and clevis mount.



Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
12	0.34 (8.0)	#8-32 X 0.31 lg (M5 x 0.8-9 lg)	0.45 (14.0)
16	0.34 (10.0)	#8-32 X 0.31 lg (M6 x 1.0-10 lg)	0.45 (15.5)
20	0.38 (13.0)	#10-32 X 0.31 lg (M8 x 1.25-12 lg)	0.49 (18.5)
25	0.43 (17.0)	1/4-28 X 0.37 lg (M10 x 1.25-15 lg)	0.57 (22.5)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

Bore mm	O (Threads) Inch (mm)	Places Front	RF Inch (mm)	Places Rear	RR Inch (mm)
12	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
16	#8-32 (M4 x 0.7)	2	0.63 (16.0)	2	0.43 (11.0)
20	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
25	1/4-20 (M6 x 1.0)	2	0.98 (25.0)	2	0.67 (17.0)
32	1/4-20 (M6 x 1.0)	2	1.02 (26.0)	2	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	4	0.75 (19.0)	4	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	4	0.75 (19.0)	4	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	4	0.87 (22.0)	4	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	4	1.13 (29.0)	4	1.13 (29.0)

Bore	K	L	M	ØN	ØO	*P	Q	W	Z
12 (1/2)	5.0 (0.20)	3.5 (0.14)	22.0 (0.87)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.0 (0.28)	–	–
16 (5/8)	6.0 (0.24)	3.5 (0.14)	28.0 (1.10)	3.5 (0.14)	6.5 x 3.5dp (0.26 x 0.14 dp)	M5 x 0.8	7.8 (0.31)	–	–
20 (3/4)	8.0 (0.31)	4.5 (0.18)	36.0 (1.42)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.1 (0.32)	–	–
25 (1)	10.0 (0.39)	5.0 (0.20)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	M5 x 0.8	8.4 (0.33)	–	–
32 (1-1/4)	14.0 (0.55)	7.0 (0.28)	34.0 (1.34)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	8.7 (0.34)	49.3 (1.94)	21.4 (0.84)
40 (1-1/2)	14.0 (0.55)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	57.0 (2.24)	21.4 (0.84)
50 (2)	18.0 (0.71)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	18.0 (0.71)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	22.0 (0.87)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	27.0 (1.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	121.9 (4.80)	30.0 (1.18)

Bore	ØT	G
12 (1/2)	15 +0/-0.043 (0.591 +0/-0.002)	1.5 (0.06)
16 (5/8)	20 +0/-0.052 (0.787 +0/-0.002)	1.5 (0.06)
20 (3/4)	13 +0/-0.043 (0.512 +0/-0.002)	2.0 (0.08)
25 (1)	15 +0/-0.043 (0.591 +0/-0.002)	2.0 (0.08)
32 (1-1/4)	21 +0/-0.062 (0.827 +0/-0.002)	2.0 (0.08)
40 (1-1/2)	28 +0/-0.062 (1.102 +0/-0.002)	2.0 (0.08)
50 (2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
63 (2-1/2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
80 (3-1/4)	43 +0/-0.062 (1.693 +0/-0.002)	2.0 (0.08)
100 (4)	59 +0/-0.074 (2.323 +0/-0.003)	2.0 (0.08)

Magnetic Piston Adjustable Extend Stroke

Adjustable Extend Stroke Cylinders – The Universal Series offers an adjustable extend stroke cylinder to provide a rugged, precision adjustment of the cylinder extend stroke.

Cylinders are offered in double acting models in bore sizes of 32mm through 100mm with 25mm standard adjustment. Magnetic pistons are included for use with any of the electronic or reed sensors.

Operator Safety – The stop tube, adjustment nut with skirt, and minimum clearances combine to eliminate pinch points.

Construction – The stop tube is black anodized aluminum. The adjustment nut is blackened steel with a black anodized aluminum skirt. The stop flange is red anodized aluminum: all for corrosion resistance and appearance.

The adjustment nut, steel for long life, includes a lock screw with a plastic plug so the adjustment nut can be locked in place without damaging the threads. Precision adjustment is achieved with fine pitch threads on the adjustment rod.

The stop flange is mounted on the end of the adjustment rod so the nut will not come off.

Adjustment – Adjustment settings are simplified by the convenient scale markings. Bores 32 and 40 have a 1/2-20 thread giving .050" (1.3mm) adjustment per nut revolution. Bores 50 and larger have a 3/4-16 thread giving .063" (1.6mm) adjustment per revolution.

How to Order

Example 1: To order a 63mm bore, 75mm stroke unit with standard adjustment of 25mm, NPT ports, and rod end tap mount, specify

Model No. UND–AA063–075D

For over 25mm adjustment specify the desired adjustment as a suffix option.

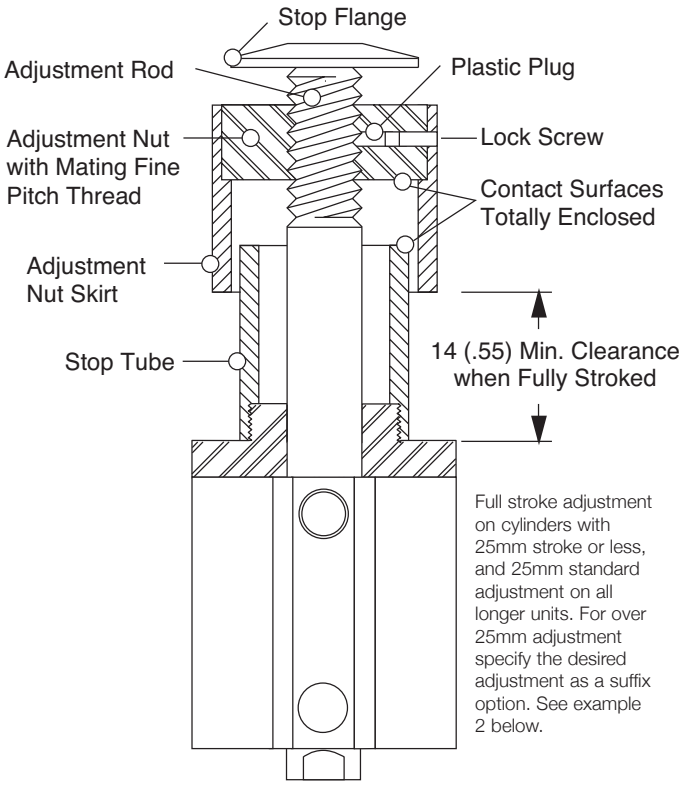
Example 2: To order the same cylinder with a 50mm adjustment, specify

Model No. UND-AA063–075D–050

Example 3: Also available with non-rotating rod; use body length 'B' dimension from page 22, tapped hole mounting information from page 23 and insert the non-rotating rod Code 'K' in model number. To order 63mm bore, 75mm stroke, non-rotating rod, 50mm adjustment, NPT ports, and ISO flange specify

Model No. UND–AKG063–075D–050

Note – When ordering units with flange or foot mounts, the rod stickout (Dim. "L") increases per dimension on page 27-28.



Dimensions: mm (inches)

Bore mm	Stroke		ØD	E1	H (Threads X dp Min.)	ØI	K	L
	15, 25, 50 MM B	75, 100, 125, 150 MM B						
32 (1-1/4)	40.5 (1.59)	47.8 (1.88)	16.0 (0.63)	44.5 (1.75)	5/16-24 X 0.52dp (M8 x 1.25 - 13dp)	58.9 (2.32)	14.0 (0.55)	7.0 (0.28)
40 (1-1/2)	50.0 (1.97)	55.5 (2.19)	16.0 (0.63)	52.0 (2.05)	3/8-24 X 0.72dp (M8 x 1.25 - 13dp)	69.0 (2.72)	14.0 (0.55)	7.0 (0.28)
50 (2)	50.5 (1.99)	59.3 (2.33)	20.0 (0.79)	63.7 (2.51)	1/2-20 X 0.69dp (M10 x 1.5 - 12dp)	84.9 (3.34)	17.0 (0.67)	8.0 (0.31)
63 (2-1/2)	52.0 (2.05)	64.6 (2.54)	20.0 (0.79)	76.7 (3.02)	1/2-20 X 0.69dp (M10 x 1.5 - 12dp)	101.8 (4.01)	17.0 (0.67)	8.0 (0.31)
80 (3-1/4)	61.0 (2.40)	69.5 (2.74)	25.0 (0.98)	97.8 (3.85)	5/8-18 X 0.96dp (M16 x 2.0 - 21dp)	129.8 (5.11)	22.0 (0.87)	10.0 (0.39)
100 (4)	70.5 (2.78)	76.7 (3.02)	30.0 (1.18)	115.3 (4.54)	3/4-16 X 1.06dp (M20 x 2.5 - 30dp)	153.9 (6.06)	27.0 (1.06)	12.0 (0.47)

Magnetic Piston Adjustable Extend Stroke continued

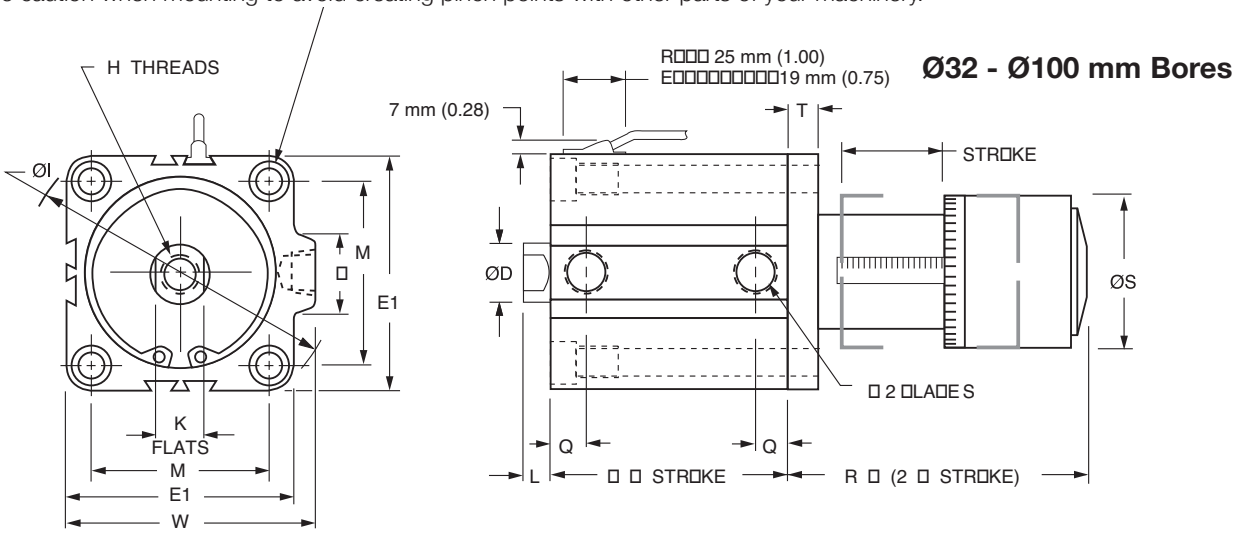
Standard mounting – Code "A" Tapped Holes

4 places useable at rod end only. Also includes 2 thru holes ØN w/c'bore ØO

Optional mounting –

Code "E" Front Flange
Code "G" ISO Front Flange
Code "L" Foot Mount

NOTE: Use caution when mounting to avoid creating pinch points with other parts of your machinery.

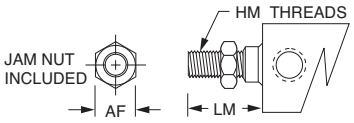


Ø32 - Ø100 mm Bores

Port Size Offerings
N - NPT ports, inch rod thread
G - BSP parallel ports, metric rod thread
P - BSPT taper ports, metric rod thread

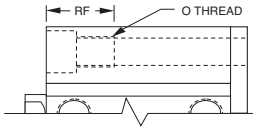
Also available with non-rotating rod, see page 24, example 3.
Sensors must be ordered separately, see Sensor section.

Rod End Male Thread



Tapped Hole Mounting

NOTE: Inch threads for 'N' port code.
Metric threads for 'G' and 'P' port codes.
Metric for foot, flange, and clevis mount.



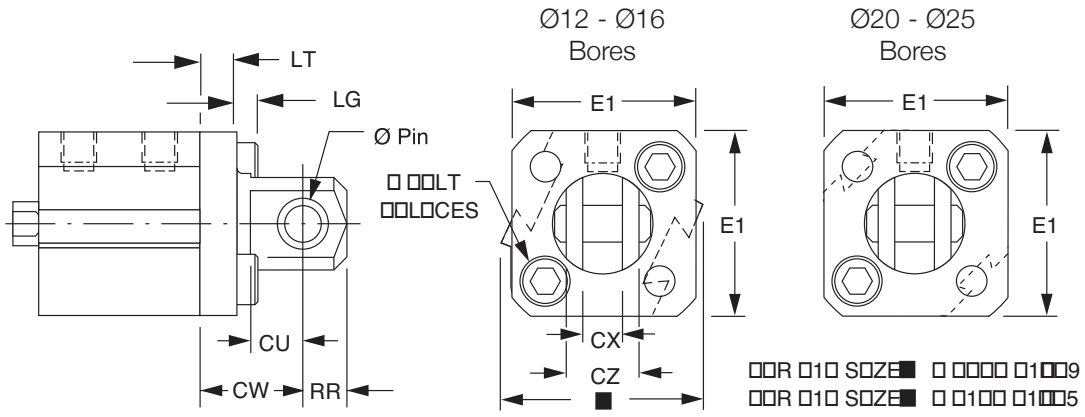
Bore mm	AF (Hex) Inch (mm)	HM (Threads) Inch (mm)	LM Inch (mm)
32	0.50 (22.0)	5/16-24 X 0.50 lg (M14 x 1.5-20.5 lg)	0.78 (28.5)
40	0.56 (22.0)	3/8-24 X 0.63 lg (M14 x 1.5-20.5 lg)	0.91 (28.5)
50	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
63	0.75 (27.0)	1/2-20 X 0.77 lg (M18 x 1.5-26 lg)	1.08 (33.5)
80	0.93 (32.0)	5/8-18 X 1.0 lg (M22 x 1.5-32.5 lg)	1.40 (43.5)
100	1.13 (46.0)	3/4-16 X 1.12 lg (M26 x 1.5-32.5 lg)	1.59 (43.5)

Bore mm	O (Threads) Inch (mm)	RR Inch (mm)
32	1/4-20 (M6 x 1.0)	0.67 (17.0)
40	1/4-20 (M6 x 1.0)	0.75 (19.0)
50	5/16-18 (M8 x 1.25)	0.75 (19.0)
63	7/16-14 (M10 x 1.5)	0.87 (22.0)
80	1/2-13 (M12 x 1.75)	1.13 (29.0)
100	1/2-13 (M12 x 1.75)	1.13 (29.0)

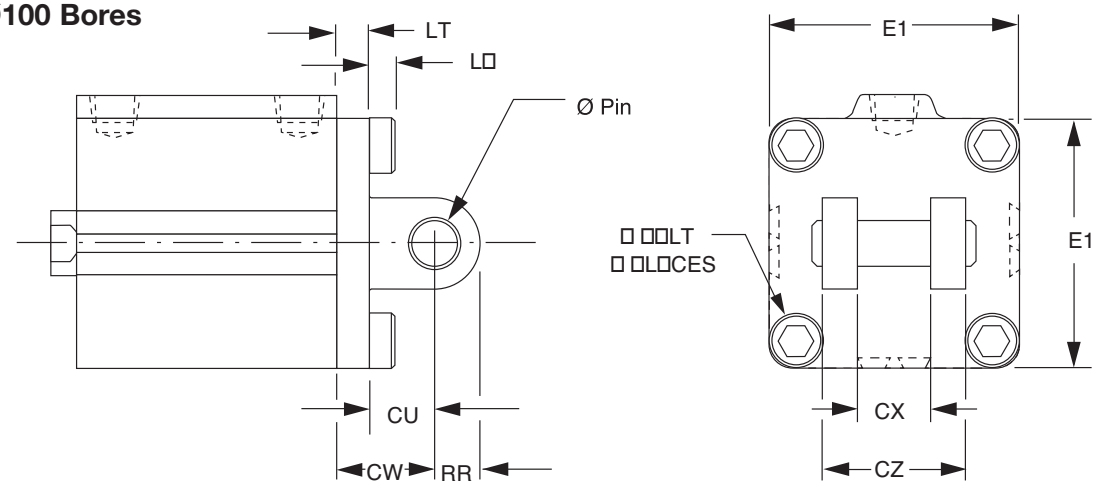
Dimensions: mm (inches)

Bore	M	ØN	ØO	*P	Q	R	ØS	T	W	Z
32 (1-1/4)	34.0 (1.34)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	8.7 (0.34)	41.1 (1.62)	38.0 (1.50)	7.6 (0.30)	49.3 (1.94)	21.4 (0.84)
40 (1-1/2)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0dp (0.35 x 0.28 dp)	1/8*	9.2 (0.36)	41.1 (1.62)	38.0 (1.50)	7.6 (0.30)	57.0 (2.24)	21.4 (0.84)
50 (2)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0dp (0.43 x 0.31 dp)	1/4*	10.5 (0.41)	53.6 (2.11)	50.8 (2.00)	12.0 (0.47)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5dp (0.55 x 0.41 dp)	1/4*	11.5 (0.45)	52.6 (2.07)	50.8 (2.00)	11.0 (0.43)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	56.6 (2.23)	50.8 (2.00)	15.0 (0.59)	104.0 (4.09)	30.0 (1.18)
100 (4)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5dp (0.69 x 0.53 dp)	3/8*	18.0 (0.71)	65.1 (2.56)	50.8 (2.00)	15.0 (0.59)	121.9 (4.80)	30.0 (1.18)

Rear Clevis Mount



Ø32 - Ø100 Bores



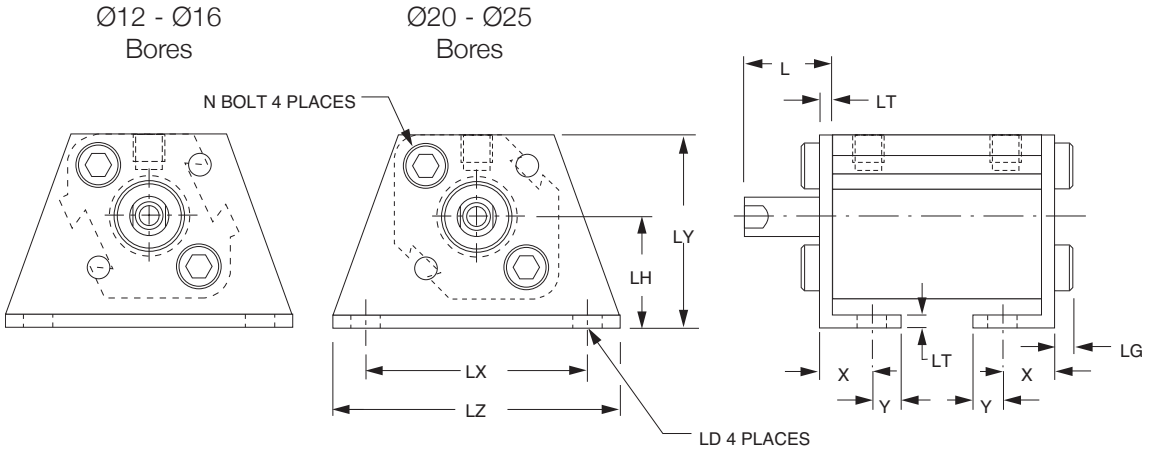
NOTE: All clevis mounts attach to cylinder body with metric size socket cap screws.

Bore MM	12	16	20	25	32	40	50	63	80	100
N Bolt	M4 x 0.7	M4 x 0.7	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M8 x 1.25	M10 x 1.5	M12 x 1.75	M12 x 1.75

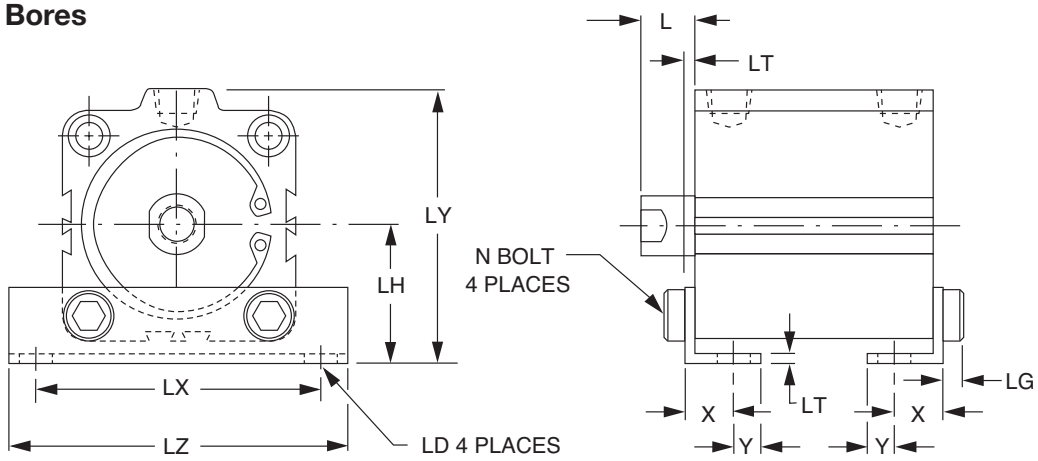
Dimensions: mm (inches)

Bore	Ø PIN Nominal mm (Inch)	CW	CU	CX	CZ	LT	LG	RR	E1
12 (1/2)	5.0 (0.19)	14.0 (0.55)	7.0 (0.28)	5.3 (0.21)	10.0 (0.39)	5.0 (0.20)	2.8 (0.11)	6.0 (0.24)	25.0 (0.98)
16 (5/8)	5.0 (0.19)	15.0 (0.59)	10.0 (0.39)	6.8 (0.27)	12.0 (0.47)	5.0 (0.20)	2.8 (0.11)	6.0 (0.24)	29.0 (1.14)
20 (3/4)	8.0 (0.319)	18.0 (0.71)	12.0 (0.47)	8.3 (0.33)	16.0 (0.63)	5.0 (0.20)	4.0 (0.16)	9.0 (0.35)	36.0 (1.42)
25 (1)	10.0 (0.36)	20.0 (0.79)	14.0 (0.55)	10.3 (0.41)	20.0 (0.79)	5.0 (0.20)	4.0 (0.16)	10.0 (0.39)	40.0 (1.57)
32 (1-1/4)	10.0 (0.36)	20.0 (0.79)	14.0 (0.55)	18.3 (0.72)	36.0 (1.42)	6.0 (0.24)	4.0 (0.16)	10.0 (0.39)	44.5 (1.75)
40 (1-1/2)	10.0 (0.36)	22.0 (0.87)	14.0 (0.55)	18.3 (0.72)	36.0 (1.42)	8.0 (0.31)	4.0 (0.16)	10.0 (0.39)	52.0 (2.05)
50 (2)	14.0 (0.50)	28.0 (1.10)	20.0 (0.79)	22.3 (0.88)	44.0 (1.73)	8.0 (0.31)	5.0 (0.20)	14.0 (0.55)	63.7 (2.51)
63 (2-1/2)	14.0 (0.50)	30.0 (1.18)	20.0 (0.79)	22.3 (0.88)	44.0 (1.73)	10.0 (0.39)	6.0 (0.24)	14.0 (0.55)	76.7 (3.02)
80 (3-1/4)	18.0 (0.75)	38.0 (1.50)	27.0 (1.07)	28.3 (1.11)	56.0 (2.20)	11.0 (0.43)	7.0 (0.28)	18.0 (0.71)	97.8 (3.85)
100 (4)	22.0 (0.88)	45.0 (1.77)	31.0 (1.22)	32.3 (1.27)	64.0 (2.52)	14.0 (0.55)	7.0 (0.28)	22.0 (0.87)	115.3 (4.54)

Foot Mounts



Ø32 - Ø100 Bores



NOTE: All feet attach to cylinder body with metric size socket cap screws.

Bore MM	12	16	20	25	32	40	50	63	80	100
N Bolt	M4 x 0.7	M4 x 0.7	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M8 x 1.25	M10 x 1.5	M12 x 1.75	M12 x 1.75

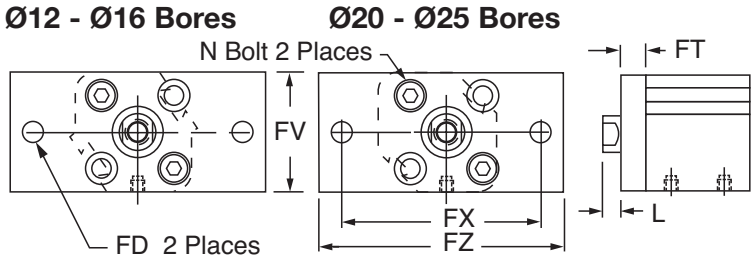
Dimensions: mm (inches)

Bore	LD	LH	LX	LY	LZ	L	LT	X	Y	LG
12 (1/2)	4.5 (0.18)	17.0 (0.67)	34.0 (1.39)	29.5 (1.16)	44.0 (1.73)	13.5 (0.53)	2.0 (0.08)	8.0 (0.31)	4.5 (0.18)	2.8 (0.11)
16 (5/8)	4.5 (0.18)	19.0 (0.75)	38.0 (1.50)	33.5 (1.32)	48.0 (1.89)	13.5 (0.53)	2.0 (0.08)	8.0 (0.31)	5.0 (0.20)	2.8 (0.11)
20 (3/4)	6.6 (0.26)	24.0 (0.94)	48.0 (1.89)	42.0 (1.65)	62.0 (2.44)	14.5 (0.57)	3.2 (0.13)	9.2 (0.36)	5.8 (0.23)	4.0 (0.16)
25 (1)	6.6 (0.26)	26.0 (1.02)	52 (2.05)	46.0 (1.81)	66.0 (2.60)	15.0 (0.59)	3.2 (0.13)	10.7 (0.42)	5.8 (0.23)	4.0 (0.16)
32 (1-1/4)	6.6 (0.26)	30.0 (1.18)	57.0 (2.24)	57.0 (2.24)	71.0 (2.80)	17.0 (0.67)	3.2 (0.13)	11.2 (0.44)	5.8 (0.23)	4.0 (0.16)
40 (1-1/2)	6.6 (0.26)	33.0 (1.30)	64.0 (2.52)	64.0 (2.52)	78.0 (3.07)	17.0 (0.67)	3.2 (0.13)	11.2 (0.44)	7.0 (0.28)	4.0 (0.16)
50 (2)	9.0 (0.35)	39.0 (1.54)	79.0 (3.11)	78.0 (3.07)	95.0 (3.74)	18.0 (0.71)	3.2 (0.13)	14.7 (0.58)	8.0 (0.31)	5.0 (0.20)
63 (2-1/2)	11.0 (0.43)	46.0 (1.81)	95.0 (3.74)	91.5 (3.60)	113.0 (4.45)	18.0 (0.71)	3.2 (0.13)	16.2 (0.64)	9.0 (0.35)	6.0 (0.24)
80 (3-1/4)	13.0 (0.51)	59.0 (2.32)	118.0 (4.65)	114.0 (4.49)	140.0 (5.51)	20.0 (0.79)	4.5 (0.18)	19.5 (0.77)	11.0 (0.43)	7.0 (0.28)
100 (4)	13.0 (0.51)	71.0 (2.80)	137.0 (5.39)	136.0 (5.35)	162.0 (6.38)	22.0 (0.87)	6.0 (0.24)	23.0 (0.91)	12.5 (0.49)	7.0 (0.28)

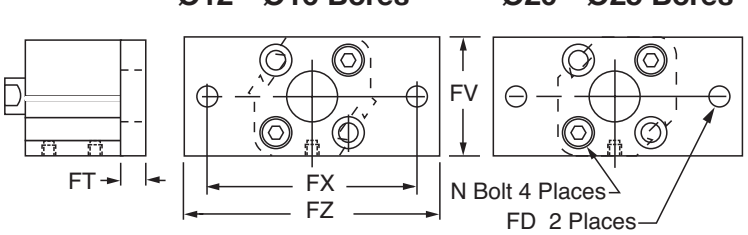
Dimensions: mm (inches)

Flange Mounts

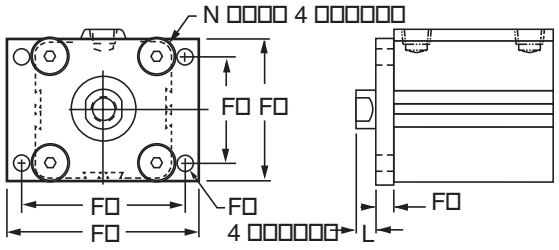
Front Flange



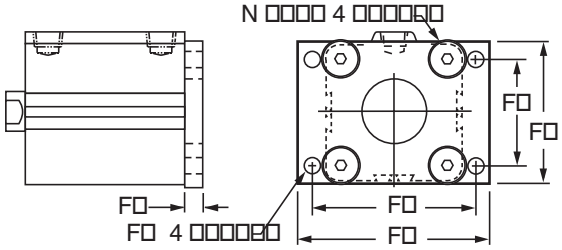
Rear Flange



Front Flange - Ø32 - Ø100 Bores



Rear Flange - Ø32 - Ø100 Bores



NOTE: All flanges attach to cylinder body with metric size flat head socket screws.

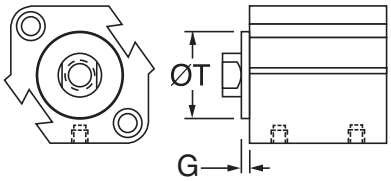
Bore	ISO Rectangular Flange Dimensions				
	FD	FY	FX	FV	FZ
12 (1/2)	5.5 (0.22)	–	40.0 (1.57)	25.0 (0.98)	50.0 (1.97)
16 (5/8)	5.5 (0.22)	–	40.0 (1.57)	30.0 (1.18)	50.0 (1.97)
20 (3/4)	6.6 (0.26)	–	50.0 (1.97)	39.0 (1.54)	62.0 (2.44)
25 (1)	6.6 (0.26)	–	50.0 (1.97)	42.0 (1.65)	62.0 (2.44)
32 (1-1/4)	7.0 (0.28)	32.0 (1.26)	64.0 (2.52)	48.0 (1.89)	76.0 (2.99)
40 (1-1/2)	9.0 (0.35)	36.0 (1.42)	72.0 (2.83)	54.0 (2.13)	88.0 (3.47)
50 (2)	9.0 (0.35)	45.0 (1.77)	90.0 (3.54)	67.0 (2.64)	106.0 (4.17)
63 (2-1/2)	9.0 (0.35)	50.0 (1.97)	100.0 (3.94)	80.0 (3.15)	116.0 (4.57)
80 (3-1/4)	12.0 (0.47)	63.0 (2.48)	126.0 (4.96)	99.0 (3.90)	150.0 (5.91)
100 (4)	14.0 (0.55)	75.0 (2.95)	150.0 (5.91)	117.0 (4.61)	178.0 (7.01)

Bore	Common Dimensions			Interchangeable (Non-ISO) Flange Dimensions				
	FT	L	N Bolt	FD	FY	FX	FV	FZ
12 (1/2)	5.5 (0.22)	8.0 (0.31)	M4 x 0.7	4.5 (0.18)	–	45.0 (1.77)	25.0 (0.98)	55.0 (2.17)
16 (5/8)	5.5 (0.22)	8.0 (0.31)	M4 x 0.7	4.5 (0.18)	–	45.0 (1.77)	30.0 (1.18)	55.0 (2.17)
20 (3/4)	8.0 (0.31)	6.5 (0.26)	M6 x 1.0	6.6 (0.26)	–	48.0 (1.89)	39.0 (1.54)	60.0 (2.36)
25 (1)	8.0 (0.31)	7.0 (0.28)	M6 x 1.0	6.6 (0.26)	–	52.0 (2.05)	42.0 (1.65)	64.0 (2.52)
32 (1-1/4)	8.0 (0.31)	9.0 (0.35)	M6 x 1.0	5.5 (0.22)	34.0 (1.34)	56.0 (2.20)	48.0 (1.89)	65.0 (2.56)
40 (1-1/2)	8.0 (0.31)	9.0 (0.35)	M6 x 1.0	5.5 (0.22)	40.0 (1.57)	62.0 (2.44)	54.0 (2.13)	72.0 (2.83)
50 (2)	9.0 (0.35)	9.0 (0.35)	M8 x 1.25	6.6 (0.26)	50.0 (1.97)	76.0 (2.99)	67.0 (2.64)	89.0 (3.50)
63 (2-1/2)	9.0 (0.35)	9.0 (0.35)	M10 x 1.5	9.0 (0.35)	60.0 (2.36)	92.0 (3.62)	80.0 (3.15)	108.0 (4.25)
80 (3-1/4)	11.0 (0.43)	9.0 (0.35)	M12 x 1.75	11.0 (0.43)	77.0 (3.03)	116.0 (4.57)	99.0 (3.90)	134.0 (5.28)
100 (4)	11.0 (0.43)	11.0 (0.43)	M12 x 1.75	11.0 (0.43)	94.0 (3.70)	136.0 (5.35)	117.0 (4.61)	154.0 (6.06)

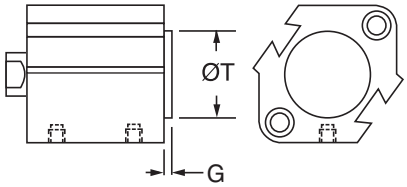
Dimensions: mm (inches)

Front and Rear Boss Mounts

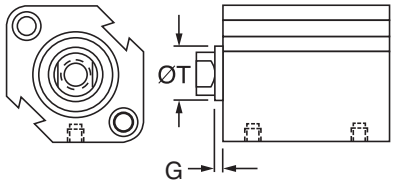
Front Boss - Ø12 - Ø16 Bores



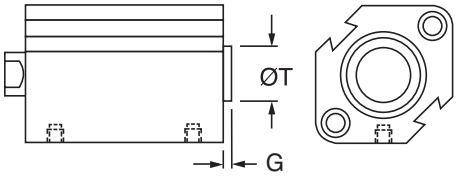
Rear Boss - Ø12 - Ø16 Bores



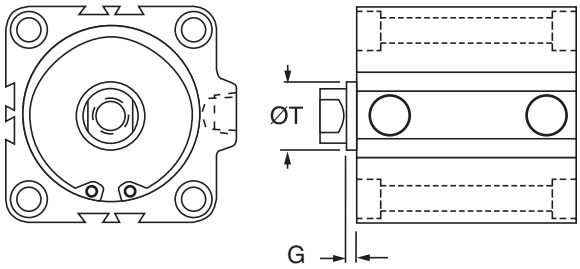
Front Boss - Ø20 - Ø25 Bores



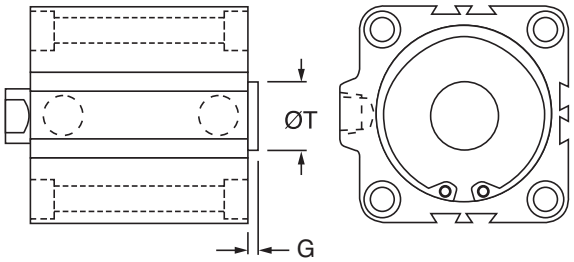
Rear Boss - Ø20 - Ø25 Bores



Front Boss - Ø20 - Ø25 Bores



Rear Boss - Ø20 - Ø25 Bores



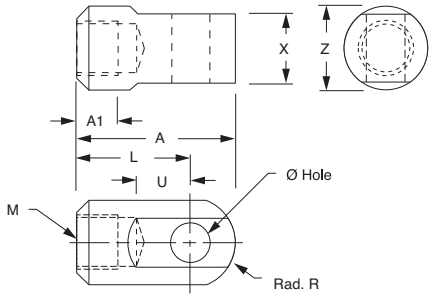
Bore	ØT	G
12 (1/2)	15 +0/-0.043 (0.591 +0/-0.002)	1.5 (0.06)
16 (5/8)	20 +0/-0.052 (0.787 +0/-0.002)	1.5 (0.06)
20 (3/4)	13 +0/-0.043 (0.512 +0/-0.002)	2.0 (0.08)
25 (1)	15 +0/-0.043 (0.591 +0/-0.002)	2.0 (0.08)
32 (1-1/4)	21 +0/-0.062 (0.827 +0/-0.002)	2.0 (0.08)
40 (1-1/2)	28 +0/-0.062 (1.102 +0/-0.002)	2.0 (0.08)
50 (2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
63 (2-1/2)	35 +0/-0.062 (1.378 +0/-0.002)	2.0 (0.08)
80 (3-1/4)	43 +0/-0.062 (1.693 +0/-0.002)	2.0 (0.08)
100 (4)	59 +0/-0.074 (2.323 +0/-0.003)	2.0 (0.08)

Dimensions: mm (inches)

Accessories

Rod Eye

To order a Rod Eye use the Prefix UE– followed by the thread size. Example: For a 25mm bore cylinder the inch rod threads are 1/4-28. The Rod Eye Part Number is UE–1/4-28
For #8-32 size, follow with –12 or –16 for bore. Example: UE-8-32-16

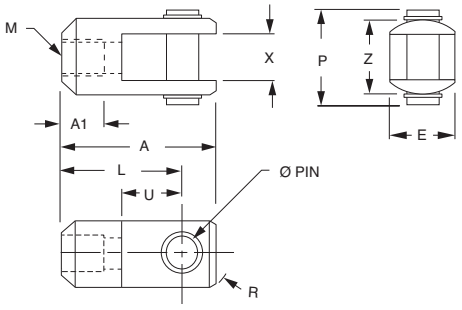


NOTE: Hole diameter will be inch size for items with inch thread and mm sizes for items with metric thread.

Bore	L	U	X	Z	A1	A	R
12 (1/2)	16.0 (0.63)	7.0 (0.27)	4.7 (0.18)	9.7 (0.38)	6.0 (0.24)	21.5 (0.85)	6.3 (0.25)
16 (5/8)	25.0 (0.98)	14.0 (0.55)	6.2 (0.24)	11.2 (0.44)	6.0 (0.24)	32.0 (1.26)	12.0 (0.47)
20 (3/4)	25.0 (0.98)	11.5 (0.45)	7.7 (0.30)	16.0 (0.63)	6.0 (0.24)	34.0 (1.34)	10.3 (0.41)
25 (1)	30.0 (1.18)	14.0 (0.55)	9.7 (0.38)	19.0 (0.75)	8.0 (0.31)	41.0 (1.61)	12.8 (0.50)
32 (1-1/4)	30.0 (1.18)	14.0 (0.55)	17.6 (0.69)	22.0 (0.87)	14.0 (0.55)	42.0 (1.65)	12.0 (0.47)
40 (1-1/2)	30.0 (1.18)	14.0 (0.55)	17.6 (0.69)	22.0 (0.87)	14.0 (0.55)	42.0 (1.65)	12.0 (0.47)
50 (2)	40.0 (1.57)	20.0 (0.79)	21.6 (0.85)	27.0 (1.06)	18.0 (0.71)	56.0 (2.20)	16.0 (0.63)
63 (2-1/2)	40.0 (1.57)	20.0 (0.79)	21.6 (0.85)	27.0 (1.06)	18.0 (0.71)	56.0 (2.20)	16.0 (0.63)
80 (3-1/4)	50.0 (1.97)	27.0 (1.06)	27.6 (1.08)	38.0 (1.50)	21.0 (0.83)	71.0 (2.80)	21.0 (0.83)
100 (4)	55.0 (2.17)	31.0 (1.22)	31.6 (1.24)	44.5 (1.75)	21.0 (0.83)	79.0 (3.11)	24.0 (0.95)

Rod Clevis

To order a Rod Clevis use the Prefix UC– followed by the thread size. Example: For a 63mm bore cylinder the metric threads are M18 x 1.5. The Rod Clevis Part Number is UC–M18x1.5
For #8-32 size, follow with –12 or –16 for bore. Example: UC-8-32-12



NOTE: Pin diameter will be inch size for items with inch thread and mm sizes for items with metric thread.

Bore	Ø Hole, Ø Pin	M (Threads)
12 (1/2)	5.0 (0.19)	M5 x 0.8 (#8-32)
16 (5/8)	5.0 (0.19)	M6 x 1.0 (#8-32)
20 (3/4)	8.0 (0.31)	M8 x 1.25 (#10-32)
25 (1)	10.0 (0.38)	M10 x 1.25 (1/4-28)
32 (1-1/4)	10.0 (0.38)	M14 x 1.5 (5/16-24)
40 (1-1/2)	10.0 (0.38)	M14 x 1.5 (3/8-24)
50 (2)	14.0 (0.50)	M18 x 1.5 (1/2-20)
63 (2-1/2)	14.0 (0.50)	M18 x 1.5 (1/2-20)
80 (3-1/4)	18.0 (0.75)	M22 x 1.5 (5/8-18)
100 (4)	22.0 (0.88)	M26 x 1.5 (3/4-16)

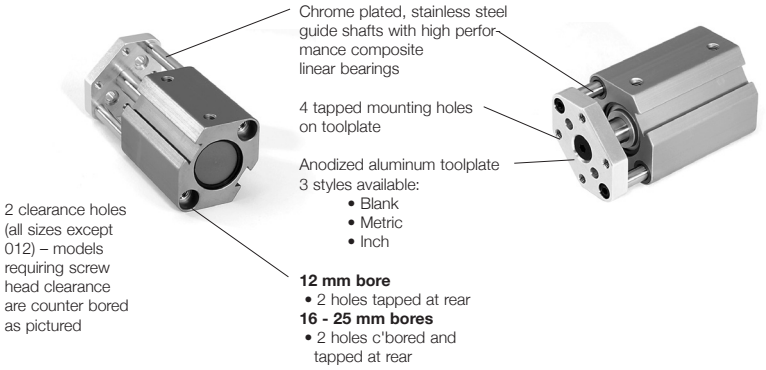
Bore	L	U	X	Z	P	E	A1	A	R
12 (1/2)	16.0 (0.63)	7.0 (0.27)	5.3 (0.21)	10.0 (0.39)	14.0 (0.55)	10.0 (0.39)	6.0 (0.24)	21.5 (0.85)	6.3 (0.25)
16 (5/8)	21.0 (0.83)	10.0 (0.39)	6.6 (0.26)	12.0 (0.47)	16.0 (0.63)	12.0 (0.47)	6.0 (0.24)		12.0 (0.47)
20 (3/4)	25.0 (0.98)	11.5 (0.45)	8.3 (0.33)	16.0 (0.63)	21.0 (0.83)	16.0 (0.63)	6.0 (0.24)	34.0 (1.34)	10.3 (0.41)
25 (1)	30.0 (1.18)	14.0 (0.55)	10.3 (0.41)	20.0 (0.78)	25.0 (0.98)	20.0 (0.78)	8.0 (0.31)	41.0 (1.61)	12.8 (0.50)
32 (1-1/4)	30.0 (1.18)	14.0 (0.55)	18.4 (0.72)	36.6 (1.44)	41.0 (1.61)	22.0 (0.87)	16.0 (0.63)	42.0 (1.65)	12.0 (0.47)
40 (1-1/2)	30.0 (1.18)	14.0 (0.55)	18.4 (0.72)	36.6 (1.44)	41.0 (1.61)	22.0 (0.87)	16.0 (0.63)	42.0 (1.65)	12.0 (0.47)
50 (2)	40.0 (1.57)	20.0 (0.79)	22.4 (0.88)	44.5 (1.75)	50.0 (1.97)	28.0 (1.10)	20.0 (0.79)	56.0 (2.20)	16.0 (0.63)
63 (2-1/2)	40.0 (1.57)	20.0 (0.79)	22.4 (0.88)	44.5 (1.75)	50.0 (1.97)	28.0 (1.10)	20.0 (0.79)	56.0 (2.20)	16.0 (0.63)
80 (3-1/4)	50.0 (1.97)	27.0 (1.06)	28.4 (1.12)	55.6 (2.19)	62.5 (2.46)	38.0 (1.50)	23.0 (0.91)	71.0 (2.80)	21.0 (0.83)
100 (4)	55.0 (2.17)	31.0 (1.22)	32.4 (1.28)	63.5 (2.50)	70.6 (2.78)	44.0 (1.73)	24.0 (0.95)	79.0 (3.11)	24.0 (0.95)

The **Universal Series with Guide Plate** is a robust compact non-rotating (guided), extruded aluminum body air cylinder line. The Universal Series with Guide Plate is a double-acting cylinder that provides the solution to specific applications where piston rod rotation is not acceptable.

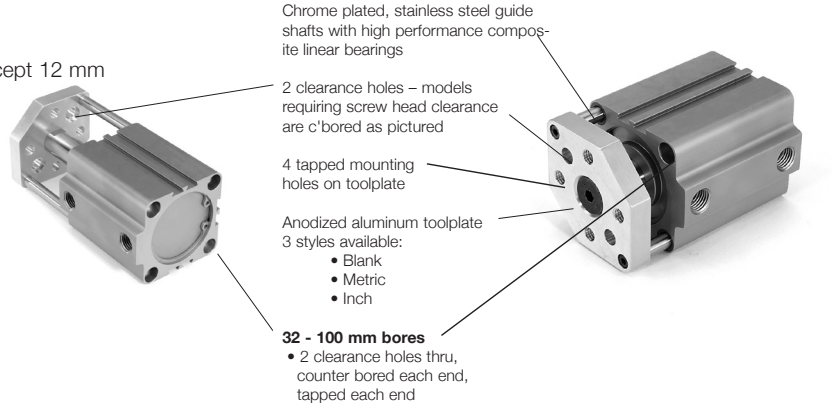
Standard Specifications:

- Bore sizes from 12 mm through 100 mm
- Strokes from 5 mm to 300 mm
- Maximum pressure rating is 10 bar (150 psi)
- 3 tooling plate choices:
  - Blank
  - Metric
  - Inch
- Flexible porting options:
  - NPT ports and inch mounting holes in tooling plate and cylinder
  - BSP Parallel ports and metric mounting holes in tooling plate and cylinder
  - BSPT taper ports and metric mounting holes in tooling and cylinder
- Chrome plated, stainless steel guide shafts with high performance composite linear bearings
- 4 tapped holes on the tooling plate
- 2 counter bored clearance holes on all tooling plates except 12 mm bore
- Rear mounting:
  - 12 mm bore
    - 2 holes tapped at rear
  - 16 - 25 mm bores
    - 2 holes counter bored and tapped at rear
  - 32 - 100 mm bores
    - 2 through clearance holes, counter bored each end, tapped each end
- Magnetic piston option
- Bumper option
- Seal material deviation

Ø12 - Ø25 mm Bores



Ø32 - Ø100 mm Bores



How To Order

UT G D - 032 - 005 - B

Series
UT = Universal Series with Guide Plate

Port
G = **BSP** Parallel Ports, Metric Mounting Holes in Toolplate and Cylinder
N = NPT Ports, **Inch** Mounting Holes in Toolplate and Cylinder
P = BSPT Taper Ports, Taper Ports, **Metric** Mounting Holes in Toolplate and Cylinder

Body
D = With Magnetic Piston
N = Without Magnetic Piston

Options
B = Bumpers, Both Ends
V = Boss, Rod End
T1 = Boss, Cap End

Stroke
005 = 5 mm
010 = 10 mm
100 = 100 mm
150 = 150 mm
300 = 300 mm

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

Dimensions: mm (inches)

Engineering Data

Maximum Allowable Load at Toolplate - Kg. (lbs.)

Bore	Standard Available Cylinder Strokes mm (Inch)								
	5.0 (0.20)	10.0 (0.39)	15.0 (0.59)	20.0 (0.79)	25.0 (0.98)	30.0 (1.18)	35.0 (1.38)	40.0 (1.57)	45.0 (1.77)
12 (1/2)	3.54 (7.8)	2.72 (6.0)	1.36 (3.0)	1.14 (2.5)	0.95 (2.1)	0.86 (1.9)	–	–	–
16 (5/8)	4.99 (11.0)	4.09 (9.0)	2.13 (4.7)	1.86 (4.1)	1.54 (3.4)	1.32 (2.9)	–	–	–
20 (3/4)	7.72 (17.0)	7.26 (16.0)	4.99 (11.0)	4.09 (9.0)	3.18 (7.0)	2.81 (6.2)	2.59 (5.7)	2.36 (5.2)	2.27 (5.0)
25 (1)	8.17 (18.0)	7.49 (16.5)	5.45 (12.0)	4.77 (10.5)	4.09 (9.0)	3.41 (7.5)	2.72 (6.0)	2.50 (5.5)	2.36 (5.2)
32 (1-1/4)	10.90 (24.0)	9.08 (20.0)	7.04 (15.5)	6.13 (13.5)	4.99 (11.0)	4.54 (10.0)	3.63 (8.0)	3.41 (7.5)	3.27 (7.2)
40 (1-1/2)	11.80 (26.0)	9.99 (22.0)	7.72 (17.0)	6.45 (14.2)	5.31 (11.7)	4.81 (10.6)	3.90 (8.6)	3.68 (8.1)	3.54 (7.8)
50 (2)	–	15.66 (34.5)	14.07 (31.0)	12.71 (28.0)	11.35 (25.0)	10.44 (23.0)	9.99 (22.0)	8.63 (19.0)	7.26 (16.0)
63 (2-1/2)	–	25.42 (56.0)	22.70 (50.0)	21.11 (46.5)	17.25 (38.0)	14.98 (33.0)	13.17 (29.0)	10.44 (23.0)	8.85 (19.5)
80 (3-1/4)	–	38.59 (85.0)	35.82 (78.9)	33.14 (73.0)	30.87 (68.0)	28.60 (63.0)	26.79 (59.0)	20.43 (45.0)	16.80 (37.0)
100 (4)	–	42.00 (92.5)	38.59 (85.0)	35.87 (79.0)	33.60 (74.0)	31.33 (69.0)	29.51 (65.0)	22.25 (49.0)	17.71 (39.0)
125 (4.9)	–	44.95 (99.0)	–	38.59 (85.0)	–	34.05 (75.0)	–	24.06 (53.0)	–
140 (5-1/2)	–	48.58 (107.0)	–	42.22 (93.0)	–	36.77 (81.0)	–	25.88 (57.0)	–
160 (6-1/4)	–	76.27 (168.0)	–	66.28 (146.0)	–	57.66 (127.0)	–	42.22 (93.0)	–

Bore	Standard Available Cylinder Strokes mm (Inch)								
	5.0 (0.97)	75.0 (2.95)	100.0 (3.94)	125.0 (4.92)	150.0 (5.91)	175.0 (6.89)	200.0 (7.87)	250.0 (9.84)	300.0 (11.81)
12 (1/2)	0.50 (1.1)	0.41 (0.9)	0.32 (0.7)	–	–	–	–	–	–
16 (5/8)	0.77 (1.7)	0.64 (1.4)	0.41 (0.9)	–	–	–	–	–	–
20 (3/4)	2.09 (4.6)	1.23 (2.7)	0.77 (1.7)	–	–	–	–	–	–
25 (1)	2.18 (4.8)	1.32 (2.9)	0.86 (1.9)	–	–	–	–	–	–
32 (1-1/4)	3.04 (6.7)	2.45 (5.4)	1.91 (4.2)	0.73 (1.6)	0.41 (0.9)	–	–	–	–
40 (1-1/2)	3.22 (7.1)	2.63 (5.8)	2.09 (4.6)	0.86 (1.9)	0.54 (1.2)	–	–	–	–
50 (2)	5.90 (13.0)	4.81 (10.6)	4.13 (9.1)	1.36 (3.0)	1.04 (2.3)	–	–	–	–
63 (2-1/2)	8.40 (18.5)	6.63 (14.6)	5.49 (12.1)	2.04 (4.5)	1.41 (3.1)	–	–	–	–
80 (3-1/4)	14.98 (33.0)	12.08 (26.6)	10.26 (22.6)	3.81 (8.4)	2.63 (5.8)	–	–	–	–
100 (4)	15.89 (35.0)	13.17 (29.0)	11.17 (24.6)	4.13 (9.1)	2.86 (6.3)	–	–	–	–
125 (4.9)	16.80 (37.0)	14.07 (31.0)	11.80 (26.0)	5.45 (12.0)	4.31 (9.5)	3.31 (7.3)	2.50 (5.5)	1.68 (3.7)	1.23 (2.7)
140 (5-1/2)	19.98 (44.0)	19.07 (42.0)	15.89 (35.0)	7.26 (16.0)	5.90 (13.0)	4.31 (9.5)	3.45 (7.6)	2.63 (5.8)	2.04 (4.5)
160 (6-1/4)	32.69 (72.0)	31.33 (69.0)	25.89 (57.0)	11.80 (26.0)	9.53 (21.0)	6.95 (15.3)	5.54 (12.2)	5.13 (11.3)	4.59 (10.1)

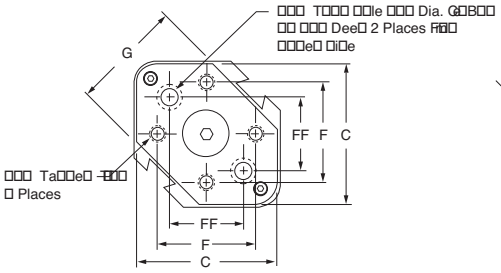
Dimensions: mm (inches)

"UT" Series, Guided Toolplate

Ø12 - Ø25 mm Bores

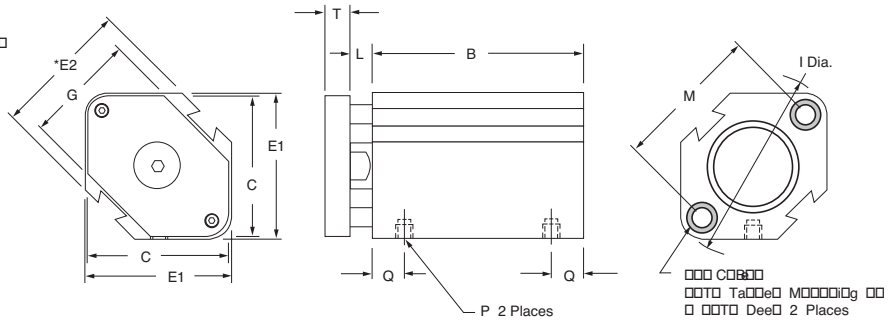
Standard Toolplate

Inch threads will be provided when 'N' port code is specified.
Metric threads will be provided when 'G' or 'P' port code is specified.



Blank Toolplate

Use Option Code T1 to specify a blank toolplate shown below.



*NOTE: See page 16 for additional cylinder body angle and profile dimensions.

Toolplate and Mounting - inch (mm)

Inch Dimensions Specified by Port Code 'N'
Metric Dimensions Specified by Port Code 'G' or 'P'

Bore	C	F	FF	G	J	OT	RT	S	U	Y
12 (1/2)	0.94 (24.0)	0.63 (16.0)	–	0.82 (20.8)	6-32 (M3 x 0.5)	8-32 (M4 x 0.7)	0.38 (9.7)	–	–	–
16 (5/8)	1.10 (28.0)	0.81 (20.0)	0.44 (11.0)	0.98 (25.0)	6-32 (M4 x 0.7)	8-32 (M4 x 0.7)	0.51 (13.0)	0.14 (3.3)	–	–
20 (3/4)	1.38 (35.0)	1.06 (24.0)	0.57 (14.5)	1.00 (25.4)	8-32 (M4 x 0.7)	1/4-20 (M6 x 1.0)	0.53 (13.5)	0.17 (4.2)	0.28	0.06
25 (1)	1.54 (40.0)	1.13 (28.5)	0.66 (16.6)	1.18 (30.0)	8-32 (M4 x 0.7)	1/4-20 (M6 x 1.0)	0.59 (15.0)	0.17 (4.2)	–	–

'Q' Port Location by Bore and Stroke

Bore	Stroke mm (inches)			
	5-45	50	75	100
12 (1/2)	7.0 (0.28)	8.9 (0.35)	8.9 (0.35)	8.9 (0.35)
16 (5/8)	7.8 (0.31)	10.2 (0.40)	10.2 (0.40)	10.2 (0.40)
20 (3/4)	8.1 (0.32)	8.1 (0.32)	12.1 (0.48)	12.1 (0.48)
25 (1)	8.4 (0.33)	8.4 (0.33)	12.7 (0.50)	12.7 (0.50)

'B' Dimensions by Bore and Stroke for both Standard and Magnetic Piston

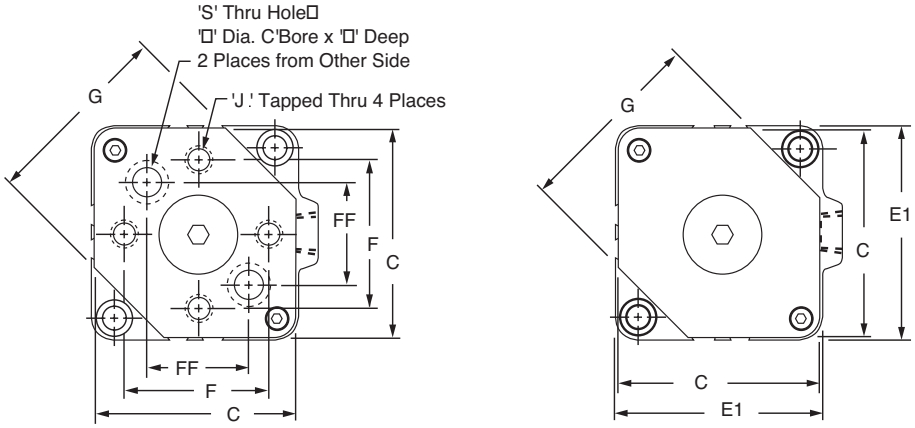
Bore	Stroke mm (inches)											
	5	10	15	20	25	30	35	40	45	50	75	100
12 (1/2)	33.0 (1.30)	38.0 (1.50)	43.0 (1.69)	48.0 (1.89)	53.0 (2.07)	58.0 (2.28)	–	–	–	83.8 (3.30)	108.8 (4.28)	133.8 (5.27)
16 (5/8)	35.5 (1.40)	40.5 (1.59)	45.5 (1.79)	50.5 (1.99)	55.5 (2.19)	60.5 (2.38)	–	–	–	86.2 (3.39)	111.2 (4.38)	136.2 (5.36)
20 (3/4)	36.5 (1.44)	41.5 (1.63)	46.5 (1.83)	51.5 (2.03)	56.5 (2.22)	61.5 (2.42)	66.5 (2.62)	71.5 (2.81)	76.5 (3.01)	81.5 (3.21)	116.6 (4.59)	141.6 (5.57)
25 (1)	37.5 (1.48)	42.5 (1.67)	47.5 (1.87)	52.5 (2.07)	57.5 (2.26)	62.5 (2.46)	67.5 (2.66)	72.5 (2.85)	77.5 (3.05)	82.5 (3.25)	122.5 (4.82)	147.5 (5.81)

Bore	Stroke mm (inches)							
	E1	E2	I	L	M	O	P	T
12 (1/2)	25.0 (0.98)	23.0 (0.90)	31.5 (1.24)	3.5 (0.14)	22.0 (0.87)	–t	M5 x 0.8	6.1 (0.24)
16 (5/8)	29.0 (1.14)	27.2 (1.07)	37.1 (1.46)	3.5 (0.14)	28.0 (1.10)	6.5 x 3.5 dp (0.26 x 0.14 dp)	M5 x 0.8	6.1 (0.24)
20 (3/4)	36.0 (1.42)	31.2 (1.23)	47.0 (1.85)	4.5 (0.18)	36.0 (1.42)	9.0 x 7.0 dp (0.35 x 0.28 dp)	M5 x 0.8	6.9 (0.27)
25 (1)	40.0 (1.57)	36.9 (1.45)	51.3 (2.02)	5.0 (0.20)	40.0 (1.57)	9.0 x 7.0 dp (0.35 x 0.28 dp)	M5 x 0.8	8.3 (0.33)

Dimensions: mm (inches)

"UT" Series, Guided Toolplate

Ø32 - Ø160 mm Bores



Standard Toolplate
Inch threads will be provided when 'N' port code is specified.
Metric threads will be provided when 'G' or 'P' port code is specified.

Blank Toolplate
Use Option Code T1 to specify a blank toolplate shown above.

Toolplate and Mounting - inch (mm)
Inch Dimensions Specified by Port Code 'N'
Metric Dimensions Specified by Port Code 'G' or 'P'

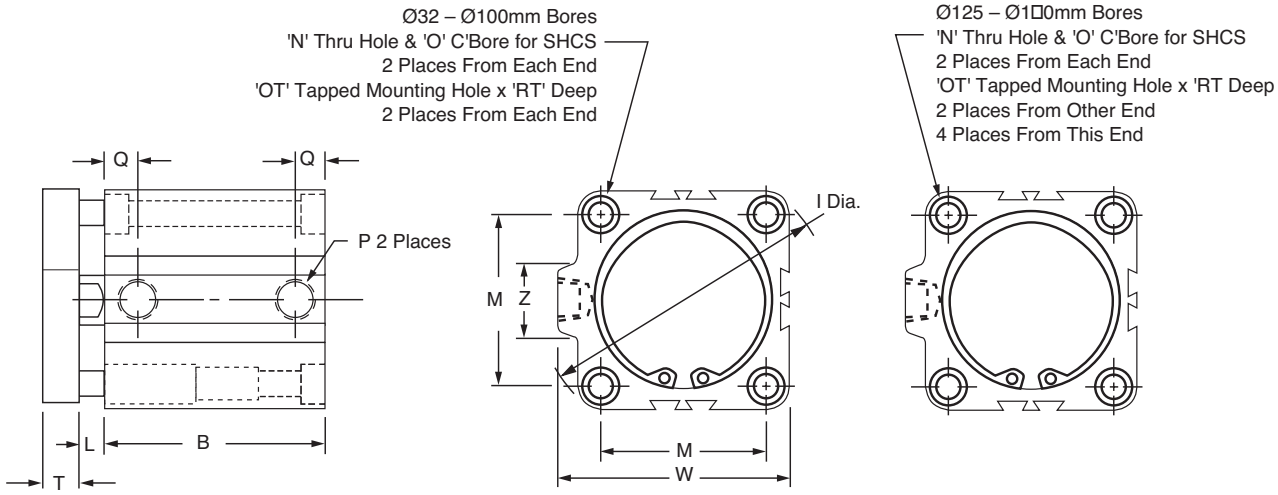
Bore	C	F	FF	G	J	OT	RT	S	U	Y
32 (1-1/4)	1.71 (43.4)	1.19 (30.0)	0.84 (21.2)	1.44 (36.7)	10-24 (M5 x 0.8)	1/4-20 (M6 x 1.0)	0.67 (17.0)	0.20 (5.2)	–	–
40 (1-1/2)	2.00 (50.5)	1.38 (35.0)	0.97 (24.7)	1.78 (45.1)	1/4-20 (M6 x 1.0)	1/4-20 (M6 x 1.0)	0.75 (19.0)	0.26 (6.1)	–	–
50 (2)	2.47 (62.7)	1.75 (45.5)	1.24 (32.2)	2.25 (57.1)	5/16-18 (M8 x 1.25)	5/16-18 (M8 x 1.25)	0.75 (19.0)	0.33 (8.2)	0.49 (13.5)	0.10 (2.5)
63 (2-1/2)	2.98 (75.7)	2.00 (75.7)	1.41 (35.7)	2.69 (68.3)	7/16-14 (M10 x 1.5)	7/16-14 (M10 x 1.5)	0.87 (22.0)	0.45 (11.5)	0.68 (16.5)	0.18 (3.3)
80 (3-1/4)	3.81 (96.9)	2.75 (70.0)	1.95 (58.3)	3.50 (88.9)	1/2-13 (M12 x 1.75)	1/2-13 (M12 x 1.75)	1.13 (29.0)	0.52 (12.3)	0.77 (18.5)	0.18 (3.8)
100 (4)	4.50 (114.4)	3.25 (82.5)	2.30 (58.3)	4.45 (112.9)	1/2-13 (M12 x 1.75)	1/2-13 (M12 x 1.75)	1.13 (29.0)	0.52 (12.3)	0.77 (18.5)	0.13 (3.2)
125* (4.9)	(141.0)	(95.0)	(67.2)	(134.7)	(M14 x 2.0)	(M14 x 2.0)	(40.0)	(14.3)	–	–
140* (5-1/2)	(157.0)	(101.5)	(71.8)	(154.5)	(M14 x 2.0)	(M14 x 2.0)	(40.0)	(14.3)	–	–
160* (6-1/4)	(175.5)	(120.5)	(85.2)	(174.1)	(M16 x 2.0)	(M16 x 2.0)	(45.2)	(16.7)	–	–

"B" Dimension by Bore and Stroke
*These bore sizes only Code 'N' indicates NPT ports and metric toolplate dimensions

Bore	Stroke mm (inches)								
	5	10	15	20	25	30	35	40	45
32 Std. Piston	28.0 (1.10)	33.0 (1.30)	38.0 (1.50)	43.0 (1.69)	48.0 (1.89)	53.0 (2.09)	58.0 (2.28)	63.0 (2.48)	68.0 (2.68)
Mag. Piston	38.0 (1.50)	43.0 (1.69)	48.0 (1.89)	53.0 (2.09)	58.0 (2.28)	63.0 (2.48)	68.0 (2.68)	73.0 (2.87)	78.0 (3.07)
40 Std. Piston	34.5 (1.36)	39.5 (1.56)	44.5 (1.75)	49.5 (1.95)	54.5 (2.15)	59.5 (2.34)	64.5 (2.54)	69.5 (2.74)	74.5 (2.93)
Mag. Piston	44.5 (1.75)	49.5 (1.95)	54.5 (2.15)	59.5 (2.34)	64.5 (2.54)	69.5 (2.74)	74.5 (2.93)	79.5 (3.13)	84.5 (3.33)
50 Std. Piston	–	40.5 (1.59)	45.5 (1.79)	50.5 (1.99)	55.5 (2.19)	60.5 (2.38)	65.5 (2.58)	70.5 (2.78)	75.5 (2.97)
Mag. Piston		50.5(1.99)	55.5 (2.19)	60.5 (2.38)	65.5 (2.58)	70.5 (2.78)	75.5 (2.97)	80.5 (3.17)	85.5 (3.37)
63 Std. Piston	–	46.0 (1.81)	51.0 (2.01)	56.0 (2.20)	61.0 (2.40)	66.0 (2.60)	71.0 (2.80)	76.0 (2.99)	81.0 (3.19)
Mag. Piston		56.0 (2.20)	61.0 (2.40)	66.0 (2.60)	71.0 (2.80)	76.0 (2.99)	81.0 (3.19)	86.0 (3.39)	91.0 (3.58)
80 Std. Piston	–	53.5 (2.11)	58.5 (2.30)	63.5 (2.50)	68.5 (2.70)	73.5 (2.89)	78.5 (3.09)	83.5 (3.29)	88.5 (3.48)
Mag. Piston		63.5 (2.50)	68.5 (2.70)	73.5 (2.89)	78.5 (3.09)	83.5 (3.29)	88.5 (3.48)	93.5 (3.68)	98.5 (3.88)
100 Std. Piston	–	63.0 (2.48)	68.0 (2.68)	73.0 (2.87)	78.0 (3.07)	83.0 (3.27)	88.0 (3.46)	93.0 (3.66)	98.0 (3.86)
Mag. Piston		73.0 (2.87)	78.0 (3.07)	83.0 (3.27)	88.0 (3.46)	93.0 (3.66)	98.0 (3.86)	103.0 (4.06)	108.0 (4.25)
125 Std. & Mag.	–	93.0 (3.66)	–	103.0 (4.06)	–	113.0 (4.45)	–	123.0 (4.84)	–
140 Std. & Mag.	–	93.0 (3.66)	–	103.0 (4.06)	–	113.0 (4.45)	–	123.0 (4.84)	–
160 Std. & Mag.	–	101.0 (3.98)	–	111.0 (4.37)	–	121.0 (4.76)	–	131.0 (5.16)	–

Dimensions: mm (inches)

"UT" Series, Guided Toolplate continued



Bore	E1	I	L	M	N	O	P	T	W	Z
32 (1-1/4)	44.5 (1.75)	58.9 (2.32)	7.0 (0.28)	34.0 (1.34)	5.5 (0.22)	9.0 x 7.0 dp (0.35 x 0.28 dp)	1/8*	8.3 (0.33)	49.3 (1.94)	21.4 (0.84)
40 (1-1/2)	52.0 (2.05)	69.0 (2.72)	7.0 (0.28)	40.0 (1.57)	5.5 (0.22)	9.0 x 7.0 dp (0.35 x 0.28 dp)	1/8*	8.3 (0.33)	57.0 (2.24)	21.4 (0.84)
50 (2)	63.7 (2.51)	84.5 (3.34)	8.0 (0.31)	50.0 (1.97)	6.6 (0.26)	11.0 x 8.0 dp (0.43 x 0.31 dp)	1/4*	12.1 (0.48)	70.6 (2.78)	26.5 (1.04)
63 (2-1/2)	76.7 (3.02)	101.8 (4.01)	8.0 (0.31)	60.0 (2.36)	9.0 (0.35)	14.0 x 10.5 dp (0.55 x 0.41 dp)	1/4*	12.5 (0.49)	83.6 (3.29)	26.5 (1.04)
80 (3-1/4)	97.8 (3.85)	129.8 (5.11)	10.0 (0.39)	77.0 (3.03)	11.0 (0.43)	17.5 x 13.5 dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	104.0 (4.09)	30.0 (1.18)
100 (4)	115.3 (4.54)	153.9 (6.06)	12.0 (0.47)	94.0 (3.70)	11.0 (0.43)	17.5 x 13.5 dp (0.69 x 0.53 dp)	3/8*	14.0 (0.55)	121.9 (4.80)	30.0 (1.18)
125 (4.9)	142.0 (5.59)	190.0 (7.48)	16.0 (0.63)	114.0 (4.49)	12.7 (0.50)	21.2 x 18.4 dp (0.83 x 0.72 dp)	3/8*	21.0 (0.83)	153.0 (6.02)	39.0 (1.53)
140 (5-1/2)	158.0 (6.22)	210.0 (8.27)	16.0 (0.63)	128.0 (5.04)	12.7 (0.50)	21.2 x 18.4 dp (0.83 x 0.72 dp)	3/8*	21.0 (0.83)	168.0 (6.61)	39.0 (1.53)
160 (6-1/4)	178.0 (7.01)	238.0 (9.37)	17.0 (0.67)	144.0 (5.67)	14.5 (0.57)	24.2 x 21.2 dp (0.95 x 0.83 dp)	3/8*	21.0 (0.83)	188.0 (7.40)	39.0 (1.53)

'B' Dimensions by Bore and Stroke

measurements in millimeters and inches (in parenthesis)

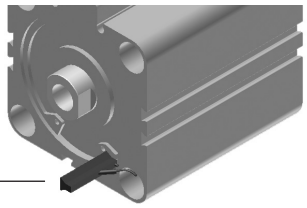
Bore	Stroke								
	50	75	100	125	150				
32 Std. Piston	73.0 (2.87)	108.0 (4.25)	133.0 (5.24)	172.8 (6.80)	197.8 (7.79)				
Mag. Piston	83.0 (3.27)	108.0 (4.25)	133.0 (5.24)	172.8 (6.80)	197.8 (7.79)				
40 Std. Piston	79.5 (3.13)	114.5 (4.51)	139.0 (5.49)	180.5 (7.11)	205.5 (8.09)				
Mag. Piston	89.5 (3.52)	114.5 (4.51)	139.0 (5.49)	180.5 (7.11)	205.5 (8.09)				
50 Std. Piston	80.5 (3.17)	115.5 (4.55)	140.5 (5.53)	184.3 (7.26)	209.3 (8.24)				
Mag. Piston	90.5 (3.56)	115.5 (4.55)	140.5 (5.53)	184.3 (7.26)	209.3 (8.24)				
63 Std. Piston	86.0 (3.39)	121.0 (4.76)	146.0 (5.75)	189.6 (7.46)	214.6 (8.49)				
Mag. Piston	96.0 (3.78)	121.0 (4.76)	146.0 (5.75)	189.6 (7.46)	214.6 (8.49)				
80 Std. Piston	93.5 (3.68)	128.5 (5.06)	153.5 (6.04)	194.5 (7.66)	219.5 (8.64)				
Mag. Piston	103.5 (4.07)	128.5 (5.06)	153.5 (6.04)	194.5 (7.66)	219.5 (8.64)				
100 Std. Piston	103.0 (4.06)	138.0 (5.43)	163.0 (6.42)	201.7 (7.94)	226.7 (8.93)				
Mag. Piston	113.0 (4.45)	138.0 (5.43)	163.0 (6.42)	201.7 (7.94)	226.7 (8.93)				
125 Std. & Mag.	133.0 (5.24)	158.0 (6.22)	183.0 (7.20)	208.0 (8.19)	233.0 (9.17)	258.0 (10.16)	283.0 (11.14)	333.0 (13.11)	383.0 (15.08)
140 Std. & Mag.	133.0 (5.24)	158.0 (6.22)	183.0 (7.20)	208.0 (8.19)	233.0 (9.17)	258.0 (10.16)	283.0 (11.14)	333.0 (13.11)	383.0 (15.08)
160 Std. & Mag.	141.0 (5.55)	166.0 (6.54)	191.0 (7.52)	216.0 (8.50)	241.0 (9.49)	266.0 (10.47)	291.0 (11.46)	341.0 (13.43)	391.0 (15.39)

'Q' Port Location by Bore and Stroke

Bore	Stroke mm (inches)		
	5-100	125, 150	175-300
32	8.7 (0.34)	12.7 (0.50)	–
40	9.2 (0.36)	12.7 (0.50)	–
50	10.5 (0.41)	13.2 (0.52)	–
63	11.5 (0.45)	18.5 (0.73)	–
80	14.0 (0.55)	14.0 (0.55)	–
100	18.0 (0.71)	18.0 (0.71)	–
125	24.5 (0.96)	24.5 (0.96)	24.5 (0.96)
140	24.5 (0.96)	24.5 (0.96)	24.5 (0.96)
160	27.5 (1.08)	27.5 (1.08)	27.5 (1.08)

Sensors and Switches

Universal Series



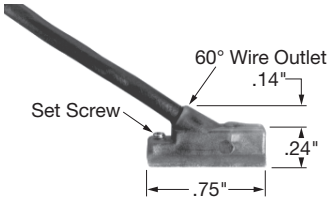
Direct Mount
No Bracket Required

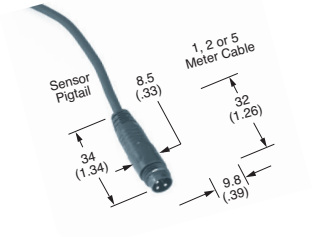
Sensor Description	Standard Cord Set	Quick Disconnect
Hall PNP	949-200-031	949-200-331
Hall NPN	949-200-032	949-200-332

See page 18 for sensor specifications

Dove tail Sensor with 45 Degree Wire

- Encased in a plastic housing, dovetail style electronic sensors are corrosion resistant. 45° wire outlet allows close mounting.





Dovetail Style Magnetic Sensor with LED

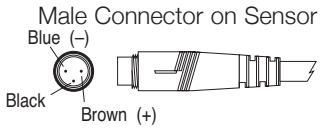
Sensor Type	Standard Cord Set	Quick Disconnect	Electrical Characteristics
Electronic	949-200-031	949-200-331	Sourcing PNP 6-24 VDC, 0.20 Amp Max current, 0.5 Voltage Drop
Electronic	949-200-032	949-200-332	Sinking NPN 6-24 VDC, 0.20 Amp Max current, 0.5 Voltage Drop

Note*: Quick disconnect styles are supplied with 6 inch pigtail with male connector. Order female cordsets separately.

Sensor Temperature Range
-20° to +80° C (-4° to +176° F)

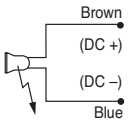
Low Profile Sensors for Magnetic Piston Cylinders

Specifications and Ordering Information

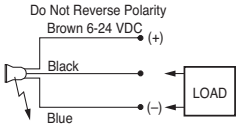


Temperature Range for Sensors
-20° to +80° C
(-4° to +176° F)

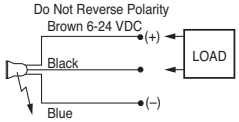
Reed Switch



Electronic Sensor Sourcing



Electronic Sensor Sinking

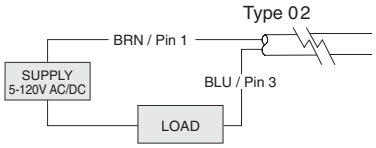


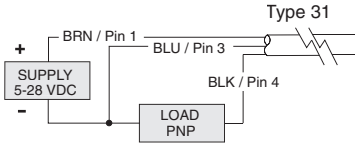
Stock Switch Part Numbers

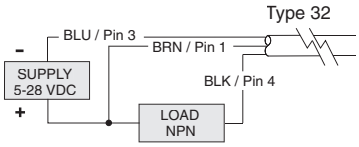
Sensor Type	Prewired 9 ft. Cable Part No.	8 mm Quick Disconnect Part No.	Package Contains
Reed	940-200-002	940-200-302	Switch and Universal Series Cylinder 3/8" Dovetail Adapter
Electronic, Sourcing (PNP)	940-200-031	940-200-331	
Electronic, Sinking (NPN)	940-200-032	940-200-332	

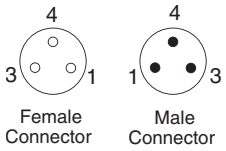
Series 9000 Type 02, 31 & 32

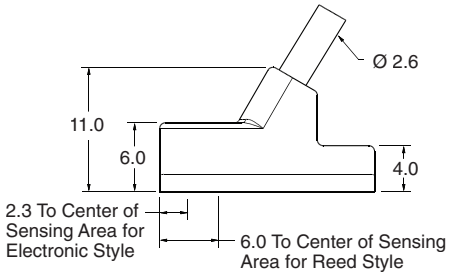
Wiring Diagrams





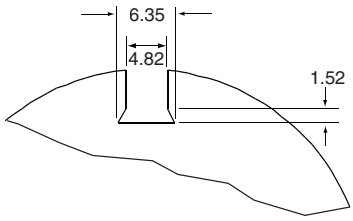






Type Code	Description	Function	Switching Voltage	Switching Current	Switching Power	Switching Speed	Voltage Drop
940-100-002	Reed Switch for PLC's, LED (current limiting)	SPST Normally Open	5-120V AC/DC 50/60 Hz	0.03 Amps max. 0.001 Amps min.	4 Watts max.	0.4 ms operate 0.1 ms release	3.5 Volts @ 5 mA
940-100-031	Electronic for Reed Magnet, LED & Sourcing	PNP Normally Open	5-28 VDC	0.2 Amps max.	4.8 Watts max.	4 µs operate 4 µs release	1.0 Volts max
940-100-032	Electronic for Reed Magnet, LED & Sourcing	NPN Normally Open	5-28 VDC	0.2 Amps max.	4.8 Watts max.	4 µs operate 4 µs release	1.0 Volts max

Groove Dimension



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