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KOGANEI

ACTUATORS GENERAL CATALOG

JIG CYLINDERS C SERIES

JIG CYLINDERS C SERIES CONTENTS

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Caution

Before use, be sure to read the "Safety Precautions" on p. 57.

Square body demonstrates powerful downsizing capacity.

JIG CYLINDERS C SERIES

Richly abundant series of 9 different types and 69 models

A rich series configuration spanning from $\phi 6$ [0.236in.] to $\phi 100$ [3.940in.] responds to diverse needs far better than previous thin type cylinders.

Moreover, Non-ion specification is also available as standard.

(Excludes $\phi 6$ [0.236in.], $\phi 8$ [0.315in.], and $\phi 10$ [0.394in.])

Provides powerful back-up for device miniaturization

Exhibits no protrusions in its external shape even after a sensor switch has been mounted, for easy mounting in tight spaces.

This cylinder is one step up on cylinders of the same class in terms of size, mass, and performance.



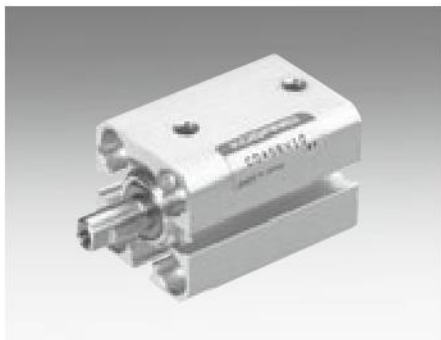
**$\phi 6$
[0.236in.]**

**$\phi 100$
[3.940in.]**



New Line-Up Includes $\phi 6$ [0.236in.], $\phi 8$ [0.315in.], and $\phi 10$ [0.394in.]

For a greater selection in response to needs for miniaturization, 3 new bore sizes at $\phi 6$, $\phi 8$, and $\phi 10$ have been added, increasing the range of sizes to choose from.



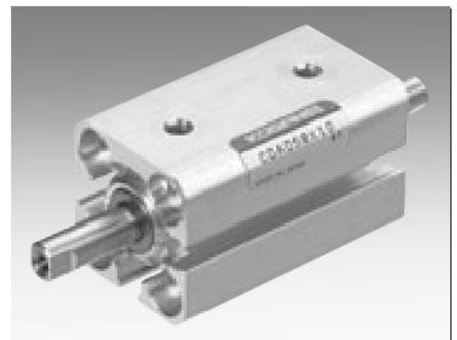
Standard Cylinders

$\phi 6$ [0.236in.]~ $\phi 100$ [3.940in.]



Non-rotating Cylinders

$\phi 6$ [0.236in.]~ $\phi 10$ [0.394in.]



Double Rod Cylinders

$\phi 6$ [0.236in.]~ $\phi 100$ [3.940in.]

The Jig Cylinders C Series Includes the 9 Types Shown Below.

■ Standard Cylinders

p.137



■ Non-rotating Cylinders

p.145



■ Square Rod Cylinders

p.149



■ Double Rod Cylinders

p.154



■ Tandem Cylinders

p.161



■ Dual Stroke Cylinders

p.170



■ Lateral Load Resistant Cylinders

p.180



■ Long Stroke Cylinders

p.185



■ End Keep Cylinders

p.190



■ Mounting Brackets

p.197



■ Sensor Switches

p.199



	Operation type			Cylinder specifications		Rod end specifications		Bumpers	Centering location	Non-iron specification	Mounting brackets		
	Double acting type	Single acting push type	Single acting pull type	Cylinder with magnet	Heat resistant type	Female thread	Male thread	Not available for heat resistant type		Not available for heat resistant type	Foot mounting bracket	Flange mounting bracket	Clevis mounting bracket
Standard Cylinders													
Non-rotating Cylinders	Note			Note		Note	Note						
Square Rod Cylinders													
Double Rod Cylinders													
Tandem Cylinders													
Dual Stroke Cylinders													
Lateral Load Resistant Cylinders													
Long Stroke Cylinders													
End Keep Cylinders													

■ The colored areas include bore sizes of $\phi 6$, $\phi 8$, and $\phi 10$.

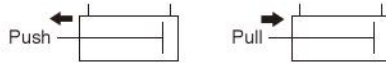
Note: Non-rotating cylinders are set at bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ only.

Cylinder Thrust

Select a suitable bore size considering the load and air pressure to obtain the required thrust.

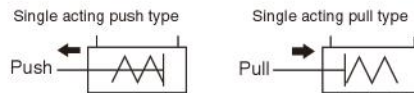
Since the figures in the table are calculated values, select a bore size that results in a load ratio (load ratio = $\frac{\text{Load}}{\text{Calculated value}}$) of 70% or less (50% or less for high speed).

● Double acting type



Bore size mm [in.]	Piston rod diameter mm [in.]	Operation	Pressure area mm ² [in. ²]	Air pressure MPa [psi.]										N [lbf.]
				0.1 [15]	0.2 [29]	0.3 [44]	0.4 [58]	0.5 [73]	0.6 [87]	0.7 [102]	0.8 [116]	0.9 [131]	1.0 [145]	
6 [0.236]	4 [0.157]	Push side	28.3 [0.0439]	2.8 [0.63]	5.7 [1.28]	8.5 [1.91]	11.3 [2.54]	14.1 [3.17]	17.0 [3.82]	19.8 [4.45]	22.6 [5.08]	25.4 [5.71]	—	—
		Pull side	15.7 [0.0243]	1.6 [0.36]	3.1 [0.7]	4.7 [1.06]	6.3 [1.42]	7.9 [1.78]	9.4 [2.11]	11.0 [2.47]	12.6 [2.83]	14.1 [3.17]	—	
8 [0.315]	5 [0.197]	Push side	50.3 [0.0780]	5.0 [1.12]	10.1 [2.27]	15.1 [3.39]	20.1 [4.52]	25.1 [5.64]	30.2 [6.79]	35.2 [7.91]	40.2 [9.04]	45.2 [10.2]	—	—
		Pull side	30.6 [0.0474]	3.1 [0.70]	6.1 [1.37]	9.2 [2.07]	12.3 [2.77]	15.3 [3.44]	18.4 [4.14]	21.4 [4.81]	24.5 [5.51]	27.6 [6.20]	—	
10 [0.394]	5 [0.197]	Push side	78.5 [0.1217]	7.9 [1.78]	15.7 [3.53]	23.6 [5.31]	31.4 [7.06]	39.3 [8.83]	47.1 [10.6]	55.0 [12.4]	62.8 [14.1]	70.7 [15.9]	—	—
		Pull side	58.9 [0.0913]	5.9 [1.33]	11.8 [2.65]	17.7 [3.98]	23.6 [5.31]	29.5 [6.63]	35.3 [7.94]	41.2 [9.26]	47.1 [10.6]	53.0 [11.9]	—	
12 [0.472]	6 [0.236]	Push side	113.0 [0.175]	11.3 [2.54]	22.6 [5.08]	33.9 [7.62]	45.2 [10.2]	56.5 [12.7]	67.8 [15.2]	79.1 [17.8]	90.4 [20.3]	101.7 [22.86]	113.0 [25.40]	113.0 [25.40]
		Pull side	84.8 [0.131]	8.5 [1.91]	17.0 [3.82]	25.4 [5.71]	33.9 [7.62]	42.4 [9.53]	50.9 [11.4]	59.3 [13.3]	67.8 [15.2]	76.3 [17.2]	84.8 [19.1]	
16 [0.630]	8 [0.315]	Push side	201.0 [0.312]	20.1 [4.52]	40.2 [9.04]	60.3 [13.6]	80.4 [18.1]	100.5 [22.59]	120.6 [27.11]	140.7 [31.63]	160.8 [36.15]	180.9 [40.67]	201.0 [45.18]	201.0 [45.18]
		Pull side	150.0 [0.233]	15.1 [3.39]	30.1 [6.77]	45.2 [10.2]	60.3 [13.6]	75.4 [16.9]	90.4 [20.3]	105.5 [23.72]	120.6 [27.11]	135.6 [30.48]	150.7 [33.88]	
20 [0.787]	10 [0.394]	Push side	314.0 [0.487]	31.4 [7.06]	62.8 [14.1]	94.2 [21.2]	125.6 [28.23]	157.0 [35.29]	188.4 [42.35]	219.8 [49.41]	251.2 [56.47]	282.6 [63.53]	314.0 [70.59]	314.0 [70.59]
		Pull side	235.5 [0.365]	23.6 [5.31]	47.1 [10.6]	70.7 [15.9]	94.2 [21.2]	117.8 [26.48]	141.3 [31.76]	164.9 [37.07]	188.4 [42.35]	212.0 [47.66]	235.5 [52.94]	
25 [0.984]	12 [0.472]	Push side	490.6 [0.760]	49.1 [11.0]	98.1 [22.1]	147.2 [33.09]	196.3 [44.13]	245.3 [55.14]	294.4 [66.18]	343.4 [77.20]	392.5 [88.23]	441.6 [99.27]	490.6 [110.3]	490.6 [110.3]
		Pull side	377.6 [0.585]	37.8 [8.50]	75.5 [17.0]	113.3 [25.47]	151.0 [33.94]	188.8 [42.44]	226.6 [50.94]	264.3 [59.41]	302.1 [67.91]	339.8 [76.39]	377.6 [84.88]	
32 [1.260]	16 [0.630]	Push side	803.8 [1.246]	80.4 [18.1]	160.8 [36.15]	241.2 [54.22]	321.5 [72.27]	401.9 [90.35]	482.3 [108.4]	562.7 [126.5]	643.1 [144.6]	723.5 [162.6]	803.8 [180.7]	803.8 [180.7]
		Pull side	602.9 [0.934]	60.3 [13.6]	120.6 [27.11]	180.9 [40.67]	241.2 [54.22]	301.4 [67.75]	361.7 [81.31]	422.0 [94.87]	482.3 [108.4]	542.6 [122.0]	602.9 [135.5]	
40 [1.575]	16 [0.630]	Push side	1256.0 [1.947]	125.6 [28.23]	251.2 [56.47]	376.8 [84.70]	502.4 [112.9]	628.0 [141.2]	753.6 [169.4]	879.2 [197.6]	1004.8 [225.9]	1130.4 [254.1]	1256.0 [282.3]	1256.0 [282.3]
		Pull side	1055.0 [1.635]	105.5 [23.72]	211.0 [47.43]	316.5 [71.15]	422.0 [94.87]	527.5 [118.6]	633.0 [142.3]	738.5 [166.0]	844.0 [189.7]	949.5 [213.4]	1055.0 [237.2]	
50 [1.969]	20 [0.787]	Push side	1962.5 [3.042]	196.3 [44.13]	392.5 [88.23]	588.8 [132.4]	785.0 [176.5]	981.3 [220.6]	1177.5 [264.7]	1373.8 [308.8]	1570.0 [352.9]	1766.3 [397.1]	1962.5 [441.2]	1962.5 [441.2]
		Pull side	1648.5 [2.555]	164.9 [37.07]	329.7 [74.12]	494.6 [111.2]	659.4 [148.2]	824.3 [185.3]	989.1 [222.3]	1154.0 [259.4]	1318.8 [296.5]	1483.7 [333.5]	1648.5 [370.6]	
63 [2.480]	20 [0.787]	Push side	3115.7 [4.829]	311.6 [70.05]	623.1 [140.1]	934.7 [210.1]	1246.3 [280.2]	1557.8 [350.2]	1869.4 [420.2]	2181.0 [490.3]	2492.5 [560.3]	2804.1 [630.4]	3115.7 [700.4]	3115.7 [700.4]
		Pull side	2801.7 [4.343]	280.2 [62.99]	560.3 [126.0]	840.5 [188.9]	1120.7 [251.9]	1400.8 [314.9]	1681.0 [377.9]	1961.2 [440.9]	2241.3 [503.8]	2521.5 [566.8]	2801.7 [629.8]	
80 [3.150]	25 [0.984]	Push side	5024.0 [7.787]	502.4 [112.9]	1004.8 [225.9]	1507.2 [338.8]	2009.6 [451.8]	2512.0 [564.7]	3014.4 [677.6]	3516.8 [790.6]	4019.2 [903.5]	4521.6 [1016.5]	5024.0 [1129.4]	5024.0 [1129.4]
		Pull side	4533.4 [7.027]	453.3 [101.9]	906.7 [203.8]	1360.0 [305.7]	1813.4 [407.7]	2266.7 [509.6]	2720.0 [611.5]	3173.4 [713.4]	3626.7 [815.3]	4080.0 [917.2]	4533.4 [1019.1]	
100 [3.940]	32 [1.181]	Push side	7850.0 [12.168]	785.0 [176.5]	1570.0 [352.9]	2355.0 [529.4]	3140.0 [705.9]	3925.0 [882.3]	4710.0 [1058.8]	5495.0 [1235.3]	6280.0 [1411.7]	7065.0 [1588.2]	7850.0 [1764.7]	7850.0 [1764.7]
		Pull side	7046.2 [10.922]	704.6 [158.4]	1409.2 [316.8]	2113.8 [475.2]	2818.5 [633.6]	3523.1 [792.0]	4227.7 [950.4]	4932.3 [1108.8]	5636.9 [1267.2]	6341.5 [1425.6]	7046.2 [1584.0]	

● Single acting type



Operation type	Bore size mm [in.]	Piston rod diameter mm [in.]	Pressure area mm ² [in. ²]	Air pressure MPa [psi.]										N [lbf.]
				0.1 [15]	0.2 [29]	0.3 [44]	0.4 [58]	0.5 [73]	0.6 [87]	0.7 [102]	0.8 [116]	0.9 [131]	1.0 [145]	
Single acting push type	6 [0.236]	4 [0.157]	28.3 [0.0439]	—	—	5.6 [1.26]	8.4 [1.89]	11.2 [2.52]	14.1 [3.17]	16.9 [3.80]	19.7 [4.43]	22.5 [5.06]	—	—
	8 [0.315]	5 [0.197]	50.3 [0.0780]	—	—	10.4 [2.34]	15.4 [3.46]	20.4 [4.59]	25.5 [5.73]	30.5 [6.86]	35.5 [7.98]	40.5 [9.10]	—	
	10 [0.394]	5 [0.197]	78.5 [0.1217]	—	—	18.9 [4.25]	26.7 [6.00]	34.6 [7.78]	42.4 [9.53]	50.3 [11.3]	58.1 [13.1]	66.0 [14.8]	—	
	12 [0.472]	6 [0.236]	113.0 [0.175]	—	12.8 [2.88]	24.1 [5.42]	35.4 [7.96]	46.7 [10.5]	58.0 [13.0]	69.3 [15.6]	80.6 [18.1]	91.9 [20.7]	103.2 [23.20]	
	16 [0.630]	6 [0.236]	201.0 [0.312]	—	26.1 [5.87]	46.2 [10.4]	66.3 [14.9]	86.4 [19.4]	106.5 [23.94]	126.6 [28.46]	146.7 [32.98]	166.8 [37.50]	186.9 [42.02]	
	20 [0.787]	8 [0.315]	314.0 [0.487]	—	49.0 [11.0]	80.4 [18.1]	111.8 [25.13]	143.2 [32.19]	174.6 [39.25]	206.0 [46.31]	237.4 [53.37]	268.8 [60.43]	300.2 [67.48]	
	25 [0.984]	10 [0.394]	490.6 [0.760]	—	76.3 [17.2]	125.4 [28.19]	174.5 [39.23]	223.5 [50.24]	272.6 [61.28]	321.6 [72.30]	370.7 [83.33]	419.8 [94.37]	468.8 [105.4]	
	32 [1.260]	12 [0.472]	803.8 [1.246]	—	123.4 [27.74]	203.8 [45.81]	284.1 [63.87]	364.5 [81.94]	444.9 [100.0]	525.3 [118.1]	605.7 [136.2]	686.1 [154.2]	766.4 [172.3]	
	40 [1.575]	16 [0.630]	1256.0 [1.947]	—	205.9 [46.29]	331.5 [74.52]	457.1 [102.8]	582.7 [131.0]	708.3 [159.2]	833.9 [187.5]	959.5 [215.7]	1085.1 [243.9]	1210.5 [272.1]	
	50 [1.969]	20 [0.787]	1962.5 [3.042]	141.0 [31.70]	337.2 [75.80]	533.5 [119.9]	729.7 [164.0]	926.0 [208.2]	1122.2 [252.3]	1318.5 [296.4]	1514.7 [340.5]	1711.0 [384.6]	1907.2 [428.7]	
Single acting pull type	6 [0.236]	4 [0.157]	15.7 [0.0243]	—	—	1.8 [0.40]	3.4 [0.76]	5.0 [1.12]	6.5 [1.46]	8.1 [1.82]	9.7 [2.18]	11.2 [2.52]	—	—
	8 [0.315]	5 [0.197]	30.6 [0.0474]	—	—	4.5 [1.01]	7.6 [1.71]	10.6 [2.38]	13.7 [3.08]	16.7 [3.75]	19.8 [4.45]	22.9 [5.15]	—	
	10 [0.394]	5 [0.197]	58.9 [0.0913]	—	—	13.0 [2.92]	18.9 [4.25]	24.8 [5.58]	30.6 [6.88]	36.5 [8.21]	42.4 [9.53]	48.3 [10.9]	—	
	12 [0.472]	6 [0.236]	84.8 [0.131]	—	7.2 [1.62]	15.6 [3.51]	24.1 [5.42]	32.6 [7.33]	41.1 [9.24]	49.5 [11.1]	58.0 [13.0]	66.5 [14.9]	75.0 [16.9]	
	16 [0.630]	6 [0.236]	150.7 [0.234]	—	16.0 [3.60]	31.1 [6.99]	46.2 [10.4]	61.3 [13.8]	76.3 [17.2]	91.4 [20.5]	106.5 [23.94]	121.5 [27.31]	136.6 [30.71]	
	20 [0.787]	8 [0.315]	235.5 [0.365]	—	33.3 [7.49]	56.9 [12.8]	80.4 [18.1]	104.0 [23.38]	127.5 [28.66]	151.1 [33.97]	174.6 [39.25]	198.2 [44.56]	221.7 [49.84]	
	25 [0.984]	10 [0.394]	377.6 [0.585]	—	75.5 [17.0]	113.3 [25.47]	151.0 [33.94]	188.8 [42.44]	226.6 [50.94]	264.3 [59.41]	302.1 [67.91]	339.8 [76.39]	377.6 [84.88]	
	32 [1.260]	12 [0.472]	602.9 [0.934]	—	61.4 [13.8]	121.7 [27.36]	182.0 [40.91]	242.2 [54.45]	302.5 [68.00]	362.8 [81.56]	423.1 [95.11]	483.4 [108.7]	543.7 [122.2]	
	40 [1.575]	16 [0.630]	1055.0 [1.635]	—	165.7 [37.25]	271.2 [60.97]	376.7 [84.68]	482.2 [108.4]	587.7 [132.1]	693.2 [155.8]	798.7 [179.5]	904.2 [203.3]	1009.7 [227.0]	
	50 [1.969]	20 [0.787]	1648.5 [2.555]	109.6 [24.64]	274.4 [61.69]	439.3 [98.75]	604.1 [135.8]	769.0 [172.9]	933.8 [209.9]	1098.7 [247.0]	1263.5 [284.0]	1428.4 [321.1]	1593.2 [358.2]	

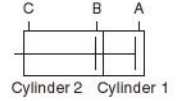
● Spring return force

Bore size mm	Stroke mm	N [lbf.]	
		Zero stroke	End of stroke
6	× 5	2.1 [0.47]	2.9 [0.65]
	× 10	1.2 [0.27]	
8	× 5	3.3 [0.74]	4.7 [1.06]
	× 10	1.9 [0.43]	
10	× 5	3.3 [0.74]	4.7 [1.06]
	× 10	1.9 [0.43]	
12	× 5	7.7 [1.73]	9.8 [2.20]
	× 10	5.7 [1.28]	
	× 15	3.7 [0.83]	
	× 20	5.7 [1.28]	
	× 25	4.7 [1.06]	
	× 30	3.7 [0.83]	
16	× 5	11.1 [2.50]	14.1 [3.17]
	× 10	8.2 [1.84]	
	× 15	5.3 [1.19]	
	× 20	8.2 [1.84]	
	× 25	6.7 [1.51]	
	× 30	5.3 [1.19]	
20	× 5	11.6 [2.61]	13.8 [3.10]
	× 10	9.5 [2.14]	
	× 15	7.3 [1.64]	
	× 20	9.5 [2.14]	
	× 25	8.4 [1.89]	
	× 30	7.3 [1.64]	

Bore size mm	Stroke mm	N [lbf.]	
		Zero stroke	End of stroke
25	× 5	18.1 [4.07]	21.8 [4.90]
	× 10	14.5 [3.26]	
	× 15	10.7 [2.41]	
	× 20	14.5 [3.26]	
	× 25	12.7 [2.85]	
32	× 30	10.9 [2.45]	37.4 [8.41]
	× 5	32.0 [7.19]	
	× 10	26.7 [6.00]	
	× 15	21.3 [4.79]	
	× 20	26.7 [6.00]	
	× 25	24.0 [5.40]	
40	× 30	21.3 [4.79]	45.3 [10.18]
	× 5	37.7 [8.47]	
	× 10	30.2 [6.79]	
	× 15	22.6 [5.08]	
	× 20	30.2 [6.79]	
	× 25	26.4 [5.93]	
50	× 30	22.6 [5.08]	55.3 [12.43]
	× 10	45.4 [10.21]	
	× 15	40.5 [9.10]	
	× 20	35.5 [7.98]	
	× 25	43.0 [9.67]	
	× 30	40.5 [9.10]	
	× 35	38.0 [8.54]	
	× 40	35.5 [7.98]	

● How to read the thrust table

1. For the thrust of the double rod cylinder double acting type, see the pull side of the double acting type thrust table. For the thrust of the single acting type, see the single acting pull type thrust table.
2. The thrust of the tandem cylinder is double that of the standard type when air is supplied simultaneously to Port A and Port B, for any operation type before the stroke in Cylinder 1 is complete. When air is supplied to any of Ports A, B, or C alone, then the thrust is the same as for the standard type.



3. The thrust for dual stroke cylinders is the same as for the standard type, for any operation type.
4. When directly carrying a load, care must be exercised of a lateral load.

For details, see p.206 "Lateral Load."

● Square rod cylinders



Bore size mm [in.]	Piston rod size mm [in.]	Operation	Pressure area mm ² [in. ²]	Air pressure MPa									
				0.1 [15]	0.2 [29]	0.3 [44]	0.4 [58]	0.5 [73]	0.6 [87]	0.7 [102]	0.8 [116]	0.9 [131]	1.0 [145]
20 [0.787]	□ 7.4 [□ 0.291]	Push side	314.0 [0.487]	31.4 [7.06]	62.8 [14.1]	94.2 [21.2]	125.6 [28.23]	157.0 [35.29]	188.4 [42.35]	219.8 [49.41]	251.2 [56.47]	282.6 [63.53]	314.0 [70.59]
		Pull side	259.2 [0.402]	25.9 [5.82]	51.8 [11.6]	77.8 [17.5]	103.7 [23.3]	129.6 [29.13]	155.5 [34.96]	181.5 [40.80]	207.4 [46.62]	233.3 [52.45]	259.2 [58.27]
25 [0.984]	□ 7.4 [□ 0.291]	Push side	490.6 [0.760]	49.1 [11.0]	98.1 [22.1]	147.2 [33.09]	196.3 [44.13]	245.3 [55.14]	294.4 [66.18]	343.4 [77.20]	392.5 [88.23]	441.6 [99.27]	490.6 [110.3]
		Pull side	435.9 [0.676]	43.6 [9.80]	87.2 [19.6]	130.8 [29.40]	174.3 [39.18]	217.9 [48.98]	261.5 [58.79]	305.1 [68.59]	348.7 [78.39]	392.3 [88.19]	435.9 [97.99]
32 [1.260]	□ 13 [□ 0.512]	Push side	803.8 [1.246]	80.4 [18.1]	160.8 [36.15]	241.2 [54.22]	321.5 [72.27]	401.9 [90.35]	482.3 [108.4]	562.7 [126.5]	643.1 [144.6]	723.5 [162.6]	803.8 [180.7]
		Pull side	634.8 [0.984]	63.5 [14.3]	127.0 [28.55]	190.5 [42.82]	253.9 [57.08]	317.4 [71.35]	380.9 [85.63]	444.4 [99.90]	507.9 [114.2]	571.4 [128.5]	634.8 [142.7]
40 [1.575]	□ 13 [□ 0.512]	Push side	1256.0 [1.947]	125.6 [28.23]	251.2 [56.47]	376.8 [84.70]	502.4 [112.9]	628.0 [141.2]	753.6 [169.4]	879.2 [197.6]	1004.8 [225.9]	1130.4 [254.1]	1256.0 [282.3]
		Pull side	1087.0 [1.685]	108.7 [24.44]	217.4 [48.87]	326.1 [73.31]	434.8 [97.74]	543.5 [122.2]	652.2 [146.6]	760.9 [171.1]	869.6 [195.5]	978.3 [219.9]	1087.0 [244.4]
50 [1.969]	□ 18 [□ 0.709]	Push side	1962.5 [3.042]	196.3 [44.13]	392.5 [88.23]	588.8 [132.4]	785.0 [176.5]	981.3 [220.6]	1177.5 [264.7]	1373.8 [308.8]	1570.0 [352.9]	1766.3 [397.1]	1962.5 [441.2]
		Pull side	1638.5 [2.540]	163.9 [36.84]	327.7 [73.67]	491.6 [110.5]	655.4 [147.3]	819.3 [184.2]	983.1 [221.0]	1147.0 [257.8]	1310.8 [294.7]	1474.7 [331.5]	1638.5 [368.3]
63 [2.480]	□ 18 [□ 0.709]	Push side	3115.7 [4.829]	311.6 [70.05]	623.1 [140.1]	934.7 [210.1]	1246.3 [280.2]	1557.8 [350.2]	1869.4 [420.2]	2181.0 [490.3]	2492.5 [560.3]	2804.1 [630.4]	3115.7 [700.4]
		Pull side	2791.7 [4.327]	279.2 [62.76]	558.3 [125.5]	837.5 [188.3]	1116.7 [251.0]	1395.8 [313.8]	1675.0 [376.5]	1954.2 [439.3]	2233.3 [502.0]	2512.5 [564.8]	2791.7 [627.6]

JIG CYLINDERS C SERIES STANDARD CYLINDERS

Double Acting Type,
Single Acting Push Type, Single Acting Pull Type

Symbols

● Double acting type ● Single acting push type ● Single acting pull type



Specifications

Item	Bore size mm [in.]	6 [0.236]	8 [0.315]	10 [0.394]	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]	80 [3.150]	100 [3.940]	
Operation type		Double acting type, Single acting push type, Single acting pull type											Double acting type		
Media		Air													
Operating pressure range MPa [psi.]	Double acting type	0.15~0.9 [22~131]			0.1~1.0 [15~145]						0.05~1.0 [7~145]				
	Single acting type	0.25~0.9 [36~131]			0.15~1.0 ^{Note 1} [22~145]						0.1~1.0 [15~145]	—			
Proof pressure MPa [psi.]		1.35 [196]			1.5 [218]										
Operating temperature range °C [°F]		0~60 [32~140] (The heat resistant specification is 120 [248]. ^{Note2})													
Operating speed range mm/s [in./sec.]	Double acting type	30~500 [1.2~19.7]			30~500 [1.2~19.7]						30~300 [1.2~11.8]				
	Single acting type	50~500 [2.0~19.7]			100~500 [3.9~19.7]						100~300 [3.9~11.8]	—			
Cushion	Double acting type	None			Rubber bumper (Option ^{Note3})										
	Single acting type				None						—				
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)													
Port size		M3×0.5			M5×0.8				Rc1/8		Rc1/4		Rc3/8		

Remark: For Handling Instructions and Precautions, see p.205.

Notes: 1. The single acting pull type of $\phi 12$ is 0.18~1.0MPa [26~145psi.].

2. For heat resistant specification, it is not available with the sensor switch. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.

3. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$, and heat resistant specification.

Note: For strokes that exceed the maximum standard strokes for each double acting type cylinder's bore size, use the long stroke cylinders on p.185~189.

Bore Size and Stroke

For non-standard strokes, see p.206.

Operation type	Bore size	Standard strokes	
		Standard cylinder	Cylinder with magnet
Double acting type	6	5, 10, 15, 20	5, 10, 15, 20
	8		
	10		
	12		
	16	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30
	20		
	25		
	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	40		
	50		
	63	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
	80		
	100		
Single acting type	6	5, 10	5, 10
	8		
	10		
	12		
	16	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30
	20		
	25		
	32		
	40		
	50		
	50	10, 15, 20, 25, 30, 35, 40	10, 15, 20, 25, 30, 35, 40

Remarks: 1. Stroke tolerance $+1 \begin{smallmatrix} 0 \\ 0 \end{smallmatrix} \begin{smallmatrix} +0.039 \\ 0 \end{smallmatrix} \text{in.}$

2. In most cases, body cutting is used for the non-standard strokes. However, body cutting is not used for strokes of less than 5mm for $\phi 12 \sim \phi 40$, and strokes of less than 10mm for $\phi 50 \sim \phi 100$. The collar packed is used for these cases.

Order Codes for Standard Cylinders

Operation type

DA : Double acting type

SA : Single acting push type

TA : Single acting pull type

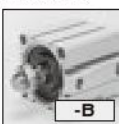
Rod end specification

Female thread



Blank

Male thread



-B

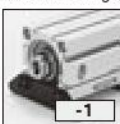
Mounting type

Basic type



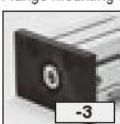
Blank

Foot mounting type ^{Note7}



-1

Flange mounting type ^{Note6}



-3

Sensor switch type ^{Note4}
(For cylinder with magnet)

Blank: No sensor switch

-ZE135 : With ZE135

- 2-lead wire Solid state type
- With indicator lamp
- DC10~28V
- Horizontal lead wire

-ZE235 : With ZE235

- 2-lead wire Solid state type
- With indicator lamp
- DC10~28V
- Vertical lead wire

-ZE101 : With ZE101 ^{Note7}

- 2-lead wire Reed switch type
- Without indicator lamp
- DC5~28V
- AC85~115V
- Horizontal lead wire

-ZE201 : With ZE201 ^{Note7}

- 2-lead wire Reed switch type
- Without indicator lamp
- DC5~28V
- AC85~115V
- Vertical lead wire

-ZE155 : With ZE155

- 3-lead wire Solid state type
- With indicator lamp
- DC4.5~28V
- Horizontal lead wire

-ZE255 : With ZE255

- 3-lead wire Solid state type
- With indicator lamp
- DC4.5~28V
- Vertical lead wire

-ZE102 : With ZE102 ^{Note7}

- 2-lead wire Reed switch type
- With indicator lamp
- DC10~28V
- AC85~115V
- Horizontal lead wire

-ZE202 : With ZE202 ^{Note7}

- 2-lead wire Reed switch type
- With indicator lamp
- DC10~28V
- AC85~115V
- Vertical lead wire

Lead wire length

A : 1000mm [39in.]

B : 3000mm [118in.]

Number of sensor switches
(For cylinder with magnet)

Blank: No sensor switch

1 : With 1 sensor switch

2 : With 2 sensor switches

Cylinder specification

Blank : Standard cylinder ^{Note1}
(Non-ion specification ^{Note8})

S : Cylinder with magnet
(Non-ion specification ^{Note8})

F : Heat resistant cylinder ^{Note2}

Bumper ^{Note3}

Blank : No bumper

-R : With bumper

Centering location ^{Note5}

Blank : No centering location

-G : With centering location

Basic type

Bore size × Stroke

C	DA SA TA	S F	×	-B	-R	-G	-1 -3	-ZE135 -ZE155 -ZE235 -ZE255 -ZE101 -ZE102 -ZE201 -ZE202	A B	1 2 : n
---	----------------	------------	---	----	----	----	--------------	--	------------	------------------

● See table for bore size and stroke.

● For information regarding the cylinder joint and cylinder rod end for male thread, see p.1568.

● For the order codes of sensor switches only, see p.199.
● For heat resistant specification, sensor switch is not available.

- Notes: 1. In the standard cylinder, a magnet for the sensor switch is not built-in.
2. Not available for the cylinder with magnet or the cylinder with bumper. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.
3. For the double acting type only. Not available for heat resistant specification, however. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.
4. For details of sensor switches, see p.1544.
5. Not available for bore sizes $\phi 6 \sim \phi 12$.
6. Cannot be mounted on bore size $\phi 40$ with centering location (-G). Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.
7. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$. And cannot be mounted on the 5mm strokes of $\phi 16$ and $\phi 25$, and 10mm strokes of $\phi 50$, $\phi 63$, and $\phi 80$.
8. Bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ are not non-ion specification.

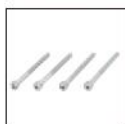
Additional Parts (To be ordered separately)



Foot mounting bracket
(p.197)



Flange mounting bracket
(p.198)

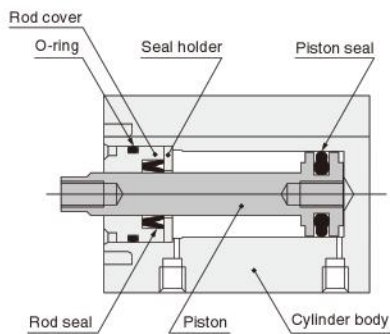


Mounting screws
(p.209)

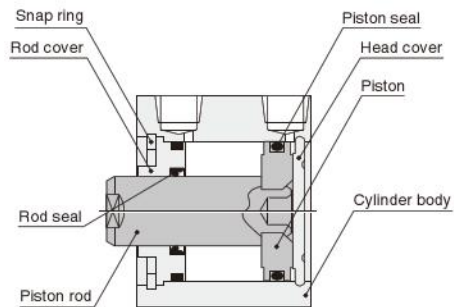
Inner Construction and Major Parts

● Double acting type (CDA)

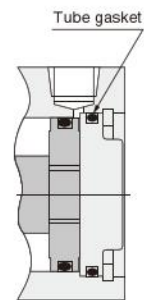
● $\phi 6 \sim \phi 10$



● $\phi 12 \sim \phi 40$

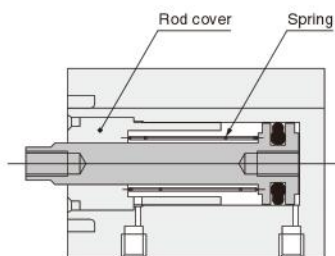


● $\phi 50 \sim \phi 100$

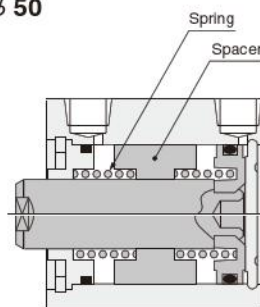


● Single acting push type (CSA)

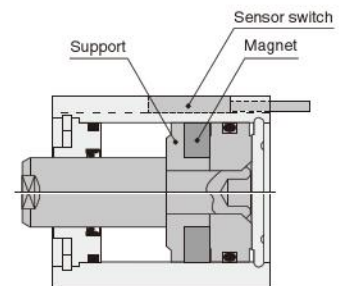
● $\phi 6 \sim \phi 10$



● $\phi 12 \sim \phi 50$



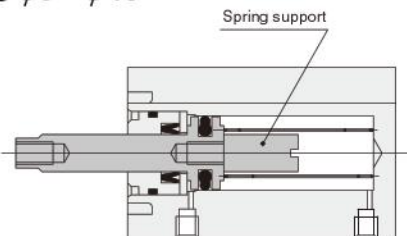
● Cylinder with magnet



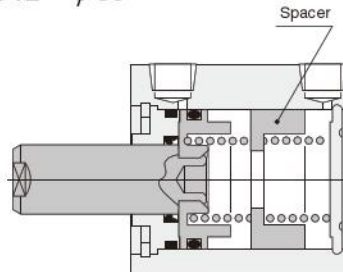
● The diagram is for $\phi 12 \sim \phi 100$.

● Single acting pull type (CTA)

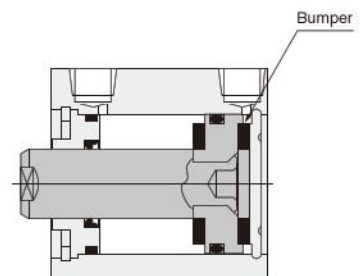
● $\phi 6 \sim \phi 10$



● $\phi 12 \sim \phi 50$



● With bumper



● The diagram is for $\phi 12 \sim \phi 100$.

Major Parts and Materials

Bore mm	φ 6	φ 8	φ 10	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Cylinder body	Aluminum alloy (anodized)												
Piston	Stainless steel			Aluminum alloy (special rust prevention treatment)									
Piston rod	—			Stainless steel (chrome plated)				Steel (chrome plated)					
Seal	Synthetic rubber (NBR)												
Rod cover	Aluminum alloy (special wear-resistant treatment)												
Head cover	—			Aluminum alloy (anodized)									
Snap ring	—			Steel (phosphate coating)									
Spring	Piano wire										—		
Spacer	—			Aluminum alloy (special rust prevention treatment)							—		
Bumper	—			Synthetic rubber (NBR; urethane for φ 12 only)									
Magnet	Neodymium magnet			Plastic magnet									
Support	Copper alloy			Aluminum alloy (special rust prevention treatment)									

Seals

Parts \ Bore mm	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
$\phi 12$	MYR-6	COP-12	Y090260	None
$\phi 16$	MYR-8	COP-16	Y090207	None
$\phi 20$	MYR-10	COP-20(MYA-16)	Y090216	None
$\phi 25$	MYR-12	COP-25(MYA-21)	Y090210	None
$\phi 32$	MYR-16	COP-32	L090084	None
$\phi 40$	MYR-16	COP-40	L090151	None
$\phi 50$	MYR-20	COP-50	L090174	L090106
$\phi 63$	MYR-20	COP-63	L090180	L090107
$\phi 80$	PNY-25	COP-80	L090171	L090108
$\phi 100$	PNY-32	COP-100	L090172	L090109

Note: Items in parentheses () are for the single acting type.

Mass

● Double acting type

Bore size mm [in.]	Zero stroke mass	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with bumper	Additional mass of cylinder with magnet	Mass of mounting bracket		Additional mass of sensor switch ^{Note}	
					Foot bracket	Flange bracket	ZE□□□A	ZE□□□B
6 [0.236]	9.2 [0.325]	0.74 [0.0261]	—	3.9 [0.138]	—	—	15 [0.53]	35 [1.23]
8 [0.315]	13.1 [0.462]	0.95 [0.0335]	—	5.4 [0.190]	—	—		
10 [0.394]	18.1 [0.638]	1.12 [0.0395]	—	6.8 [0.240]	—	—		
12 [0.472]	20.59 [0.726]	1.28 [0.0451]	6.42 [0.226]	6.59 [0.232]	50 [1.76]	55 [1.94]		
16 [0.630]	28.93 [1.020]	1.62 [0.0571]	8.08 [0.285]	9.93 [0.350]	62 [2.19]	71 [2.50]		
20 [0.787]	46.71 [1.648]	2.26 [0.0797]	11.29 [0.398]	25.71 [0.907]	84 [2.96]	101 [3.56]		
25 [0.984]	70.47 [2.486]	3.11 [0.110]	15.53 [0.548]	37.47 [1.322]	104 [3.67]	160 [5.64]		
32 [1.260]	106.43 [3.754]	4.11 [0.145]	20.57 [0.726]	52.43 [1.849]	126 [4.44]	186 [6.56]		
40 [1.575]	166.15 [5.861]	4.77 [0.168]	0	69.15 [2.439]	160 [5.64]	335 [11.82]		
50 [1.969]	271.69 [9.583]	7.03 [0.248]	0	108 [3.81]	220 [7.76]	447 [15.77]		
63 [2.480]	435.06 [15.35]	8.69 [0.307]	0	159 [5.61]	300 [10.58]	591 [20.85]		
80 [3.150]	861.44 [30.39]	13.06 [0.461]	0	245 [8.64]	644 [22.72]	1414 [49.88]		
100 [3.940]	1583.88 [55.87]	18.61 [0.656]	0	360 [12.70]	1172 [41.34]	2606 [91.92]		

Note: Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

● Single acting push type

Item Bore mm	Stroke mm	Basic mass ^{Note 1}								Additional mass of cylinder with magnet	Mass of mounting bracket		Additional mass of sensor switch ^{Note 2}	
		5	10	15	20	25	30	35	40		Foot bracket	Flange bracket	ZE□□□A	ZE□□□B
6	20.8 [0.734]	24.5 [0.884]	—	—	—	—	—	—	—	3.9 [0.138]	—	—	15 [0.53]	35 [1.23]
8	28.3 [0.996]	33.1 [1.167]	—	—	—	—	—	—	—	5.4 [0.190]	—	—		
10	36.2 [1.277]	41.8 [1.474]	—	—	—	—	—	—	—	6.8 [0.240]	—	—		
12	32.61 [1.157]	38.22 [1.383]	45.64 [1.610]	67 [2.36]	73.42 [2.590]	79.83 [2.816]	—	—	—	7.78 [0.274]	50 [1.76]	55 [1.94]		
16	46.5 [1.644]	54.66 [1.929]	62.75 [2.213]	91 [3.21]	99.08 [3.485]	107.15 [3.780]	—	—	—	10.32 [0.364]	62 [2.19]	71 [2.50]		
20	58.33 [2.057]	69.62 [2.456]	80.91 [2.854]	121 [4.27]	132.29 [4.666]	143.58 [5.065]	—	—	—	25.38 [0.895]	84 [2.96]	101 [3.56]		
25	66.37 [3.047]	101.9 [3.594]	117.43 [4.142]	173 [6.10]	188.53 [6.650]	204.06 [7.198]	—	—	—	39.1 [1.379]	104 [3.67]	160 [5.64]		
32	128.65 [4.545]	149.42 [5.271]	169.99 [5.996]	276 [9.74]	296.57 [10.461]	317.14 [11.187]	—	—	—	50.58 [1.784]	126 [4.44]	186 [6.56]		
40	190.73 [6.726]	214.58 [7.599]	238.43 [8.410]	373 [13.16]	396.85 [13.966]	420.7 [14.84]	—	—	—	69.42 [2.449]	160 [5.64]	335 [11.82]		
50	—	349.95 [12.132]	379.11 [13.372]	414.26 [14.61]	582 [20.53]	617.16 [21.769]	652.31 [23.009]	687.47 [24.249]	—	106.05 [3.741]	220 [7.76]	447 [15.77]		

Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

● Single acting pull type

Item Bore mm	Stroke mm	Basic mass ^{Note 1}								Additional mass of cylinder with magnet	Mass of mounting bracket		Additional mass of sensor switch ^{Note 2}	
		5	10	15	20	25	30	35	40		Foot bracket	Flange bracket	ZE□□□A	ZE□□□B
6	20.5 [0.723]	24.2 [0.854]	—	—	—	—	—	—	—	3.9 [0.138]	—	—	15 [0.53]	35 [1.23]
8	27.6 [0.974]	32.4 [1.143]	—	—	—	—	—	—	—	5.5 [0.194]	—	—		
10	35.1 [1.238]	40.7 [1.436]	—	—	—	—	—	—	—	6.7 [0.236]	—	—		
12	32.03 [1.130]	38.44 [1.356]	44.66 [1.582]	64 [2.26]	70.42 [2.484]	76.83 [2.710]	—	—	—	8.56 [0.302]	50 [1.76]	55 [1.94]		
16	45.55 [1.607]	53.63 [1.892]	61.7 [2.176]	86 [3.03]	94.08 [3.319]	102.15 [3.603]	—	—	—	11.37 [0.401]	62 [2.19]	71 [2.50]		
20	66.4 [2.413]	79.69 [2.811]	90.98 [3.209]	125 [4.41]	136.29 [4.807]	147.58 [5.206]	—	—	—	26.31 [0.928]	84 [2.96]	101 [3.56]		
25	100.02 [3.529]	115.55 [4.076]	131.08 [4.623]	178 [6.26]	193.53 [6.826]	209.06 [7.374]	—	—	—	38.45 [1.356]	104 [3.67]	160 [5.64]		
32	144.73 [5.105]	165.3 [5.831]	185.87 [6.556]	269 [9.49]	289.57 [10.214]	310.14 [10.940]	—	—	—	51.71 [1.824]	126 [4.44]	186 [6.56]		
40	215.24 [7.592]	239.09 [8.434]	262.94 [9.275]	374 [13.19]	397.85 [14.034]	421.7 [14.875]	—	—	—	67.91 [2.395]	160 [5.64]	335 [11.82]		
50	—	378.94 [13.366]	414.1 [14.61]	449.25 [15.847]	580 [20.46]	615.16 [21.699]	650.31 [22.939]	685.47 [24.179]	—	70.06 [2.471]	220 [7.76]	447 [15.77]		

Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.

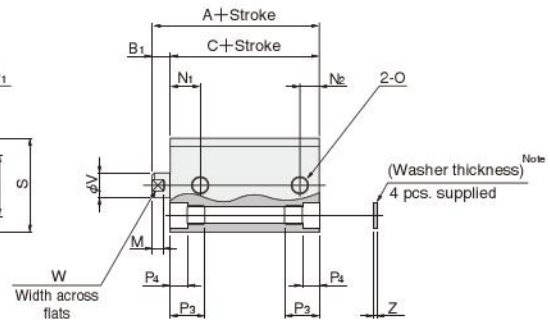
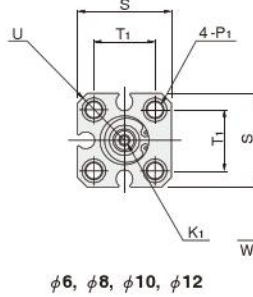
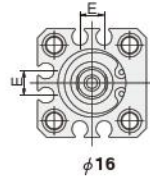
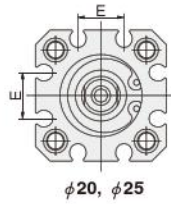
A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a double acting type cylinder with magnet, bore size of 25mm, stroke of 30mm, and with 2 sensor switches (ZE135A)
 $70.47 + (3.11 \times 30) + 37.47 + (15 \times 2) = 231.24\text{g}$ [8.157oz.]

Dimensions of Standard Cylinder Double Acting Type (mm)

● $\phi 6 \sim \phi 25$

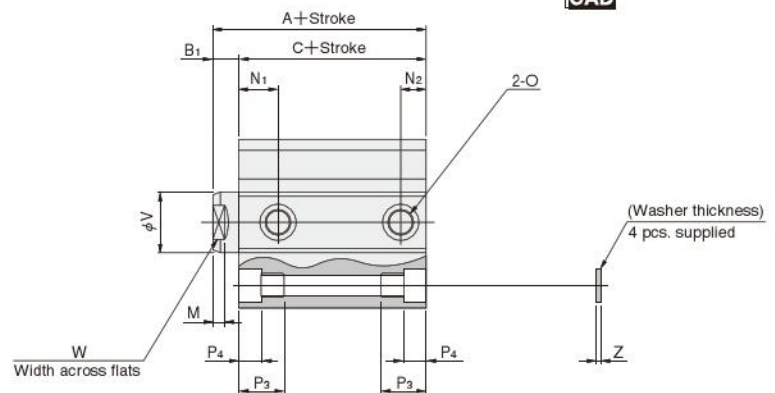
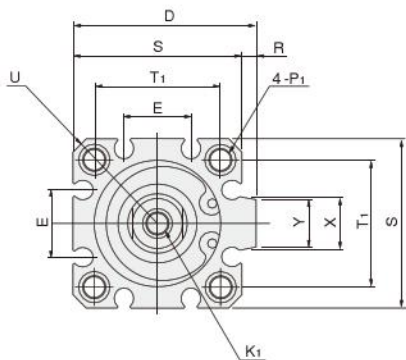
CDA Bore size



Note: Bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ are not available with washers.
● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 100$

CDA Bore size



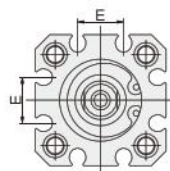
Type	Standard cylinder (CDA)			Cylinder with magnet (CDAS)			Standard cylinder with bumper (CDA-R)			Cylinder with magnet and bumper (CDAS-R)			D	E	K ₁	M	N ₁	N ₂
Bore mm [in.]	A	B ₁	C	A	B ₁	C	A	B ₁	C	A	B ₁	C						
6 [0.236]	19	5	14	24	5	19	—	—	—	—	—	—	—	—	M2.5X0.45 Depth5	3	6.5	3.5
8 [0.315]	20	5	15	25	5	20	—	—	—	—	—	—	—	—	M3X0.5 Depth5	3	7.5	3.5
10 [0.394]	21	5	16	26	5	21	—	—	—	—	—	—	—	—	M3X0.5 Depth5	3	8	4
12 [0.472]	22	5	17	27	5	22	27	5	22	32	5	27	—	—	M3X0.5 Depth6	3.5	8	5
16 [0.630]	22.5	5.5	17	27.5	5.5	22	27.5	5.5	22	32.5	5.5	27	—	6.2	M4X0.7 Depth8	3.5	8	5
20 [0.787]	25	5.5	19.5	35	5.5	29.5	30	5.5	24.5	40	5.5	34.5	—	12.2	M5X0.8 Depth10	4.5	9.5	5
25 [0.984]	27	6	21	37	6	31	32	6	26	42	6	36	—	12.2	M6X1 Depth10	5	10.5	5
32 [1.260]	30	7	23	40	7	33	35	7	28	40	7	33	48.5	18.2	M8X1.25 Depth12	6	9.5	7.5(6)
40 [1.575]	33	7	26	43	7	36	33	7	26	43	7	36	56.5	18.2	M8X1.25 Depth12	6	10.5	7.5
50 [1.969]	37	9	28	47	9	38	37	9	28	47	9	38	70	24.8	M10X1.5 Depth15	7	11	9.5
63 [2.480]	41	9	32	51	9	42	41	9	32	51	9	42	83	26.8	M10X1.5 Depth15	7	12.5	11
80 [3.150]	52	11	41	62	11	51	52	11	41	62	11	51	102	32.8	M14X2 Depth20	9	18	12
100 [3.940]	63	12	51	73	12	61	63	12	51	73	12	61	122	32.8	M18X2.5 Depth20	9	22.5	16.5

Type	O	P ₁	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt
Bore mm [in.]														
6 [0.236]	M3X0.5	$\phi 3.3$ (Thru hole) C'bore $\phi 6$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	19	11	R12	4	3.5	—	—	—	M3
8 [0.315]	M3X0.5	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	21	13	R13.5	5	4	—	—	—	M3
10 [0.394]	M3X0.5	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	23	15	R15	5	4	—	—	—	M3
12 [0.472]	M5X0.8	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	M5X0.8	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	M5X0.8	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	M5X0.8	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	Rc1/8	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	Rc1/8	$\phi 6.9$ (Thru hole) C'bore $\phi 9.5$ (Both sides) and M8X1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	Rc1/4	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
63 [2.480]	Rc1/4	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)	16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	M6
80 [3.150]	Rc3/8	$\phi 10.5$ (Thru hole) C'bore $\phi 14$ (Both sides) and M12X1.75 (Both sides)	22.5	10.5	8	94	74	R62	25	22	27.6	25	1.6	M8
100 [3.940]	Rc3/8	$\phi 12.3$ (Thru hole) C'bore $\phi 17.5$ (Both sides) and M14X2 (Both sides)	27	13	8	114	90	R75	32	27	27.6	25	2	M10

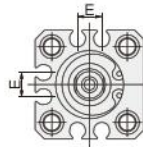
Note: Figure in parentheses [] is for the standard cylinder (CDA) with 5mm stroke.
Remark: If using a through bolt to directly mount the body in place, see p.205.

Dimensions of Standard Cylinder Single Acting Push Type (mm)

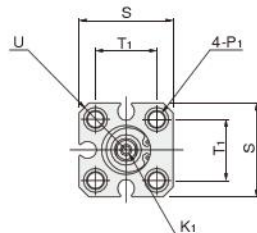
● $\phi 6 \sim \phi 25$



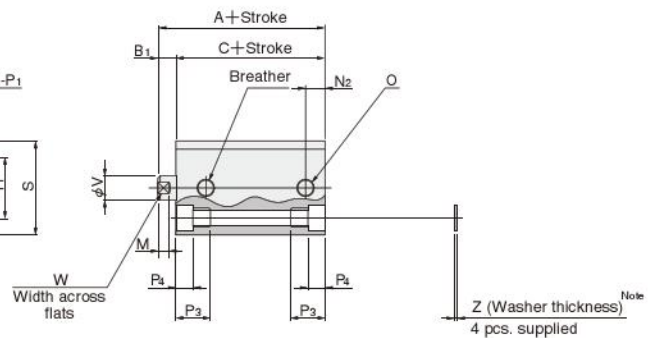
$\phi 20, \phi 25$



$\phi 16$



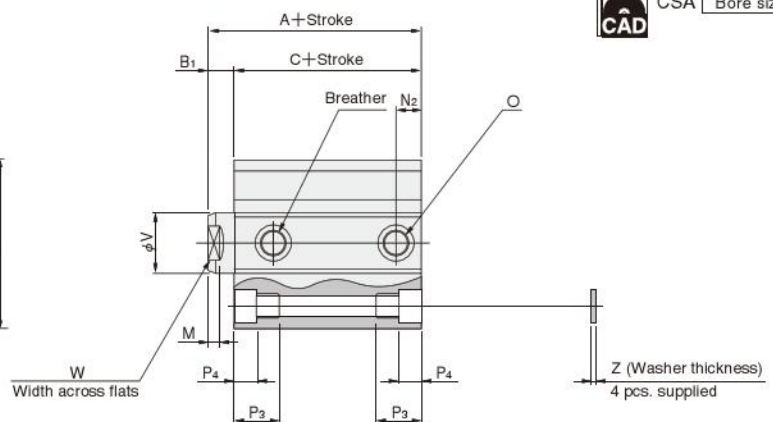
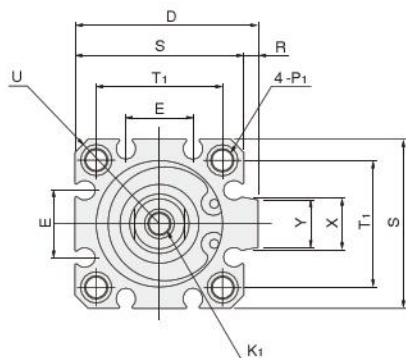
$\phi 6, \phi 8, \phi 10, \phi 12$



Note: Bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ are not available with washers.

● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 50$



Type Stroke Code Bore mm [in.]	Standard cylinder (CSA)						Cylinder with magnet (CSAS)						D	E	K ₁	M	N ₂	O
	5~15 (φ 50: 10~20)			16~30 (φ 50: 21~40)			5~15 (φ 50: 10~20)			16~30 (φ 50: 21~40)								
	A	B ₁	C	A	B ₁	C	A	B ₁	C	A	B ₁	C						
6 [0.236]	29	5	24	—	—	—	34	5	29	—	—	—	—	—	M2.5X0.45 Depth5	3	3.5	M3X0.5
8 [0.315]	30	5	25	—	—	—	35	5	30	—	—	—	—	—	M3X0.5 Depth5	3	3.5	M3X0.5
10 [0.394]	31	5	26	—	—	—	36	5	31	—	—	—	—	—	M3X0.5 Depth5	3	4	M3X0.5
12 [0.472]	27	5	22	37	5	32	32	5	27	42	5	37	—	—	M3X0.5 Depth6	3.5	5	M5X0.8
16 [0.630]	27.5	5.5	22	37.5	5.5	32	32.5	5.5	27	42.5	5.5	37	—	6.2	M4X0.7 Depth6	3.5	5	M5X0.8
20 [0.787]	25	5.5	19.5	35	5.5	29.5	35	5.5	29.5	45	5.5	39.5	—	12.2	M5X0.8 Depth10	4.5	5	M5X0.8
25 [0.984]	27	6	21	37	6	31	37	6	31	47	6	41	—	12.2	M6X1 Depth10	5	5	M5X0.8
32 [1.260]	30	7	23	45	7	38	40	7	33	55	7	48	48.5	18.2	M8X1.25 Depth12	6	7.5[6]	Rc1/8
40 [1.575]	33	7	26	48	7	41	43	7	36	58	7	51	56.5	18.2	M8X1.25 Depth12	6	7.5	Rc1/8
50 [1.969]	37	9	28	52	9	43	47	9	38	62	9	53	70	24.8	M10X1.5 Depth15	7	9.5	Rc1/4

Code	P ₁	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt
6 [0.236]	$\phi 3.3$ (Thru hole) C'bore $\phi 6$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	19	11	R12	4	3.5	—	—	—	M3
8 [0.315]	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	21	13	R13.5	5	4	—	—	—	M3
10 [0.394]	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	23	15	R15	5	4	—	—	—	M3
12 [0.472]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole) C'bore $\phi 9.5$ (Both sides) and M8X1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6

Note: Figure in parentheses () is for the standard cylinder (CSA) with 5mm stroke.

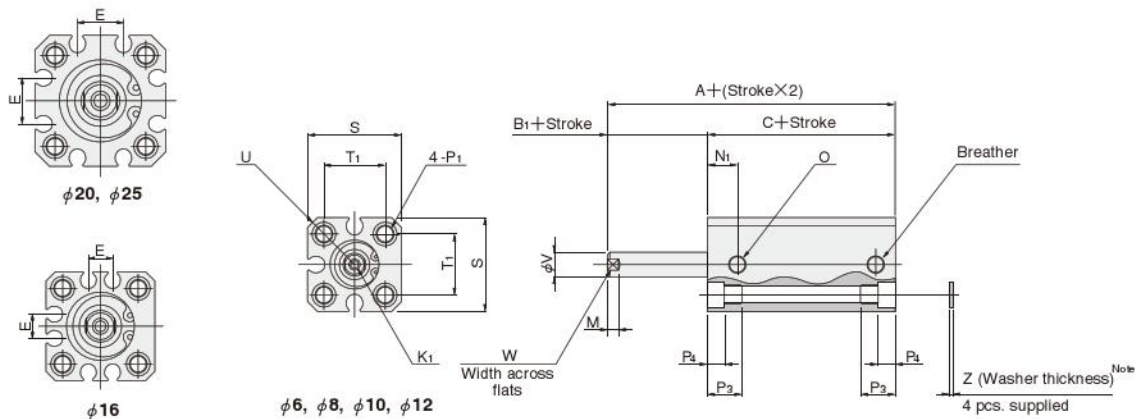
Remark: If using a through bolt to directly mount the body in place, see p.205.

※ Some types of mounting screws are available (to be ordered separately). See p.209.

Dimensions of Standard Cylinder Single Acting Pull Type (mm)

● $\phi 6 \sim \phi 25$

CTA Bore size

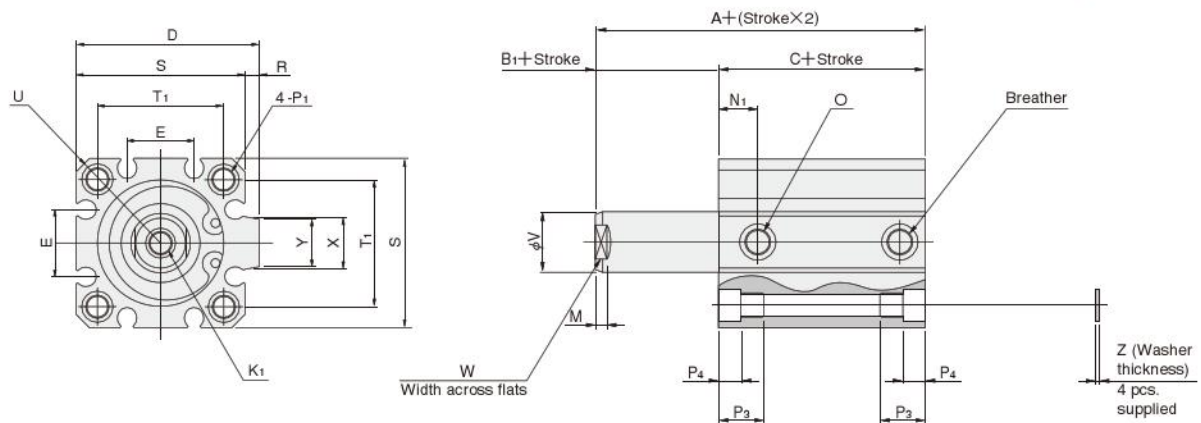


Note: Bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ are not available with washers.

● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 50$

CTA Bore size



Type Stroke Code Bore mm [in.]	Standard cylinder (CTA)						Cylinder with magnet (CTAS)						D	E	K ₁	M	N ₁	O
	5~15 (φ 50: 10~20) ^{※1}			16~30 (φ 50: 21~40)			5~15 (φ 50: 10~20) ^{※1}			16~30 (φ 50: 21~40)								
	A	B ₁	C	A	B ₁	C	A	B ₁	C	A	B ₁	C						
6 [0.236]	29	5	24	—	—	—	34	5	29	—	—	—	—	—	M2.5X0.45 Depth5	3	6.5	M3X0.5
8 [0.315]	30	5	25	—	—	—	35	5	30	—	—	—	—	—	M3X0.5 Depth5	3	7.5	M3X0.5
10 [0.394]	31	5	26	—	—	—	36	5	31	—	—	—	—	—	M3X0.5 Depth5	3	8	M3X0.5
12 [0.472]	27	5	22	37	5	32	32	5	27	42	5	37	—	—	M3X0.5 Depth6	3.5	8	M5X0.8
16 [0.630]	27.5	5.5	22	37.5	5.5	32	32.5	5.5	27	42.5	5.5	37	—	6.2	M4X0.7 Depth8	3.5	8	M5X0.8
20 [0.787]	30	5.5	24.5	40	5.5	34.5	40	5.5	34.5	50	5.5	44.5	—	12.2	M5X0.8 Depth10	4.5	9.5	M5X0.8
25 [0.984]	32	6	26	42	6	36	42	6	36	52	6	46	—	12.2	M6X1 Depth10	5	10.5	M5X0.8
32 [1.260]	35	7	28	50	7	43	45	7	38	60	7	53	48.5	18.2	M8X1.25 Depth12	6	9.5	Rc1/8
40 [1.575]	38	7	31	53	7	46	48	7	41	63	7	56	56.5	18.2	M8X1.25 Depth12	6	10.5	Rc1/8
50 [1.969]	37	9	28	52	9	43	47	9	38	62	9	53	70	24.8	M10X1.5 Depth15	7	11	Rc1/4

Code	P ₁	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt #2
6 [0.236]	$\phi 3.3$ (Thru hole) C'bore $\phi 6$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	19	11	R12	4	3.5	—	—	—	M3
8 [0.315]	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	21	13	R13.5	5	4	—	—	—	M3
10 [0.394]	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	23	15	R15	5	4	—	—	—	M3
12 [0.472]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole) C'bore $\phi 9.5$ (Both sides) and M8X1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6

Remark: If using a through bolt to directly mount the body in place, see p.205.

※ 1. Bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ are 5~10 strokes.

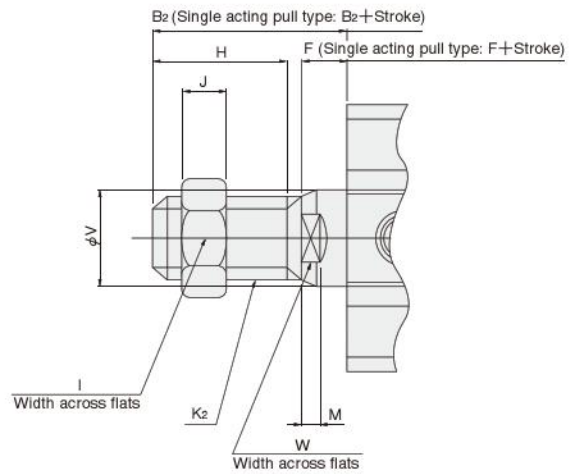
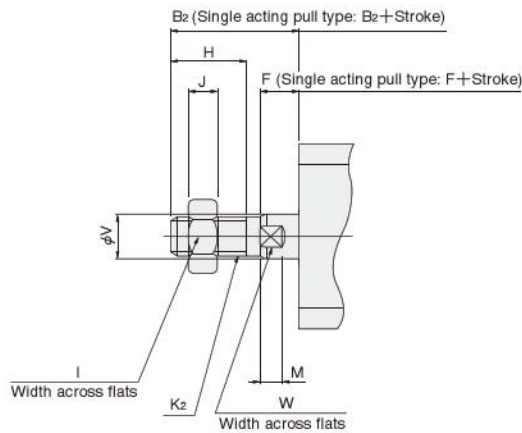
2. Some types of mounting screws are available (to be ordered separately). See p.209.

● Double acting type, Single acting push type, Single acting pull type

● $\phi 6 \sim \phi 25$

● $\phi 32 \sim \phi 100$

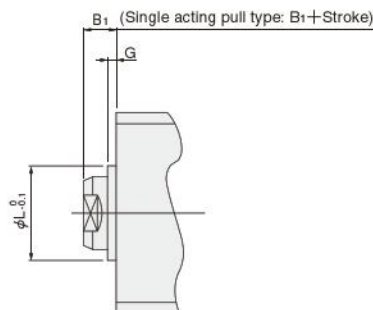
(Single acting type available up to $\phi 50$)



Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	M	V	W
6 [0.236]		15	5	8	5.5	1.8	M3×0.5	3	4	3.5
8 [0.315]		15	5	8	7	2.4	M4×0.7	3	5	4
10 [0.394]		15	5	8	7	2.4	M4×0.7	3	5	4
12 [0.472]		17	5	10	8	4	M5×0.8	3.5	6	5
16 [0.630]		20.5	5.5	13	10	5	M6×1	3.5	8	6
20 [0.787]		22.5	5.5	15	12	5	M8×1	4.5	10	8
25 [0.984]		24	6	15	14	6	M10×1.25	5	12	10
32 [1.260]		35	7	25	19	8	M14×1.5	6	16	14
40 [1.575]		35	7	25	19	8	M14×1.5	6	16	14
50 [1.969]		37	9	25	27	11	M18×1.5	7	20	17
63 [2.480]		37	9	25	27	11	M18×1.5	7	20	17
80 [3.150]		44	11	30	32	13	M22×1.5	9	25	22
100 [3.940]		50	12	35	36	14	M26×1.5	9	32	27

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



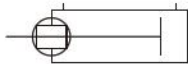
● Not available for bore sizes $\phi 6$, $\phi 8$, $\phi 10$ and $\phi 12$.

Bore mm [in.]	Code	B ₁	G	L
16 [0.630]		5.5	1.5	9.4
20 [0.787]		5.5	1.5	12
25 [0.984]		6	2	15
32 [1.260]		7	2	21
40 [1.575]		7	2	29
50 [1.969]		9	2	38
63 [2.480]		9	2	40
80 [3.150]		11	2	45
100 [3.940]		12	2	55

JIG CYLINDERS C SERIES NON-ROTATING CYLINDERS

Double Acting Type

Symbol



Specifications

Item	Bore size mm [in.]	6 [0.236]	8 [0.315]	10 [0.394]
Operation type		Double acting type		
Media		Air		
Operating pressure range	MPa [psi.]	0.15~0.9 [22~131]		
Proof pressure	MPa[psi.]	1.35 [196]		
Operating temperature range	°C [°F]	0~60 [32~140]		
Operating speed range	mm/s [in./sec.]	50~500 [2.0~19.7]		
Cushion		—		
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)		
Non-rotating accuracy		±2°	±1.6°	±1.4°
Port size		M3×0.5		

Remark: For Handling Instructions and Precautions, see p.205.

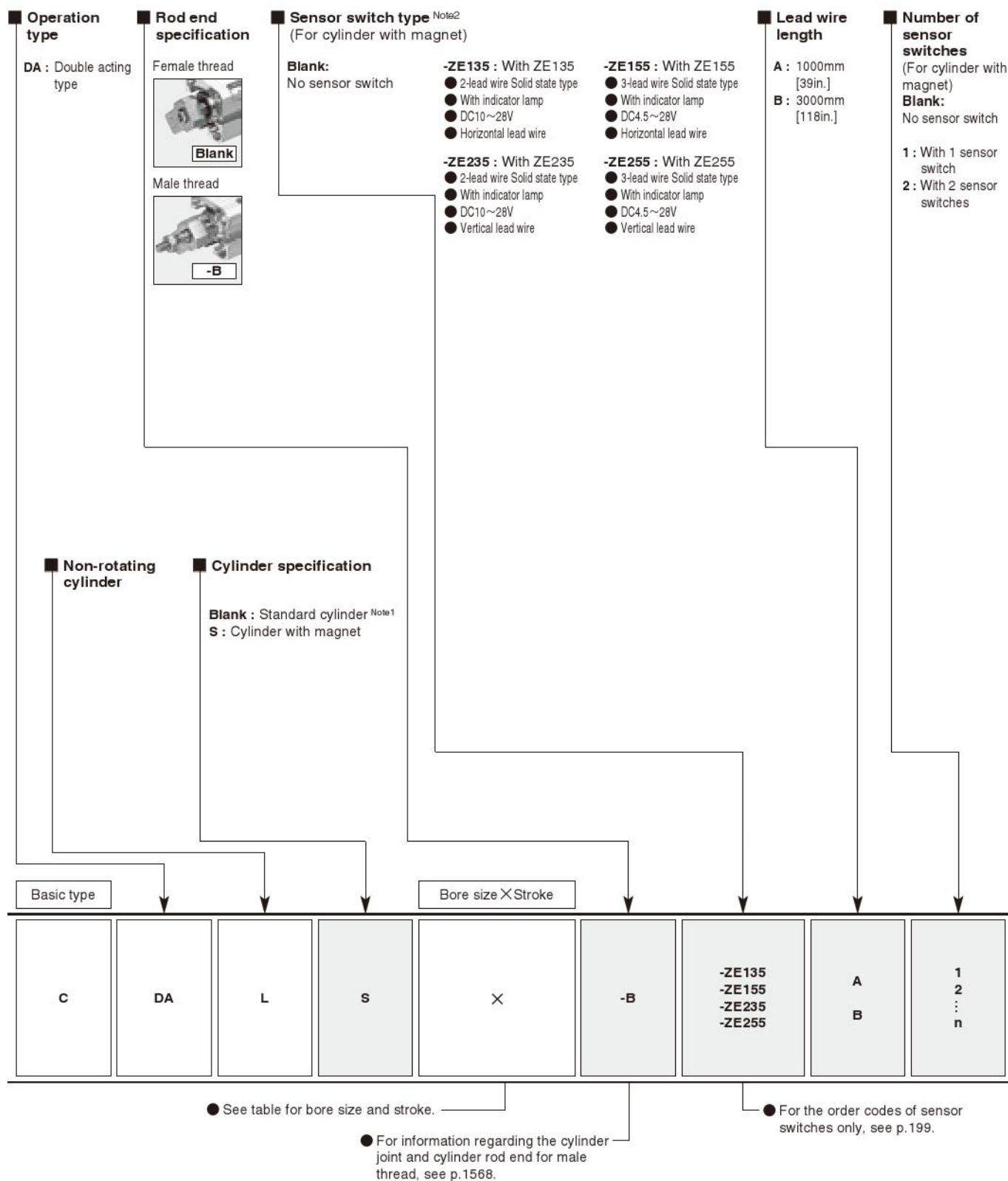
Bore Size and Stroke

For non-standard strokes, see p.206.

Bore size	Standard strokes	
	Standard cylinder	Cylinder with magnet
6	5, 10	5, 10
8		
10		

Remark: Stroke tolerance $^{+1}_0$ [$^{+0.039}_{0}$ in.]

Order Codes for Non-rotating Cylinders

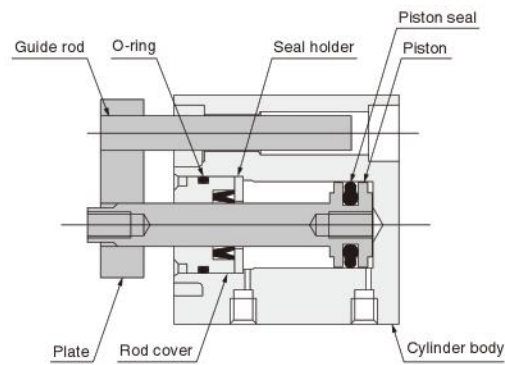
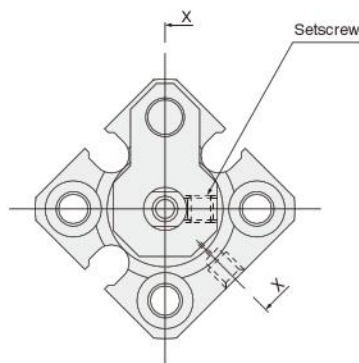


Notes: 1. In the standard cylinder, a magnet for the sensor switch is not built-in.
2. For details of sensor switches, see p.1544.

Inner Construction and Major Parts

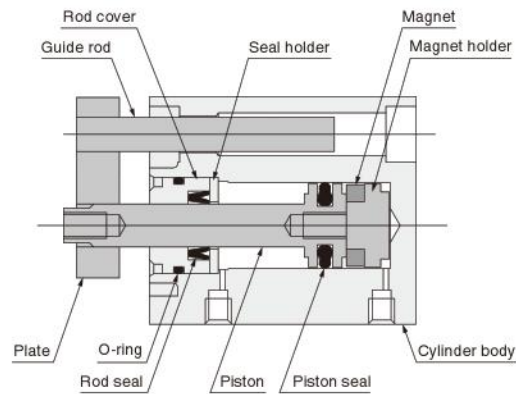
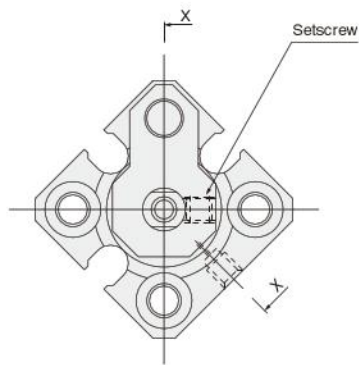
● Double acting type

● $\phi 6 \sim \phi 10$



X-X cross section

● Cylinder with magnet



X-X cross section

Major Parts and Materials

Parts	Bore mm	$\phi 6 \sim \phi 10$
Cylinder body		Aluminum alloy (anodized)
Piston		Stainless steel
Seal		Synthetic rubber (NBR)
Seal holder		Copper alloy
Rod cover		Aluminum alloy (special wear resistant treatment)
Plate		Copper alloy (nickel plated)
Setscrew		Steel
Magnet		Neodymium magnet
Magnet holder		Copper alloy
Guide rod		Stainless steel

Mass

Bore size mm [in.]	Basic mass ^{Note 1}		Mass with sensor		Additional mass of sensor switch ^{Note 2}	
	5mm stroke	10mm stroke	5mm stroke	10mm stroke	ZE□□□A	ZE□□□B
6 [0.236]	19.8 [0.698]	23.4 [0.825]	23.1 [0.815]	27.1 [0.956]	15 [0.53]	35 [1.23]
8 [0.315]	26.4 [0.931]	31.1 [1.097]	31.2 [1.101]	36.3 [1.280]		
10 [0.394]	33.7 [1.189]	39.2 [1.383]	39.9 [1.407]	45.9 [1.619]		

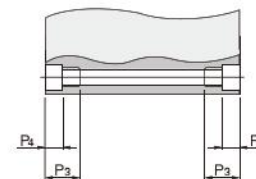
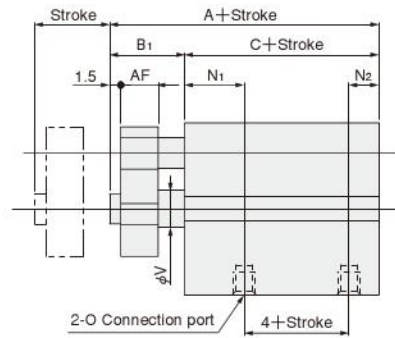
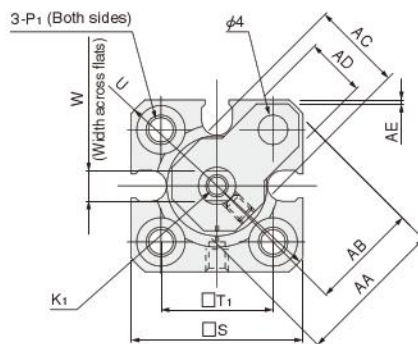
Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.
A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a double acting type cylinder with magnet, bore size of 8mm, stroke of 10mm, and with 2 sensor switches (ZE135A)
 $36.3 + (15 \times 2) = 66.3\text{g}$ [2.339oz.]

Dimensions of Non-rotating Cylinder Double Acting Type (mm)

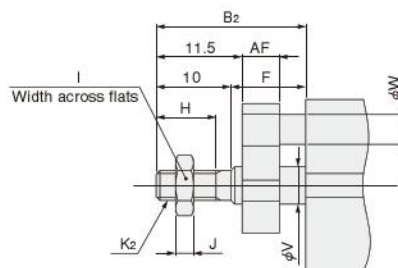
● $\phi 6 \sim \phi 10$



Type Bore mm [in.]	Standard cylinder (CDAL)			Cylinder with magnet (CDALS)			K ₁	N ₁	N ₂	O	P ₁
	Code	A	B ₁	C	A	B ₁					
6 [0.236]		24	10	14	29	10	M2.5×0.45 Depth5	6.5	3.5	M3×0.5	φ3.3 (Thru hole) C'bore φ6 (Both sides) and M4×0.7 (Both sides)
8 [0.315]		25	10	15	30	10	M3×0.5 Depth5	7.5	3.5	M3×0.5	φ3.3 (Thru hole) C'bore φ6.2 (Both sides) and M4×0.7 (Both sides)
10 [0.394]		26	10	16	31	10	M3×0.5 Depth5	8	4	M3×0.5	φ3.3 (Thru hole) C'bore φ6.2 (Both sides) and M4×0.7 (Both sides)

Bore mm [in.]	Code	P ₃	P ₄	S	T ₁	U	V	W	Appropriate through bolt	AA	AB	AC	AD	AE	AF
		9.5	3.5	19	11	R12	4	3.5	M3	15	11.5	9.5	7	0.3	5
8 [0.315]		9.5	3.5	21	13	R13.5	5	4	M3	17	12.5	11	7	0.6	5
10 [0.394]		9.5	3.5	23	15	R15	5	4	M3	20	14.5	12	8	0.5	5

Dimensions of Male Rod End Thread Specification (mm)



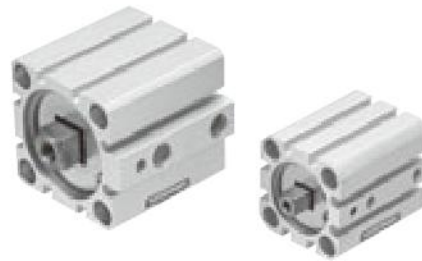
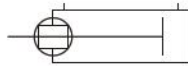
Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	V	W	AF
		20	10	8	5.5	1.8	M3×0.5	4	4	5
8 [0.315]		20	10	8	7	2.4	M4×0.7	5	4	5
10 [0.394]		20	10	8	7	2.4	M4×0.7	5	4	5

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

JIG CYLINDERS C SERIES SQUARE ROD CYLINDERS

Double Acting Type

Symbol



Specifications

Item	Bore size mm [in.]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
Operation type		Double acting type					
Media		Air					
Operating pressure range	MPa [psi.]	0.1～1.0 [15～145]					
Proof pressure	MPa [psi.]	1.5 [218]					
Operating temperature range	℃ [°F]	0～60 [32～140]					
Operating speed range	mm/s [in./sec.]	30～500 [1.2～19.7]				30～300 [1.2～11.8]	
Cushion		Rubber bumper (Optional)					
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)					
Non-rotating accuracy		±1.5°		±0.8°		±0.6°	
Allowable torque Note	N・cm [in・lbf]	2 [0.18]	2.4 [0.21]		4.4 [0.39]		
Port size		M5×0.8		Rc1/8		Rc1/4	

Remark: For Handling Instructions and Precautions, see p.205.

Note: Maximum torque allowed on piston rod.

Bore Size and Stroke

For non-standard strokes, see p.206.

Bore size	Standard strokes	
	Standard cylinder	Cylinder with magnet
20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
25		
32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
40		
50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
63		

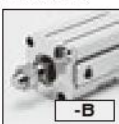
Remarks: 1. Stroke tolerance $^{+1}_0$ [$^{+0.039}_{+0}$ in.]

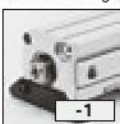
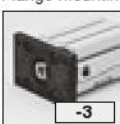
2. In most cases, body cutting is used for the non-standard strokes.

However, body cutting is not used for strokes of less than 5mm for ϕ 12 ~ ϕ 40, and strokes of less than 10mm for ϕ 50 and ϕ 63. The collar packed is used for these cases.

Order Codes for Square Rod Cylinders

Operation type
DA : Double acting type

Rod end specification
Female thread
 Blank
Male thread
 -B

Mounting type
Basic type
 Blank
Foot mounting type
 -1
Flange mounting type ^{Note2}
 -3

Sensor switch type ^{Note3}
(For cylinder with magnet)
Blank: No sensor switch
-ZE135 : With ZE135
● 2-lead wire Solid state type
● With indicator lamp
● DC10~28V
● Horizontal lead wire
-ZE235 : With ZE235
● 2-lead wire Solid state type
● With indicator lamp
● DC10~28V
● Vertical lead wire
-ZE101 : With ZE101
● 2-lead wire Reed switch type
● Without indicator lamp
● DC5~28V
● AC85~115V
● Horizontal lead wire
-ZE201 : With ZE201
● 2-lead wire Reed switch type
● Without indicator lamp
● DC5~28V
● AC85~115V
● Vertical lead wire
-ZE155 : With ZE155
● 3-lead wire Solid state type
● With indicator lamp
● DC4.5~28V
● Horizontal lead wire
-ZE255 : With ZE255
● 3-lead wire Solid state type
● With indicator lamp
● DC4.5~28V
● Vertical lead wire
-ZE102 : With ZE102
● 2-lead wire Reed switch type
● With indicator lamp
● DC10~28V
● AC85~115V
● Horizontal lead wire
-ZE202 : With ZE202
● 2-lead wire Reed switch type
● With indicator lamp
● DC10~28V
● AC85~115V
● Vertical lead wire

Lead wire length
A : 1000mm [39in.]
B : 3000mm [118in.]

Number of sensor switches
(For cylinder with magnet)
Blank: No sensor switch
1 : With 1 sensor switch
2 : With 2 sensor switches

Square rod cylinder

Cylinder specification
Blank : Standard cylinder ^{Note1}
S : Cylinder with magnet

Bumper
Blank : No bumper
-R : With bumper

Centering location
Blank : No centering location
-G : With centering location

Basic type

Bore size X Stroke

C	DA	L	S	X	-B	-R	-G	-1 -3	-ZE135 -ZE155 -ZE235 -ZE255 -ZE101 -ZE102 -ZE201 -ZE202	A B	1 2 : n
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● See table for bore size and stroke.

● For information regarding the cylinder joint and cylinder rod end for male thread, see p.1568.

● Mounting brackets are included at shipping.

● For the order codes of sensor switches only, see p.199.

Notes: 1. In the standard cylinder, a magnet for the sensor switch is not built-in.
2. When using with a centering location (-G), the flange mounting bracket can be mounted on the head side only.
3. For details of sensor switches, see p.1544.

Additional Parts (To be ordered separately)



Foot mounting bracket
(p.197)



Flange mounting bracket
(p.198)

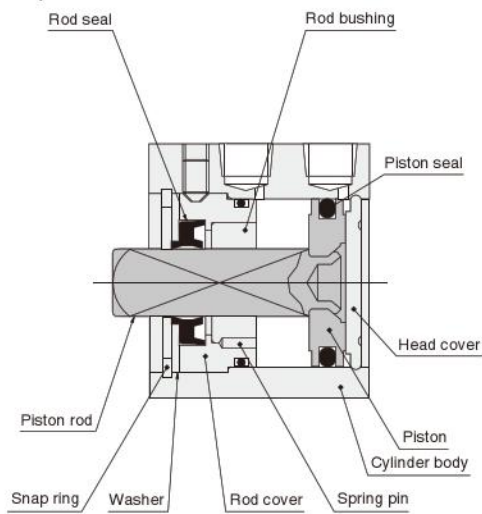


Mounting screws
(p.209)

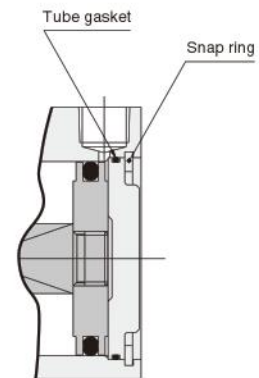
Inner Construction and Major Parts

● Double acting type

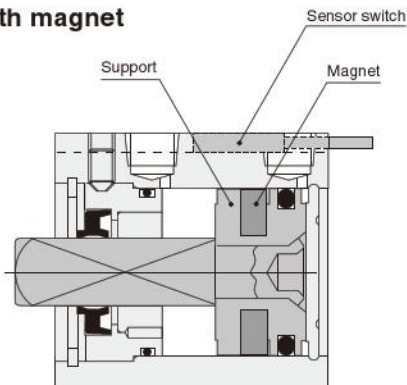
● $\phi 20 \sim \phi 40$



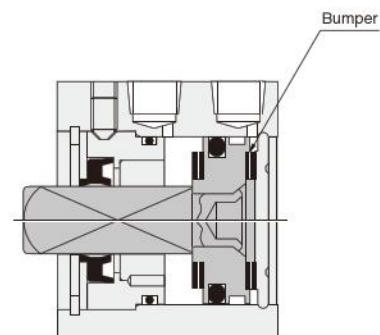
● $\phi 50, \phi 63$



● Cylinder with magnet



● With bumper



Major Parts and Materials

Parts	Bore mm	$\phi 20 \sim \phi 63$
Cylinder body		Aluminum alloy (anodized)
Piston		Aluminum alloy (special rust prevention treatment)
Piston rod		Steel (chrome plated)
Seal		Synthetic rubber (NBR; urethane for the rod seal)
Rod bushing		Oil impregnated bronze
Rod cover		Aluminum alloy (anodized)
Head cover		Aluminum alloy (anodized)
Spring pin		Steel
Washer		Steel (nickel plated)
Snap ring		Steel (phosphate coating)
Bumper		Synthetic rubber (NBR)
Magnet		Plastic magnet
Support		Aluminum alloy (special rust prevention treatment)

Seals

Parts Bore mm	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
$\phi 20$	KC-7.4	COP-20	Y090216	None
$\phi 25$	KC-7.4	COP-25	Y090210	None
$\phi 32$	KC-13	COP-32	L090084	None
$\phi 40$	KC-13	COP-40	L090151	None
$\phi 50$	KC-18	COP-50	L090174	L090106
$\phi 63$	KC-18	COP-63	L090180	L090107

Mass

Bore size mm [in.]	Zero stroke mass ^{Note1}	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with bumper	Additional mass of cylinder with magnet	Mass of mounting bracket		Additional mass of sensor switch ^{Note2}	
					Foot bracket	Flange bracket	ZE□□□A	ZE□□□B
20 [0.787]	63.89 [2.254]	2.07 [0.0730]	10.36 [0.365]	25.71 [0.907]	87 [3.07]	105 [3.70]	15 [0.53]	35 [1.23]
25 [0.984]	96.54 [3.405]	2.65 [0.0935]	13.24 [0.467]	37.47 [1.322]	108 [3.81]	165 [5.82]		
32 [1.260]	160.05 [5.646]	3.86 [0.136]	19.31 [0.681]	52.43 [1.849]	131 [4.62]	196 [6.91]		
40 [1.575]	241.47 [8.517]	4.52 [0.159]	0	69.15 [2.439]	168 [5.93]	351 [12.38]		
50 [1.969]	477.70 [16.850]	7.11 [0.251]	0	108 [3.81]	232 [8.18]	471 [16.61]		
63 [2.480]	706.58 [24.923]	8.77 [0.309]	0	159 [5.61]	312 [11.01]	615 [21.69]		

Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.

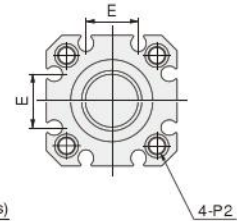
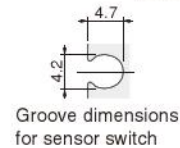
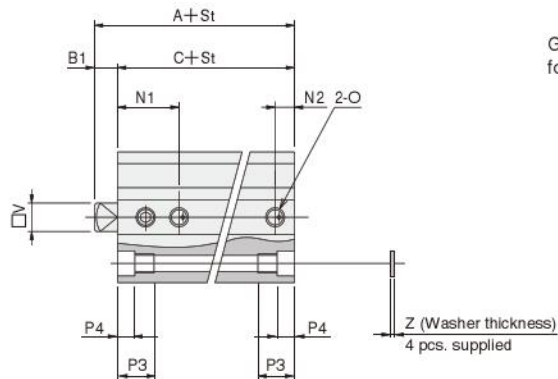
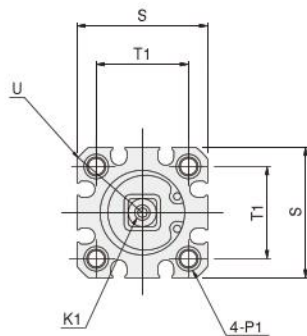
A : 1000mm [39in.] B : 3000mm [118in.]

Calculation example: For the mass of a double acting type cylinder with magnet, bore size of 32mm, stroke of 30mm, and with 2 sensor switches (ZE135A)
 $167.38 + (3.86 \times 30) + 52.43 + (15 \times 2) = 365.61 \text{ g} [12.896 \text{ oz.}]$

Dimensions of Square Rod Cylinder Double Acting Type (mm)

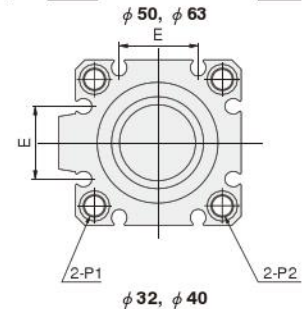
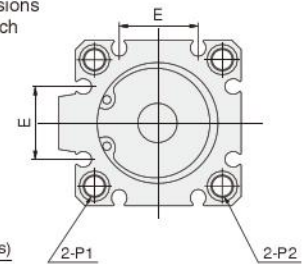
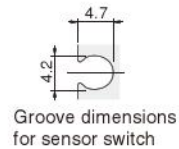
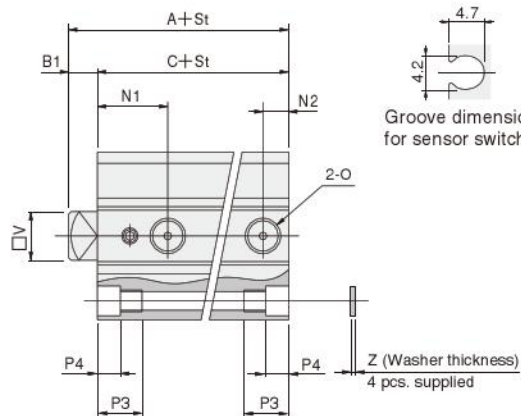
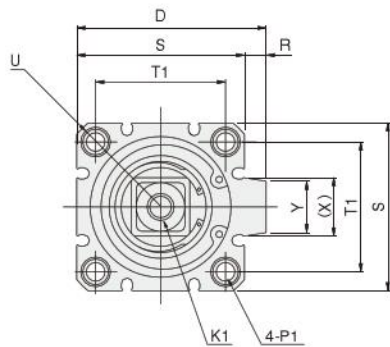
● $\phi 20 \sim \phi 25$

CAD CDAL Bore size



● $\phi 32 \sim \phi 63$

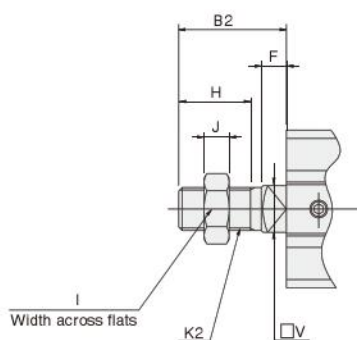
CAD CDAL Bore size



Type	Standard cylinder (CDAL)			Cylinder with magnet (CDALS)			Standard cylinder with bumper (CDAL-R)			Cylinder with magnet and bumper (CDALS-R)			D	E	K ₁	N ₁	N ₂	O
Code	A	B ₁	C	A	B ₁	C	A	B ₁	C	A	B ₁	C						
20 [0.787]	32	6	26	42	6	36	37	6	31	47	6	41	—	12.2	M4X0.7 Depth6	16	5	M5X0.8
25 [0.984]	33.5	6	27.5	43.5	6	37.5	38.5	6	32.5	48.5	6	42.5	—	12.2	M4X0.7 Depth6	17	5	M5X0.8
32 [1.260]	39	7	32	49	7	42	44	7	37	49	7	42	48.5	18.2	M8X1.25 Depth12	18.5	7.5(6)	Rc1/8
40 [1.575]	43	7	36	53	7	46	43	7	36	53	7	46	56.5	18.2	M8X1.25 Depth12	20.5	7.5	Rc1/8
50 [1.969]	53.7	10.7	43	63.7	10.7	53	53.7	10.7	43	63.7	10.7	53	70	24.8	M10X1.5 Depth15	26	9.5	Rc1/4
63 [2.480]	56.2	9.2	47	66.2	9.2	57	56.2	9.2	47	66.2	9.2	57	83	26.8	M10X1.5 Depth15	27.5	11	Rc1/4

Code	P ₁			P ₂	P ₃	P ₄	R	S	T ₁	U	V	X	Y	Z	Appropriate through bolt※
20 [0.787]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)			Counterbore $\phi 6.5$ and M5X0.8	9.5	4.5	—	34	24	R22	7.4	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)			Counterbore $\phi 8$ and M6X1	11.5	5.5	—	40	28	R25	7.4	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)			Counterbore $\phi 8$ and M6X1	11.5	5.5	4.5	44	34	R29.5	13	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole) C'bore $\phi 9.5$ (Both sides) and M8X1.25 (Both sides)			Counterbore $\phi 9.5$ and M8X1.25	15.5	7.5	4.5	52	40	R35	13	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)			Counterbore $\phi 11$ and M8X1.25	16.5	8.5	8	62	48	R41	18	21.6	19	1.6	M6
63 [2.480]	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)			Counterbore $\phi 11$ and M8X1.25	16.5	8.5	8	75	60	R50	18	21.6	19	1.6	M6

Note: Figure in parentheses [] is for the standard cylinder (CDAL) with 5mm stroke.
 ※ Some types of mounting screws are available (to be ordered separately). See p.209.

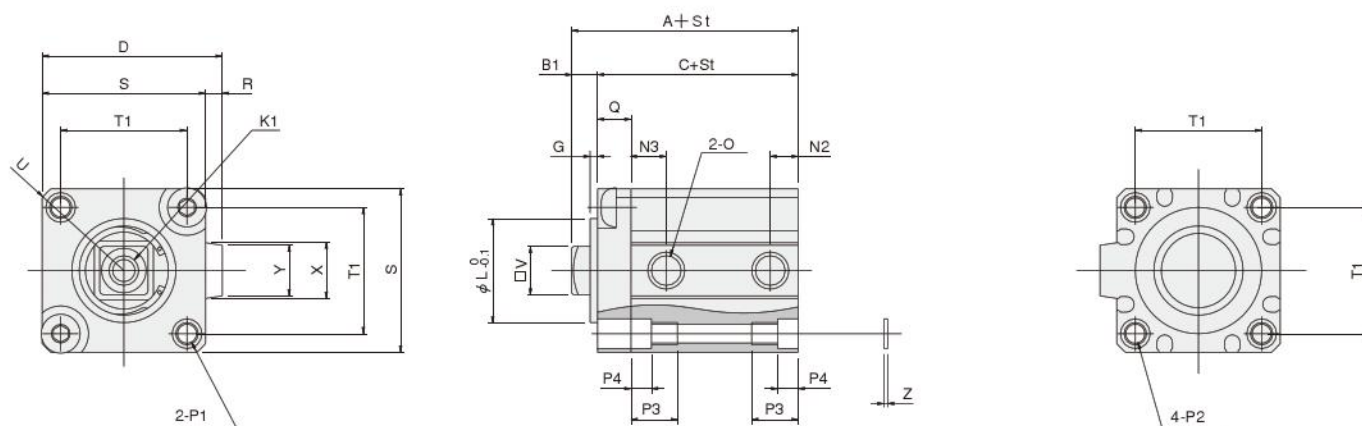


Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	V
20 [0.787]		21	6	13	10	5	M6×1	7.4
25 [0.984]		23	6	15	12	5	M8×1	7.4
32 [1.260]		30	7	20	17	7	M12×1.25	13
40 [1.575]		35	7	25	19	8	M14×1.5	13
50 [1.969]		38.7	10.7	25	27	11	M18×1.5	18
63 [2.480]		37.2	9.2	25	27	11	M18×1.5	18

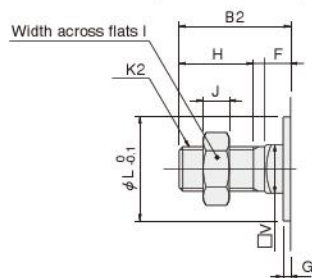
Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)

● Female thread specification, with centering location



● Male thread specification, with centering location



Bore mm [in.]	Code	B ₁	G	L	N ₂	Q
20 [0.787]		6	1.5	18	9.5	6.5
25 [0.984]		6	2	18	10.5	6.5
32 [1.260]		7	2	28	9.5	9
40 [1.575]		7	2	28	10.5	10
50 [1.969]		10.7	2	38	11	15
63 [2.480]		9.2	2	40	12.5	15

- The outward view of the square rod cylinder with centering location differs from the view in the case of no centering location, in that a rod cover is mounted on the piston rod side, as shown in the dimension above. For the dimension tables for female thread specification with centering location, also use the table on p.152, while for male thread specification with centering location, see the above this page.

JIG CYLINDERS C SERIES DOUBLE ROD CYLINDERS

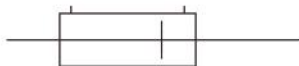
Double Acting Type, Single Acting Type



JIG CYLINDERS C SERIES

Symbols

● Double acting type



● Single acting type



Specifications

Item		Bore size mm [in.]													
		6 [0.236]	8 [0.315]	10 [0.394]	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]	80 [3.150]	100 [3.940]	
Operation type		Double acting type			Double acting type, Single acting type							Double acting type			
Media		Air													
Operating pressure range MPa [psi.]	Double acting type	0.15~0.9 [22~131]			0.1~1.0 [15~145]						0.05~1.0 [7~145]				
	Single acting type	—			0.18~1.0 [26~145]	0.15~1.0 [22~145]					0.1~1.0 [15~145]	—			
Proof pressure MPa [psi.]		1.35 [196]			1.5 [218]										
Operating temperature range °C [°F]		0~60 [32~140] (The heat resistant specification is 120 [248]. ^{Note1)}													
Operating speed range mm/s [in./sec.]	Double acting type	50~500 [2.0~19.7]			30~500 [1.2~19.7]						30~300 [1.2~11.8]				
	Single acting type	—			100~500 [3.9~19.7]						100~300 [3.9~11.8]	—			
Cushion	Double acting type	None			Rubber bumper (Option ^{Note2)}										
	Single acting type	—			None							—			
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)													
Port size		M3×0.5			M5×0.8				Rc1/8		Rc1/4		Rc3/8		

Remark: For Handling Instructions and Precautions, see p.205.

Notes: 1. For heat resistant specification, consult us. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.

2. Not available for heat resistant specification.

Bore Size and Stroke

For non-standard strokes, see p.206.

Operation type	Bore size	Standard strokes		mm
		Standard cylinder	Cylinder with magnet	
Double acting type	6	5, 10, 15, 20	5, 10, 15, 20	
	8			
	10			
	12	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30	
	16			
	20			
	25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	
	32			
	40			
	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	
	63			
	80			
Single acting type	100			
	12	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30	
	16			
	20			
	25			
	32			
	40			
	50	10, 15, 20, 25, 30, 35, 40	10, 15, 20, 25, 30, 35, 40	

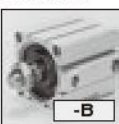
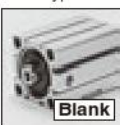
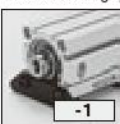
Remarks: 1. Stroke tolerance $^{+1}_0$ [0.039in.]

2. In most cases, body cutting is used for the non-standard strokes.

However, body cutting is not used for strokes of less than 5mm for $\phi 12 \sim \phi 40$, and strokes of less than 10mm for $\phi 50 \sim \phi 100$. The collar packed is used for these cases.

Bore sizes $\phi 6$ to $\phi 10$ are collar packed only.

Order Codes for Double Rod Cylinders

Operation type	Rod end specification ^{Note4}	Mounting type	Sensor switch type ^{Note6} (For cylinder with magnet)	Lead wire length							
DA : Double acting type SA : Single acting type ^{Note1}	Female thread  Male thread 	Basic type  Foot mounting type ^{Note7}  Flange mounting type ^{Note8} 	Blank : No sensor switch -ZE135 : With ZE135 ● 2-lead wire Solid state type ● With indicator lamp ● DC10~28V ● Horizontal lead wire -ZE235 : With ZE235 ● 2-lead wire Solid state type ● With indicator lamp ● DC10~28V ● Vertical lead wire -ZE101 : With ZE101 ^{Note7} ● 2-lead wire Reed switch type ● Without indicator lamp ● DC5~28V ● AC85~115V ● Horizontal lead wire -ZE201 : With ZE201 ^{Note7} ● 2-lead wire Reed switch type ● Without indicator lamp ● DC5~28V ● AC85~115V ● Vertical lead wire -ZE155 : With ZE155 ● 3-lead wire Solid state type ● With indicator lamp ● DC4.5~28V ● Horizontal lead wire -ZE255 : With ZE255 ● 3-lead wire Solid state type ● With indicator lamp ● DC4.5~28V ● Vertical lead wire -ZE102 : With ZE102 ^{Note7} ● 2-lead wire Reed switch type ● With indicator lamp ● DC10~28V ● AC85~115V ● Horizontal lead wire -ZE202 : With ZE202 ^{Note7} ● 2-lead wire Reed switch type ● With indicator lamp ● DC10~28V ● AC85~115V ● Vertical lead wire	A : 1000mm [39in.] B : 3000mm [118in.]							
Double rod cylinder											
Cylinder specification Blank : Standard cylinder ^{Note2} (Non-ion specification ^{Note9}) S : Cylinder with magnet (Non-ion specification ^{Note9}) F : Heat resistant cylinder ^{Note3}											
Bumper ^{Note5} Blank : No bumper -R : With bumper											
Centering location ^{Note7} Blank : No centering location -G : With centering location											
Number of sensor switches (For cylinder with magnet) Blank : No sensor switch 1 : With 1 sensor switch 2 : With 2 sensor switches											
Basic type											
Bore size X Stroke											
C	DA SA	D	S F	X	-B ^{Note10}	-R	-G	-1 -3	-ZE135 -ZE155 -ZE235 -ZE255 -ZE101 -ZE102 -ZE201 -ZE202	A B	1 2 n

- Notes: 1. Used for both single acting push type and single acting pull type. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.
2. In the standard cylinders, a magnet for the sensor switch is not built-in.
3. Not available for the cylinder with magnet or the cylinder with bumper.
4. Specifications are the same for both sides.
5. For the double acting type only. Not available in heat resistant specification, however. Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.
6. For details of sensor switches, see p.1544.
7. Not available for bore sizes $\phi 6$, $\phi 8$, $\phi 10$ and $\phi 12$.
8. Cannot be mounted on bore size $\phi 40$ with centering location (-G). Not available for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$.
9. Bore sizes $\phi 6$, $\phi 8$, $\phi 10$, and $\phi 12$ are not non-ion specification.
10. For information regarding the cylinder joint and cylinder rod end for male thread, see p.1568.

- See table for bore size and stroke.
- Mounting brackets are included at shipping.
- For the order codes of sensor switches only, see p.199.
- For heat resistant specification, sensor switch is not available.
- In sizes $\phi 12$ and $\phi 16$ with foot mounting brackets and strokes of less than 10mm, the foot mounting bracket and sensor switch may interfere with each other, which could prevent 2 sensor switches from being mounted. For details, consult us.

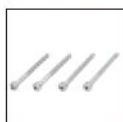
Additional Parts (To be ordered separately)



Foot mounting bracket
(p.197)



Flange mounting bracket
(p.198)

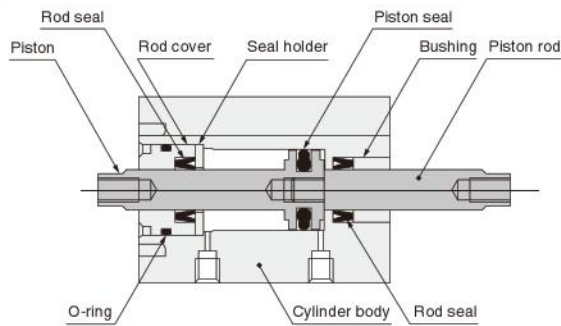


Mounting screws
(p.209)

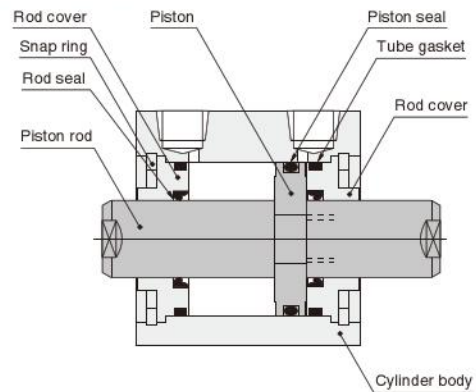
Inner Construction and Major Parts

● Double acting type (CDAD)

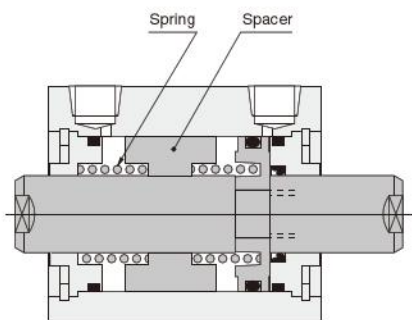
● $\phi 6 \sim \phi 10$



● $\phi 12 \sim \phi 100$

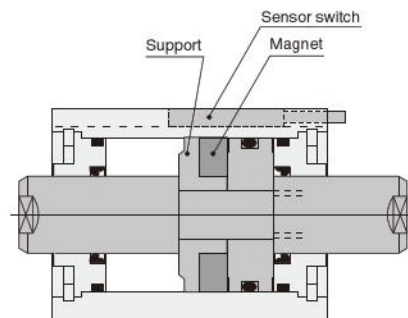


● Single acting type (CSAD)

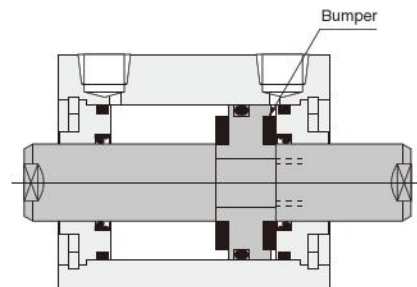


Note: Bore sizes $\phi 6$ to $\phi 10$ are not available as single acting cylinders.

● Cylinder with magnet



● With bumper



Note: Bore sizes $\phi 6$ to $\phi 10$ are not available with bumpers.

Major Parts and Materials

Parts	Bore mm	φ 6	φ 8	φ 10	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Cylinder body	Aluminum alloy (anodized)													
Piston	Stainless steel	Aluminum alloy (special rust prevention treatment)												
Piston rod	Stainless steel	Stainless steel (chrome plated)				Steel (chrome plated)								
Seal	Synthetic rubber (NBR)													
Rod cover	Aluminum alloy (special wear-resistant treatment)													
Snap ring	—	Steel (phosphate coating)												
Spring	—	Piano wire										—		
Spacer	—	Aluminum alloy (special rust prevention treatment)										—		
Bumper	—	Synthetic rubber (NBR; urethane for φ 12 only)												
Magnet	Neodymium magnet	Plastic magnet												
Support	—	Aluminum alloy (special rust prevention treatment)												
Bushing	Copper alloy	—												

Seals

Parts	Bore mm	Rod seal	Piston seal	Tube gasket
$\phi 12$		MYR-6	COP-12	Y090260
$\phi 16$		MYR-8	COP-16	Y090207
$\phi 20$		MYR-10	COP-20(MYA-16)	Y090216
$\phi 25$		MYR-12	COP-25(MYA-21)	Y090210
$\phi 32$		MYR-16	COP-32	L090084
$\phi 40$		MYR-16	COP-40	L090151
$\phi 50$		MYR-20	COP-50	L090174
$\phi 63$		MYR-20	COP-63	L090180
$\phi 80$		PNY-25	COP-80	L090171
$\phi 100$		PNY-32	COP-100	L090172

Note: Items in parentheses () are for the single acting type.

Mass

● Double acting type

g [oz.]

Bore size mm [in.]	Zero stroke mass	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with bumper	Additional mass of cylinder with magnet	Mass of mounting bracket		Additional mass of sensor switch ^{Note}	
					Foot bracket	Flange bracket	ZE□□□A	ZE□□□B
6 [0.236]	12.7 [0.448]	0.84 [0.0296]	—	3.9 [0.138]	—	—	15 [0.53]	35 [1.23]
8 [0.315]	19.2 [0.677]	1.11 [0.0392]	—	5.3 [0.187]	—	—		
10 [0.394]	21.0 [0.741]	1.27 [0.0448]	—	6.7 [0.236]	—	—		
12 [0.472]	30.41 [1.073]	1.51 [0.0533]	7.53 [0.266]	6.59 [0.232]	50 [1.76]	55 [1.94]		
16 [0.630]	44.4 [1.566]	2.01 [0.0709]	10.05 [0.354]	9.93 [0.350]	62 [2.19]	71 [2.50]		
20 [0.787]	73.31 [2.586]	2.88 [0.102]	14.38 [0.507]	25.71 [0.907]	84 [2.96]	101 [3.56]		
25 [0.984]	104.2 [3.675]	3.99 [0.141]	19.97 [0.704]	37.47 [1.322]	104 [3.67]	160 [5.64]		
32 [1.260]	165.44 [5.836]	5.69 [0.201]	28.47 [1.004]	52.43 [1.849]	126 [4.44]	186 [6.56]		
40 [1.575]	241.43 [8.516]	6.35 [0.224]	0	69.15 [2.439]	160 [5.64]	335 [11.82]		
50 [1.969]	328.92 [11.602]	9.5 [0.335]	0	108 [3.81]	220 [7.76]	447 [15.77]		
63 [2.480]	499.3 [17.61]	11.16 [0.394]	0	159 [5.61]	300 [10.58]	591 [20.85]		
80 [3.150]	1029.17 [36.302]	16.91 [0.596]	0	245 [8.64]	644 [22.72]	1414 [49.88]		
100 [3.940]	1872.15 [66.037]	24.93 [0.879]	0	360 [12.70]	1172 [41.34]	2606 [91.92]		

Note: Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

● Single acting type

g [oz.]

Item Bore mm [in.]	Stroke mm	Basic mass ^{Note 1}								Additional mass of cylinder with magnet 5~30 (φ 50: 10~40)	Mass of mounting bracket		Additional mass of sensor switch ^{Note 2}	
		5	10	15	20	25	30	35	40		Foot bracket	Flange bracket	ZE□□□A	ZE□□□B
12 [0.472]	42.64 [1.504]	50.16 [1.789]	57.69 [2.035]	76.83 [2.710]	84.35 [2.975]	91.88 [3.241]	—	—	—	7.78 [0.274]	50 [1.76]	55 [1.94]	15 [0.53]	35 [1.23]
16 [0.630]	62.08 [2.190]	72.13 [2.544]	82.18 [2.899]	106.48 [3.798]	116.53 [4.110]	126.58 [4.465]	—	—	—	10.32 [0.364]	62 [2.19]	71 [2.50]		
20 [0.787]	84.93 [2.996]	99.31 [3.530]	113.68 [4.010]	147.6 [5.206]	161.98 [5.714]	176.35 [6.220]	—	—	—	23.38 [0.825]	84 [2.96]	101 [3.56]		
25 [0.984]	120.1 [4.296]	140.07 [4.941]	160.04 [5.645]	206.79 [7.282]	226.7 [7.996]	246.67 [8.701]	—	—	—	39.1 [1.379]	104 [3.67]	160 [5.64]		
32 [1.260]	187.86 [6.626]	216.33 [7.631]	244.79 [8.635]	335.01 [11.817]	363.48 [12.821]	391.94 [13.825]	—	—	—	50.58 [1.784]	126 [4.44]	186 [6.56]		
40 [1.575]	266 [9.38]	297.75 [10.503]	329.49 [11.622]	448.28 [15.812]	480.02 [16.932]	511.77 [18.052]	—	—	—	69.42 [2.449]	160 [5.64]	335 [11.82]		
50 [1.969]	—	401.18 [14.151]	448.67 [15.826]	496.15 [17.501]	639.23 [22.548]	686.72 [24.223]	734.2 [25.898]	781.69 [27.573]	—	106.05 [3.741]	220 [7.76]	447 [15.77]		

Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.

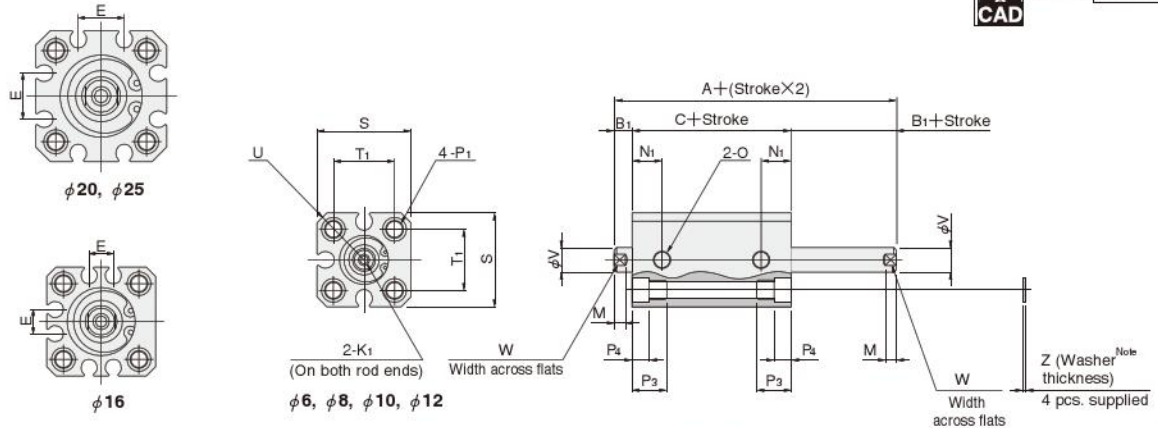
A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a double acting type cylinder with magnet, bore size of 25mm, stroke of 30mm, and with 2 sensor switches (**ZE135A**)
 $104.2 + (3.99 \times 30) + 37.47 + (15 \times 2) = 291.37\text{g}$ [10.278oz.]

Dimensions of Double Rod Double Acting Type (mm)

● $\phi 6 \sim \phi 25$

CDAD Bore size

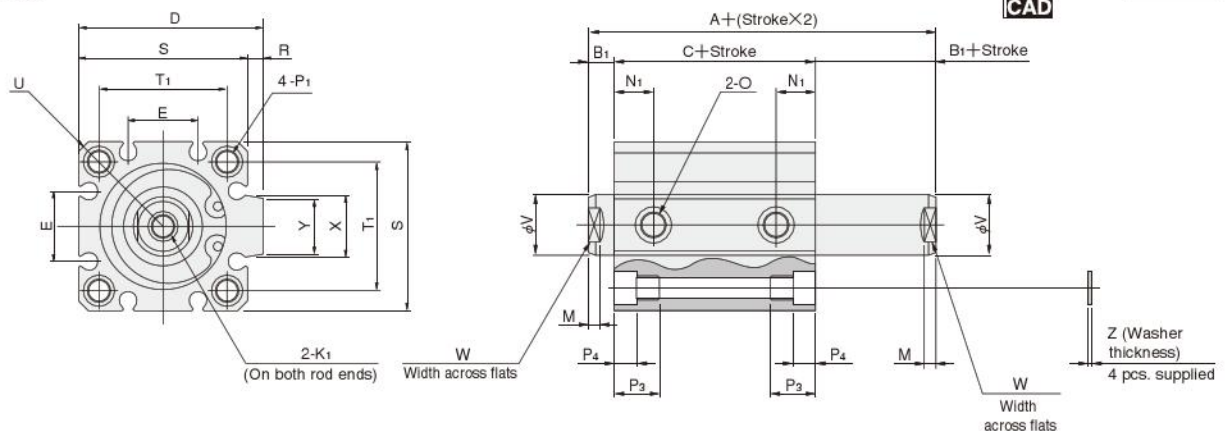


Note: Washers for bore sizes $\phi 6$, $\phi 8$, and $\phi 10$ are not available.

● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 100$

CDAD Bore size



Type Code	Standard cylinder (CDAD)			Cylinder with magnet (CDADS)			Standard cylinder with bumper (CDAD-R)			Cylinder with magnet and bumper (CDADS-R)			D	E	K ₁	M	N ₁	O
	A	B ₁	C	A	B ₁	C	A	B ₁	C	A	B ₁	C						
Bore mm [in.]																		
6 [0.236]	28.5	5	18.5	33.5	5	23.5	—	—	—	—	—	—	—	—	M2.5X0.45 Depth5	3	7	M3X0.5
8 [0.315]	30.5	5	20.5	35.5	5	25.5	—	—	—	—	—	—	—	—	M3X0.5 Depth5	3	7.5	M3X0.5
10 [0.394]	31	5	21	36	5	26	—	—	—	—	—	—	—	—	M3X0.5 Depth5	3	8.5	M3X0.5
12 [0.472]	33	5	23	38	5	28	38	5	28	43	5	33	—	—	M3X0.5 Depth6	3.5	8	M5X0.8
16 [0.630]	34	5.5	23	39	5.5	28	39	5.5	28	44	5.5	33	—	6.2	M4X0.7 Depth8	3.5	8	M5X0.8
20 [0.787]	37	5.5	26	47	5.5	36	42	5.5	31	52	5.5	41	—	12.2	M5X0.8 Depth10	4.5	9.5	M5X0.8
25 [0.984]	38.5	6	26.5	48.5	6	36.5	43.5	6	31.5	53.5	6	41.5	—	12.2	M6X1 Depth10	5	10.5	M5X0.8
32 [1.260]	44	7	30	54	7	40	49	7	35	54	7	40	48.5	18.2	M8X1.25 Depth12	6	9.5	Rc1/8
40 [1.575]	47	7	33	57	7	43	47	7	33	57	7	43	56.5	18.2	M8X1.25 Depth12	6	10.5	Rc1/8
50 [1.969]	48	9	30	58	9	40	48	9	30	58	9	40	70	24.8	M10X1.5 Depth15	7	11	Rc1/4
63 [2.480]	52.5	9	34.5	62.5	9	44.5	52.5	9	34.5	62.5	9	44.5	83	26.8	M10X1.5 Depth15	7	12.5	Rc1/4
80 [3.150]	69.5	11	47.5	79.5	11	57.5	69.5	11	47.5	79.5	11	57.5	102	32.8	M14X2 Depth20	9	18	Rc3/8
100 [3.940]	81.5	12	57.5	91.5	12	67.5	81.5	12	57.5	91.5	12	67.5	122	32.8	M18X2.5 Depth20	9	22.5	Rc3/8

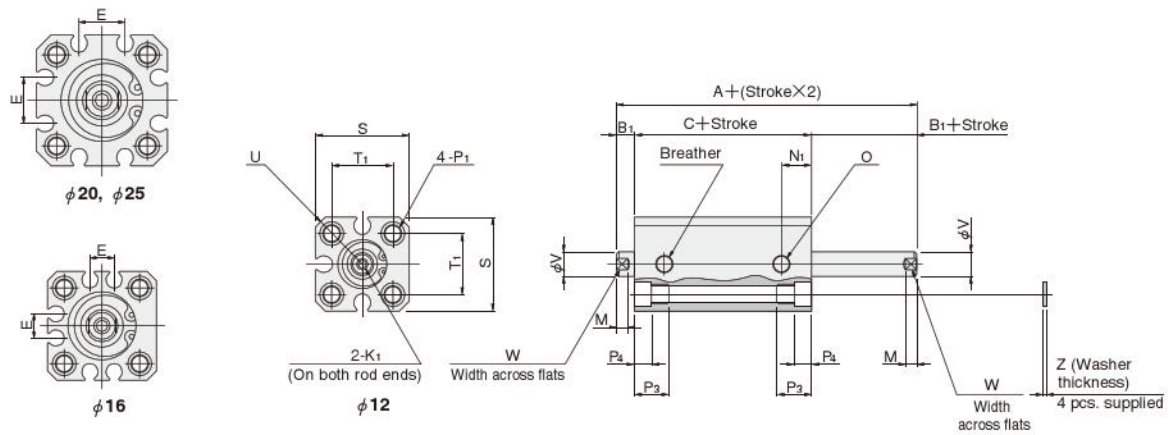
Code	P1	P3	P4	R	S	T1	U	V	W	X	Y	Z	Appropriate through bolt
6 [0.236]	$\phi 3.3$ (Thru hole) C'bore $\phi 6$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	19	11	R12	4	3.5	—	—	—	M3
8 [0.315]	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	21	13	R13.5	5	4	—	—	—	M3
10 [0.394]	$\phi 3.3$ (Thru hole) C'bore $\phi 6.2$ (Both sides) and M4X0.7 (Both sides)	9.5	3.5	—	23	15	R15	5	4	—	—	—	M3
12 [0.472]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	$\phi 4.3$ (Thru hole) C'bore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole) C'bore $\phi 8$ (Both sides) and M6X1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole) C'bore $\phi 9.5$ (Both sides) and M8X1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
63 [2.480]	$\phi 6.9$ (Thru hole) C'bore $\phi 11$ (Both sides) and M8X1.25 (Both sides)	16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	M6
80 [3.150]	$\phi 10.5$ (Thru hole) C'bore $\phi 14$ (Both sides) and M12X1.75 (Both sides)	22.5	10.5	8	94	74	R62	25	22	27.6	25	1.6	M8
100 [3.940]	$\phi 12.3$ (Thru hole) C'bore $\phi 17.5$ (Both sides) and M14X2 (Both sides)	27	13	8	114	90	R75	32	27	27.6	25	2	M10

※ Some types of mounting screws are available (to be ordered separately). See p.209.

Dimensions of Double Rod Single Acting Type (mm)

● $\phi 12 \sim \phi 25$

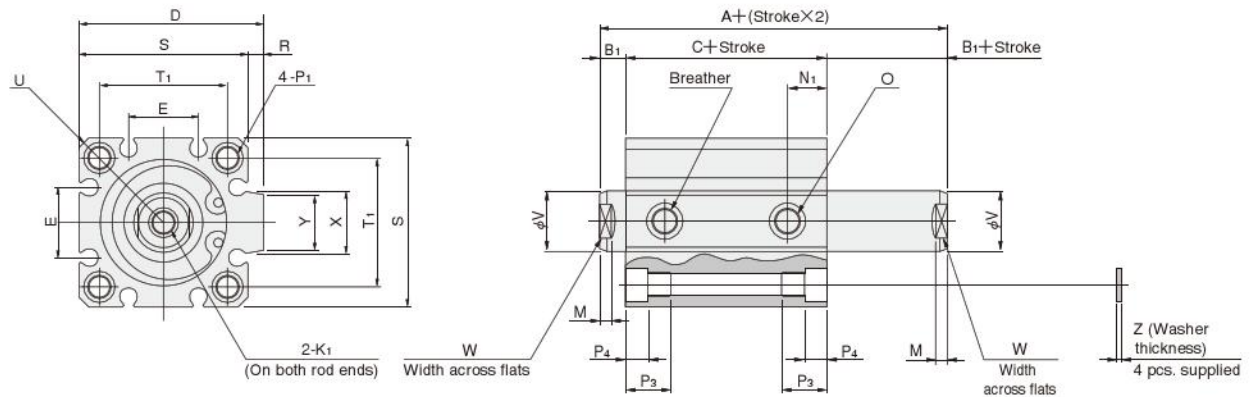
CAD Bore size



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 50$

CAD Bore size



Type Stroke Code Bore mm [in.]	Standard cylinder (CSAD)						Cylinder with magnet (CSADS)						D	E	K ₁	M	N ₁	O
	5~15 (φ 50: 10~20)			16~30 (φ 50: 21~40)			5~15 (φ 50: 10~20)			16~30 (φ 50: 21~40)								
	A	B ₁	C	A	B ₁	C	A	B ₁	C	A	B ₁	C						
12 [0.472]	38	5	28	48	5	38	43	5	33	53	5	43	—	—	M3×0.5 Depth6	3.5	8	M5×0.8
16 [0.630]	39	5.5	28	49	5.5	38	44	5.5	33	54	5.5	43	—	6.2	M4×0.7 Depth8	3.5	8	M5×0.8
20 [0.787]	37	5.5	26	47	5.5	36	47	5.5	36	57	5.5	46	—	12.2	M5×0.8 Depth10	4.5	9.5	M5×0.8
25 [0.984]	38.5	6	26.5	48.5	6	36.5	48.5	6	36.5	58.5	6	46.5	—	12.2	M6×1 Depth10	5	10.5	M5×0.8
32 [1.260]	44	7	30	59	7	45	54	7	40	69	7	55	48.5	18.2	M8×1.25 Depth12	6	9.5	Rc1/8
40 [1.575]	47	7	33	62	7	48	57	7	43	72	7	58	56.5	18.2	M8×1.25 Depth12	6	10.5	Rc1/8
50 [1.969]	48	9	30	63	9	45	58	9	40	73	9	55	70	24.8	M10×1.5 Depth15	7	11	Rc1/4

Code	P ₁	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt※
12 [0.472]	$\phi 4.3$ (Thru hole) Counterbore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	$\phi 4.3$ (Thru hole) Counterbore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	$\phi 4.3$ (Thru hole) Counterbore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole) Counterbore $\phi 8$ (Both sides) and M6×1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole) Counterbore $\phi 8$ (Both sides) and M6×1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole) Counterbore $\phi 9.5$ (Both sides) and M8×1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole) Counterbore $\phi 11$ (Both sides) and M8×1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6

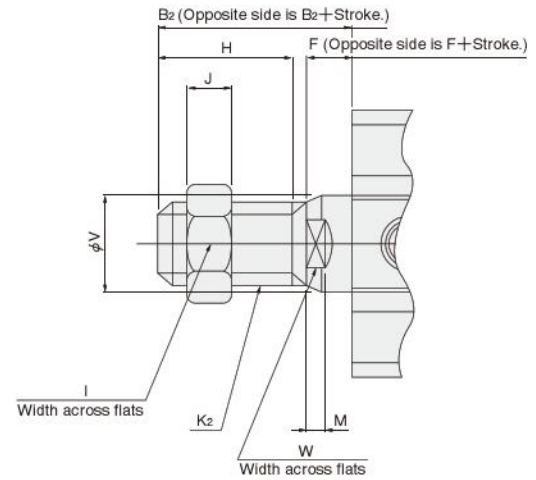
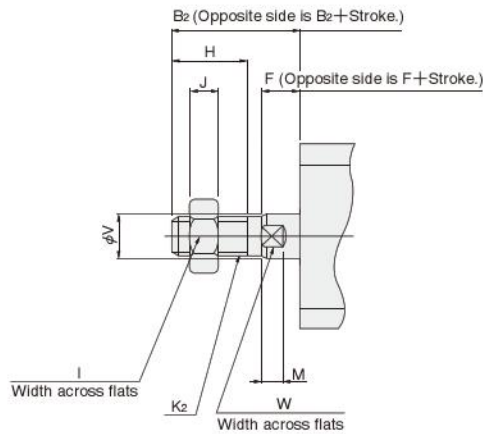
※ Some types of mounting screws are available (to be ordered separately). See p.209.

● Double acting type, Single acting type

● $\phi 6 \sim \phi 25$

● $\phi 32 \sim \phi 100$

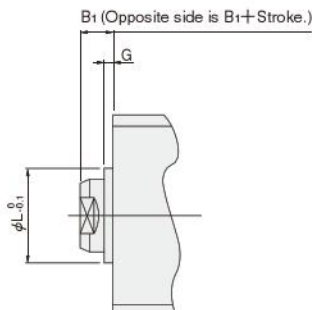
(Single acting type available up to $\phi 50$)



Bore mm (in.)	Code	B ₂	F	H	I	J	K ₂	M	V	W
6 [0.236]		15	5	8	5.5	1.8	M3×0.5	3	4	3.5
8 [0.315]		15	5	8	7	2.4	M4×0.7	3	5	4
10 [0.394]		15	5	8	7	2.4	M4×0.7	3	5	4
12 [0.472]		17	5	10	8	4	M5×0.8	3.5	6	5
16 [0.630]		20.5	5.5	13	10	5	M6×1	3.5	8	6
20 [0.787]		22.5	5.5	15	12	5	M8×1	4.5	10	8
25 [0.984]		24	6	15	14	6	M10×1.25	5	12	10
32 [1.260]		35	7	25	19	8	M14×1.5	6	16	14
40 [1.575]		35	7	25	19	8	M14×1.5	6	16	14
50 [1.969]		37	9	25	27	11	M18×1.5	7	20	17
63 [2.480]		37	9	25	27	11	M18×1.5	7	20	17
80 [3.150]		44	11	30	32	13	M22×1.5	9	25	22
100 [3.940]		50	12	35	36	14	M26×1.5	9	32	27

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



Bore mm (in.)	Code	B ₁	G	L
16 [0.630]		5.5	1.5	9.4
20 [0.787]		5.5	1.5	12
25 [0.984]		6	2	15
32 [1.260]		7	2	21
40 [1.575]		7	2	29
50 [1.969]		9	2	38
63 [2.480]		9	2	40
80 [3.150]		11	2	45
100 [3.940]		12	2	55

● Not available for bore sizes $\phi 6$, $\phi 8$, $\phi 10$ and $\phi 12$.

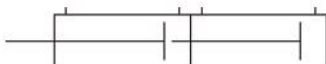
JIG CYLINDERS C SERIES TANDEM CYLINDERS

Double Acting Type,
Single Acting Push Type



Symbols

● Double acting type



● Single acting push type



Specifications

Bore size mm [in.]		12	16	20	25	32	40	50	63	80	100
Item		[0.472]	[0.630]	[0.787]	[0.984]	[1.260]	[1.575]	[1.969]	[2.480]	[3.150]	[3.940]
Operation type		Double acting type, Single acting push type							Double acting type		
Media		Air									
Operating pressure range MPa [psi.]	Double acting type	0.2~1.0 [29~145]						0.1~1.0 [15~145]			
	Single acting type	0.3~1.0 [44~145]						0.2~1.0 [29~145]	—		
Proof pressure MPa [psi.]		1.5 [218]									
Operating temperature range °C [°F]		0~60 [32~140] (The heat resistant specification is 120 [248]. ^{Note1})									
Operating speed range mm/s [in./sec.]	Double acting type	30~500 [1.2~19.7]						30~300 [1.2~11.8]			
	Single acting type	100~500 [3.9~19.7]						100~300 [3.9~11.8]	—		
Cushion	Double acting type	Rubber bumper (Option ^{Note2})									
	Single acting type	None							—		
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)									
Port size		M5×0.8				Rc1/8		Rc1/4		Rc3/8	

Remark: For Handling Instructions and Precautions, see p.205.

Notes: 1. For heat resistant specification, consult us.

2. Not available for heat resistant specification.

Bore Size and Stroke

For non-standard strokes, see p.206.

		mm											
Operation type	Stroke 1 Bore size	5	10	15	20	25	30	35	40	45	50	75	100
Double acting type CDAT CSATS	12, 16	0.5, 10 15, 20, 25	0.5, 10 15, 20	0.5, 10, 15	0.5, 10	0.5	0	—	—	—	—	—	—
	20, 25	0.5, 10, 15 20, 25, 30 35, 40, 45	0.5, 10, 15 20, 25, 30 35, 40	0.5, 10 15, 20, 25 30, 35	0.5, 10, 15 20, 25, 30	0.5, 10 15, 20, 25	0.5, 10 15, 20	0.5, 10, 15	0.5, 10	0.5	0	—	—
	32, 40	0.5, 10, 15 20, 25, 30, 35 40, 45, 70, 95	0.5, 10, 15 20, 25, 30, 35 40, 65, 90	0.5, 10, 15 20, 25, 30 35, 60, 85	0.5, 10, 15 20, 25, 30 55, 80	0.5, 10 15, 20, 25 50, 75	0.5, 10 15, 20 45, 70	0.5, 10, 15 40, 65	0.5, 10 35, 60	0.5, 30, 55	0.25, 50	0.25	0
	50, 63 80, 100	—	0.5, 10, 15 20, 25, 30, 35 40, 65, 90	0.5, 10, 15 20, 25, 30 35, 60, 85	0.5, 10, 15 20, 25, 30 55, 80	0.5, 10 15, 20, 25 50, 75	0.5, 10, 15 20, 45, 70	0.5, 10, 15 40, 65	0.5, 10 35, 60	0.5, 30, 55	0.25, 50	0.25	0
Single acting type CSAT CSATS	12, 16, 20 25, 32, 40	0.5, 10 15, 20, 25	0.5, 10 15, 20	0.5, 10, 15	0.5, 10	0.5	0	—	—	—	—	—	—
	50	—	0.5, 10, 15 20, 25, 30	0.5, 10 15, 20, 25	0.5, 10 15, 20	0.5, 10, 15	0.5, 10	0.5	0	—	—	—	—

Remarks: 1. Stroke tolerance: Stroke 1 side $^{+1}_{-0.2}$ [$^{+0.039}_{-0.008}$ in.], stroke 2 side $^{+1}_{0}$ [$^{+0.039}_{0}$ in.].
 2. The figures in the table are combinations of stroke 2 (standard) responding to stroke 1 (standard).
 3. In most cases, body cutting is used for the non-standard strokes.
 However, body cutting is not used for "Stroke 1" or "Stroke 1 + Stroke 2" under the condition mentioned below. The collar packed is used for these cases.
 $\phi 12 \sim \phi 40$: less than 5mm
 $\phi 50 \sim \phi 100$: less than 10mm

● About stroke 1 and stroke 2

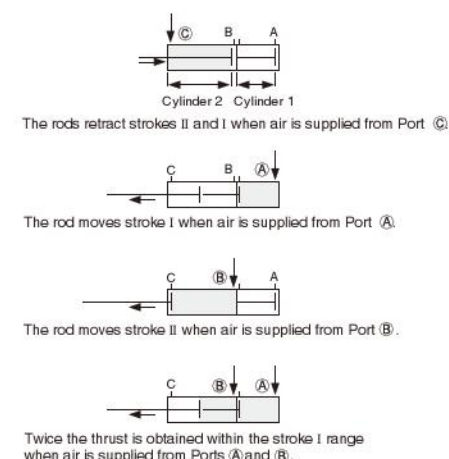
Stroke 1 is the stroke of cylinder 1.

Stroke 2 is obtained by subtracting stroke 1 from the stroke of cylinder 2.

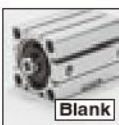
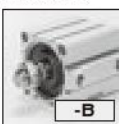
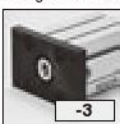
Operation of Tandem Cylinders

Tandem Cylinders are a set of 2 cylinders joined end to end.

It can be used as a two-stage stroke cylinder by supplying air to either Port A or Port B. It can also obtain twice the thrust within the "stroke I" range.



Order Codes for Tandem Cylinders

Operation type	Rod end specification	Mounting type	Sensor switch type ^{Note5} (For cylinder with magnet)	Lead wire length	Number of sensor switches (For cylinder with magnet) Blank: No sensor switch							
DA : Double acting type SA : Single acting push type	Female thread  Blank Male thread  -B	Basic type  Blank Flange mounting type ^{Note6}  -3	Blank : No sensor switch -ZE135 : With ZE135 ● 2-lead wire Solid state type ● With indicator lamp ● DC10~28V ● Horizontal lead wire -ZE235 : With ZE235 ● 2-lead wire Solid state type ● With indicator lamp ● DC10~28V ● Vertical lead wire -ZE101 : With ZE101 ● 2-lead wire Reed switch type ● Without indicator lamp ● DC5~28V AC85~115V ● Horizontal lead wire -ZE201 : With ZE201 ● 2-lead wire Reed switch type ● Without indicator lamp ● DC5~28V AC85~115V ● Vertical lead wire -ZE155 : With ZE155 ● 3-lead wire Solid state type ● With indicator lamp ● DC4.5~28V ● Horizontal lead wire -ZE255 : With ZE255 ● 3-lead wire Solid state type ● With indicator lamp ● DC4.5~28V ● Vertical lead wire -ZE102 : With ZE102 ● 2-lead wire Reed switch type ● With indicator lamp ● DC10~28V AC85~115V ● Horizontal lead wire -ZE202 : With ZE202 ● 2-lead wire Reed switch type ● With indicator lamp ● DC10~28V AC85~115V ● Vertical lead wire	A : 1000mm [39in.] B : 3000mm [118in.]	Blank : No sensor switch 1 : With 1 sensor switch 2 : With 2 sensor switches							
Heat resistant specification Blank : Standard cylinder ^{Note1} F : Heat resistant cylinder ^{Note2}	Cylinder specification Blank : Standard cylinder ^{Note1} (Non-ion specification) S : Cylinder with magnet ^{Note3} (Non-ion specification)	Bumper ^{Note4} Blank : No bumper -R : With bumper	Centering location ^{Note7} Blank : No centering location -G : With centering location									
Tandem cylinder												
Basic type				Bore size X Stroke								
C	DA SA	F	T	S	Bore size X Stroke1 X Stroke2	-B ^{Note8}	-R	-G	-3	-ZE135 -ZE155 -ZE235 -ZE255 -ZE101 -ZE102 -ZE201 -ZE202	A B	1 2 : n

● See table for bore size and stroke.

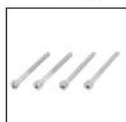
● Mounting brackets are included at shipping.

- Notes: 1. In the standard cylinder, a magnet for the sensor switch is not built-in.
 2. Not available for the cylinder with magnet or the cylinder with bumper.
 3. Not available in heat resistant specification.
 4. For the double acting type only. Not available for heat resistant specification.
 5. For details of sensor switches, see p.1544.
 6. The flange mounting bracket can be mounted on the rod side only.
 Moreover, it cannot be mounted on the bore size $\phi 40$ with centering location (-G).
 7. Not available for the bore size $\phi 12$.
 8. For information regarding the cylinder joint and cylinder rod end for male thread, see p.1568.

Additional Parts (To be ordered separately)



Flange mounting bracket
(p.198)

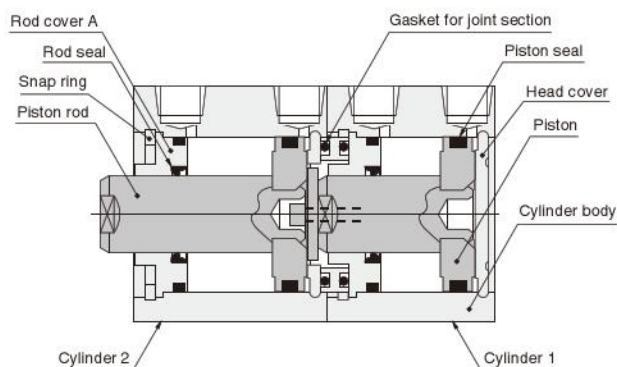


Mounting screws
(p.209)

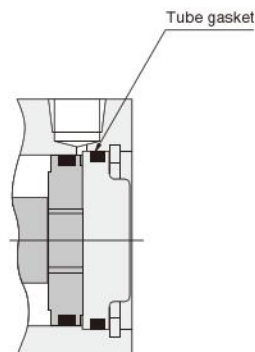
Inner Construction and Major Parts

● Double acting type (CDAT)

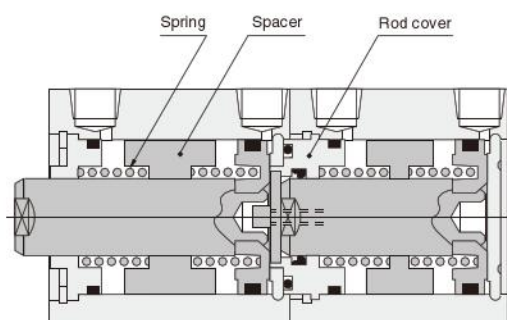
● $\phi 12 \sim \phi 40$



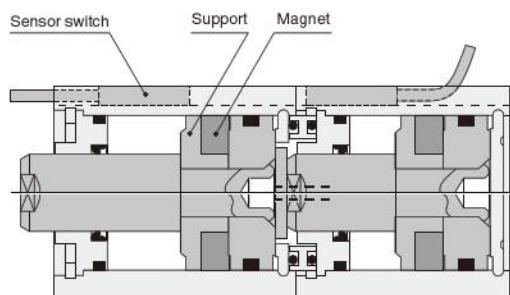
● $\phi 50 \sim \phi 100$



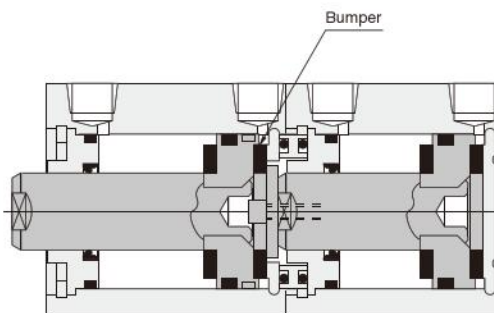
● Single acting push type (CSAT)



● Cylinder with magnet



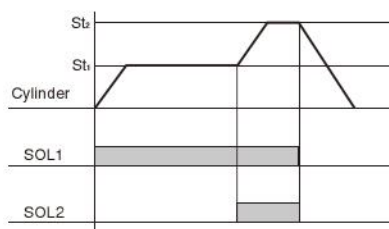
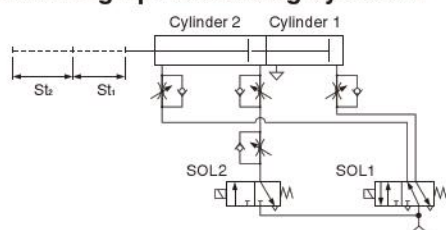
● With bumper



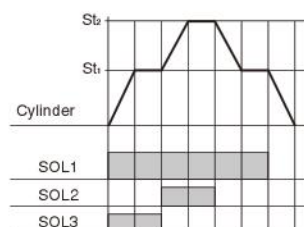
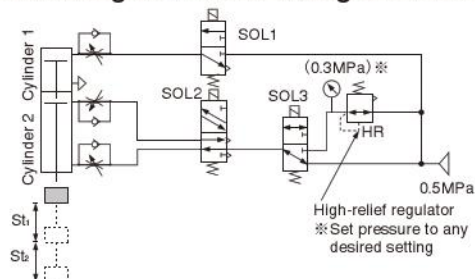
Tandem Cylinder Air Circuit Examples

When using a tandem cylinder as a 2-stage stroke cylinder, refer to the air circuits shown below. For application of other air circuits not shown below, consult us.

● For mounting upward-facing cylinders



● For mounting downward-facing or horizontal cylinders



Major Parts and Materials

Parts	Bore mm	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Cylinder body		Aluminum alloy (anodized)									
Piston		Aluminum alloy (special rust prevention treatment)									
Piston rod		Stainless steel (chrome plated)					Steel (chrome plated)				
Seal		Synthetic rubber (NBR)									
Rod cover		Aluminum alloy (special wear-resistant treatment)									
Head cover		Aluminum alloy (anodized)									
Snap ring		Steel (phosphate coating)									
Spring		Piano wire								—	
Spacer		Aluminum alloy (special rust prevention treatment)								—	
Bumper		Synthetic rubber (NBR; urethane for φ 12 only)									
Magnet		Plastic magnet									
Support		Aluminum alloy (special rust prevention treatment)									

Seals

Parts	Rod seal	Piston seal	Tube gasket		Gasket for joint section
Bore mm			Rod side	Head side	
φ 12	MYR-6	COP-12	Y090260	None	Y090119
φ 16	MYR-8	COP-16	Y090207	None	M202208
φ 20	MYR-10	COP-20(MYA-16)	Y090216	None	L090134
φ 25	MYR-12	COP-25(MYA-21)	Y090210	None	Y090196
φ 32	MYR-16	COP-32	L090084	None	L090015
φ 40	MYR-16	COP-40	L090151	None	L090028
φ 50	MYR-20	COP-50	L090174	L090106	None
φ 63	MYR-20	COP-63	L090180	L090107	None
φ 80	PNY-25	COP-80	L090171	L090108	None
φ 100	PNY-32	COP-100	L090172	L090109	None

Note: Items in parentheses () are for the single acting type.

Mass

● Double acting type

Bore size mm [in.]	Zero stroke mass ^{Note 1}	Additional mass for each 1mm [0.0394in.] of stroke1	Additional mass for each 1mm [0.0394in.] of stroke2	Additional mass of cylinder with bumper	Additional mass of cylinder with magnet	Mass of mounting bracket		Additional mass of sensor switch ^{Note 2}	
						Flange bracket		ZE□□□A	ZE□□□B
12 [0.472]	44.26 [1.561]	2.68 [0.095]	1.28 [0.045]	13.39 [0.472]	13.73 [0.484]	55 [1.94]	15 [0.53]	35 [1.23]	
16 [0.630]	61.11 [2.156]	3.34 [0.118]	1.62 [0.057]	16.71 [0.589]	20.41 [0.720]	71 [2.50]			
20 [0.787]	96.79 [3.414]	4.63 [0.163]	2.26 [0.080]	23.14 [0.816]	52.54 [1.853]	101 [3.56]			
25 [0.984]	147.69 [5.210]	6.41 [0.226]	3.11 [0.110]	32.05 [1.131]	76.92 [2.713]	160 [5.64]			
32 [1.260]	220.3 [7.771]	8.43 [0.297]	4.11 [0.145]	42.13 [1.486]	106.84 [3.769]	186 [6.56]			
40 [1.575]	345.12 [12.174]	9.85 [0.347]	4.77 [0.168]	0	141.38 [4.987]	335 [11.82]			
50 [1.969]	562.47 [19.840]	14.51 [0.512]	7.03 [0.248]	0	220.44 [7.776]	447 [15.77]			
63 [2.480]	890.99 [31.428]	17.83 [0.629]	8.69 [0.307]	0	322.44 [11.374]	591 [20.85]			
80 [3.150]	1770.07 [62.436]	26.91 [0.949]	13.06 [0.461]	0	497.9 [17.563]	1414 [49.88]			
100 [3.940]	3252 [114.7]	38.46 [1.357]	18.61 [0.656]	0	732.34 [25.832]	2606 [91.92]			

Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a double acting type cylinder with magnet, bore size of 25mm, 30mm for stroke 1, 10mm for stroke2, and 2 sensor switches (ZE135A)

$$147.69 + (6.41 \times 30) + (3.11 \times 10) + 76.92 + (15 \times 2) = 478.01\text{g [16.861oz.]}$$

● Single acting push type

Single acting push type									g [oz.]	
Bore size mm [in.]	Zero stroke mass ^{Note1}			Additional mass for each 1mm [0.0394in.] of stroke1	Additional mass for each 1mm [0.0394in.] of stroke2	Additional mass of cylinder with magnet	Mass of mounting bracket	Additional mass of sensor switch ^{Note2}		
	Stroke1							ZE□□□A	ZE□□□B	
	5~15 (φ 50: 10~20)		16~30 (φ 50: 21~40)							
	Stroke 1 + Stroke2									
	5~15 (φ 50: 10~20)	16~30 (φ 50: 21~40)								
12 [0.472]	55.88 [1.971]	69.98 [2.468]	85.21 [3.006]	2.68 [0.0945]	1.28 [0.0451]	16.11 [0.568]	55 [1.94]	15 [0.53]	35 [1.23]	
16 [0.630]	80.31 [2.833]	99.64 [3.515]	120.1 [4.236]	3.34 [0.118]	1.62 [0.0571]	21.21 [0.748]	71 [2.50]			
20 [0.787]	96.88 [3.417]	124.84 [4.404]	153.93 [5.430]	4.63 [0.163]	2.26 [0.0797]	51.89 [1.830]	101 [3.56]			
25 [0.984]	147.45 [5.201]	186 [6.561]	226.53 [7.990]	6.41 [0.226]	3.11 [0.110]	80.18 [2.828]	160 [5.64]			
32 [1.260]	223.01 [7.866]	306.96 [10.828]	393.89 [13.894]	8.43 [0.297]	4.11 [0.145]	103.14 [3.638]	186 [6.56]			
40 [1.575]	345.03 [12.170]	453.44 [15.994]	566.48 [19.982]	9.85 [0.347]	4.77 [0.168]	141.93 [5.006]	335 [11.82]			
50 [1.969]	561.93 [19.821]	691.19 [24.381]	827.1 [29.175]	14.51 [0.512]	7.03 [0.248]	216.54 [7.638]	447 [15.77]			

Notes 1: The above table is for the standard strokes.

2: Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

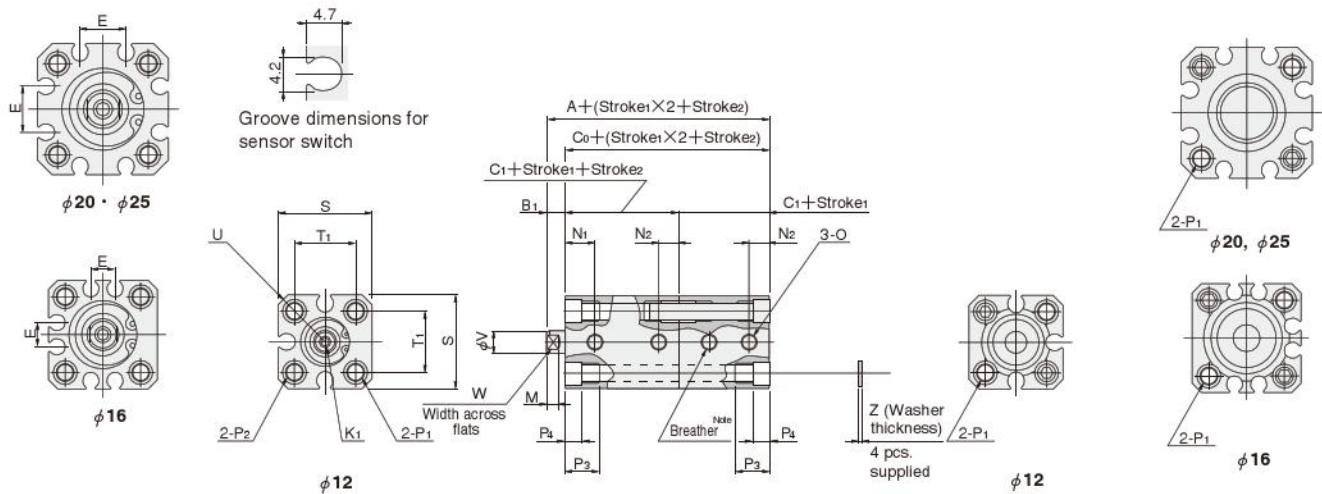
Calculation example: For the mass of a single acting push type cylinder with magnet, bore size of 25mm, 10mm for stroke 1, 20mm for stroke2, and 2 sensor switches (ZE135A)

$$186 + (6.41 \times 10) + (3.11 \times 20) + 80.18 + (15 \times 2) = 422.48\text{g [14.902oz.]}$$

Dimensions of Tandem Cylinder Double Acting Type (mm)

● $\phi 12 \sim \phi 25$

CAD CDAT Bore size

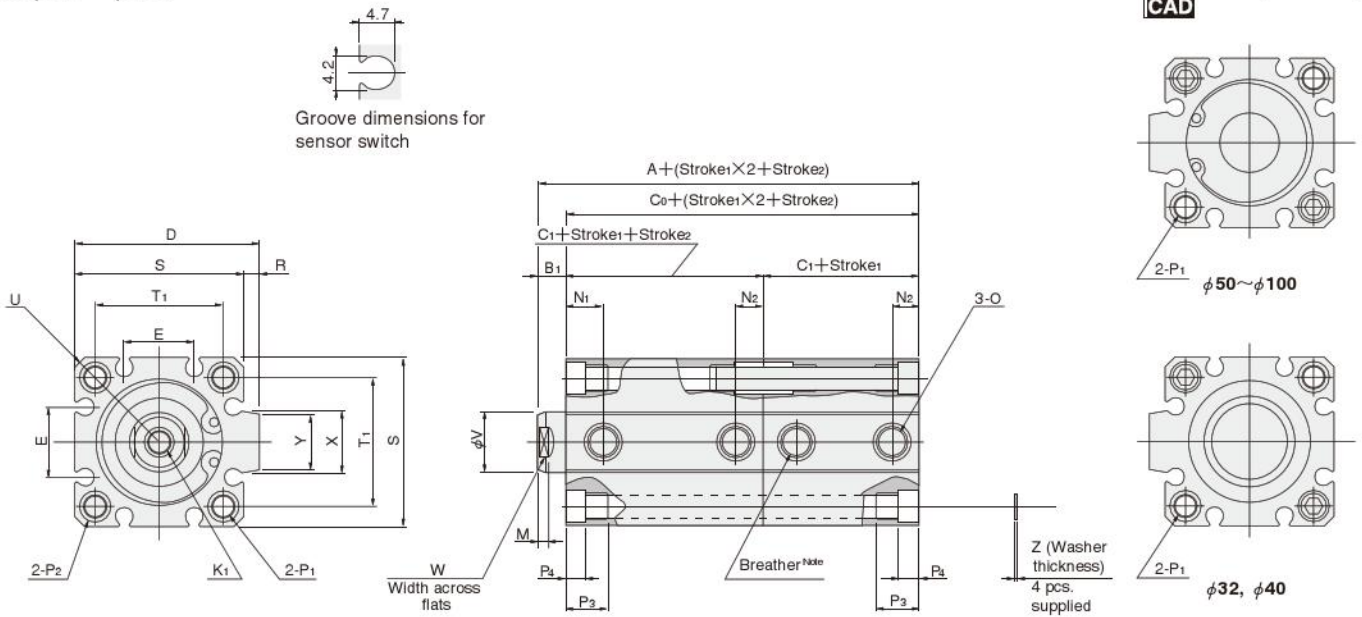


Note: Mufflers, etc. are not included.
Install a muffler when using in places exposed to dust, etc.

● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 100$

CAD CDAT Bore size



Note: Mufflers, etc. are not included.
Install a muffler when using in places exposed to dust, etc.

Type Bore mm [in.]	Code	Standard cylinder (CDAT)				Cylinder with magnet (CDATS)				Standard cylinder with bumper (CDAT-R)				Cylinder with magnet with bumper (CDATS-R)				D	E	K ₁	M	N ₁	N ₂	O
		A	B ₁	C ₀	C ₁	A	B ₁	C ₀	C ₁	A	B ₁	C ₀	C ₁	A	B ₁	C ₀	C ₁							
12 [0.472]		39	5	34	17	49	5	44	22	49	5	44	22	59	5	54	27	—	—	M3X0.5 Depth6	3.5	8	5	M5X0.8
16 [0.630]		39.5	5.5	34	17	49.5	5.5	44	22	49.5	5.5	44	22	59.5	5.5	54	27	—	6.2	M4X0.7 Depth8	3.5	8	5	M5X0.8
20 [0.787]		44.5	5.5	39	19.5	64.5	5.5	59	29.5	54.5	5.5	49	24.5	74.5	5.5	69	34.5	—	12.2	M5X0.8 Depth10	4.5	9.5	5	M5X0.8
25 [0.984]		48	6	42	21	68	6	62	31	58	6	52	26	78	6	72	36	—	12.2	M6X1 Depth10	5	10.5	5	M5X0.8
32 [1.260]		53	7	46	23	73	7	66	33	63	7	56	28	73	7	66	33	48.5	18.2	M6X1.25 Depth12	6	9.5	7.5(6)	Rc1/8
40 [1.575]		59	7	52	26	79	7	72	36	59	7	52	26	79	7	72	36	56.5	18.2	M6X1.25 Depth12	6	10.5	7.5	Rc1/8
50 [1.969]		65	9	56	28	85	9	76	38	65	9	56	28	85	9	76	38	70	24.8	M10X1.5 Depth15	7	11	9.5	Rc1/4
63 [2.480]		73	9	64	32	93	9	84	42	73	9	64	32	93	9	84	42	83	26.8	M10X1.5 Depth15	7	12.5	11	Rc1/4
80 [3.150]		93	11	82	41	113	11	102	51	93	11	82	41	113	11	102	51	102	32.8	M14X2 Depth20	9	18	12	Rc3/8
100 [3.940]		114	12	102	51	134	12	122	61	114	12	102	51	134	12	122	61	122	32.8	M18X2.5 Depth20	9	22.5	16.5	Rc3/8

Code	Bore mm [in.]	P ₁		P ₂	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt ※
		φ 4.3 (Thru hole)	C'bore φ 6.5 (Both sides) and M5 X0.8 (Both sides)	Counterbore φ 6.5 and M5 X0.8	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
12 [0.472]		φ 4.3 (Thru hole)	C'bore φ 6.5 (Both sides) and M5 X0.8 (Both sides)	Counterbore φ 6.5 and M5 X0.8	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]		φ 4.3 (Thru hole)	C'bore φ 6.5 (Both sides) and M5 X0.8 (Both sides)	Counterbore φ 6.5 and M5 X0.8	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]		φ 4.3 (Thru hole)	C'bore φ 6.5 (Both sides) and M5 X0.8 (Both sides)	Counterbore φ 6.5 and M5 X0.8	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]		φ 5.1 (Thru hole)	C'bore φ 8 (Both sides) and M6 X1 (Both sides)	Counterbore φ 8 and M6 X1	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]		φ 5.1 (Thru hole)	C'bore φ 8 (Both sides) and M6 X1 (Both sides)	Counterbore φ 8 and M6 X1	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]		φ 6.9 (Thru hole)	C'bore φ 9.5 (Both sides) and M8 X1.25 (Both sides)	Counterbore φ 9.5 and M8 X1.25	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]		φ 6.9 (Thru hole)	C'bore φ 11 (Both sides) and M8 X1.25 (Both sides)	Counterbore φ 11 and M8 X1.25	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
63 [2.480]		φ 6.9 (Thru hole)	C'bore φ 11 (Both sides) and M8 X1.25 (Both sides)	Counterbore φ 11 and M8 X1.25	16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	M6
80 [3.150]		φ 10.5 (Thru hole)	C'bore φ 14 (Both sides) and M12 X1.75 (Both sides)	Counterbore φ 14 and M12 X1.75	22.5	10.5	8	94	74	R62	25	22	27.6	25	1.6	M8
100 [3.940]		φ 12.3 (Thru hole)	C'bore φ 17.5 (Both sides) and M14 X2 (Both sides)	Counterbore φ 17.5 and M14 X2	27	13	8	114	90	R75	32	27	27.6	25	2	M10

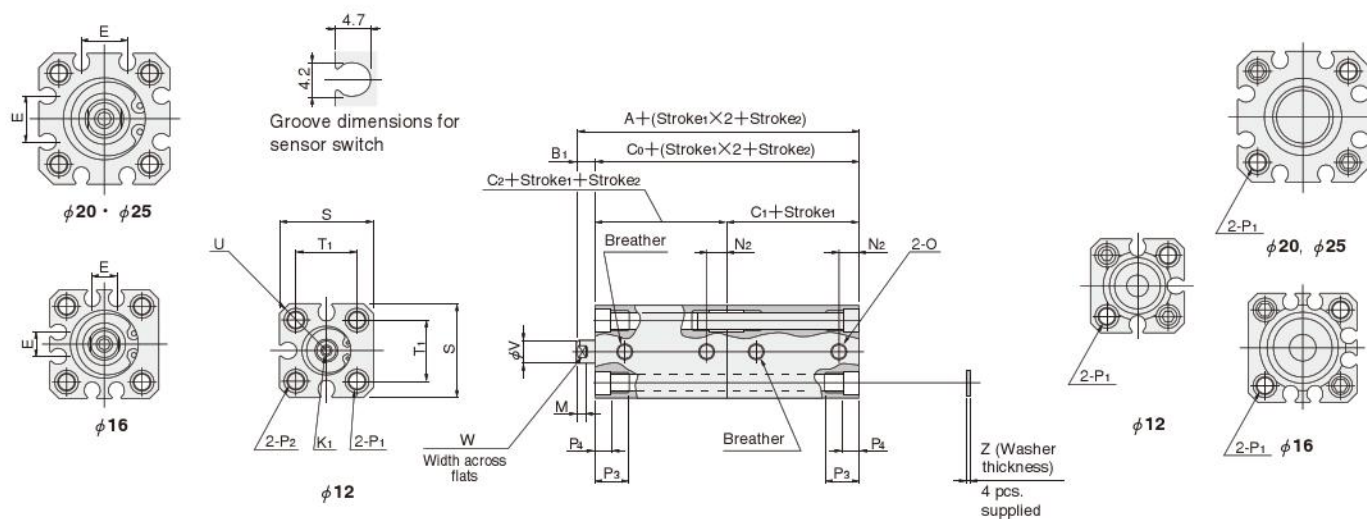
Note: Figure in parentheses [] is for the standard cylinder (CDAT) when stroke 1, or stroke 1 + stroke2 is 5mm.

※ Some types of mounting screws are available (to be ordered separately). See p.209.

Dimensions of Tandem Cylinder Single Acting Push Type (mm)

● $\phi 12 \sim \phi 25$

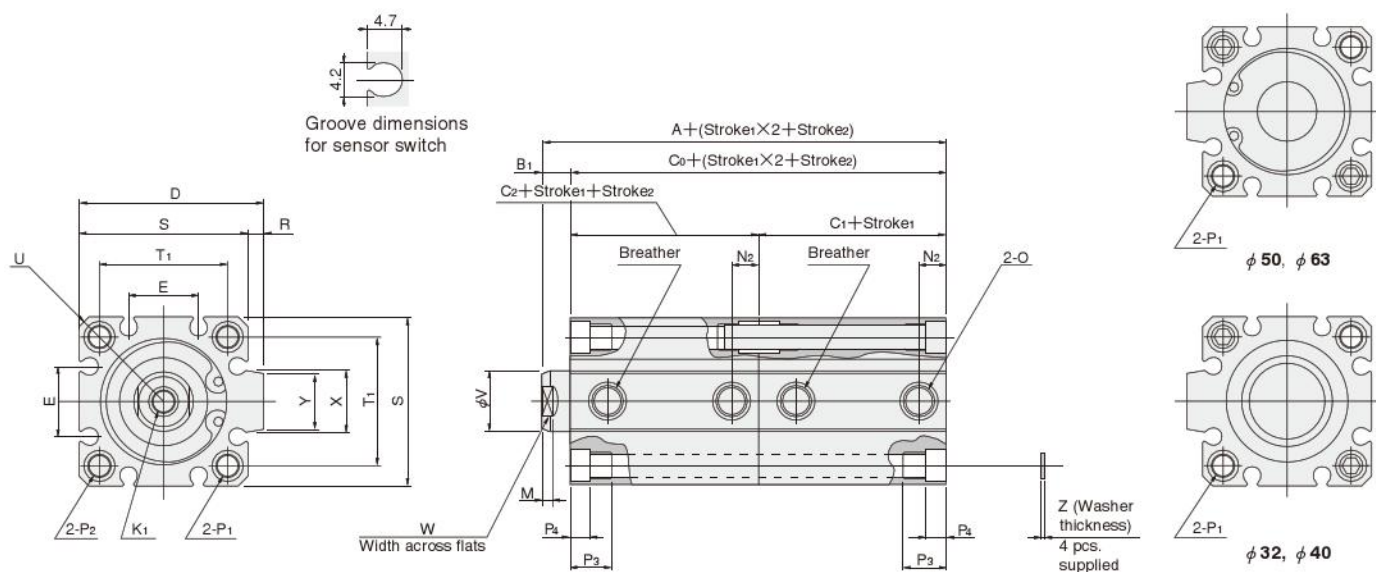
CAD CSAT Bore size



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 50$

CAD CSAT Bore size



Type Stroke1	Code	Standard cylinder (CSAT)										Cylinder with magnet (CSATS)									
		5~15 (φ 50: 10~20)					16~30 (φ 50: 21~40)					5~15 (φ 50: 10~20)					16~30 (φ 50: 21~40)				
		A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂
12 [0.472]	D1	49	5	44	22	22	—	—	—	—	—	59	5	54	27	27	—	—	—	—	—
	D2	59		54		32	69	5	64	32	32	69		64		37	79	5	74	37	37
16 [0.630]	D1	49.5	5.5	44	22	22	—	—	—	—	—	59.5	5.5	54	27	27	—	—	—	—	—
	D2	59.5		54		32	69.5	5.5	64	32	32	69.5		64		37	79.5	5.5	74	37	37
20 [0.787]	D1	44.5	5.5	39	19.5	19.5	—	—	—	—	—	64.5	5.5	59	29.5	29.5	—	—	—	—	—
	D2	54.5		49		29.5	64.5	5.5	59	29.5	29.5	74.5		69		39.5	84.5	5.5	79	39.5	39.5
25 [0.984]	D1	48	6	42	21	21	—	—	—	—	—	68	6	62	31	31	—	—	—	—	—
	D2	58		52		31	68	6	62	31	31	78		72		41	88	6	82	41	41
32 [1.260]	D1	53	7	46	23	23	—	—	—	—	—	73	7	66	33	33	—	—	—	—	—
	D2	68		61		38	83	7	76	38	38	88		81		48	103	7	96	48	48
40 [1.575]	D1	59	7	52	26	26	—	—	—	—	—	79	7	72	36	36	—	—	—	—	—
	D2	74		67		41	89	7	82	41	41	94		87		51	109	7	102	51	51
50 [1.969]	D1	65	9	56	28	28	—	—	—	—	—	85	9	76	38	38	—	—	—	—	—
	D2	80		71		43	95	9	86	43	43	100		91		53	115	9	106	53	53

Bore mm [in.]	Code	D		E		K ₁		M	N ₂	O	P ₁	
12 [0.472]	D1	—		—		M3×0.5 Depth6		3.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)	
	D2	—		—		M3×0.5 Depth6		3.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)	
16 [0.630]	D1	—		6.2		M4×0.7 Depth8		3.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)	
	D2	—		6.2		M4×0.7 Depth8		3.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)	
20 [0.787]	D1	—		12.2		M5×0.8 Depth10		4.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)	
	D2	—		12.2		M5×0.8 Depth10		4.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)	
25 [0.984]	D1	—		12.2		M6×1 Depth10		5	5	M5×0.8	φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)	
	D2	—		12.2		M6×1 Depth10		5	5	M5×0.8	φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)	
32 [1.260]	D1	48.5		18.2		M8×1.25 Depth12		6	7.5	Rc1/8	φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)	
	D2	48.5		18.2		M8×1.25 Depth12		6	7.5	Rc1/8	φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)	
40 [1.575]	D1	56.5		18.2		M8×1.25 Depth12		6	7.5	Rc1/8	φ 6.9 (Thru hole) Counterbore φ 9.5 (Both sides) and M8×1.25 (Both sides)	
	D2	56.5		18.2		M8×1.25 Depth12		6	7.5	Rc1/8	φ 6.9 (Thru hole) Counterbore φ 9.5 (Both sides) and M8×1.25 (Both sides)	
50 [1.969]	D1	70		24.8		M10×1.5 Depth15		7	9.5	Rc1/4	φ 6.9 (Thru hole) Counterbore φ 11 (Both sides) and M8×1.25 (Both sides)	
	D2	70		24.8		M10×1.5 Depth15		7	9.5	Rc1/4	φ 6.9 (Thru hole) Counterbore φ 11 (Both sides) and M8×1.25 (Both sides)	

Bore mm [in.]	Code	P ₂		P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt
12 [0.472]	D1	Counterbore φ 6.5 and M5×0.8		9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
	D2	Counterbore φ 6.5 and M5×0.8		9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	D1	Counterbore φ 6.5 and M5×0.8		9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
	D2	Counterbore φ 6.5 and M5×0.8		9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	D1	Counterbore φ 6.5 and M5×0.8		9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
	D2	Counterbore φ 6.5 and M5×0.8		9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	D1	Counterbore φ 8 and M6×1		11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
	D2	Counterbore φ 8 and M6×1		11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	D1	Counterbore φ 8 and M6×1		11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
	D2	Counterbore φ 8 and M6×1		11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	D1	Counterbore φ 9.5 and M8×1.25		15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
	D2	Counterbore φ 9.5 and M8×1.25		15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	D1	Counterbore φ 11 and M8×1.25		16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
	D2	Counterbore φ 11 and M8×1.25		16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6

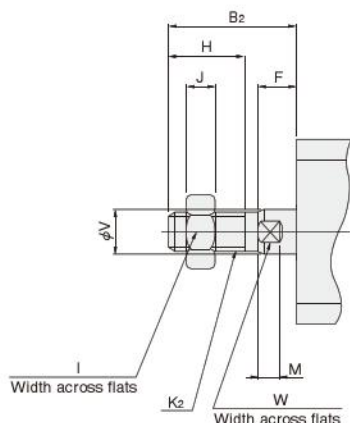
Notes: D1 is when stroke 1 + stroke 2 is 5~15 (φ 50: 10~20) mm.

D2 is when stroke 1 + stroke 2 is 16~30 (φ 50: 21~40) mm.

※ Some types of mounting screws are available (to be ordered separately). See p.209.

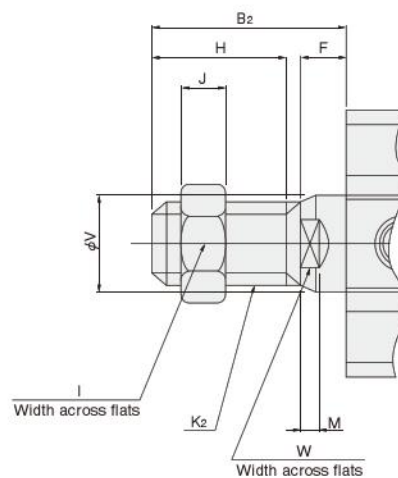
● Double acting type, Single acting push type

● $\phi 12 \sim \phi 25$



● $\phi 32 \sim \phi 100$

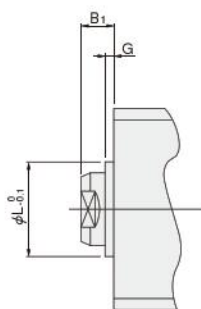
(Single acting type available up to $\phi 50$)



Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	M	V	W
12 [0.472]		17	5	10	8	4	M5×0.8	3.5	6	5
16 [0.630]		20.5	5.5	13	10	5	M6×1	3.5	8	6
20 [0.787]		22.5	5.5	15	12	5	M8×1	4.5	10	8
25 [0.984]		24	6	15	14	6	M10×1.25	5	12	10
32 [1.260]		35	7	25	19	8	M14×1.5	6	16	14
40 [1.575]		35	7	25	19	8	M14×1.5	6	16	14
50 [1.969]		37	9	25	27	11	M18×1.5	7	20	17
63 [2.480]		37	9	25	27	11	M18×1.5	7	20	17
80 [3.150]		44	11	30	32	13	M22×1.5	9	25	22
100 [3.940]		50	12	35	36	14	M26×1.5	9	32	27

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



● Not available for bore size $\phi 12$.

Bore mm [in.]	Code	B ₁	G	L
16 [0.630]		5.5	1.5	9.4
20 [0.787]		5.5	1.5	12
25 [0.984]		6	2	15
32 [1.260]		7	2	21
40 [1.575]		7	2	29
50 [1.969]		9	2	38
63 [2.480]		9	2	40
80 [3.150]		11	2	45
100 [3.940]		12	2	55

JIG CYLINDERS C SERIES DUAL STROKE CYLINDERS

Double Acting Type,
Single Acting Push Type, Single Acting Pull Type



Symbols

● Double acting type ● Single acting push type ● Single acting pull type



Specifications

Bore size mm [in.]		12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]	80 [3.150]	100 [3.940]
Item											
Operation type		Double acting type, Single acting push type, Single acting pull type								Double acting type	
Media		Air									
Operating pressure range MPa [psi.]	Double acting type	0.1~1.0 [15~145]						0.05~1.0 [7~145]			
	Single acting type	0.15~1.0 ^{Note 1} [22~145]						0.1~1.0 [15~145]	—		
Proof pressure MPa [psi.]		1.5 [218]									
Operating temperature range °C [°F]		0~60 [32~140] (The heat resistant specification is 120 [248]. ^{Note2})									
Operating speed range mm/s [in./sec.]	Double acting type	30~500 [1.2~19.7]						30~300 [1.2~11.8]			
	Single acting type	100~500 [3.9~19.7]						100~300 [3.9~11.8]		—	
Cushion	Double acting type	Rubber bumper (Option ^{Note2})									
	Single acting type	None								—	
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)									
Port size		M5×0.8				Rc1/8		Rc1/4		Rc3/8	

Remark: For Handling Instructions and Precautions, see p.205.

Notes: 1. The single acting pull type of $\phi 12$ is 0.18~1.0MPa [26~145psi].

2. For heat resistant specification, consult us.

3. Not available for heat resistant specification.

Bore Size and Stroke

For non-standard strokes, see p.206.

Operation type	Bore size	Standard strokes	
		Standard cylinder	Cylinder with magnet
Double acting type	12	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30
	16		
	20		
	25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	32		
	40		
	50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
	63		
	80		
Single acting type	100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
	12		
	16		
	20		
	25		
	32		
	40		
	50	10, 15, 20, 25, 30, 35, 40	10, 15, 20, 25, 30, 35, 40

Remarks: 1. Stroke tolerance $+1 \left[+0.039 \text{ in.} \right]$

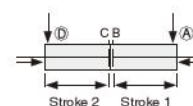
2. In most cases, body cutting is used for the non-standard strokes.

However, body cutting is not used for strokes of less than 5mm for $\phi 12 \sim \phi 40$, and strokes of less than 10mm for $\phi 50 \sim \phi 100$. The collar packed is used for these cases.

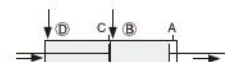
Operation of Dual Stroke Cylinders

Dual Stroke Cylinders are a set of 2 cylinders connected back to back.

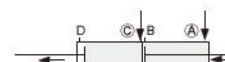
The cylinder body can be secured in place and each stroke can be controlled separately. It can also be used to obtain 2-stage or 3-stage strokes by securing the piston rod on one side in place.



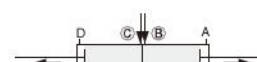
The rods retract stroke 1 and stroke 2 when air is supplied from Ports A and D.



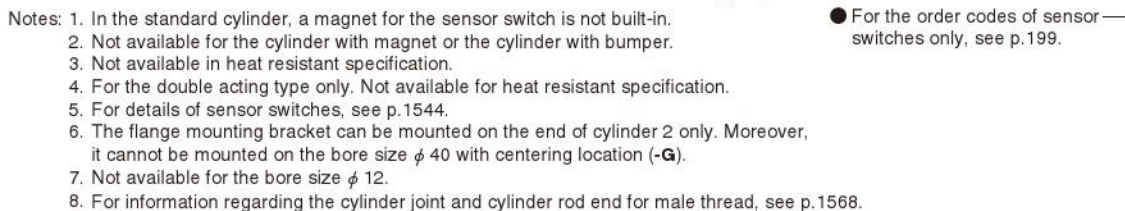
The rod moves stroke 1 when air is supplied from Ports B and C.



The rod moves stroke 2 when air is supplied from Ports A and C.



The rod moves stroke 1 and stroke 2 when air is supplied from Ports B and D.



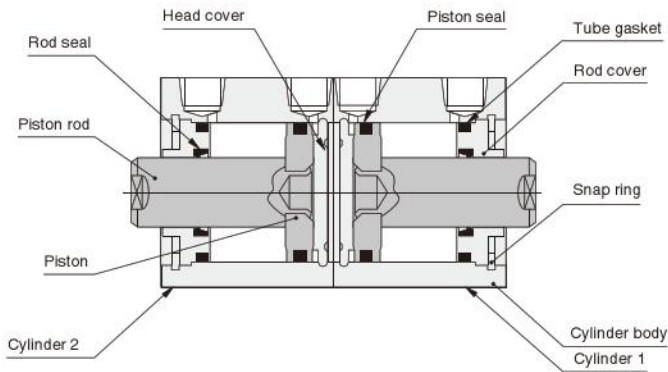
Flange mounting bracket (p.198)

Mounting screws (p.209)

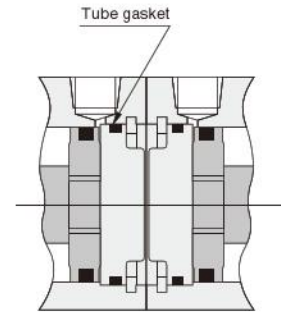
Inner Construction and Major Parts

● Double acting type (CDAW)

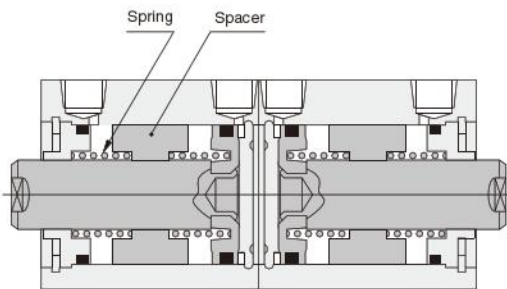
● $\phi 12 \sim \phi 40$



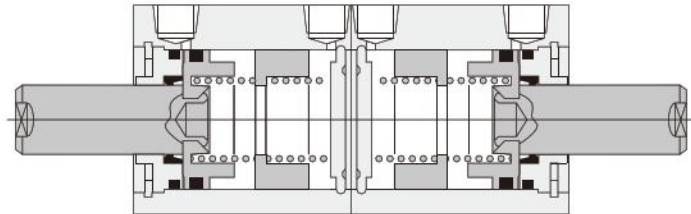
● $\phi 50 \sim \phi 100$



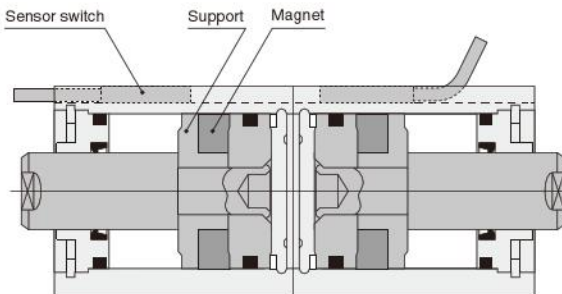
● Single acting push type (CSAW)



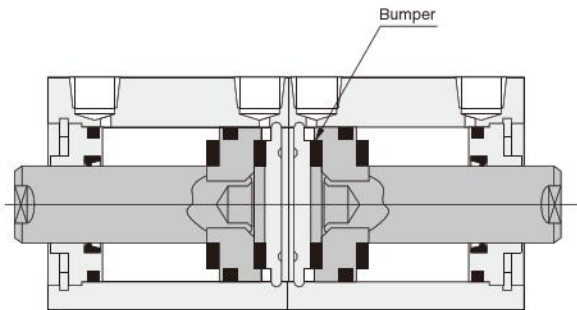
● Single acting pull type (CTAW)



● Cylinder with magnet



● With bumper



Major Parts and Materials

Parts	Bore mm	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Cylinder body		Aluminum alloy (anodized)									
Piston		Aluminum alloy (special rust prevention treatment)									
Piston rod		Stainless steel (chrome plated)					Steel (chrome plated)				
Seal		Synthetic rubber (NBR)									
Rod cover		Aluminum alloy (special wear-resistant treatment)									
Head cover		Aluminum alloy (anodized)									
Snap ring		Steel (phosphate coating)									
Spring		Piano wire								—	
Spacer		Aluminum alloy (special rust prevention treatment)								—	
Bumper		Synthetic rubber (NBR; urethane for φ 12 only)									
Magnet		Plastic magnet									
Support		Aluminum alloy (special rust prevention treatment)									

Seals

Parts Bore mm	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
$\phi 12$	MYR-6	COP-12	Y090260	None
$\phi 16$	MYR-8	COP-16	Y090207	None
$\phi 20$	MYR-10	COP-20(MYA-16)	Y090216	None
$\phi 25$	MYR-12	COP-25(MYA-21)	Y090210	None
$\phi 32$	MYR-16	COP-32	L090084	None
$\phi 40$	MYR-16	COP-40	L090151	None
$\phi 50$	MYR-20	COP-50	L090174	L090106
$\phi 63$	MYR-20	COP-63	L090180	L090107
$\phi 80$	PNY-25	COP-80	L090171	L090108
$\phi 100$	PNY-32	COP-100	L090172	L090109

Note: Items in parentheses () are for the single acting type.

Mass

Dual stroke

● Double acting type

g [oz.]

Bore size mm [in.]	Zero stroke mass ^{Note1}	Additional mass for each 1mm [0.0394in.] of stroke1	Additional mass for each 1mm [0.0394in.] of stroke2	Additional mass of cylinder with bumper	Additional mass of cylinder with magnet	Mass of mounting bracket Flange bracket	Additional mass of sensor switch ^{Note2}	
							ZE□□□A	ZE□□□B
12 [0.472]	44.26 [1.561]	1.4 [0.0494]	1.28 [0.0451]	13.39 [0.472]	13.73 [0.484]	55 [1.94]	15 [0.53]	35 [1.23]
16 [0.630]	61.11 [2.156]	1.73 [0.0610]	1.62 [0.0571]	16.71 [0.589]	20.41 [0.720]	71 [2.50]		
20 [0.787]	96.79 [3.414]	2.37 [0.0836]	2.26 [0.0797]	23.14 [0.816]	52.54 [1.853]	101 [3.56]		
25 [0.984]	147.69 [5.210]	3.3 [0.116]	3.11 [0.110]	32.05 [1.131]	76.92 [2.713]	160 [5.64]		
32 [1.260]	220.3 [7.771]	4.31 [0.152]	4.11 [0.145]	42.13 [1.486]	106.84 [3.769]	186 [6.56]		
40 [1.575]	345.12 [12.174]	5.08 [0.179]	4.77 [0.168]	0	141.38 [4.987]	335 [11.82]		
50 [1.969]	562.47 [19.840]	7.48 [0.264]	7.03 [0.248]	0	220.44 [7.776]	447 [15.77]		
63 [2.480]	896.12 [31.609]	9.14 [0.322]	8.69 [0.307]	0	322.4 [11.37]	591 [20.85]		
80 [3.150]	1755.88 [61.936]	13.51 [0.477]	13.06 [0.461]	0	494.4 [17.44]	1414 [49.88]		
100 [3.940]	3207.76 [113.15]	19.06 [0.672]	18.61 [0.656]	0	724.4 [25.55]	2606 [91.92]		

Notes 1: The above table is for the standard strokes.

2: Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a double acting type cylinder with magnet, bore size of 25mm, 30mm for stroke 1, 10mm for stroke 2, and with 2 sensor switches (ZE135A)

$$147.69 + (3.3 \times 30) + (3.11 \times 10) + 76.92 + (15 \times 2) = 384.71 \text{ g [13.570oz.]}$$

Dual stroke

● Single acting push type

g [oz.]

Bore size mm [in.]	Zero stroke mass ^{Note1}				Additional mass for each 1mm [0.0394in.] of stroke 1	Additional mass for each 1mm [0.0394in.] of stroke2	Additional mass of cylinder with magnet	Mass of mounting bracket	Additional mass of sensor switch ^{Note2}	
	Stroke1							Flange bracket	ZE□□□A	ZE□□□B
	5~15 (φ 50: 10~20)		16~30 (φ 50: 21~40)							
	Stroke2									
	5~15 (φ 50: 10~20)	16~30 (φ 50: 21~40)	5~15 (φ 50: 10~20)	16~30 (φ 50: 21~40)						
12 [0.472]	55.88 [1.971]	69.98 [2.468]	71.1 [2.508]	85.21 [3.006]	1.4 [0.0494]	1.28 [0.0451]	16.11 [0.568]	55 [1.94]	15 [0.53]	35 [1.23]
16 [0.630]	80.31 [2.833]	99.64 [3.515]	100.76 [3.554]	120.1 [4.236]	1.73 [0.0610]	1.62 [0.0571]	21.21 [0.748]	71 [2.50]		
20 [0.787]	96.88 [3.417]	124.84 [4.404]	125.96 [4.443]	153.93 [5.430]	2.37 [0.0836]	2.26 [0.0797]	51.89 [1.830]	101 [3.56]		
25 [0.984]	147.45 [5.201]	186 [6.561]	187.98 [6.631]	226.53 [7.990]	3.3 [0.116]	3.11 [0.110]	80.18 [2.828]	160 [5.64]		
32 [1.260]	223.01 [7.866]	306.96 [10.828]	309.93 [10.932]	393.89 [13.894]	4.31 [0.152]	4.11 [0.145]	103.14 [3.638]	186 [6.56]		
40 [1.575]	345.03 [12.170]	453.44 [15.994]	458.06 [16.157]	566.48 [19.982]	5.08 [0.179]	4.77 [0.168]	141.93 [5.006]	335 [11.82]		
50 [1.969]	561.93 [19.821]	691.19 [24.381]	697.85 [24.616]	827.1 [29.175]	7.48 [0.264]	7.03 [0.248]	216.54 [7.638]	447 [15.77]		

Notes 1: The above table is for the standard strokes.

2: Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a single acting push type cylinder with magnet, bore size of 25mm, 20mm for stroke 1, 20mm for stroke 2, and with 2 sensor switches (ZE135A)

$$226.53 + (3.3 \times 20) + (3.11 \times 20) + 80.18 + (15 \times 2) = 464.91 \text{ g [16.399oz.]}$$

Dual stroke

● Single acting pull type

g [oz.]

Bore size mm [in.]	Zero stroke mass ^{Note1}				Additional mass for each 1mm [0.0394in.] of stroke1	Additional mass for each 1mm [0.0394in.] of stroke2	Additional mass of cylinder with magnet	Mass of mounting bracket	Additional mass of sensor switch ^{Note2}	
	Stroke1							Flange bracket	ZE□□□A	ZE□□□B
	5~15 (φ 50: 10~20)		16~30 (φ 50: 21~40)							
	Stroke2									
	5~15 (φ 50: 10~20)	16~30 (φ 50: 21~40)	5~15 (φ 50: 10~20)	16~30 (φ 50: 21~40)						
12 [0.472]	54.88 [1.936]	66.76 [2.355]	67.88 [2.394]	79.77 [2.814]	1.4 [0.0494]	1.28 [0.0451]	17.67 [0.623]	55 [1.94]	15 [0.53]	35 [1.23]
16 [0.630]	78.77 [2.778]	94.15 [3.321]	95.27 [3.360]	110.66 [3.903]	1.73 [0.0610]	1.62 [0.0571]	23.31 [0.822]	71 [2.50]		
20 [0.787]	117.58 [4.147]	139.48 [4.920]	140.6 [4.959]	162.49 [5.732]	2.37 [0.0836]	2.26 [0.0797]	53.74 [1.896]	101 [3.56]		
25 [0.984]	175.72 [6.198]	205.63 [7.253]	207.61 [7.323]	237.52 [8.378]	3.3 [0.116]	3.11 [0.110]	78.89 [2.783]	160 [5.64]		
32 [1.260]	255.75 [9.021]	316.83 [11.176]	319.8 [11.280]	380.88 [13.435]	4.31 [0.152]	4.11 [0.145]	105.39 [3.717]	186 [6.56]		
40 [1.575]	395.6 [13.954]	480.5 [16.949]	485.12 [17.112]	570.02 [20.107]	5.08 [0.179]	4.77 [0.168]	138.9 [4.899]	335 [11.82]		
50 [1.969]	634.13 [22.368]	726.4 [25.623]	733.06 [25.857]	825.32 [29.112]	7.48 [0.264]	7.03 [0.248]	144.56 [5.099]	447 [15.77]		

Notes 1: The above table is for the standard strokes.

2: Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

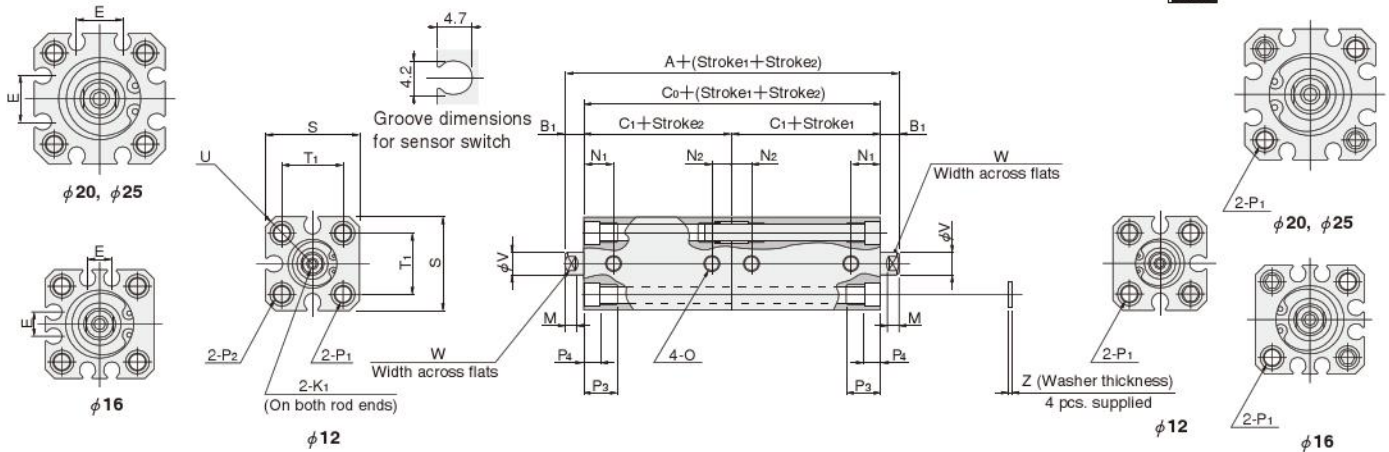
Calculation example: For the mass of a single acting pull type cylinder with magnet, bore size of 25mm, 20mm for stroke 1, 20mm for stroke 2, and with 2 sensor switches (ZE135A)

$$237.52 + (3.3 \times 20) + (3.11 \times 20) + 78.89 + (15 \times 2) = 474.61 \text{ g [16.741oz.]}$$

Dimensions of Dual Stroke Double Acting Type (mm)

● $\phi 12 \sim \phi 25$

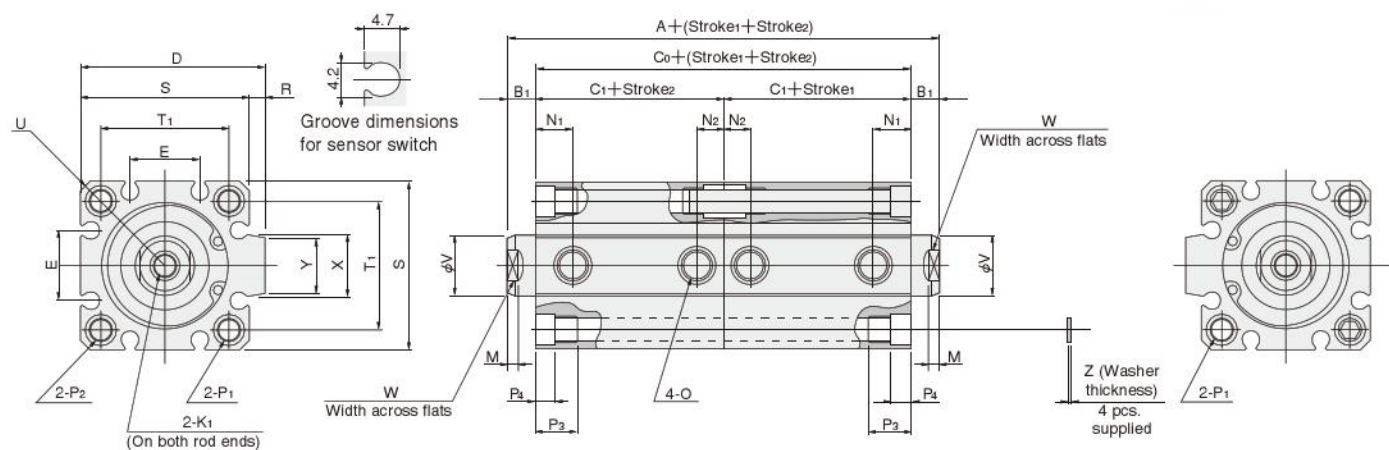
CDAW Bore size



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 100$

CDAW Bore size



Type Code Bore size [in.]	Standard cylinder (CDAW)				Cylinder with magnet (CDAWS)				Standard cylinder with bumper (CDAW-R)				Cylinder with magnet and bumper (CDAWS-R)				D	E	K1	M	N1	N2	O
	A	B1	C0	C1	A	B1	C0	C1	A	B1	C0	C1	A	B1	C0	C1							
12 [0.472]	44	5	34	17	54	5	44	22	54	5	44	22	64	5	54	27	—	—	M3X0.5 Depth5	3.5	8	5	M5X0.8
16 [0.630]	45	5.5	34	17	55	5.5	44	22	55	5.5	44	22	65	5.5	54	27	—	6.2	M4X0.7 Depth8	3.5	8	5	M5X0.8
20 [0.787]	50	5.5	39	19.5	70	5.5	59	29.5	60	5.5	49	24.5	80	5.5	69	34.5	—	12.2	M5X0.8 Depth10	4.5	9.5	5	M5X0.8
25 [0.984]	54	6	42	21	74	6	62	31	64	6	52	26	84	6	72	36	—	12.2	M6X1 Depth10	5	10.5	5	M5X0.8
32 [1.260]	60	7	46	23	80	7	66	33	70	7	56	28	80	7	66	33	48.5	18.2	M6X1.25 Depth12	6	9.5	7.5(6)	Rc1/8
40 [1.575]	66	7	52	26	86	7	72	36	66	7	52	26	86	7	72	36	56.5	18.2	M6X1.25 Depth12	6	10.5	7.5	Rc1/8
50 [1.969]	74	9	56	28	94	9	76	38	74	9	56	28	94	9	76	38	70	24.8	M10X1.5 Depth15	7	11	9.5	Rc1/4
63 [2.480]	82	9	64	32	102	9	84	42	82	9	64	32	102	9	84	42	83	26.8	M10X1.5 Depth15	7	12.5	11	Rc1/4
80 [3.150]	104	11	82	41	124	11	102	51	104	11	82	41	124	11	102	51	102	32.8	M14X2 Depth20	9	18	12	Rc3/8
100 [3.940]	126	12	102	51	146	12	122	61	126	12	102	51	146	12	122	61	122	32.8	M18X2.5 Depth20	9	22.5	16.5	Rc3/8

Code	P ₁		P ₂	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt ⚙
12 [0.472]	⌀ 4.3 (Thru hole)	C'bore ⌀ 6.5 (Both sides) and M5 X 0.8 (Both sides)	Counterbore ⌀ 6.5 and M5 X 0.8	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	⌀ 4.3 (Thru hole)	C'bore ⌀ 6.5 (Both sides) and M5 X 0.8 (Both sides)	Counterbore ⌀ 6.5 and M5 X 0.8	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	⌀ 4.3 (Thru hole)	C'bore ⌀ 6.5 (Both sides) and M5 X 0.8 (Both sides)	Counterbore ⌀ 6.5 and M5 X 0.8	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	⌀ 5.1 (Thru hole)	C'bore ⌀ 8 (Both sides) and M6 X 1 (Both sides)	Counterbore ⌀ 8 and M6 X 1	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	⌀ 5.1 (Thru hole)	C'bore ⌀ 8 (Both sides) and M6 X 1 (Both sides)	Counterbore ⌀ 8 and M6 X 1	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	⌀ 6.9 (Thru hole)	C'bore ⌀ 9.5 (Both sides) and M8 X 1.25 (Both sides)	Counterbore ⌀ 9.5 and M8 X 1.25	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	⌀ 6.9 (Thru hole)	C'bore ⌀ 11 (Both sides) and M8 X 1.25 (Both sides)	Counterbore ⌀ 11 and M8 X 1.25	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
63 [2.480]	⌀ 6.9 (Thru hole)	C'bore ⌀ 11 (Both sides) and M8 X 1.25 (Both sides)	Counterbore ⌀ 11 and M8 X 1.25	16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	M6
80 [3.150]	⌀ 10.5 (Thru hole)	C'bore ⌀ 14 (Both sides) and M12 X 1.75 (Both sides)	Counterbore ⌀ 14 and M12 X 1.75	22.5	10.5	8	94	74	R62	25	22	27.6	25	1.6	M8
100 [3.940]	⌀ 12.3 (Thru hole)	C'bore ⌀ 17.5 (Both sides) and M14 X 2 (Both sides)	Counterbore ⌀ 17.5 and M14 X 2	27	13	8	114	90	R75	32	27	27.6	25	2	M10

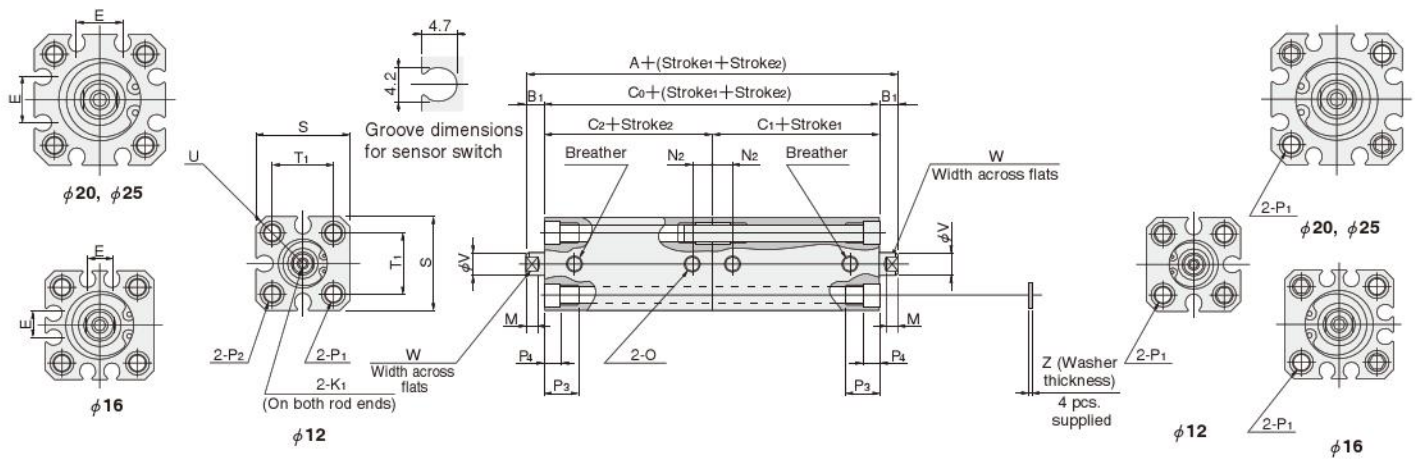
Note: Figure in parentheses [] is for the standard cylinder (CDAW) with 5mm stroke.

※ Some types of mounting screws are available (to be ordered separately). See p.209.

Dimensions of Dual Stroke Single Acting Push Type (mm)

● $\phi 12 \sim \phi 25$

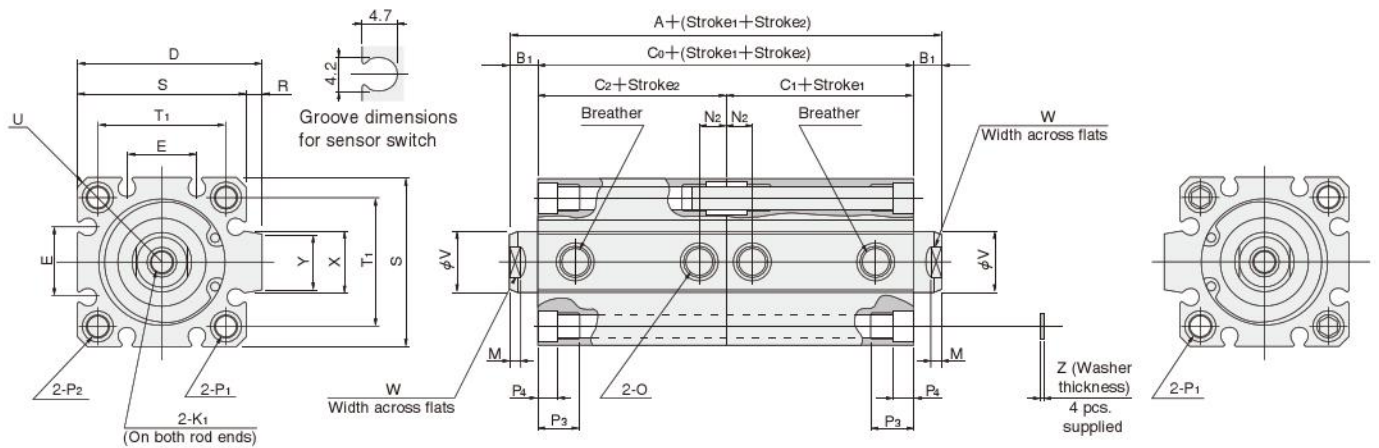
CAD CSAW Bore size



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 50$

CAD CSAW Bore size



Type Stroke1	Standard cylinder (CSAW)										Cylinder with magnet (CSAWS)									
	5~15 (φ 50: 10~20)					16~30 (φ 50: 21~40)					5~15 (φ 50: 10~20)					16~30 (φ 50: 21~40)				
Code	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂
12 [0.472]	D1	54	5	44	22	64	5	54	32	22	64	5	54	27	27	74	5	64	37	27
	D2	64		54	32	74		32		74	64		37		84	74		37		
16 [0.630]	D1	55	5.5	44	22	65	5.5	54	32	22	65	5.5	54	27	27	75	5.5	64	37	27
	D2	65		54	32	75		32		75	64		37		85	74		37		
20 [0.787]	D1	50	5.5	39	19.5	60	5.5	49	29.5	19.5	70	5.5	59	29.5	29.5	80	5.5	69	39.5	29.5
	D2	60		49	29.5	70		59		29.5	80		69		39.5	90		79		39.5
25 [0.984]	D1	54	6	42	21	64	6	52	31	21	74	6	62	31	31	84	6	72	41	31
	D2	64		52	31	74		62		31	84		72		41	94		82		41
32 [1.260]	D1	60	7	46	23	75	7	61	38	23	80	7	66	33	33	95	7	81	48	33
	D2	75		61	38	90		76		38	95		81		33	48		110		96
40 [1.575]	D1	66	7	52	26	81	7	67	41	26	86	7	72	36	36	101	7	87	51	36
	D2	81		67	41	96		82		41	101		87		36	51		116		102
50 [1.969]	D1	74	9	56	28	89	9	71	43	28	94	9	76	38	38	109	9	91	53	38
	D2	89		71	43	104		86		43	94		109		91	38		53		124

Bore mm [in.]	Code	D	E	K ₁	M	N ₂	O	P ₁
12 [0.472]	D1	—	—	M3×0.5 Depth6	3.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)
	D2	—	—					
16 [0.630]	D1	—	6.2	M4×0.7 Depth8	3.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)
	D2	—	—					
20 [0.787]	D1	—	12.2	M5×0.8 Depth10	4.5	5	M5×0.8	φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)
	D2	—	—					
25 [0.984]	D1	—	12.2	M6×1 Depth10	5	5	M5×0.8	φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)
	D2	—	—					
32 [1.260]	D1	48.5	18.2	M8×1.25 Depth12	6	7.5	Rc1/8	φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)
	D2	—	—					
40 [1.575]	D1	56.5	18.2	M8×1.25 Depth12	6	7.5	Rc1/8	φ 6.9 (Thru hole) Counterbore φ 9.5 (Both sides) and M8×1.25 (Both sides)
	D2	—	—					
50 [1.969]	D1	70	24.8	M10×1.5 Depth15	7	9.5	Rc1/4	φ 6.9 (Thru hole) Counterbore φ 11 (Both sides) and M8×1.25 (Both sides)
	D2	—	—					

Bore mm [in.]	Code	P ₂	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt※
12 [0.472]	D1	Counterbore φ 6.5 and M5×0.8	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
	D2													
16 [0.630]	D1	Counterbore φ 6.5 and M5×0.8	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
	D2													
20 [0.787]	D1	Counterbore φ 6.5 and M5×0.8	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
	D2													
25 [0.984]	D1	Counterbore φ 8 and M6×1	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
	D2													
32 [1.260]	D1	Counterbore φ 8 and M6×1	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
	D2													
40 [1.575]	D1	Counterbore φ 9.5 and M8×1.25	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
	D2													
50 [1.969]	D1	Counterbore φ 11 and M8×1.25	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
	D2													

Note: D1 is when stroke 2 is 5~15 (φ 50: 10~20)mm.

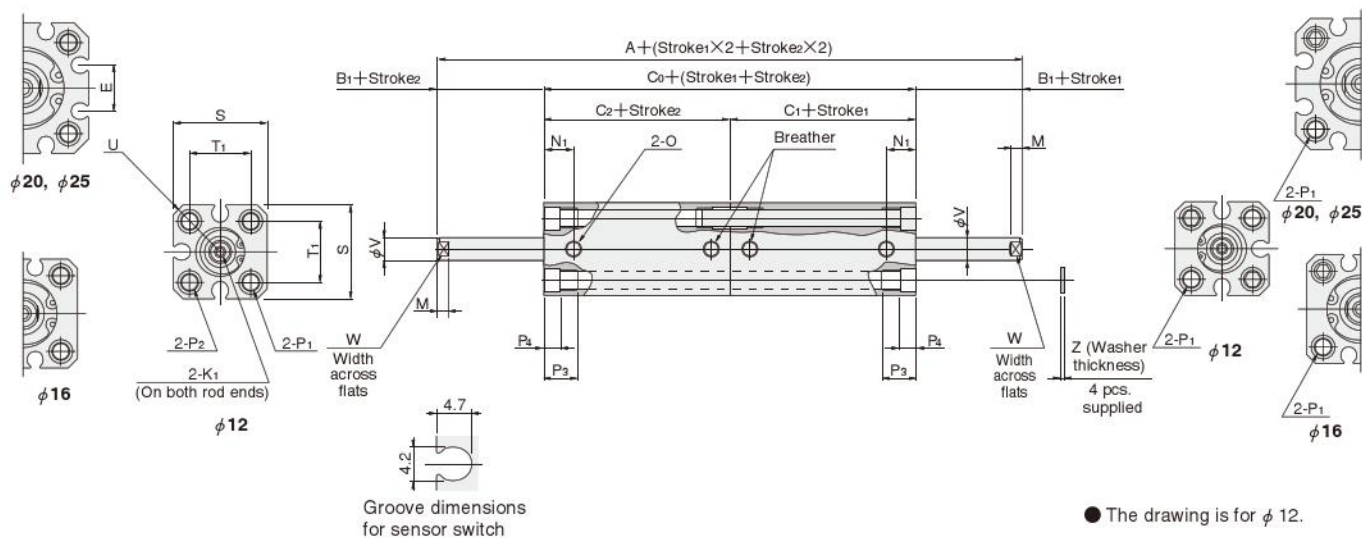
D2 is when stroke 2 is 16~30 (φ 50: 21~40)mm.

※ Some types of mounting screws are available (to be ordered separately). See p.209.

Dimensions of Dual Stroke Single Acting Pull Type (mm)

● $\phi 12 \sim \phi 25$

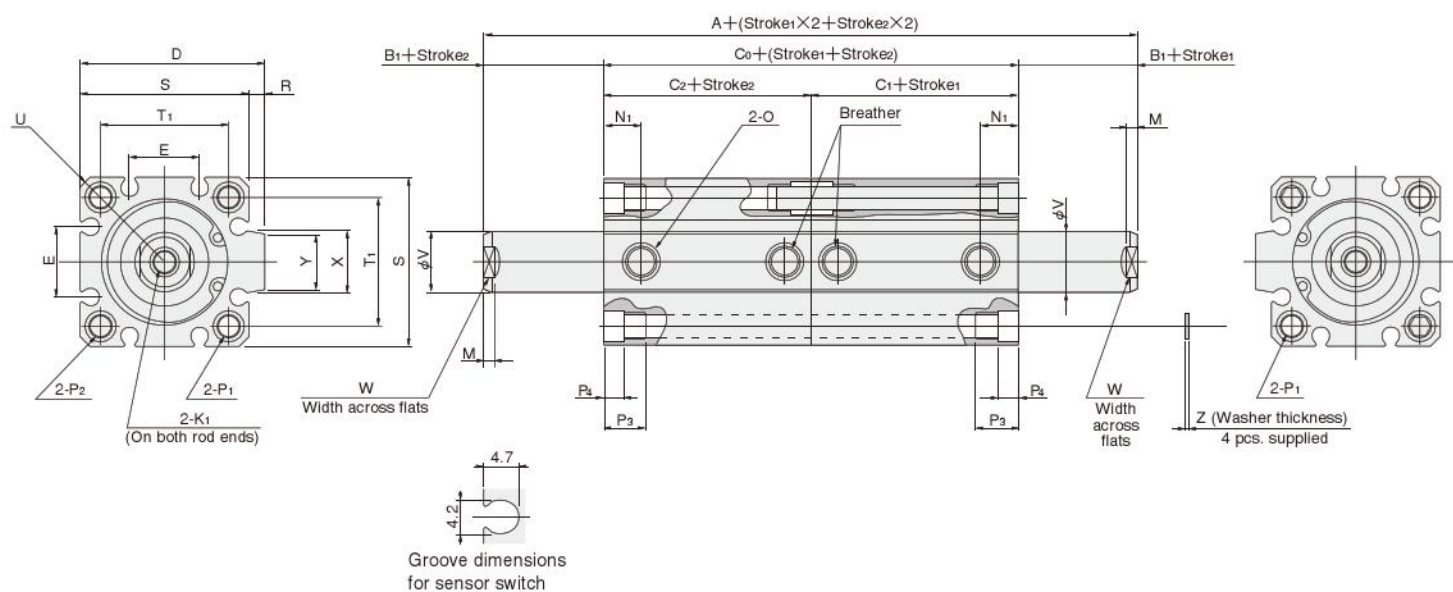
CAD Bore size



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 50$

CAD Bore size



Type Stroke 1	Standard cylinder (CTAW)										Cylinder with magnet (CTAWS)									
	5~15 (φ 50: 10~20)					16~30 (φ 50: 21~40)					5~15 (φ 50: 10~20)					16~30 (φ 50: 21~40)				
Code	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂	A	B ₁	C ₀	C ₁	C ₂
12 [0.472]	D1	54	5	44	22	64	5	54	32	22	64	5	54	27	27	74	5	64	37	27
	D2	64		54	22	32		74	64	32	74		64	37	84	74		37		
16 [0.630]	D1	55	5.5	44	22	65	5.5	54	32	22	65	5.5	54	27	27	75	5.5	64	37	27
	D2	65		54	22	32		75	64	32	75		64	37	85	74		37		
20 [0.787]	D1	60	5.5	49	24.5	70	5.5	59	34.5	24.5	80	5.5	69	34.5	34.5	90	5.5	79	44.5	34.5
	D2	70		59	24.5	34.5		80	69	34.5	90		79	44.5	100	89		44.5		
25 [0.984]	D1	64	6	52	26	74	6	62	36	26	84	6	72	36	36	94	6	82	46	36
	D2	74		62	26	36		84	72	36	94		82	46	104	92		46		
32 [1.260]	D1	70	7	56	28	85	7	71	43	28	90	7	76	38	38	105	7	91	53	38
	D2	85		71	28	43		100	86	43	43		105	91	53	120		106	53	
40 [1.575]	D1	76	7	62	31	91	7	77	46	31	96	7	82	41	41	111	7	97	56	41
	D2	91		77	31	46		106	92	46	111		97	56	126	112		56		
50 [1.969]	D1	74	9	56	28	89	9	71	43	28	94	9	76	38	38	109	9	91	53	38
	D2	89		71	28	43		104	86	43	43		109	91	53	124		106	53	

Code	D	E	K ₁	M	N ₁	O	P ₁
12 [0.472]	D1	—	—	M3×0.5 Depth6	3.5	8	M5×0.8
	D2	—	—				φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)
16 [0.630]	D1	—	6.2	M4×0.7 Depth8	3.5	8	M5×0.8
	D2	—	6.2				φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)
20 [0.787]	D1	—	12.2	M5×0.8 Depth10	4.5	9.5	M5×0.8
	D2	—	12.2				φ 4.3 (Thru hole) Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)
25 [0.984]	D1	—	12.2	M6×1 Depth10	5	10.5	M5×0.8
	D2	—	12.2				φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)
32 [1.260]	D1	48.5	18.2	M8×1.25 Depth12	6	9.5	Rc1/8
	D2	48.5	18.2				φ 5.1 (Thru hole) Counterbore φ 8 (Both sides) and M6×1 (Both sides)
40 [1.575]	D1	56.5	18.2	M8×1.25 Depth12	6	10.5	Rc1/8
	D2	56.5	18.2				φ 6.9 (Thru hole) Counterbore φ 9.5 (Both sides) and M8×1.25 (Both sides)
50 [1.969]	D1	70	24.8	M10×1.5 Depth15	7	11	Rc1/4
	D2	70	24.8				φ 6.9 (Thru hole) Counterbore φ 11 (Both sides) and M8×1.25 (Both sides)

Bore mm [in.]	Code	P ₂	P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt
12 [0.472]	D1	Counterbore ϕ 6.5 and M5 $\times$ 0.8	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
	D2													
16 [0.630]	D1	Counterbore ϕ 6.5 and M5 $\times$ 0.8	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
	D2													
20 [0.787]	D1	Counterbore ϕ 6.5 and M5 $\times$ 0.8	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
	D2													
25 [0.984]	D1	Counterbore ϕ 8 and M6 $\times$ 1	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
	D2													
32 [1.260]	D1	Counterbore ϕ 8 and M6 $\times$ 1	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
	D2													
40 [1.575]	D1	Counterbore ϕ 9.5 and M8 $\times$ 1.25	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
	D2													
50 [1.969]	D1	Counterbore ϕ 11 and M8 $\times$ 1.25	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
	D2													

Note: D1 is when stroke 2 is 5~15 (φ 50: 10~20)mm.

D2 is when stroke 2 is 16~30 (φ 50: 21~40)mm.

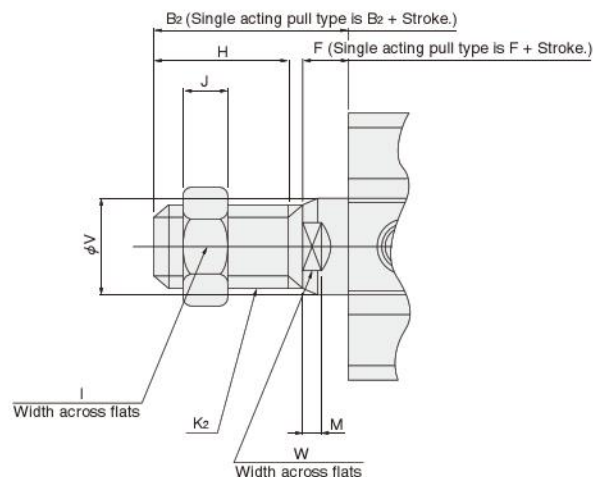
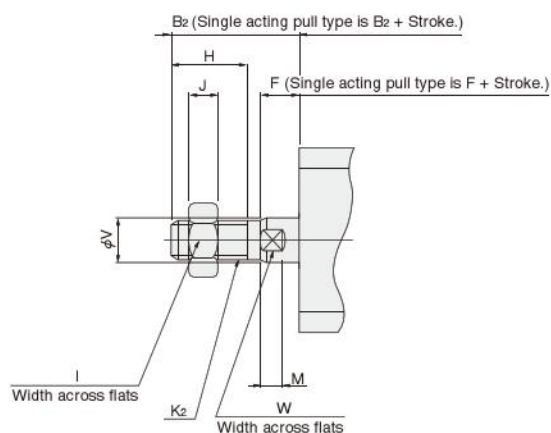
※ Some types of mounting screws are available (to be ordered separately). See p.209.

● Double acting type, Single acting push type, Single acting pull type

● $\phi 12 \sim \phi 25$

● $\phi 32 \sim \phi 100$

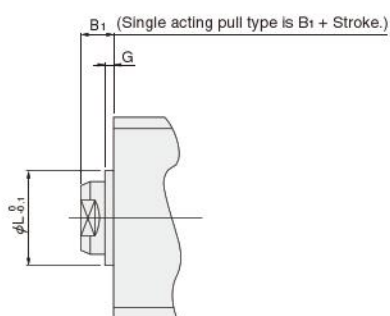
(Single acting type available up to $\phi 50$)



Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	M	V	W
12 [0.472]		17	5	10	8	4	M5×0.8	3.5	6	5
16 [0.630]		20.5	5.5	13	10	5	M6×1	3.5	8	6
20 [0.787]		22.5	5.5	15	12	5	M8×1	4.5	10	8
25 [0.984]		24	6	15	14	6	M10×1.25	5	12	10
32 [1.260]		35	7	25	19	8	M14×1.5	6	16	14
40 [1.575]		35	7	25	19	8	M14×1.5	6	16	14
50 [1.969]		37	9	25	27	11	M18×1.5	7	20	17
63 [2.480]		37	9	25	27	11	M18×1.5	7	20	17
80 [3.150]		44	11	30	32	13	M22×1.5	9	25	22
100 [3.940]		50	12	35	36	14	M26×1.5	9	32	27

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



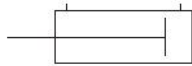
● Not available for bore size $\phi 12$.

Bore mm [in.]	Code	B ₁	G	L
16 [0.630]		5.5	1.5	9.4
20 [0.787]		5.5	1.5	12
25 [0.984]		6	2	15
32 [1.260]		7	2	21
40 [1.575]		7	2	29
50 [1.969]		9	2	38
63 [2.480]		9	2	40
80 [3.150]		11	2	45
100 [3.940]		12	2	55

JIG CYLINDERS C SERIES LATERAL LOAD RESISTANT CYLINDERS

Double Acting Type

Symbol



Specifications

Item	Bore size mm [in.]	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]	80 [3.150]	100 [3.940]
Operation type		Double acting type									
Media		Air									
Operating pressure range	MPa [psi.]	0.15 ~ 1.0 [22 ~ 145]						0.1 ~ 1.0 [15 ~ 145]			
Proof pressure	MPa [psi.]	1.5 [218]									
Operating temperature range	°C [°F]	0 ~ 60 [32 ~ 140]									
Operating speed range	mm/s [in./sec.]	30 ~ 500 [1.2 ~ 19.7]						30 ~ 300 [1.2 ~ 11.8]			
Cushion		Rubber bumper (Standard equipment)									
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)									
Port size		M5×0.8				Rc1/8		Rc1/4		Rc3/8	

Remark: For Handling Instructions and Precautions, see p.205.

Refer to p.206 of the graph of "Lateral Load" when the Lateral Load Resistant Cylinder is used.

Bore Size and Stroke

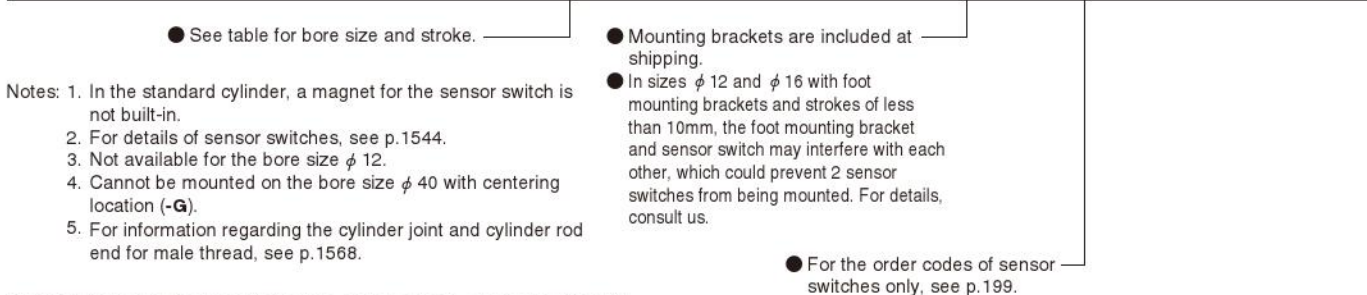
For non-standard strokes, see p.206.

Operation type	Bore size	Standard strokes	
		Standard cylinder	Cylinder with magnet
Double acting type	12	5, 10, 15, 20, 25, 30	5, 10, 15, 20, 25, 30
	16		
	20		
	25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	32		
	40		
	50	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
	63		
	80		
	100		

Remarks: 1. Stroke tolerance $^{+1}_{0} \left[\begin{smallmatrix} +0.039 \\ 0 \end{smallmatrix} \text{in.} \right]$

2. In most cases, body cutting is used for the non-standard strokes.

However, body cutting is not used for strokes of less than 5mm for $\phi 12 \sim \phi 40$, and strokes of less than 10mm for $\phi 50 \sim \phi 100$. The collar packed is used for these cases.

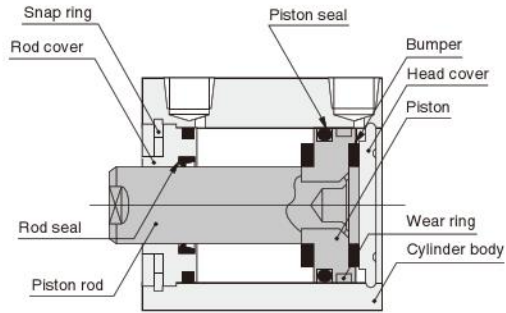


Foot mounting bracket (p.197)	Flange mounting bracket (p.198)	Clevis mounting bracket (with pin) (p.198)	Mounting screws (p.209)

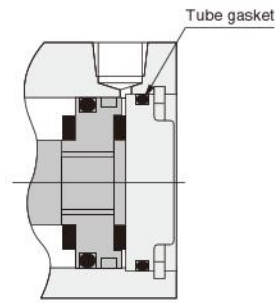
Inner Construction and Major Parts

● Double acting type (CBDA)

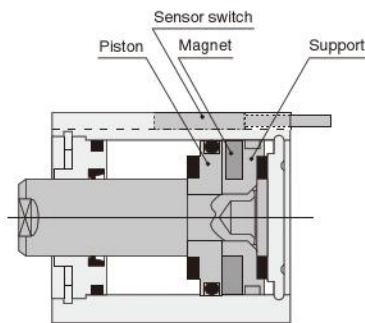
● $\phi 12 \sim \phi 40$



● $\phi 50 \sim \phi 100$



● Cylinder with magnet



Major Parts and Materials

Parts	Bore mm	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Cylinder body		Aluminum alloy (anodized)									
Piston		Aluminum alloy (special rust prevention treatment)									
Piston rod		Stainless steel (chrome plated)				Steel (chrome plated)					
Seal		Synthetic rubber (NBR)									
Rod cover		Aluminum alloy (special wear-resistant treatment)									
Head cover		Aluminum alloy (anodized)									
Snap ring		Steel (phosphate coating)									
Bumper		Synthetic rubber (NBR; urethane for φ 12 only)									
Magnet		Plastic magnet									
Support		Aluminum alloy (special rust prevention treatment)									
Wear ring		Plastic									

Seals

Parts Bore mm	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
$\phi 12$	MYR-6	COP-12	Y090260	None
$\phi 16$	MYR-8	COP-16	Y090207	None
$\phi 20$	MYR-10	COP-20	Y090216	None
$\phi 25$	MYR-12	COP-25	Y090210	None
$\phi 32$	MYR-16	COP-32	L090084	None
$\phi 40$	MYR-16	COP-40	L090151	None
$\phi 50$	MYR-20	COP-50	L090174	L090106
$\phi 63$	MYR-20	COP-63	L090180	L090107
$\phi 80$	PNY-25	COP-80	L090171	L090108
$\phi 100$	PNY-32	COP-100	L090172	L090109

Mass

Bore size mm [in.]	Zero stroke mass ^{Note 1}	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with magnet	Mass of mounting bracket			Additional mass of sensor switch ^{Note 2}	
				Foot bracket	Flange bracket	Clevis bracket	ZE□□□A	ZE□□□B
12 [0.472]	26.17 [0.923]	1.28 [0.0451]	8 [0.28]	50 [1.76]	55 [1.94]	30 [1.06]	15 [0.53]	35 [1.23]
16 [0.630]	36.85 [1.300]	1.62 [0.0571]	11 [0.39]	62 [2.19]	71 [2.50]	40 [1.41]		
20 [0.787]	57.42 [2.025]	2.26 [0.0797]	27 [0.95]	84 [2.96]	101 [3.56]	75 [2.65]		
25 [0.984]	85.94 [3.031]	3.11 [0.110]	39 [1.38]	104 [3.67]	160 [5.64]	100 [3.53]		
32 [1.260]	126.86 [4.475]	4.11 [0.145]	28 [0.99]	126 [4.44]	186 [6.56]	165 [5.82]		
40 [1.575]	195.3 [6.889]	4.77 [0.168]	37 [1.31]	160 [5.64]	335 [11.82]	200 [7.05]		
50 [1.969]	314.69 [11.100]	7.03 [0.248]	57 [2.01]	220 [7.76]	447 [15.77]	315 [11.11]		
63 [2.480]	501.06 [17.674]	8.69 [0.307]	79 [2.79]	300 [10.58]	591 [20.85]	495 [17.46]		
80 [3.150]	951.44 [33.560]	13.06 [0.461]	244 [8.61]	644 [22.72]	1414 [49.88]	1110 [39.15]		
100 [3.940]	1729.88 [61.019]	18.61 [0.656]	344 [12.13]	1172 [41.34]	2606 [91.92]	1490 [52.56]		

Notes: 1. The above table is for the standard strokes.

2. Sensor switch codes A and B show the lead wire lengths.

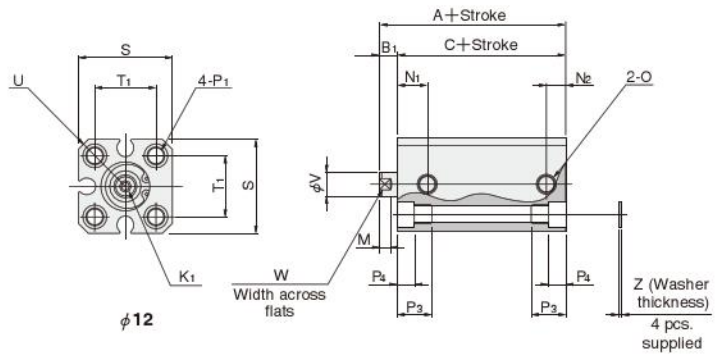
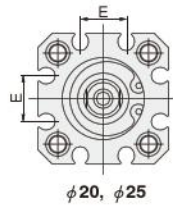
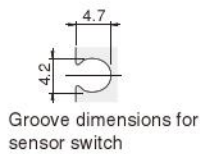
A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a cylinder with magnet, bore size of 25mm, stroke of 30mm, and with 2 sensor switches (ZE135A)
 $85.94 + (3.11 \times 30) + 39 + (15 \times 2) = 248.24\text{g}$ [8.756oz.]

Dimensions of Lateral Load Resistant Double Acting Type (mm)

● $\phi 12 \sim \phi 25$

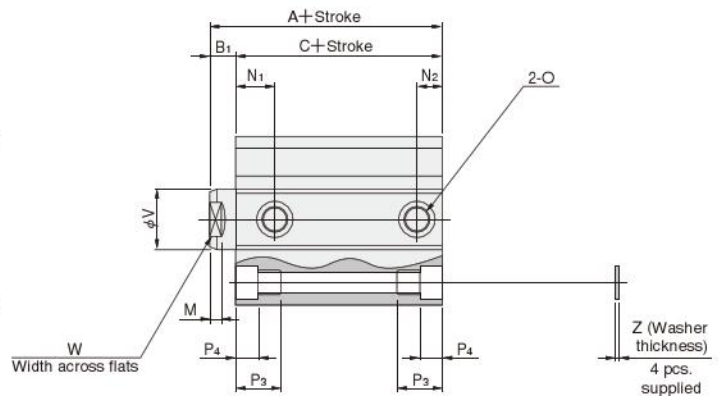
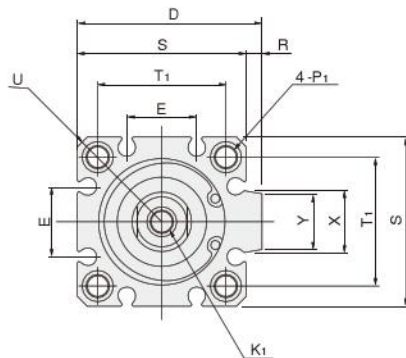
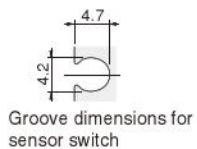
CAD CBDA Bore size



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 100$

CAD CBDA Bore size



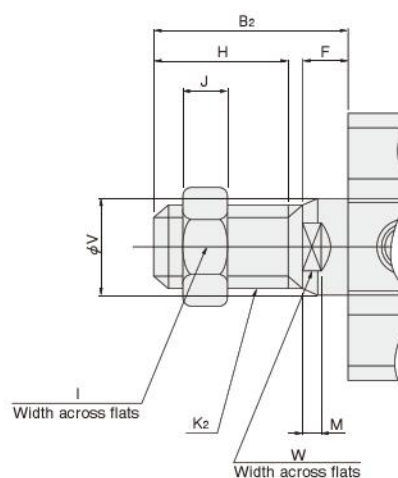
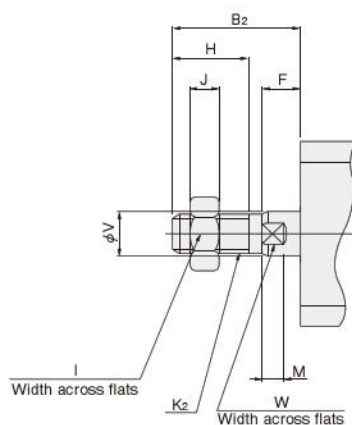
Type Code	Standard cylinder (CBDA)			Cylinder with magnet (CBDAS)			D	E	K ₁	M	N ₁	N ₂	O
	A	B ₁	C	A	B ₁	C							
12 [0.472]	27	5	22	32	5	27	—	—	M3×0.5 Depth6	3.5	8	5	M5×0.8
16 [0.630]	27.5	5.5	22	32.5	5.5	27	—	6.2	M4×0.7 Depth8	3.5	8	5	M5×0.8
20 [0.787]	30	5.5	24.5	40	5.5	34.5	—	12.2	M5×0.8 Depth10	4.5	9.5	5	M5×0.8
25 [0.984]	32	6	26	42	6	36	—	12.2	M6×1 Depth10	5	10.5	5	M5×0.8
32 [1.260]	35	7	28	40	7	33	48.5	18.2	M8×1.25 Depth12	6	9.5	7.5	Rc1/8
40 [1.575]	38	7	31	43	7	36	56.5	18.2	M8×1.25 Depth12	6	10.5	7.5	Rc1/8
50 [1.969]	42	9	33	47	9	38	70	24.8	M10×1.5 Depth15	7	11	9.5	Rc1/4
63 [2.480]	46	9	37	51	9	42	83	26.8	M10×1.5 Depth15	7	12.5	11	Rc1/4
80 [3.150]	57	11	46	67	11	56	102	32.8	M14×2 Depth20	9	18	12	Rc3/8
100 [3.940]	68	12	56	78	12	66	122	32.8	M18×2.5 Depth20	9	22.5	16.5	Rc3/8

Code	P ₁		P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt※
12 [0.472]	$\phi 4.3$ (Thru hole)	C'bore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	$\phi 4.3$ (Thru hole)	C'bore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	$\phi 4.3$ (Thru hole)	C'bore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole)	C'bore $\phi 8$ (Both sides) and M6×1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole)	C'bore $\phi 8$ (Both sides) and M6×1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole)	C'bore $\phi 9.5$ (Both sides) and M8×1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole)	C'bore $\phi 11$ (Both sides) and M8×1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
63 [2.480]	$\phi 6.9$ (Thru hole)	C'bore $\phi 11$ (Both sides) and M8×1.25 (Both sides)	16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	M6
80 [3.150]	$\phi 10.5$ (Thru hole)	C'bore $\phi 14$ (Both sides) and M12×1.75 (Both sides)	22.5	10.5	8	94	74	R62	25	22	27.6	25	1.6	M8
100 [3.940]	$\phi 12.3$ (Thru hole)	C'bore $\phi 17.5$ (Both sides) and M14×2 (Both sides)	27	13	8	114	90	R75	32	27	27.6	25	2	M10

※ Some types of mounting screws are available (to be ordered separately). See p.209.

● $\phi 12 \sim \phi 25$

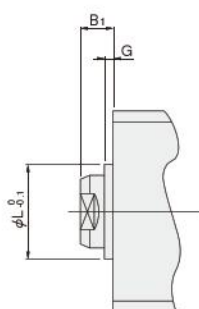
● $\phi 32 \sim \phi 100$



Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	M	V	W
12 [0.472]		17	5	10	8	4	M5×0.8	3.5	6	5
16 [0.630]		20.5	5.5	13	10	5	M6×1	3.5	8	6
20 [0.787]		22.5	5.5	15	12	5	M8×1	4.5	10	8
25 [0.984]		24	6	15	14	6	M10×1.25	5	12	10
32 [1.260]		35	7	25	19	8	M14×1.5	6	16	14
40 [1.575]		35	7	25	19	8	M14×1.5	6	16	14
50 [1.969]		37	9	25	27	11	M18×1.5	7	20	17
63 [2.480]		37	9	25	27	11	M18×1.5	7	20	17
80 [3.150]		44	11	30	32	13	M22×1.5	9	25	22
100 [3.940]		50	12	35	36	14	M26×1.5	9	32	27

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



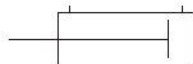
● Not available for bore size $\phi 12$.

Bore mm [in.]	Code	B ₁	G	L
16 [0.630]		5.5	1.5	9.4
20 [0.787]		5.5	1.5	12
25 [0.984]		6	2	15
32 [1.260]		7	2	21
40 [1.575]		7	2	29
50 [1.969]		9	2	38
63 [2.480]		9	2	40
80 [3.150]		11	2	45
100 [3.940]		12	2	55

JIG CYLINDERS C SERIES LONG STROKE CYLINDERS

Double Acting Type

Symbol



Specifications

Item	Bore size mm [in.]	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]	80 [3.150]	100 [3.940]
Operation type		Double acting type									
Media		Air									
Operating pressure range	MPa [psi.]	0.15～1.0 [22～145]						0.1～1.0 [15～145]			
Proof pressure	MPa [psi.]	1.5 [218]									
Operating temperature range	℃ [°F]	0～60 [32～140]									
Operating speed range	mm/s [in./sec.]	30～500 [1.2～19.7]						30～300 [1.2～11.8]			
Cushion		Rubber bumper (Standard equipment)									
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)									
Port size		M5×0.8				Rc1/8		Rc1/4		Rc3/8	

Remark: For Handling Instructions and Precautions, see p.205.

Bore Size and Stroke

For non-standard strokes, see p.206.

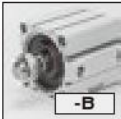
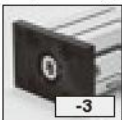
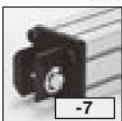
Operation type	Bore size	Standard strokes	
		Standard cylinder	Cylinder with magnet
Double acting type	12	35, 50, 75, 100, 125	35, 50, 75, 100, 125
	16		
	20		
	25		
	32	125, 150, 175, 200, 225, 250, 275, 300	125, 150, 175, 200, 225, 250, 275, 300
	40		
	50		
	63		
	80		
	100		

Remarks: 1. Stroke tolerance $^{+1}_{0} \left[\begin{smallmatrix} +0.039 \\ 0 \end{smallmatrix} \text{in.} \right]$

2. In most cases, body cutting is used for the non-standard strokes.

Body cutting is also used for strokes of 31 ~ 34mm for ϕ 12 and ϕ 16, strokes of 51 ~ 74mm for ϕ 20 and ϕ 25, strokes of 101 ~ 124mm for ϕ 32 and ϕ 100.

Order Codes for Long Stroke Cylinders

Rod end specification		Mounting type		Sensor switch type ^{Note2} (For cylinder with magnet)		Lead wire length		Number of sensor switches (For cylinder with magnet) Blank: No sensor switch	
Female thread	 Blank	Basic type	 Blank	Blank: No sensor switch		A : 1000mm [39in.] B : 3000mm [118in.]			
Male thread	 -B	Foot mounting type	 -1	-ZE135 : With ZE135 ● 2-lead wire Solid state type ● With indicator lamp ● DC10~28V ● Horizontal lead wire	-ZE155 : With ZE155 ● 3-lead wire Solid state type ● With indicator lamp ● DC4.5~28V ● Horizontal lead wire				
		Flange mounting type ^{Note 4}	 -3	-ZE235 : With ZE235 ● 2-lead wire Solid state type ● With indicator lamp ● DC10~28V ● Vertical lead wire	-ZE255 : With ZE255 ● 3-lead wire Solid state type ● With indicator lamp ● DC4.5~28V ● Vertical lead wire				
		Clevis mounting type (with pin)	 -7	-ZE101 : With ZE101 ● 2-lead wire Reed switch type ● Without indicator lamp ● DC5~28V AC85~115V ● Horizontal lead wire	-ZE102 : With ZE102 ● 2-lead wire Reed switch type ● With indicator lamp ● DC10~28V AC85~115V ● Horizontal lead wire				
				-ZE201 : With ZE201 ● 2-lead wire Reed switch type ● Without indicator lamp ● DC5~28V AC85~115V ● Vertical lead wire	-ZE202 : With ZE202 ● 2-lead wire Reed switch type ● With indicator lamp ● DC10~28V AC85~115V ● Vertical lead wire				
Operation type		Cylinder specification		Centering location ^{Note3}					
DA : Double acting type		Blank : Standard cylinder ^{Note1} (Non-ion specification) S : Cylinder with magnet (Non-ion specification)		Blank : No centering location -G : With centering location					
Long stroke cylinder Basic type		Bore size X Stroke							
CC	DA	S	×	-B ^{Note5}	-G	-1 -3 -7	-ZE135 -ZE155 -ZE235 -ZE255 -ZE101 -ZE102 -ZE201 -ZE202	A B	1 2 : n

● See table for bore size and stroke. ● Mounting brackets are included at shipping. ● For the order codes of sensor switches only, see p.199.

Notes: 1. In the standard cylinder, a magnet for the sensor switch is not built-in.
 2. For details of sensor switches, see p.1544.
 3. Not available for the bore size ϕ 12.
 4. Cannot be mounted on the bore size ϕ 40 with centering locator (-G).
 5. For information regarding the cylinder joint and cylinder rod end for male thread, see p.1568.

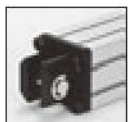
Additional Parts (To be ordered separately)



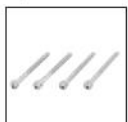
Foot mounting bracket
(p.197)



Flange mounting bracket
(p.198)



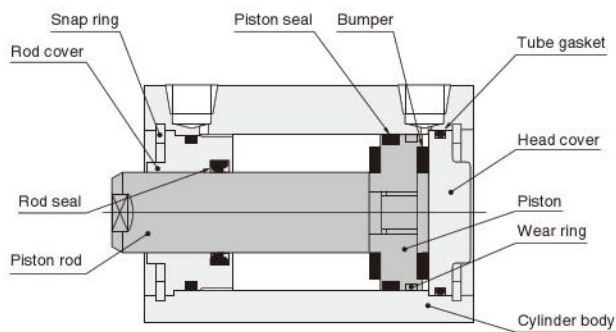
Clevis mounting bracket
(with pin)
(p.198)



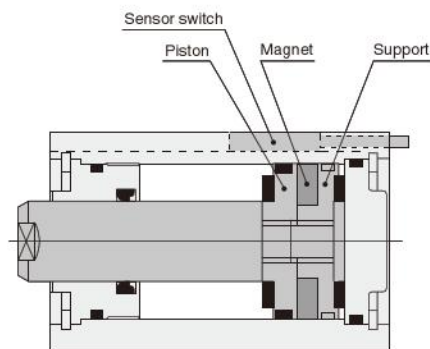
Mounting screws
(p.209)

Inner Construction and Major Parts

● Double acting type (CCDA)



● Cylinder with magnet



Major Parts and Materials

Parts	Bore mm	φ 12	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63	φ 80	φ 100
Cylinder body		Aluminum alloy (anodized)									
Piston		Aluminum alloy (special rust prevention treatment)									
Piston rod		Stainless steel (chrome plated)					Steel (chrome plated)				
Seal		Synthetic rubber (NBR)									
Rod cover		Aluminum alloy (special wear-resistant treatment)									
Head cover		Aluminum alloy (anodized)									
Snap ring		Steel (phosphate coating)									
Bumper		Synthetic rubber (NBR; urethane for φ 12 only)									
Magnet		Plastic magnet									
Support		Aluminum alloy (special rust prevention treatment)									
Wear ring		Plastic									

Seals

Parts	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
φ 12	MYR-6	COP-12	Y090260	Y090260
φ 16	MYR-8	COP-16	Y090207	Y090207
φ 20	MYR-10	COP-20	Y090216	Y090216
φ 25	MYR-12	COP-25	Y090210	Y090210
φ 32	MYR-16	COP-32	L090084	L090084
φ 40	MYR-16	COP-40	L090151	L090151
φ 50	MYR-20	COP-50	L090174	L090106
φ 63	MYR-20	COP-63	L090180	L090107
φ 80	PNY-25	COP-80	L090171	L090108
φ 100	PNY-32	COP-100	L090172	L090109

Mass

Bore size mm [in.]	Zero stroke mass ^{Note 1}	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with magnet	Mass of mounting bracket			Additional mass of sensor switch ^{Note 2}	
				Foot bracket	Flange bracket	Clevis bracket	ZE□□□A	ZE□□□B
12 [0.472]	39.15 [1.381]	1.28 [0.0451]	7 [0.25]	50 [1.76]	55 [1.94]	30 [1.06]	15 [0.53]	35 [1.23]
16 [0.630]	54.75 [1.931]	1.62 [0.0571]	11 [0.39]	62 [2.19]	71 [2.50]	40 [1.41]		
20 [0.787]	84 [2.963]	2.26 [0.0797]	26 [0.92]	84 [2.96]	101 [3.56]	75 [2.65]		
25 [0.984]	121 [4.268]	3.11 [0.110]	38 [1.34]	104 [3.67]	160 [5.64]	100 [3.53]		
32 [1.260]	184.15 [6.496]	4.11 [0.145]	28 [0.99]	126 [4.44]	186 [6.56]	165 [5.82]		
40 [1.575]	281.75 [9.938]	4.77 [0.168]	34 [1.20]	160 [5.64]	335 [11.82]	200 [7.05]		
50 [1.969]	370.23 [13.059]	7.03 [0.248]	56 [1.98]	220 [7.76]	447 [15.77]	315 [11.11]		
63 [2.480]	578.65 [20.411]	8.69 [0.307]	79 [2.79]	300 [10.58]	591 [20.85]	495 [17.46]		
80 [3.150]	1057.6 [37.305]	13.06 [0.461]	250 [8.82]	644 [22.72]	1414 [49.88]	1110 [39.15]		
100 [3.940]	1913.7 [67.503]	18.61 [0.656]	350 [12.35]	1172 [41.34]	2606 [91.92]	1490 [52.56]		

Notes: 1. The above table is for the standard strokes.

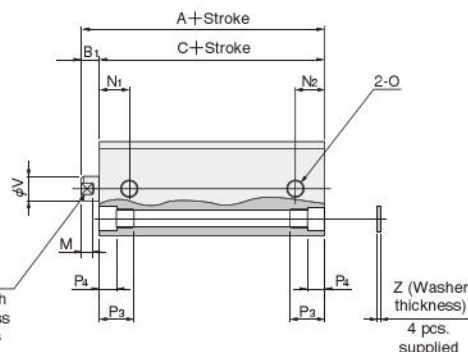
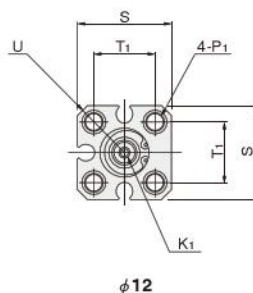
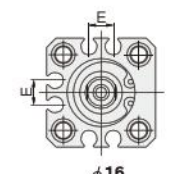
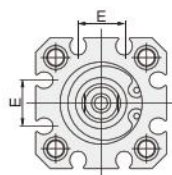
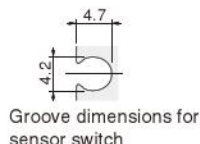
2. Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a cylinder with magnet, bore size of 25mm, stroke of 150mm, and with 2 sensor switches (ZE135A),
 $121 + (3.11 \times 150) + 38 + (15 \times 2) = 655.5\text{g}$ [23.122oz.]

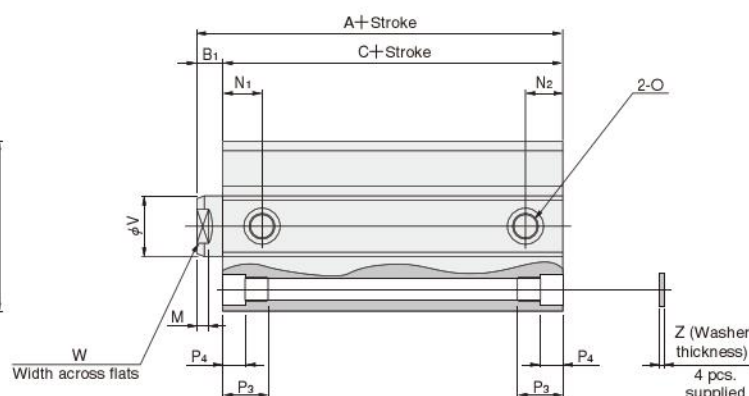
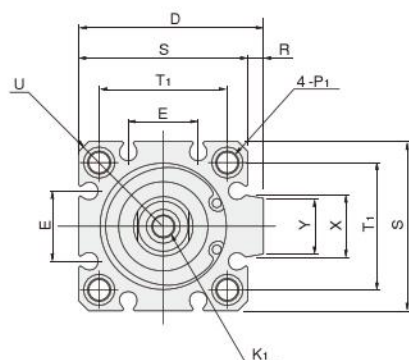
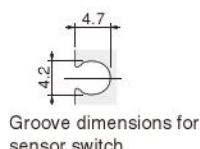
Dimensions of Long Stroke Cylinder Double Acting Type (mm)

● $\phi 12 \sim \phi 25$



● The drawing is for $\phi 12$.

● $\phi 32 \sim \phi 100$



Type Code	Standard cylinder (CCDA)			Cylinder with magnet (CCDAS)			D	E	K ₁	M	N ₁	N ₂	O
	A	B ₁	C	A	B ₁	C							
12 [0.472]	38	5	33	43	5	38	—	—	M3×0.5 Depth6	3.5	8	8	M5×0.8
16 [0.630]	38.5	5.5	33	43.5	5.5	38	—	6.2	M4×0.7 Depth8	3.5	8	8	M5×0.8
20 [0.787]	41.5	5.5	36	51.5	5.5	46	—	12.2	M5×0.8 Depth10	4.5	9.5	9.5	M5×0.8
25 [0.984]	42.5	6	36.5	52.5	6	46.5	—	12.2	M6×1 Depth10	5	10.5	10.5	M5×0.8
32 [1.260]	47	7	40	52	7	45	48.5	18.2	M8×1.25 Depth12	6	9.5	9.5	Rc1/8
40 [1.575]	50	7	43	55	7	48	56.5	18.2	M8×1.25 Depth12	6	10.5	10.5	Rc1/8
50 [1.969]	47	9	38	52	9	43	70	24.8	M10×1.5 Depth15	7	11	9.5	Rc1/4
63 [2.480]	51	9	42	56	9	47	83	26.8	M10×1.5 Depth15	7	12.5	11	Rc1/4
80 [3.150]	62	11	51	72	11	61	102	32.8	M14×2 Depth20	9	18	12	Rc3/8
100 [3.940]	73	12	61	83	12	71	122	32.8	M18×2.5 Depth20	9	22.5	16.5	Rc3/8

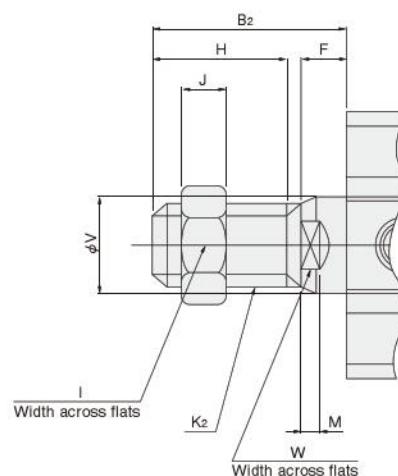
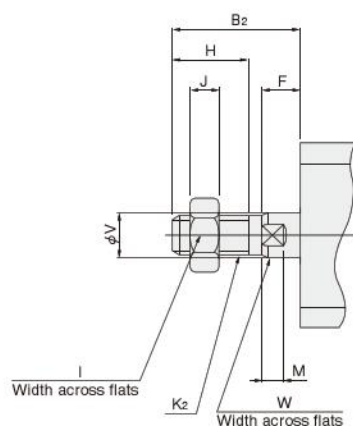
Code	P ₁		P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	Appropriate through bolt
12 [0.472]	$\phi 4.3$ (Thru hole)	Counterbore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	25	16.3	R16	6	5	—	—	1	M3
16 [0.630]	$\phi 4.3$ (Thru hole)	Counterbore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	29	19.8	R19	8	6	—	—	1	M3
20 [0.787]	$\phi 4.3$ (Thru hole)	Counterbore $\phi 6.5$ (Both sides) and M5×0.8 (Both sides)	9.5	4.5	—	34	24	R22	10	8	—	—	1	M3
25 [0.984]	$\phi 5.1$ (Thru hole)	Counterbore $\phi 8$ (Both sides) and M6×1 (Both sides)	11.5	5.5	—	40	28	R25	12	10	—	—	1	M4
32 [1.260]	$\phi 5.1$ (Thru hole)	Counterbore $\phi 8$ (Both sides) and M6×1 (Both sides)	11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	M4
40 [1.575]	$\phi 6.9$ (Thru hole)	Counterbore $\phi 9.5$ (Both sides) and M8×1.25 (Both sides)	15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	M5
50 [1.969]	$\phi 6.9$ (Thru hole)	Counterbore $\phi 11$ (Both sides) and M8×1.25 (Both sides)	16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	M6
63 [2.480]	$\phi 6.9$ (Thru hole)	Counterbore $\phi 11$ (Both sides) and M8×1.25 (Both sides)	16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	M6
80 [3.150]	$\phi 10.5$ (Thru hole)	Counterbore $\phi 14$ (Both sides) and M12×1.75 (Both sides)	22.5	10.5	8	94	74	R62	25	22	27.6	25	1.6	M8
100 [3.940]	$\phi 12.3$ (Thru hole)	Counterbore $\phi 17.5$ (Both sides) and M14×2 (Both sides)	27	13	8	114	90	R75	32	27	27.6	25	2	M10

※ Some types of mounting screws are available (to be ordered separately). See p.209.

● Double acting type

● $\phi 12 \sim \phi 25$

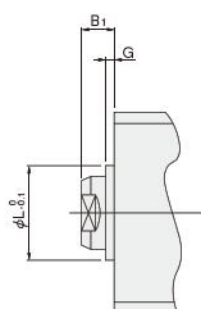
● $\phi 32 \sim \phi 100$



Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	M	V	W
12	[0.472]	17	5	10	8	4	M5×0.8	3.5	6	5
16	[0.630]	20.5	5.5	13	10	5	M6×1	3.5	8	6
20	[0.787]	22.5	5.5	15	12	5	M8×1	4.5	10	8
25	[0.984]	24	6	15	14	6	M10×1.25	5	12	10
32	[1.260]	35	7	25	19	8	M14×1.5	6	16	14
40	[1.575]	35	7	25	19	8	M14×1.5	6	16	14
50	[1.969]	37	9	25	27	11	M18×1.5	7	20	17
63	[2.480]	37	9	25	27	11	M18×1.5	7	20	17
80	[3.150]	44	11	30	32	13	M22×1.5	9	25	22
100	[3.940]	50	12	35	36	14	M26×1.5	9	32	27

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



● Not available for bore size $\phi 12$.

Bore mm [in.]	Code	B ₁	G	L
16	[0.630]	5.5	1.5	9.4
20	[0.787]	5.5	1.5	12
25	[0.984]	6	2	15
32	[1.260]	7	2	21
40	[1.575]	7	2	29
50	[1.969]	9	2	38
63	[2.480]	9	2	40
80	[3.150]	11	2	45
100	[3.940]	12	2	55

JIG CYLINDERS C SERIES END KEEP CYLINDERS

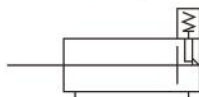
Double Acting Type



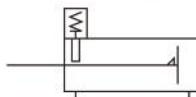
JIG CYLINDERS C SERIES

Symbols

● Head side end keep



● Rod side end keep



Specifications

Item	Bore size mm [in.]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
Operation type		Double acting type						
Media		Air						
Operating pressure range MPa [psi.]	0.2~0.9 [29~131]	0.15~0.9 [22~131]					0.1~0.7 [15~102]	
Proof pressure MPa [psi.]		1.5 [218]						
Operating temperature range °C [°F]		0~60 [32~140]						
Operating speed range mm/s [in./sec.]		30~500 [1.2~19.7]					30~300 [1.2~11.8]	
Cushion		Rubber bumper (Standard equipment)						
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)						
Maximum holding force (at end keep) N [lbf.]	61.7 [13.9]	96.1 [21.6]	151 [33.9]	248.1 [55.8]	387.3 [87.1]	471.6 [106]	534.4 [120]	
Backlash (at end keep) mm [in.]		1.4 [0.055] MAX.			1.6 [0.063] MAX.			
Port size		M5×0.8			Rc1/8		Rc1/4	

Remark : For Handling Instructions and Precautions, see p.205.

Bore Size and Stroke

For non-standard strokes, see p.206.

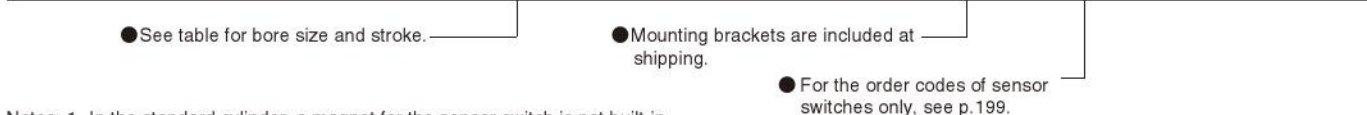
Operation type	Bore size	Standard strokes
		Standard cylinder, cylinder with magnet
Double acting type	16	5, 10, 15, 20, 25, 30, 35, 50, 75, 100, 125
	20	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 125, 150, 175, 200
	25	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 125, 150, 175, 200, 225, 250
	32	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300
	40	
	50	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300
	63	

Remarks 1: Stroke tolerance $^{+1}_{0} [^{+0.039}_{0} \text{in.}]$

2: In most cases, body cutting is used for the non-standard strokes.

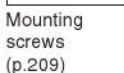
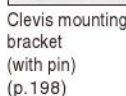
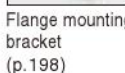
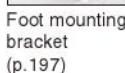
However, body cutting is not used for strokes of less than 5mm for $\phi 16 \sim \phi 40$, and strokes of less than 10mm for $\phi 50$ and $\phi 63$. The collar packed is used for these cases.

Rod side end keep cylinders cannot be collar packed.



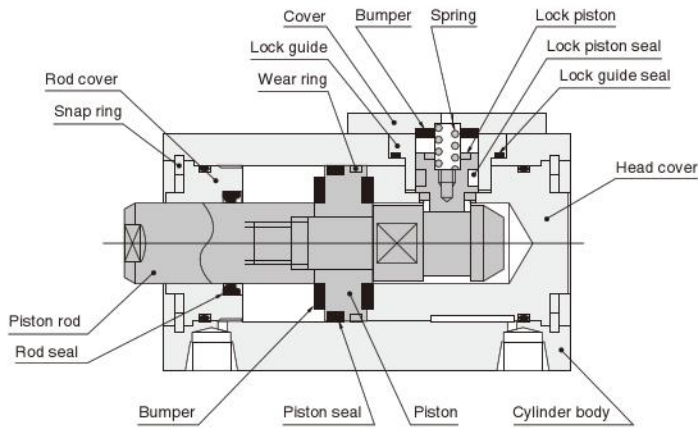
Notes: 1. In the standard cylinder, a magnet for the sensor switch is not built-in.
2. For details of sensor switches, see p.1544.
3. Cannot be mounted on the bore size $\phi 40$ with centering location (-G).
4. For information regarding the cylinder joint and cylinder rod end for male thread, see p.1568.

Additional Parts (To be ordered separately)

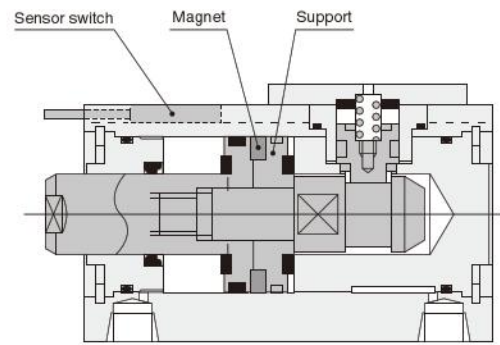


Inner Construction and Major Parts

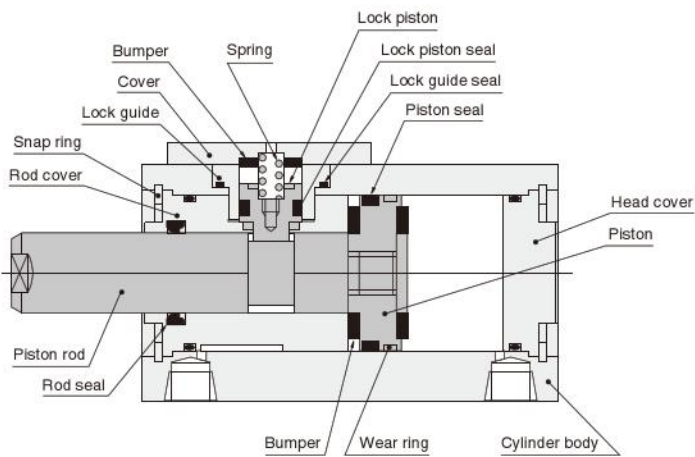
● Head side end keep (CCDAK-HL)



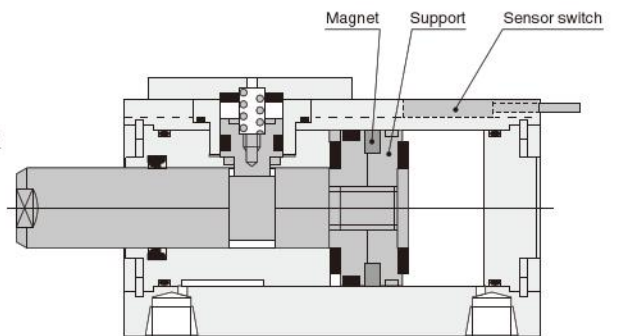
● Cylinder with magnet



● Rod side end keep (CCDAK-RL)



● Cylinder with magnet



The locking mechanism uses a sequential operation.

Major Parts and Materials

Parts	Bore mm	φ 16	φ 20	φ 25	φ 32	φ 40	φ 50	φ 63
Cylinder body	Aluminum alloy (anodized)							
Piston	Aluminum alloy (special rust prevention treatment)							
Piston rod	Stainless steel (chrome plated)			Steel (chrome plated)				
Seal	Synthetic rubber (NBR)							
Rod cover	Aluminum alloy (special wear-resistant treatment)							
Head cover	Aluminum alloy (special rust prevention treatment)							
Snap ring	Steel (phosphate coating)							
Lock piston	Stainless steel							
Bumper	Synthetic rubber (NBR)							
Magnet	Plastic magnet							
Support	Aluminum alloy (special rust prevention treatment)							
Wear ring	Plastic							
Lock cover	Aluminum alloy (anodized)							
Spring	Piano wire							

Seals

Parts	Rod seal	Piston seal	Tube gasket		Lock piston seal	Lock guide seal
Bore mm			Rod side	Head side		
φ 16	MYR-8	COP-16	Y090207	Y090207	MYN-4	Y090157
φ 20	MYR-10	COP-20	Y090216	Y090216	MYN-5	Y090260
φ 25	MYR-12	COP-25	Y090210	Y090210	MYN-5	Y090260
φ 32	MYR-16	COP-32	L090084	L090084	MYN-10A	L090009
φ 40	MYR-16	COP-40	L090151	L090151	MYN-10A	L090009
φ 50	MYR-20	COP-50	L090174	L090106	MYN-16	L090084
φ 63	MYR-20	COP-63	L090180	L090107	MYN-16	L090084

Mass

● Head side end keep cylinder

g [oz.]

Bore size mm [in.]	Zero stroke mass ^{Note 1}	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with magnet	Mass of mounting bracket			Additional mass of sensor switch ^{Note 2}	
				Foot bracket	Flange bracket	Clevis bracket	ZE□□□A	ZE□□□B
16 [0.630]	109.33 [3.856]	1.62 [0.0571]	9.93 [0.350]	62 [2.19]	71 [2.50]	40 [1.41]	15 [0.53]	35 [1.23]
20 [0.787]	142.49 [5.026]	2.26 [0.0797]	25.71 [0.907]	84 [2.96]	101 [3.56]	75 [2.65]		
25 [0.984]	205.98 [7.266]	3.11 [0.110]	37.47 [1.322]	104 [3.67]	160 [5.64]	100 [3.53]		
32 [1.260]	330.47 [11.657]	4.11 [0.145]	52.43 [1.849]	126 [4.44]	186 [6.56]	165 [5.82]		
40 [1.575]	475.35 [16.767]	4.77 [0.168]	69.15 [2.439]	160 [5.64]	335 [11.82]	200 [7.05]		
50 [1.969]	775.35 [27.349]	7.03 [0.248]	108 [3.81]	220 [7.76]	447 [15.77]	315 [11.11]		
63 [2.480]	1137.3 [40.116]	8.69 [0.307]	159 [5.61]	300 [10.58]	591 [20.85]	495 [17.46]		

● Rod side end keep cylinder

g [oz.]

Bore size mm [in.]	Zero stroke mass ^{Note 1}	Additional mass for each 1mm [0.0394in.] stroke	Additional mass of cylinder with magnet	Mass of mounting bracket			Additional mass of sensor switch ^{Note 2}	
				Foot bracket	Flange bracket	Clevis bracket	ZE□□□A	ZE□□□B
16 [0.630]	101.33 [3.574]	1.62 [0.0571]	9.93 [0.350]	62 [2.19]	71 [2.50]	40 [1.41]	15 [0.53]	35 [1.23]
20 [0.787]	130.49 [4.603]	2.26 [0.0797]	25.71 [0.907]	84 [2.96]	101 [3.56]	75 [2.65]		
25 [0.984]	185.93 [6.558]	3.11 [0.110]	37.47 [1.322]	104 [3.67]	160 [5.64]	100 [3.53]		
32 [1.260]	310.44 [10.950]	4.11 [0.145]	52.46 [1.850]	126 [4.44]	186 [6.56]	165 [5.82]		
40 [1.575]	445.35 [15.709]	4.77 [0.168]	69.15 [2.439]	160 [5.64]	335 [11.82]	200 [7.05]		
50 [1.969]	755.35 [26.644]	7.03 [0.248]	108 [3.81]	220 [7.76]	447 [15.77]	315 [11.11]		
63 [2.480]	1082.3 [38.176]	8.69 [0.307]	159 [5.61]	300 [10.58]	591 [20.85]	495 [17.46]		

Notes: 1. The above table is for the standard strokes.

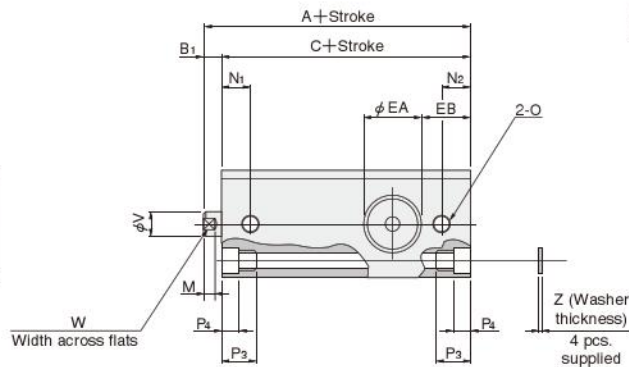
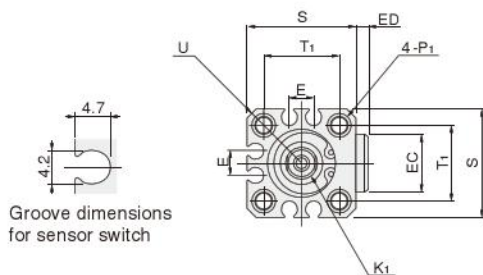
2. Sensor switch codes A and B show the lead wire lengths.

A: 1000mm [39in.] B: 3000mm [118in.]

Calculation example: For the mass of a head side end keep cylinder with magnet, bore size of 25mm, stroke of 30mm, and with 2 sensor switches (**ZE135A**)
 $205.98 + (3.11 \times 30) + 37.47 + (15 \times 2) = 366.75\text{g}$ [12.937oz.]

Dimensions of Head Side End Keep Double Acting Type (mm)

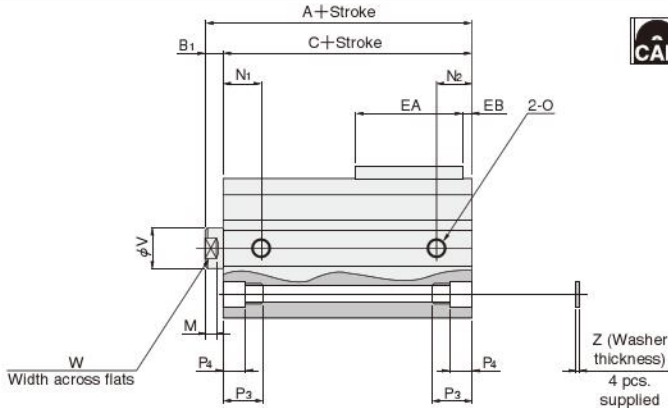
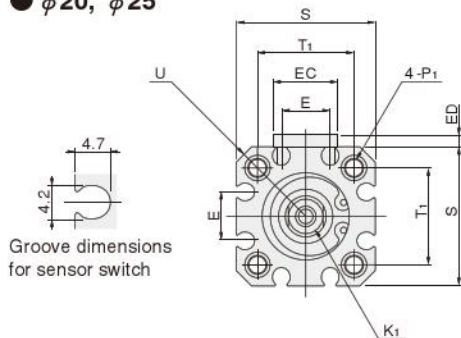
● $\phi 16$



CCDAK Bore size H

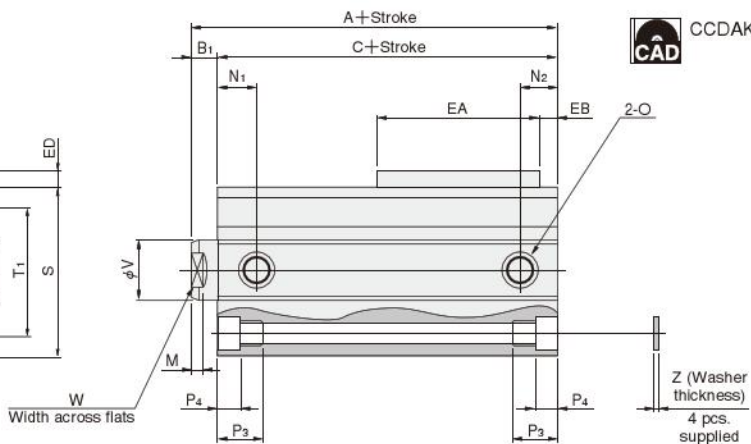
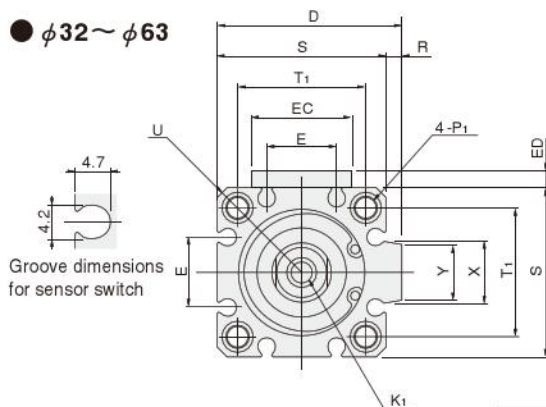
JIG CYLINDERS C SERIES

● $\phi 20, \phi 25$



CCDAK Bore size H

● $\phi 32 \sim \phi 63$



CCDAK Bore size H

Type Code Bore mm [in.]	Standard cylinder (CCDAK-HL)			Cylinder with magnet (CCDAKS-HL)			D	E	K ₁	M	N ₁	N ₂	O
	A	B ₁	C	A	B ₁	C							
16 [0.630]	63.5	5.5	58	68.5	5.5	63	—	6.2	M4×0.7 Depth8	3.5	8	8	M5×0.8
20 [0.787]	61.5	5.5	56	71.5	5.5	66	—	12.2	M5×0.8 Depth10	4.5	9.5	9.5	M5×0.8
25 [0.984]	62.5	6	56.5	72.5	6	66.5	—	12.2	M6×1 Depth10	5	10.5	10.5	M5×0.8
32 [1.260]	77	7	70	82	7	75	48.5	18.2	M8×1.25 Depth12	6	9.5	9.5	Rc1/8
40 [1.575]	80	7	73	85	7	78	56.5	18.2	M8×1.25 Depth12	6	10.5	10.5	Rc1/8
50 [1.969]	87	9	78	92	9	83	70	24.8	M10×1.5 Depth15	7	11	9.5	Rc1/4
63 [2.480]	91	9	82	96	9	87	83	26.8	M10×1.5 Depth15	7	12.5	11	Rc1/4

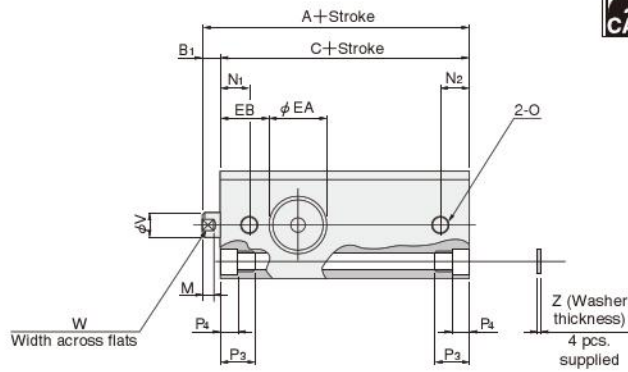
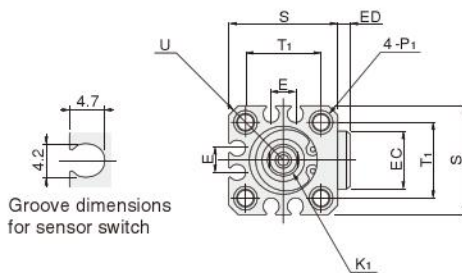
Code	P ₁			P ₃	P ₄	R	S	T ₁	U	V	W	X	Y	Z	EA	EB	EC	ED	Appropriate through bolt※
16 [0.630]	φ 4.3 (Thru hole)	Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)		9.5	4.5	—	29	19.8	R19	8	6	—	—	1	16.5	13.75	16.5	3	M3
20 [0.787]	φ 4.3 (Thru hole)	Counterbore φ 6.5 (Both sides) and M5×0.8 (Both sides)		9.5	4.5	—	34	24	R22	10	8	—	—	1	30	3	16	3.2	M3
25 [0.984]	φ 5.1 (Thru hole)	Counterbore φ 8 (Both sides) and M6×1 (Both sides)		11.5	5.5	—	40	28	R25	12	10	—	—	1	30	3	16	3.2	M4
32 [1.260]	φ 5.1 (Thru hole)	Counterbore φ 8 (Both sides) and M6×1 (Both sides)		11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	42	5	26	4	M4
40 [1.575]	φ 6.9 (Thru hole)	Counterbore φ 9.5 (Both sides) and M8×1.25 (Both sides)		15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	42	6	26	4	M5
50 [1.969]	φ 6.9 (Thru hole)	Counterbore φ 11 (Both sides) and M8×1.25 (Both sides)		16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	49	6	35	6	M6
63 [2.480]	φ 6.9 (Thru hole)	Counterbore φ 11 (Both sides) and M8×1.25 (Both sides)		16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	49	7.5	35	6	M6

※ Some types of mounting screws are available (to be ordered separately). See p.209.

Dimensions of Rod Side End Keep Double Acting Type (mm)

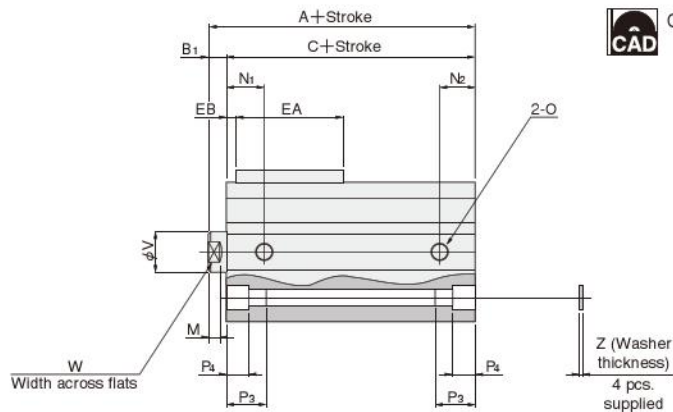
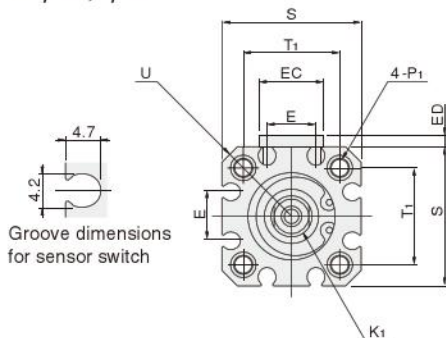
● $\phi 16$

CCDAK Bore size R



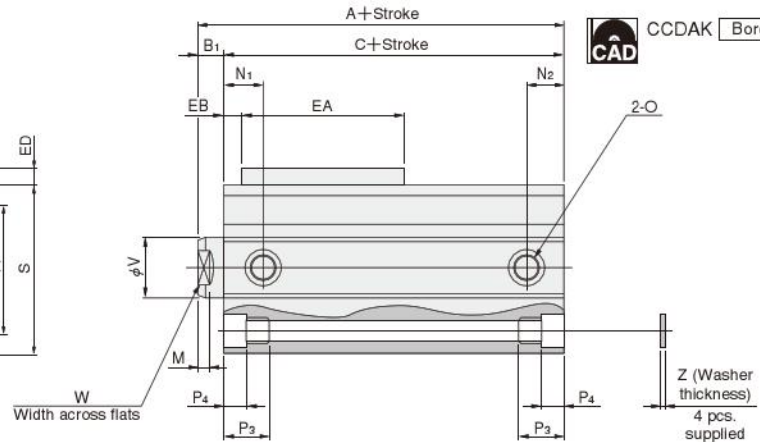
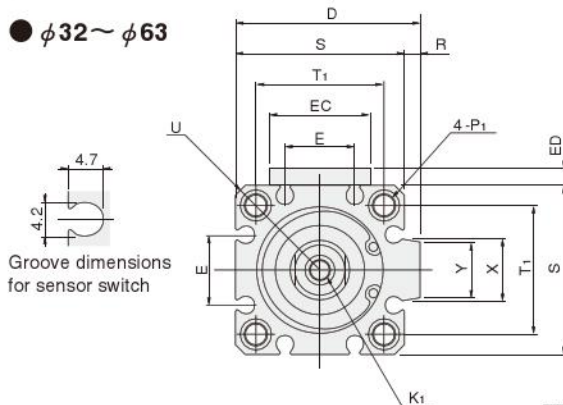
● $\phi 20, \phi 25$

CCDAK Bore size R



● $\phi 32 \sim \phi 63$

CCDAK Bore size R



Type Code	Standard cylinder (CCDAK-RL)			Cylinder with magnet (CCDAKS-RL)			D	E	K1	M	N1	N2	O
Bore mm [in.]	A	B1	C	A	B1	C							
16 [0.630]	58.5	5.5	53	63.5	5.5	58	—	6.2	M4X0.7 Depth8	3.5	8	8	M5X0.8
20 [0.787]	56.5	5.5	51	66.5	5.5	61	—	12.2	M5X0.8 Depth10	4.5	9.5	9.5	M5X0.8
25 [0.984]	57.5	6	51.5	67.5	6	61.5	—	12.2	M6X1 Depth10	5	10.5	10.5	M5X0.8
32 [1.260]	72	7	65	77	7	70	48.5	18.2	M8X1.25 Depth12	6	9.5	9.5	Rc1/8
40 [1.575]	75	7	68	80	7	73	56.5	18.2	M8X1.25 Depth12	6	10.5	10.5	Rc1/8
50 [1.969]	82	9	73	87	9	78	70	24.8	M10X1.5 Depth15	7	11	9.5	Rc1/4
63 [2.480]	86	9	77	91	9	82	83	26.8	M10X1.5 Depth15	7	12.5	11	Rc1/4

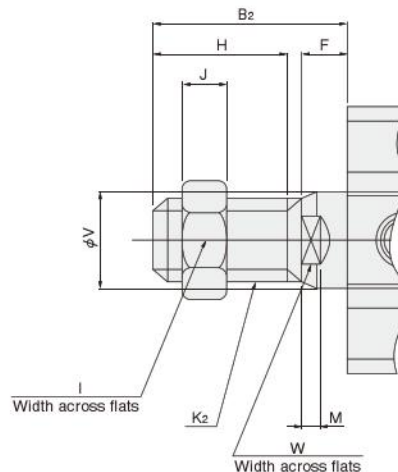
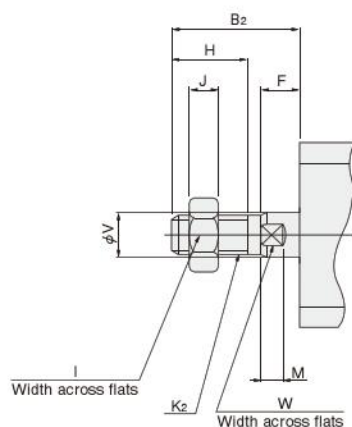
Code	P1			P3	P4	R	S	T1	U	V	W	X	Y	Z	EA	EB	EC	ED	Appropriate through bolt
Bore mm [in.]																			
16 [0.630]	$\phi 4.3$ (Thru hole)	Counterbore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)		9.5	4.5	—	29	19.8	R19	8	6	—	—	1	16.5	13.75	16.5	3	M3
20 [0.787]	$\phi 4.3$ (Thru hole)	Counterbore $\phi 6.5$ (Both sides) and M5X0.8 (Both sides)		9.5	4.5	—	34	24	R22	10	8	—	—	1	30	3	16	3.2	M3
25 [0.984]	$\phi 5.1$ (Thru hole)	Counterbore $\phi 8$ (Both sides) and M6X1 (Both sides)		11.5	5.5	—	40	28	R25	12	10	—	—	1	30	3	16	3.2	M4
32 [1.260]	$\phi 5.1$ (Thru hole)	Counterbore $\phi 8$ (Both sides) and M6X1 (Both sides)		11.5	5.5	4.5	44	34	R29.5	16	14	15	13.6	1	42	5	26	4	M4
40 [1.575]	$\phi 6.9$ (Thru hole)	Counterbore $\phi 9.5$ (Both sides) and M8X1.25 (Both sides)		15.5	7.5	4.5	52	40	R35	16	14	15	13.6	1.6	42	6	26	4	M5
50 [1.969]	$\phi 6.9$ (Thru hole)	Counterbore $\phi 11$ (Both sides) and M8X1.25 (Both sides)		16.5	8.5	8	62	48	R41	20	17	21.6	19	1.6	49	6	35	6	M6
63 [2.480]	$\phi 6.9$ (Thru hole)	Counterbore $\phi 11$ (Both sides) and M8X1.25 (Both sides)		16.5	8.5	8	75	60	R50	20	17	21.6	19	1.6	49	7.5	35	6	M6

※ Some types of mounting screws are available (to be ordered separately). See p.209.

● Double acting type

● $\phi 16 \sim \phi 25$

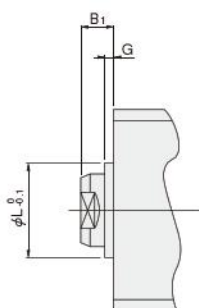
● $\phi 32 \sim \phi 63$



Bore mm [in.]	Code	B ₂	F	H	I	J	K ₂	M	V	W
16	[0.630]	20.5	5.5	13	10	5	M6×1	3.5	8	6
20	[0.787]	22.5	5.5	15	12	5	M8×1	4.5	10	8
25	[0.984]	24	6	15	14	6	M10×1.25	5	12	10
32	[1.260]	35	7	25	19	8	M14×1.5	6	16	14
40	[1.575]	35	7	25	19	8	M14×1.5	6	16	14
50	[1.969]	37	9	25	27	11	M18×1.5	7	20	17
63	[2.480]	37	9	25	27	11	M18×1.5	7	20	17

Remark: Cylinder joints and cylinder rod ends are available for mounting with the rod end male thread specification. For details, see p.1568.

Dimensions of Centering Location (mm)



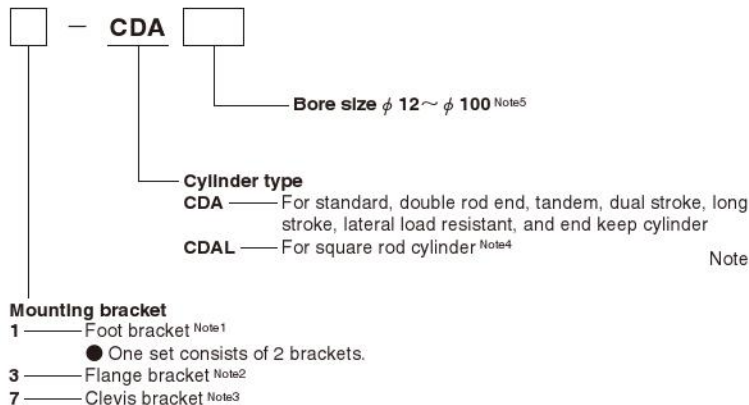
Bore mm [in.]	Code	B ₁	G	L
16	[0.630]	5.5	1.5	9.4
20	[0.787]	5.5	1.5	12
25	[0.984]	6	2	15
32	[1.260]	7	2	21
40	[1.575]	7	2	29
50	[1.969]	9	2	38
63	[2.480]	9	2	40

JIG CYLINDERS C SERIES MOUNTING BRACKETS

Foot Mounting Bracket, Flange Mounting
Bracket, Clevis Mounting Bracket



Order Codes of Mounting Bracket Only

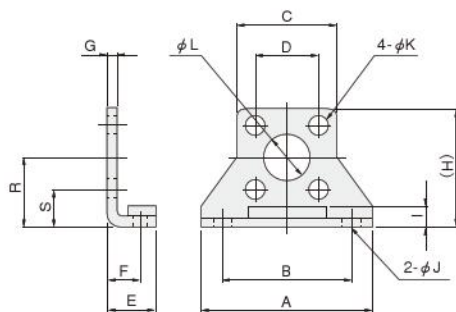


Dimensions of Foot Mounting Bracket (mm)

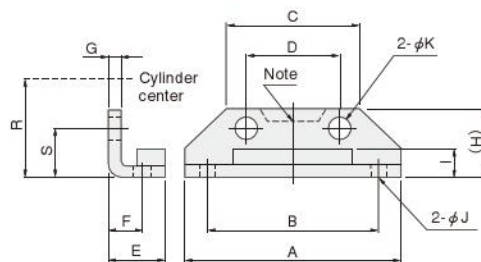


$\phi 12 \sim \phi 40$: CDA-OP1, $\phi 50 \sim \phi 100$: CDA-OP2

● $\phi 12 \sim \phi 16$

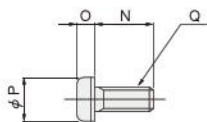


● $\phi 20 \sim \phi 100$

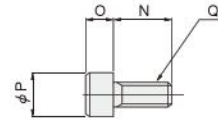


Note: Only for $\phi 50$

● Mounting screw For $\phi 12 \sim \phi 80$



For $\phi 100$



																			Material: Steel	
Bore mm [in.]	Code	A	B	C	D	E	F	G	H	I	J	K	L	N	O	P	Q	R	S	Mass g [oz.]
12 [0.472]	44	34	25	16.3	12.5	8	2	29.5	4.5	4.5	5.5	11	12	2.7	9.5	M5	17	8.9	50 [1.76]	
16 [0.630]	48	38	29	19.8	13	8	2	33.5	4.5	4.5	5.5	11	12	2.7	9.5	M5	19	9.1	62 [2.19]	
20 [0.787]	54	44	34	24	15	9.2	3.2	16.5	7	4.5	5.5	—	12 (12, 20)	2.7	9.5	M5	24	12	84 [2.96] (87 [3.07])	
25 [0.984]	64	52	40	28	16.5	10.7	3.2	17.5	6	5.5	6.6	—	14 (14, 22)	3.3	10.5	M6	26	12	104 [3.67] (108 [3.81])	
32 [1.260]	68	56	44	34	17	11.2	3.2	19	8	5.5	6.6	—	14 (14, 25)	3.3	10.5	M6	30	13	126 [4.44] (131 [4.62])	
40 [1.575]	78	64	52	40	18.2	11.2	3.2	19	7	6.6	9	—	20 (20, 30)	4.4	14	M8	33	13	180 [5.64] (188 [5.93])	
50 [1.969]	96	78	62	48	22.7	14.7	3.2	22	8	9	9	—	20 (20, 35)	4.4	14	M8	39	15	220 [7.76] (232 [8.18])	
63 [2.480]	108	90	75	60	25.2	16.2	3.2	24	8.5	9	9	—	20 (20, 35)	4.4	14	M8	46	16	300 [10.58] (312 [11.01])	
80 [3.150]	134	112	94	74	30.5	19.5	4.5	33	12	11	14	—	25	6.6	21	M12	59	22	644 [22.72]	
100 [3.940]	160	134	114	90	35.5	23	6	40	14	14	16	—	30	14	21	M14	71	26	1172 [41.34]	

Remark: Figures in parentheses () are for square rod cylinders.
Two figures in parentheses (), Left side: for head side; Right side: for rod side



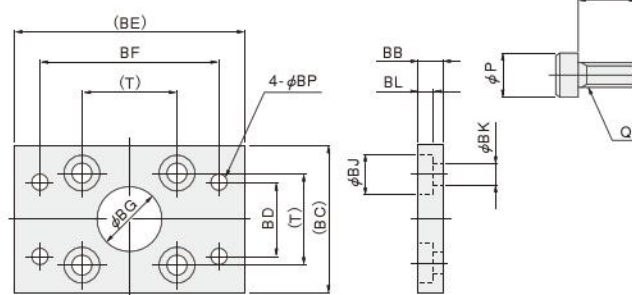
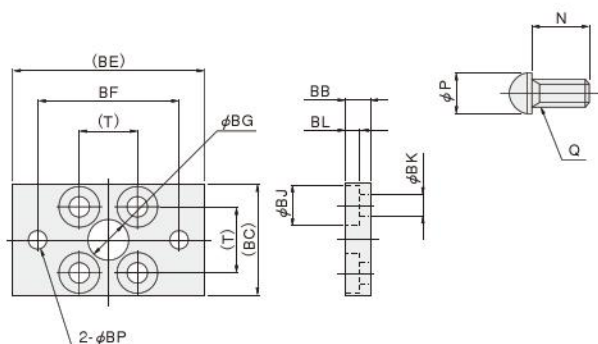
φ 12 ~ φ 40 : CDA-OP3, φ 50 ~ φ 100 : CDA-OP4

● $\phi 12 \sim \phi 16$

● Mounting screw
For $\phi 12 \sim \phi 80$

● $\phi 20 \sim \phi 100$

● Mounting screw
For $\phi 100$



Material: Steel

Code	N	P	Q	T	BB	BC	BD	BE	BF	BG	BJ	BK	BL	BP	Mass g [oz.]
12 [0.472]	12	9.5	M5	16.3	6	28	—	50	38	11	10	5.5	3.6	4.5	55 [1.94]
16 [0.630]	12	9.5	M5	19.8	6	32	—	54	42	11	10	5.5	3.6	4.5	71 [2.50]
20 [0.787]	12(18)	9.5	M5	24	6	36	24	58	46	15	10	5.5	3.6	4.5	101 [3.56] [105 [3.70]]
25 [0.984]	14(22)	10.5	M6	28	8	42	28	68	54	17	11	6.6	4.3	5.5	160 [5.64] [165 [5.82]]
32 [1.260]	14(25)	10.5	M6	34	8	48	34	72	58	22	11	6.6	4.3	5.5	186 [6.56] [196 [6.91]]
40 [1.575]	20(30)	14	M8	40	8	58	40	84	68	28	15	9	5.3	6.6	335 [11.82] [351 [12.38]]
50 [1.969]	20(35)	14	M8	48	8	66	40	102	82	38	15	9	5.3	9	447 [15.77] [471 [16.61]]
63 [2.480]	20(35)	14	M8	60	8	78	50	116	96	40	15	9	5.3	9	591 [20.85] [615 [21.69]]
80 [3.150]	25	21	M12	74	12	100	70	142	118	45	22	14	7.3	11	1414 [49.88]
100 [3.940]	30	21	M14	90	20	116	80	170	142	55	23	16	15.2	14	2606 [91.92]

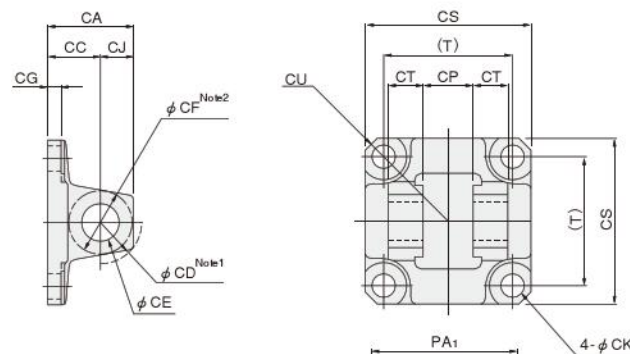
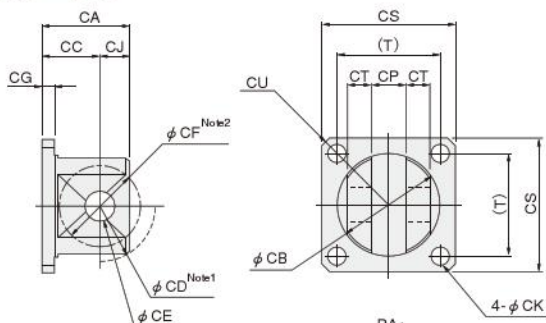
Remark: Figures in parentheses () are for square rod cylinders.



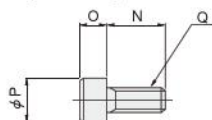
φ 12 ~ φ 40 : CDA-OP5, φ 50 ~ φ 100 : CDA-OP6

● $\phi 12 \sim \phi 40$

● $\phi 50 \sim \phi 100$



● Mounting screw
For $\phi 12 \sim \phi 100$



(Two snap rings supplied)

(Two snap rings supplied)

Material: Steel

Bore mm [in.]	Code	Metric (mm)																							Imperial (in.)	
		N	O	P	Q	T	CA	CB	CC	CD	CE	CF	CG	CJ	CK	CP	CS	CT	CU	PA ₁	PB ₁	PC	PD	PE ₁	Mass g [oz.]	
12 [0.472]	12	5	8.5	M5	16.3	15	12	11	R 7.5	4 ^{+0.03} ₀	R5	4	4	5.5	4 ^{+0.2} _{+0.1}	25	3	R16	15	10.6	0.7	4 ₈	2.5	30 [1.06]		
16 [0.630]	12	5	8.5	M5	19.8	17	16	12	R10	5 ^{+0.03} ₀	R6	4	5	5.5	5 ^{+0.2} _{+0.1}	29	3.5	R19	17	12.6	0.7	5 ₈	3	40 [1.41]		
20 [0.787]	12	5	8.5	M5	24	25	22	17	R14	8 ^{+0.04} ₀	R11	4	8	5.5	8 ^{+0.4} _{+0.2}	34	5.2	R22	24.4	19.6	0.9	8 ₈	6	75 [2.65]		
25 [0.984]	16	6	10	M6	28	25	26	17	R16	8 ^{+0.04} ₀	R11	4	8	6.6	8 ^{+0.4} _{+0.2}	40	5.2	R25	24.4	19.6	0.9	8 ₈	6	100 [3.53]		
32 [1.260]	16	6	10	M6	34	29	34	19	R20	10 ^{+0.04} ₀	R12.5	4	10	6.6	12 ^{+0.4} _{+0.2}	44	8	R29.5	34	29.2	0.9	10 ₈	8	165 [5.82]		
40 [1.575]	20	8	13	M8	40	29	34	19	R20	10 ^{+0.04} ₀	R12.5	4	10	9	12 ^{+0.4} _{+0.2}	52	8	R35	34	29.2	0.9	10 ₈	8	200 [7.05]		
50 [1.969]	22	8	13	M8	48	32	—	19	R17	14 ^{+0.08} ₀	R14	5	13	9 Counterbore #17	20 ^{+0.6} _{+0.3}	63	12.5	R41.5	55	47	1.15	14 ^{+0.030} _{-0.070}	13.4	315 [11.11]		
63 [2.480]	20	8	13	M8	60	32	—	19	R17	14 ^{+0.08} ₀	R14	6	13	9 Counterbore #20	20 ^{+0.6} _{+0.3}	76	15	R50.5	60	52	1.15	14 ^{+0.030} _{-0.070}	13.4	495 [17.46]		
80 [3.150]	30	12	18	M12	74	52	—	32	R24	20 ^{+0.1} ₀	R20	7	20	14 Counterbore #22	32 ^{+0.6} _{+0.3}	95	16	R62.5	74	66	1.35	20 ^{+0.040} _{-0.084}	19	1110 [39.15]		
100 [3.940]	30	14	21	M14	90	52	—	32	R24	20 ^{+0.1} ₀	R21	7	20	16 Counterbore #26	32 ^{+0.6} _{+0.3}	115	16	R75.5	74	66	1.35	20 ^{+0.040} _{-0.084}	19	1490 [52.56]		

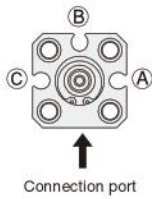
Notes: 1. CD = Swing range of clevis mounting bracket itself.

- CF = Maximum radius of swing for mating bracket.

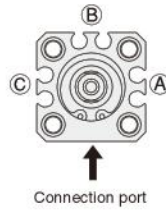
Remark: $\phi 12 \sim \phi 50$ are mounted with 2 bolts.

Mounting Sensor Switch

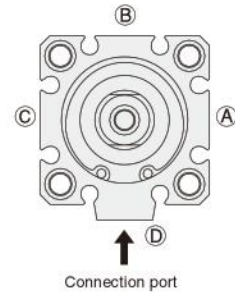
● $\phi 6 \sim \phi 12$



● $\phi 16$



● $\phi 20 \sim \phi 100$



● The drawing is for $\phi 32$.

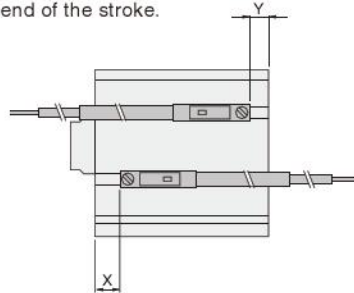
The standard mounting positions at shipping for the end of stroke detection on the rod side is either surface (A) or surface (C), while the end of stroke detection on the head side is surface (B).
If mounting sensor switches on the same surface for detection of both ends is required, consult us.
(The sensor switch may sometimes protrude from the cylinder body.)

Mounting on any of surfaces (A), (B), or (C) allows detection of the end of stroke on the rod side and head side.
(The sensor switch may sometimes protrude from the cylinder body.)

Mounting on any of surfaces (A), (B), (C), or (D) allows detection of the end of stroke on the rod side and head side.
(The sensor switch may sometimes protrude from the cylinder body.)
However, the **ZE2**□ sensor switches cannot be mounted on the (D) position in $\phi 32$, $\phi 40$, and $\phi 50$.

Mounting Location of End of Stroke Detection Sensor Switch

When the sensor switch is mounted in the position shown in the diagram below (figures in the tables are reference values), the magnet reaches the sensor switch's maximum sensing location at the end of the stroke.



● Standard cylinder, Non-rotating cylinder

■ Solid state type

● Double acting type

Bore		6	8	10	12	16	20	25	32	40	50	63	80	100
Code														
X	Standard type	7.2 [0.283]	8 [0.315]	8.3 [0.327]	7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]	15 [0.591]	20 [0.787]	25 [0.984]
	With bumper (-R)	—	—	—	10 [0.394]	10 [0.394]	15 [0.591]	16 [0.630]	15.5 [0.610]	16.5 [0.650]	15.5 [0.610]	15 [0.591]	20 [0.787]	25 [0.984]
Y	Standard type	1 [0.039]	0.3 [0.012]	1 [0.039]	4 [0.157]	4 [0.157]	7.5 [0.295]	9 [0.354]	8.5 [0.335]	10.5 [0.413]	14.5 [0.571]	16 [0.630]	20 [0.787]	25 [0.984]
	With bumper (-R)	—	—	—	6 [0.236]	6 [0.236]	8.5 [0.335]	9 [0.354]	6.5 [0.256]	8.5 [0.335]	11.5 [0.453]	16 [0.630]	20 [0.787]	25 [0.984]

● Single acting push type

		mm [in.]									
Code	Bore	6	8	10	12	16	20	25	32	40	50
X	Standard type	17.2 [0.677]	18 [0.709]	18.3 [0.720]	15 [0.591]	15 [0.591]	14 [0.551]	14.5 [0.571]	15.5 [0.610]	17.5 [0.689]	17 [0.669]
	Y	1 [0.039]	0.3 [0.012]	1 [0.039]	1 [0.039]	1 [0.039]	4.5 [0.177]	5.5 [0.217]	6.5 [0.256]	7.5 [0.295]	10.5 [0.413]

● Single acting pull type

		mm [in.]									
Code	Bore	6	8	10	12	16	20	25	32	40	50
X	Standard type	7.2 [0.283]	8 [0.315]	8.3 [0.327]	7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]
	Y	11 [0.433]	10.3 [0.406]	11 [0.433]	9 [0.354]	9 [0.354]	12.5 [0.492]	14 [0.551]	13.5 [0.531]	15.5 [0.610]	14.5 [0.571]

■ Reed switch type

● Double acting type

Bore		12	16	20	25	32	40	50	63	80	100
Code											
X	Standard type	2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]	10.5 [0.413]	15.5 [0.610]	20.5 [0.807]
	With bumper (-R)	5.5 [0.217]	5.5 [0.217]	10.5 [0.413]	11.5 [0.453]	11 [0.433]	12 [0.472]	11 [0.433]	10.5 [0.413]	15.5 [0.610]	20.5 [0.807]
Y	Standard type	-0.5 [-0.020]	-0.5 [-0.020]	3 [0.118]	4.5 [0.177]	4 [0.157]	6 [0.236]	10 [0.394]	11.5 [0.453]	15.5 [0.610]	20.5 [0.807]
	With bumper (-R)	1.5 [0.059]	1.5 [0.059]	4 [0.157]	4.5 [0.177]	2 [0.079]	4 [0.157]	7 [0.276]	11.5 [0.453]	15.5 [0.610]	20.5 [0.807]

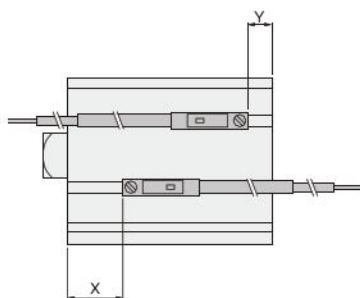
● Single acting push type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X	Standard type	10.5 [0.413]	10.5 [0.413]	9.5 [0.374]	10 [0.394]	11 [0.433]	13 [0.512]	12.5 [0.492]
	Y	-3.5 [-0.138]	-3.5 [-0.138]	0 [0]	1 [0.039]	2 [0.079]	3 [0.118]	6 [0.236]

● Single acting pull type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X	Standard type	2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]
	Y	4.5 [0.177]	4.5 [0.177]	8 [0.315]	9.5 [0.374]	9 [0.354]	11 [0.433]	10 [0.394]

● Square rod cylinders with magnet



■ Solid state type

● Double acting type

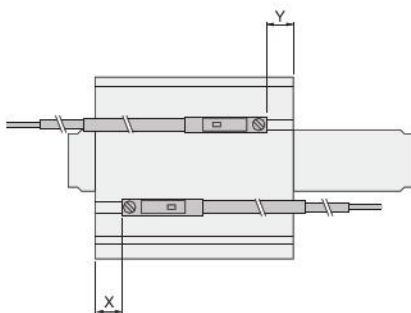
Code \ Bore		mm [in.]					
		20	25	32	40	50	63
X	Standard type	17.5 [0.689]	17.5 [0.689]	22.5 [0.886]	24.5 [0.965]	27.5 [1.083]	30 [1.181]
	With bumper (-R)	21.5 [0.846]	22.5 [0.886]	24.5 [0.965]	26.5 [1.043]	30.5 [1.201]	30 [1.181]
Y	Standard type	10 [0.394]	9 [0.354]	14 [0.551]	14.5 [0.571]	14.5 [0.571]	16 [0.630]
	With bumper (-R)	8.5 [0.335]	9 [0.354]	6.5 [0.256]	8.5 [0.335]	11.5 [0.453]	16 [0.630]

■ Reed switch type

● Double acting type

Code \ Bore		mm [in.]					
		20	25	32	40	50	63
X	Standard type	13 [0.512]	13 [0.512]	18 [0.709]	20 [0.787]	23 [0.906]	25.5 [1.004]
	With bumper (-R)	17 [0.669]	18 [0.709]	20 [0.787]	22 [0.866]	26 [1.024]	25.5 [1.004]
Y	Standard type	5 [0.197]	4.5 [0.177]	4 [0.157]	6 [0.236]	10 [0.394]	11.5 [0.453]
	With bumper (-R)	4 [0.157]	4.5 [0.177]	2 [0.079]	4 [0.157]	7 [0.276]	11.5 [0.453]

● Double rod cylinders with magnet



■ Solid state type

● Double acting type

● Double acting type														mm [in.]			
Code \ Bore		6	8	10	12	16	20	25	32	40	50	63	80	100			
X	Standard type	7.2 [0.283]	8 [0.315]	8.3 [0.327]	7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]	15.5 [0.610]	20.5 [0.807]	25 [0.984]			
	With bumper (-R)	—	—	—	10 [0.394]	10 [0.394]	15 [0.591]	16 [0.630]	15.5 [0.610]	16.5 [0.650]	14 [0.551]	15 [0.591]	20.5 [0.807]	25 [0.984]			
Y	Standard type	5.5 [0.217]	5.8 [0.228]	6 [0.236]	10 [0.394]	10 [0.394]	14 [0.551]	14.5 [0.571]	15.5 [0.610]	17.5 [0.689]	16.5 [0.650]	18 [0.709]	26.5 [1.043]	31.5 [1.240]			
	With bumper (-R)	—	—	—	12 [0.472]	12 [0.472]	15 [0.591]	14.5 [0.571]	6.5 [0.256]	15.5 [0.610]	15 [0.591]	18 [0.709]	26.5 [1.043]	31.5 [1.240]			

● Single acting type

Code \ Bore		mm [in.]						
		12	16	20	25	32	40	50
X	Standard type	15 [0.591]	15 [0.591]	14 [0.551]	14.5 [0.571]	15.5 [0.610]	17.5 [0.689]	16.5 [0.650]
	With bumper (-R)	7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]

■ Reed switch type

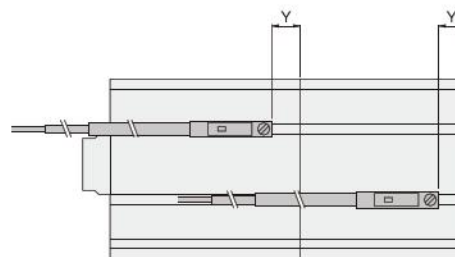
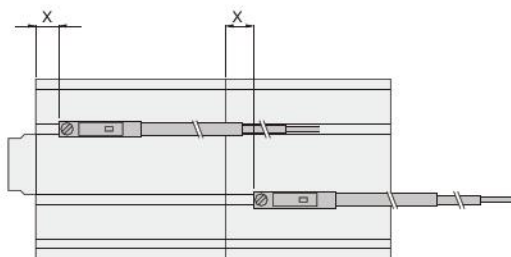
● Double acting type

● Double acting type											mm [in.]
Code \ Bore		12	16	20	25	32	40	50	63	80	100
X	Standard type	2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]	10.5 [0.413]	16 [0.630]	20.5 [0.807]
	With bumper (-R)	5.5 [0.217]	5.5 [0.217]	10.5 [0.413]	11.5 [0.453]	11 [0.433]	12 [0.472]	9.5 [0.374]	10.5 [0.413]	16 [0.630]	20.5 [0.807]
Y	Standard type	5.5 [0.217]	5.5 [0.217]	9.5 [0.374]	10 [0.394]	11 [0.433]	13 [0.512]	12 [0.472]	13.5 [0.531]	22 [0.866]	27 [1.063]
	With bumper (-R)	7.5 [0.295]	7.5 [0.295]	10.5 [0.413]	10 [0.394]	2 [0.079]	11 [0.433]	10.5 [0.413]	13.5 [0.531]	22 [0.866]	27 [1.063]

● Single acting type

Code \ Bore		mm [in.]						
		12	16	20	25	32	40	50
X	Standard type	10.5 [0.413]	10.5 [0.413]	9.5 [0.374]	10 [0.394]	11 [0.433]	13 [0.512]	12 [0.472]
	With bumper (-R)	2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]

● Tandem cylinders with magnet



■ Solid state type

● Double acting type

		mm [in.]									
Code	Bore	12	16	20	25	32	40	50	63	80	100
X	Standard type	7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]	15 [0.591]	20 [0.787]	25 [0.984]
	With bumper (-R)	10 [0.394]	10 [0.394]	15 [0.591]	16 [0.630]	15.5 [0.610]	16.5 [0.650]	15.5 [0.610]	15 [0.591]	20 [0.787]	25 [0.984]
Y	Standard type	4 [0.157]	4 [0.157]	7.5 [0.295]	9 [0.354]	8.5 [0.335]	10.5 [0.413]	14.5 [0.571]	16 [0.630]	20 [0.787]	25 [0.984]
	With bumper (-R)	6 [0.236]	6 [0.236]	8.5 [0.335]	9 [0.354]	6.5 [0.256]	8.5 [0.335]	11.5 [0.453]	16 [0.630]	20 [0.787]	25 [0.984]

● Single acting push type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X		15 [0.591]	15 [0.591]	14 [0.551]	14.5 [0.571]	15.5 [0.610]	17.5 [0.689]	16.5 [0.650]
Y		1 [0.039]	1 [0.039]	4.5 [0.177]	5.5 [0.217]	6.5 [0.256]	7.5 [0.295]	10.5 [0.413]

■ Reed switch type

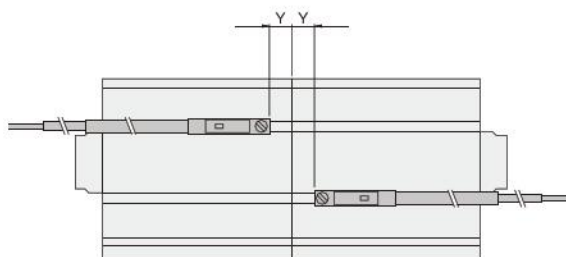
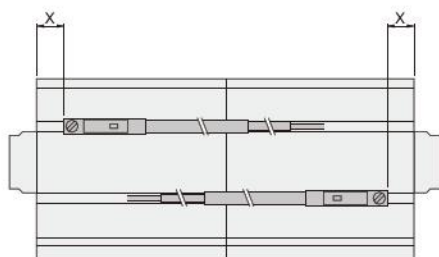
● Double acting type

		mm [in.]									
Code	Bore	12	16	20	25	32	40	50	63	80	100
X	Standard type	2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]	10.5 [0.413]	15.5 [0.610]	20.5 [0.807]
	With bumper (-R)	5.5 [0.217]	5.5 [0.217]	10.5 [0.413]	11.5 [0.453]	11 [0.433]	12 [0.472]	11 [0.433]	10.5 [0.413]	15.5 [0.610]	20.5 [0.807]
Y	Standard type	-0.5 [-0.020]	-0.5 [-0.020]	3 [0.118]	4.5 [0.177]	4 [0.157]	6 [0.236]	10 [0.394]	11.5 [0.453]	15.5 [0.610]	20.5 [0.807]
	With bumper (-R)	1.5 [0.059]	1.5 [0.059]	4 [0.157]	4.5 [0.177]	2 [0.079]	4 [0.157]	7 [0.276]	11.5 [0.453]	15.5 [0.610]	20.5 [0.807]

● Single acting push type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X		10.5 [0.413]	10.5 [0.413]	9.5 [0.374]	10 [0.394]	11 [0.433]	13 [0.512]	12 [0.472]
Y		-3.5 [-0.138]	-3.5 [-0.138]	0 [0]	1 [0.039]	2 [0.079]	3 [0.118]	6 [0.236]

● Dual stroke cylinders with magnet



■ Solid state type

● Double acting type

		mm [in.]									
Code	Bore	12	16	20	25	32	40	50	63	80	100
X	Standard type	7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]	15 [0.591]	20 [0.787]	25 [0.984]
	With bumper (-R)	10 [0.394]	10 [0.394]	15 [0.591]	16 [0.630]	15.5 [0.610]	16.5 [0.650]	14 [0.551]	15 [0.591]	20 [0.787]	25 [0.984]
Y	Standard type	4 [0.157]	4 [0.157]	7.5 [0.295]	9 [0.354]	8.5 [0.335]	10.5 [0.413]	14.5 [0.571]	16 [0.630]	20 [0.787]	25 [0.984]
	With bumper (-R)	6 [0.236]	6 [0.236]	8.5 [0.335]	9 [0.354]	6.5 [0.256]	8.5 [0.335]	13.5 [0.531]	16 [0.630]	20 [0.787]	25 [0.984]

● Single acting push type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X		15 [0.591]	15 [0.591]	14 [0.551]	14.5 [0.571]	15.5 [0.610]	17.5 [0.689]	16.5 [0.650]
Y		1 [0.039]	1 [0.039]	7.5 [0.295]	5.5 [0.217]	6.5 [0.256]	7.5 [0.295]	10.5 [0.413]

● Single acting pull type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X		7 [0.276]	7 [0.276]	11 [0.433]	11 [0.433]	13.5 [0.531]	14.5 [0.571]	12.5 [0.492]
Y		9 [0.354]	9 [0.354]	12.5 [0.492]	14 [0.551]	13.5 [0.531]	15.5 [0.610]	14.5 [0.571]

■ Reed switch type

● Double acting type

		mm [in.]									
Code	Bore	12	16	20	25	32	40	50	63	80	100
X	Standard type	2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]	10.5 [0.413]	15.5 [0.610]	20.5 [0.807]
	With bumper (-R)	5.5 [0.217]	5.5 [0.217]	10.5 [0.413]	11.5 [0.453]	11 [0.433]	12 [0.472]	9.5 [0.374]	10.5 [0.413]	15.5 [0.610]	20.5 [0.807]
Y	Standard type	-0.5 [-0.020]	-0.5 [-0.020]	3 [0.118]	4.5 [0.177]	4 [0.157]	6 [0.236]	10 [0.394]	11.5 [0.453]	15.5 [0.610]	20.5 [0.807]
	With bumper (-R)	1.5 [0.059]	1.5 [0.059]	4 [0.157]	4.5 [0.177]	2 [0.079]	4 [0.157]	9 [0.354]	11.5 [0.453]	15.5 [0.610]	20.5 [0.807]

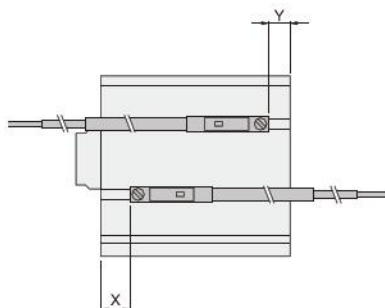
● Single acting push type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X		10.5 [0.413]	10.5 [0.413]	9.5 [0.374]	10 [0.394]	11 [0.433]	13 [0.512]	12 [0.472]
Y		-3.5 [-0.138]	-3.5 [-0.138]	3 [0.118]	1 [0.039]	2 [0.079]	3 [0.118]	6 [0.236]

● Single acting pull type

		mm [in.]						
Code	Bore	12	16	20	25	32	40	50
X		2.5 [0.098]	2.5 [0.098]	6.5 [0.256]	6.5 [0.256]	9 [0.354]	10 [0.394]	8 [0.315]
Y		4.5 [0.177]	4.5 [0.177]	8 [0.315]	9.5 [0.374]	9 [0.354]	11 [0.433]	10 [0.394]

● Lateral load resistant cylinders with magnet



■ Solid state type

● Double acting type

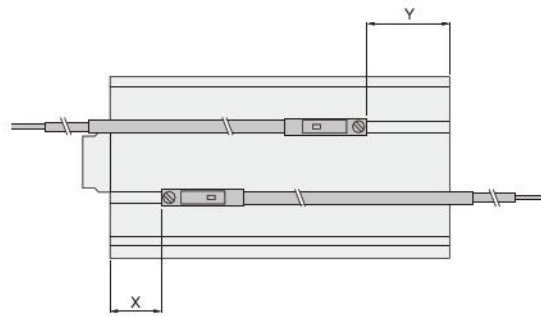
		mm [in.]									
Code	Bore	12	16	20	25	32	40	50	63	80	100
X		10 [0.394]	10 [0.394]	15 [0.591]	16 [0.630]	15.5 [0.610]	16.5 [0.650]	15.5 [0.610]	17.5 [0.689]	26.5 [1.043]	31.5 [1.240]
Y		6 [0.236]	6 [0.236]	8.5 [0.335]	9 [0.354]	6.5 [0.256]	8.5 [0.335]	11.5 [0.453]	13.5 [0.531]	18.5 [0.728]	23.5 [0.925]

■ Reed switch type

● Double acting type

		mm [in.]									
Code	Bore	12	16	20	25	32	40	50	63	80	100
X		5.5 [0.217]	5.5 [0.217]	10.5 [0.413]	11.5 [0.453]	11 [0.433]	12 [0.472]	11 [0.433]	13 [0.512]	22 [0.866]	27 [1.063]
Y		1.5 [0.059]	1.5 [0.059]	4 [0.157]	4.5 [0.177]	2 [0.079]	4 [0.157]	7 [0.276]	9 [0.354]	14 [0.551]	19 [0.748]

● Long stroke cylinders with magnet



■ Solid state type

● Double acting type

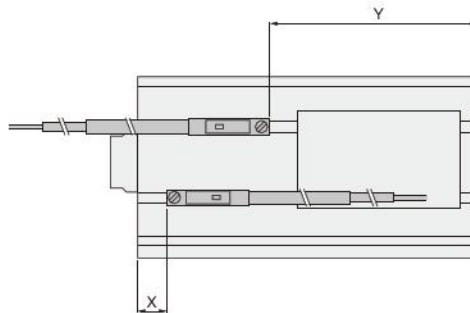
Code \ Bore	12	16	20	25	32	40	50	63	80	100
X	15 [0.591]	15 [0.591]	20 [0.787]	21 [0.827]	20.5 [0.807]	21.5 [0.846]	20.5 [0.807]	22.5 [0.886]	31.5 [1.240]	36.5 [1.437]
Y	12 [0.472]	12 [0.472]	15 [0.591]	14.5 [0.571]	13.5 [0.531]	15.5 [0.610]	12.5 [0.492]	13.5 [0.531]	18.5 [0.728]	23.5 [0.925]

■ Reed switch type

● Double acting type

Code \ Bore	12	16	20	25	32	40	50	63	80	100
X	10.5 [0.413]	10.5 [0.413]	15.5 [0.610]	16.5 [0.650]	16 [0.630]	17 [0.669]	16 [0.630]	18 [0.709]	27 [1.063]	32 [1.260]
Y	7.5 [0.295]	7.5 [0.295]	10.5 [0.413]	10 [0.394]	9 [0.354]	11 [0.433]	8 [0.315]	9 [0.354]	14 [0.551]	19 [0.748]

● End keep cylinder with magnet



■ Solid state type

● Head side end keep

Code \ Bore	16	20	25	32	40	50	63
X	15.5 [0.610]	20.5 [0.807]	21.5 [0.846]	20.5 [0.807]	21.5 [0.846]	20.5 [0.807]	22.5 [0.886]
Y	36.5 [1.437]	34.5 [1.358]	34.5 [1.358]	43.5 [1.713]	45.5 [1.791]	51.5 [2.028]	54.5 [2.146]

■ Solid state type

● Rod side end keep

Code \ Bore	16	20	25	32	40	50	63
X	35.5 [1.398]	35.5 [1.398]	36.5 [1.437]	45.5 [1.791]	46.5 [1.831]	55.5 [2.185]	57.5 [2.264]
Y	11.5 [0.453]	14.5 [0.571]	14.5 [0.571]	13.5 [0.531]	15.5 [0.610]	11.5 [0.453]	13.5 [0.531]

■ Reed switch type

● Head side end keep

Code \ Bore	16	20	25	32	40	50	63
X	11 [0.433]	16 [0.630]	17 [0.669]	16 [0.630]	17 [0.669]	16 [0.630]	16 [0.630]
Y	32 [1.260]	30 [1.181]	30 [1.181]	39 [1.535]	41 [1.614]	47 [1.850]	50 [1.969]

■ Reed switch type

● Rod side end keep

Code \ Bore	16	20	25	32	40	50	63
X	31 [1.220]	31 [1.220]	32 [1.260]	41 [1.614]	42 [1.654]	51 [2.008]	53 [2.087]
Y	7 [0.276]	10 [0.394]	10 [0.394]	9 [0.354]	11 [0.433]	7 [0.276]	9 [0.354]

Handling Instructions and Precautions

Body mounting

Jig cylinder mounting holes include both through holes with female mounting thread, and dedicated female mounting threads, for a variety of mountings. For details, see the diagrams below.

Standard cylinders, Double rod cylinders

- Standard cylinders
- Long stroke cylinders

- Double rod cylinders
- End keep cylinders

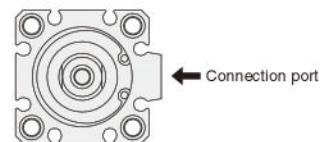
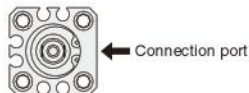
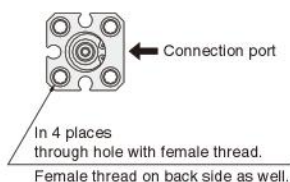
- Lateral load resistant cylinders

● $\phi 6 \sim \phi 12$

● $\phi 16$

● $\phi 20, \phi 25$

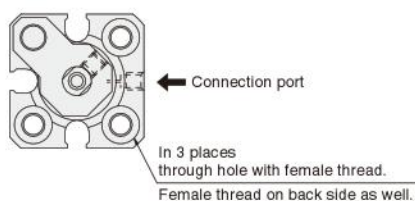
● $\phi 32 \sim \phi 100$



Remark: Mounting methods are the same regardless of bore sizes.

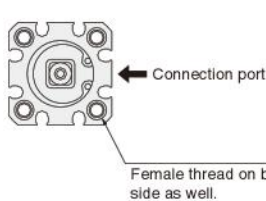
Non-rotating cylinders

● $\phi 6, \phi 8, \phi 10$

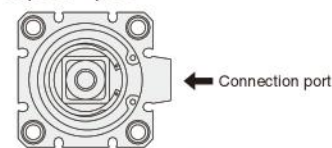


Square rod cylinders

● $\phi 20, \phi 25$



● $\phi 32 \sim \phi 63$



Remark: Mounting methods are the same regardless of bore sizes. However, the mounting method for "with centering location" differs from the figure above. See p.153.

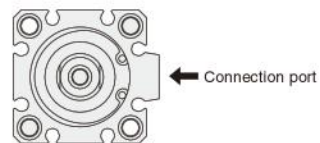
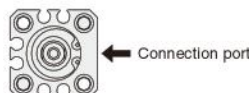
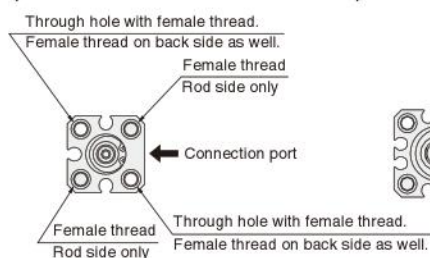
Tandem cylinders

● $\phi 12$

● $\phi 16$

● $\phi 20, \phi 25$

● $\phi 32 \sim \phi 100$



Remark: Mounting methods are the same regardless of bore sizes.

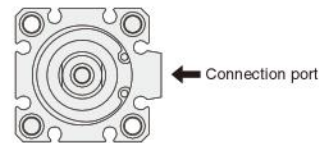
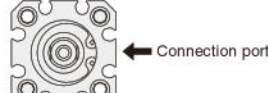
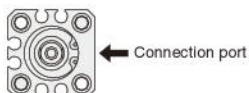
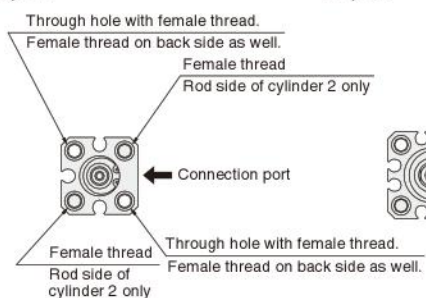
Dual stroke cylinders

● $\phi 12$

● $\phi 16$

● $\phi 20, \phi 25$

● $\phi 32 \sim \phi 100$



Remark: Mounting methods are the same regardless of bore sizes.

- Notes: 1. Avoid applying lateral loads on the piston rod, with the exception of Lateral load resistant cylinders, Long stroke cylinders, and End keep cylinders.
2. When using through holes for mounting, always use the supplied dedicated washers. (except $\phi 6, \phi 8$, and $\phi 10$)
3. Mount an external stopper, etc., to prevent the cylinder from being subjected to direct shocks during operation.

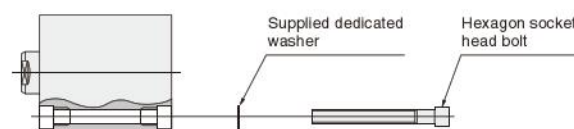
Tightening thread of the end of piston rod

Since a tool (thin wrench) has been prepared for holding the piston rod when tightening the rod end thread, consult us.

Order code: L115069



- Always use the supplied dedicated washer whenever using a through bolt to directly mount the cylinder body in place.* Use the bolts shown in the table below to mount in place. And for bolts used for direct mounting, see p.209.



*Washer not available for bore sizes $\phi 6, \phi 8$, and $\phi 10$.

Bore size mm [in.]	6	8	10	12	16	20	25	32	40	50	63	80	100
	[0.236]	[0.315]	[0.394]	[0.472]	[0.630]	[0.787]	[0.984]	[1.260]	[1.575]	[1.969]	[2.480]	[3.150]	[3.940]
Hexagon socket head bolt nominal size	M3	M3	M3	M3	M3	M3	M4	M4	M5	M6	M6	M8	M10

Bracket mounting

- Foot mounting brackets cannot be installed on tandem cylinders and dual stroke cylinders.
- Flange mounting brackets cannot be installed on the head side of tandem cylinders and the stroke 1 side of dual stroke cylinders.
- Clevis mounting brackets cannot be installed on anything except for lateral load resistant cylinders, long stroke cylinders, and end keep cylinders.

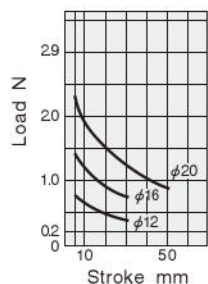
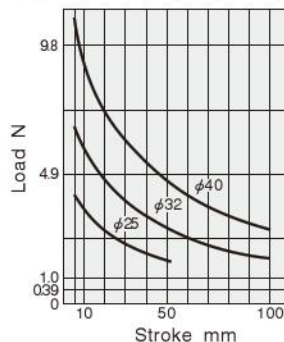
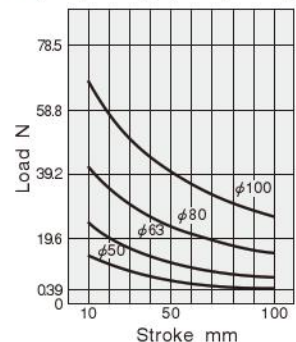
Non-standard stroke

- In most cases, body cutting is used for the manufacturing for non-standard strokes. However, body cutting is not used for strokes of less than 5mm for $\phi 12$ [0.472in.]~ $\phi 40$ [1.575in.], and strokes of less than 10mm for $\phi 50$ [1.969in.]~ $\phi 100$ [3.940in.]. The collar packed is used for these cases. Moreover, sizes $\phi 6$ [0.236in.]~ $\phi 10$ [0.394in.] are collar packed only. For delivery, consult us.
- Rod side end keep cylinders cannot be collar packed.
- Dimensions
 1. Additional strokes obtained by body cutting remain classed as non-standard strokes.
 2. Additional strokes obtained by collar packed are classed as standard strokes in the longer one.

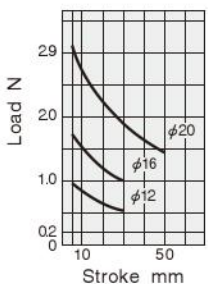
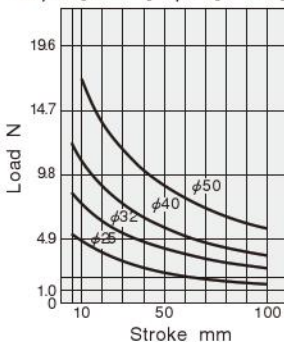
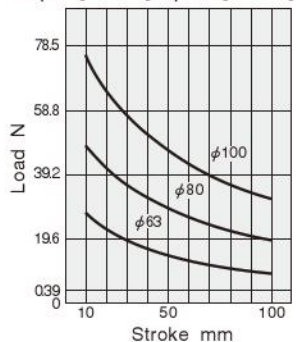
Lateral Load

- Keep the lateral load on the rod end of the lateral load resistant cylinder, long stroke cylinder, and end keep cylinder, at or below the values shown in the graphs below.

Note: Avoid applying lateral load on any cylinder types other than the lateral load resistant cylinder, long stroke cylinder, and end keep cylinder.

● Lateral load resistant cylinders**● Standard type (CBDA)**● $\phi 12$ [0.472in.]~ $\phi 20$ [0.787in.]● $\phi 25$ [0.984in.]~ $\phi 40$ [1.575in.]● $\phi 50$ [1.969in.]~ $\phi 100$ [3.940in.]

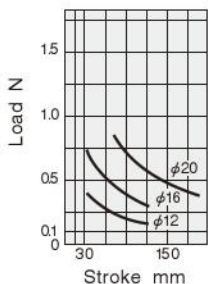
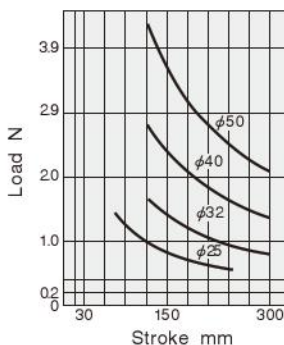
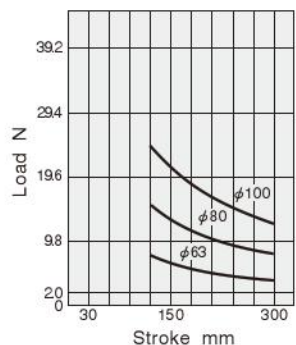
1N = 0.2248lbf.
1mm = 0.0394in.

● Cylinder with magnet (CBDAS)● $\phi 12$ [0.472in.]~ $\phi 20$ [0.787in.]● $\phi 25$ [0.984in.]~ $\phi 50$ [1.969in.]● $\phi 63$ [2.480in.]~ $\phi 100$ [3.940in.]

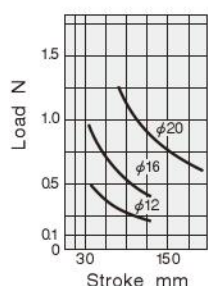
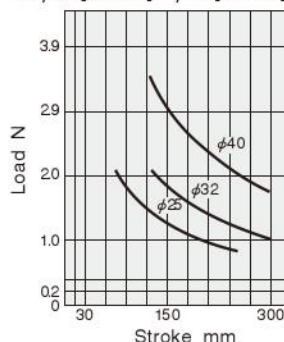
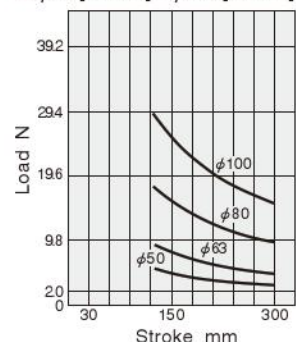
1N = 0.2248lbf.
1mm = 0.0394in.

● Long stroke cylinders, End keep cylinders

● Standard type (CCDA,CCDAK)

● $\phi 12$ [0.472in.]~ $\phi 20$ [0.787in.]● $\phi 25$ [0.984in.]~ $\phi 50$ [1.969in.]● $\phi 63$ [2.480in.]~ $\phi 100$ [3.940in.]

1N = 0.2248lbf.
1mm = 0.0394in.

● Cylinder with magnet (CCDAS, CCDAKS)● $\phi 12$ [0.472in.]~ $\phi 20$ [0.787in.]● $\phi 25$ [0.984in.]~ $\phi 40$ [1.575in.]● $\phi 50$ [1.969in.]~ $\phi 100$ [3.940in.]

1N = 0.2248lbf.
1mm = 0.0394in.

Handling Instructions and Precautions

Single acting cylinders

Standard cylinders single acting push type
Standard cylinders single acting pull type
Double rod cylinders single acting type
Tandem cylinders single acting push type
Dual stroke cylinders single acting push type
Dual stroke cylinders single acting pull type

If in the above types' application, air is being continuously applied from a connection port, and the spring remains in a compressed state for long periods of time, the piston may sometimes fail to return to its original position even after the air is exhausted. If equipment is to be used in this way over long periods of time, consult us.

End keep cylinder

● Control circuit

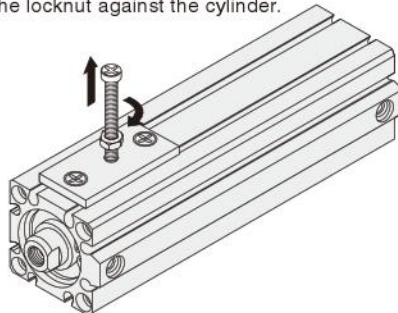
1. For control of Jig end keep cylinders, we recommend the use of 2-position, 4-, 5-port valves. Avoid the use of a control circuit of ABR connections (exhaust centers) with 3-position valves that exhaust air from 2 ports.
2. Always use meter-out control for speed control. Meter-in control may result in failure of the locking mechanism to release.

Notes: 1. It is dangerous to supply air to a connection port on a side with a locking mechanism while already exhausted, because the piston rod could suddenly extend (retract). In addition, it could also cause galling of the lock piston and piston rod, resulting in defective operation. Always supply air to the connection port on the opposite side to ensure back pressure is applied.

2. When restarting operations after air has been exhausted from the cylinder due to completion of operations or to an emergency stop, always start by supplying air to the connection port on the opposite side of the locking mechanism.
3. Connect the valve port A (NC) to the connection port on the side with the locking mechanism.

● Manual operation of the locking mechanism

While the locking mechanism is normally released automatically through cylinder operations, it can also be released manually. For manual release, insert an M3 × 0.5 screw that has 30mm [1.18in.] below head length into the manual override opening, thread it in about 3 turns into the internal lock piston, and then pull up the screw. To maintain the manual override for adjustment, etc., thread the locknut onto the screw and, with the locking mechanism in a released state, tighten the locknut against the cylinder.



- Notes: 1. It is dangerous to release the lock when a load (weight) is present on the piston rod, because it may cause a sudden fall or cause the unintended piston rod's extension (retraction). In this case, always supply air to the connection port opposite the one adjacent to the locking mechanism before releasing the locking mechanism.
2. If the locking mechanism cannot easily be released even with manual override, it could be the result of galling of the lock piston and piston rod. In this case, supply air to the connection port opposite the one adjacent to the locking mechanism before releasing the locking mechanism.
 3. Because water, oil, dust, etc., entering via the manual override opening could be a cause of defective locking or other erratic operation, use a cover, etc., for protection when using in locations subject to dripping water, dripping oil, or to large amounts of dust, etc.

Sensor switch

In the standard cylinder, a magnet for the sensor switch is not built-in.

To install a sensor switch, a cylinder with a built-in magnet for the sensor switch is required.

- Notes: 1. For the sensor switch mounting location and moving ranges, see p.199.
2. Contact protection measures are required for connecting inductive loads to reed sensor switches or for when capacitive surges are generated. For contact protection measures, see p.1566.

Piping

Always thoroughly blow off (use compressed air) the tubing before connecting it to the cylinder. Entering chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.

Atmosphere

1. If using in locations subject to dripping water, dripping oil, etc., or to large amounts of dust, use a cover to protect the unit.
2. The product cannot be used when the media or ambient atmosphere contains any of the substances listed below.
Organic solvents, phosphate ester type hydraulic oil, sulphur dioxide, chlorine gas, or acids, etc.

Lubrication

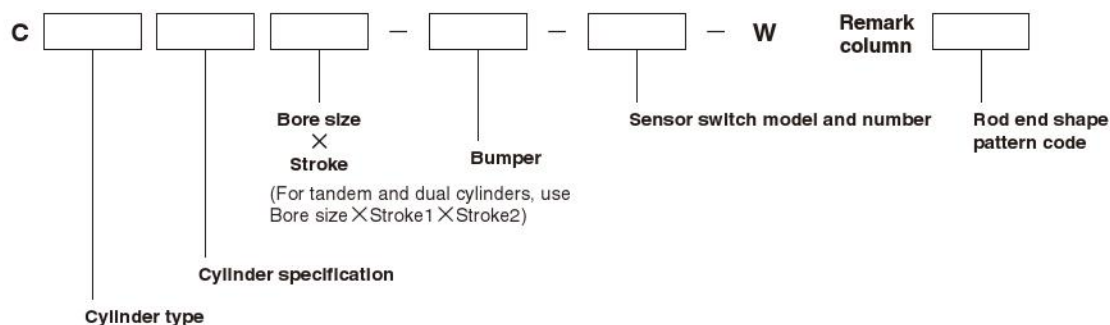
The product can be used without lubrication, if lubrication is required, use Turbine Oil Class 1 (ISO VG32) or equivalent.

Avoid using spindle oil or machine oil.

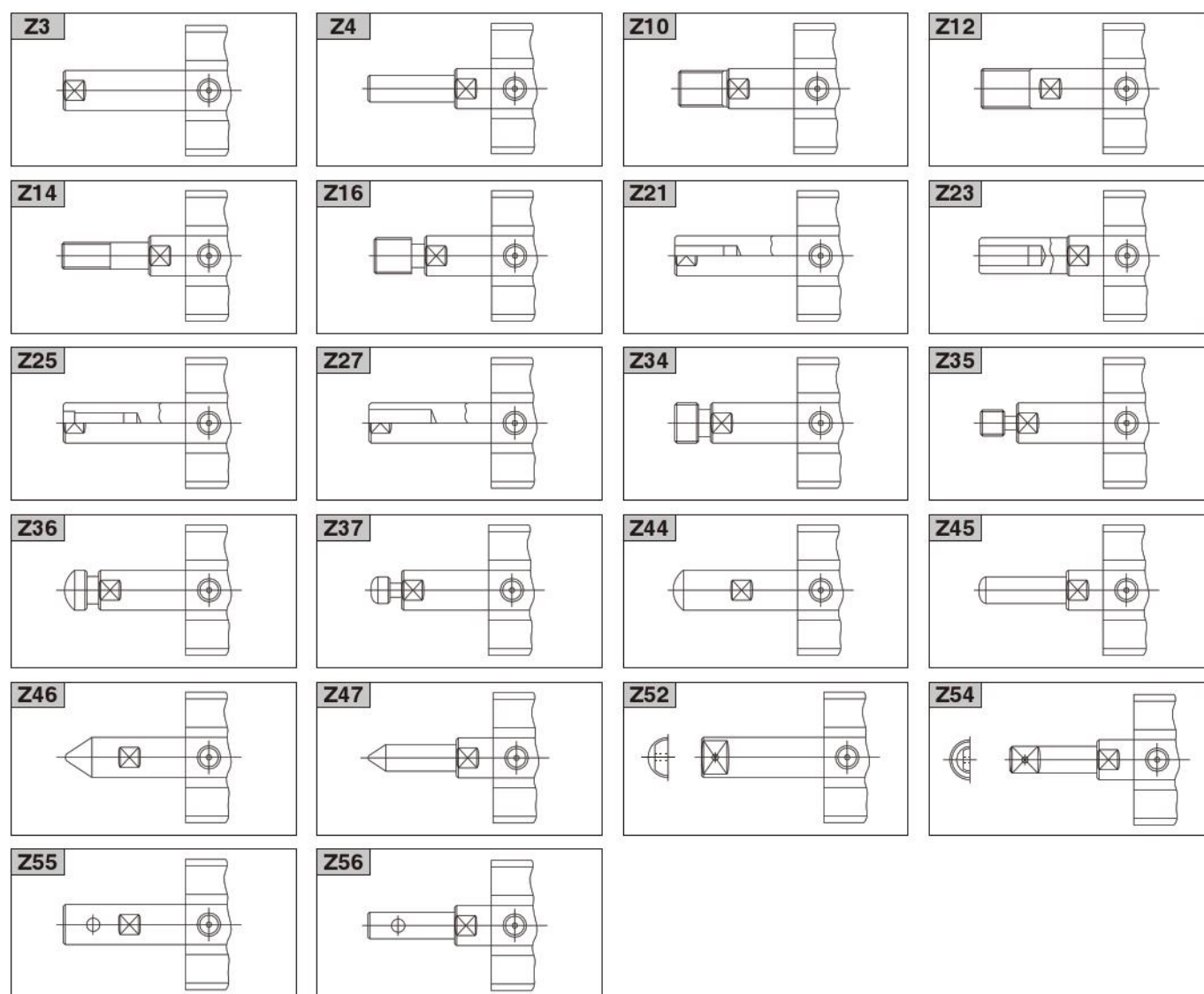
OPTIONAL ROD END SHAPE PATTERNS

Use an order form of rod end pattern and fill the items on the selected one from among 22 types of optional patterned shapes to obtain made-to-order cylinders of non-standard rod end shapes. The optional rod end shapes can be applied to the entire Jig Cylinders C Series. For the order form containing the optional patterned shapes, contact us.
(Except $\phi 6$, $\phi 8$, $\phi 10$)

Order Codes



Piston Rod End Shape Pattern Diagrams (22 Types)



MOUNTING SCREWS FOR JIG CYLINDERS



● Some types of mounting screws specifically for the Jig Cylinders are available.

Use the order codes below to place orders.

List of Order Codes

① Mounting screw type: JIS B 1176 Hexagon socket head cap screws

② Surface treatment: Nickel plated

Applicable cylinder bore size mm [in.]	Mounting screw order code	Screw size	Number of supplied screws
6 [0.236] 8 [0.315] 10 [0.394] 12 [0.472] 16 [0.630] 20 [0.787]	CRK124	M3×25	2
	CRK125	M3×30	
	CRK126	M3×35	
	CRK127	M3×40	
	CRK128	M3×45	
	CRK129	M3×50	4
	CRK130	M3×30	
	CRK131	M3×35	
	CRK132	M3×40	
	CRK133	M3×45	
25 [0.984] 32 [1.260]	CRK134	M3×50	4
	CRK135	M4×30	
	CRK136	M4×35	
	CRK137	M4×40	
	CRK138	M4×45	
	CRK139	M4×50	
	CRK140	M4×55	
	CRK141	M4×60	
	CRK142	M4×65	
	CRK143	M4×70	
40 [1.575]	CRK144	M4×75	4
	CRK145	M5×35	
	CRK146	M5×40	
	CRK147	M5×45	
	CRK148	M5×50	
	CRK149	M5×55	
	CRK150	M5×60	
	CRK151	M5×65	
	CRK152	M5×70	
	CRK153	M5×75	
	CRK154	M5×80	
	CRK155	M5×85	
	CRK156	M5×90	
	CRK157	M5×100	
	CRK158	M5×110	
50 [1.969] 63 [2.480]	CRK159	M6×40	4
	CRK160	M6×45	
	CRK161	M6×50	
	CRK162	M6×55	
	CRK163	M6×60	
	CRK164	M6×65	
	CRK165	M6×70	
	CRK166	M6×75	
	CRK167	M6×80	
	CRK168	M6×85	
	CRK169	M6×90	
	CRK170	M6×100	
	CRK171	M6×110	
	CRK172	M6×120	
	CRK173	M6×130	
	CRK174	M6×140	
	CRK175	M6×150	

Applicable cylinder bore size mm [in.]	Mounting screw order code	Screw size	Number of supplied screws
80 [3.150]	CRK176	M8×60	4
	CRK177	M8×65	
	CRK178	M8×70	
	CRK179	M8×75	
	CRK180	M8×80	
	CRK181	M8×85	
	CRK182	M8×90	
	CRK183	M8×95	
	CRK184	M8×100	
	CRK185	M8×110	
	CRK186	M8×120	
	CRK187	M8×130	
	CRK188	M8×140	
	CRK189	M8×150	
	CRK190	M8×160	
	CRK191	M8×170	
100 [3.940]	CRK192	M10×65	4
	CRK193	M10×70	
	CRK194	M10×75	
	CRK195	M10×80	
	CRK196	M10×85	
	CRK197	M10×90	
	CRK198	M10×95	
	CRK199	M10×100	
	CRK200	M10×110	
	CRK201	M10×120	
	CRK202	M10×130	
	CRK203	M10×140	
	CRK204	M10×150	
	CRK205	M10×160	
	CRK206	M10×170	