CAD drawing data catalog is available.

KOGANEI

ACTUATORS GENERAL CATALOG

JIG CYLINDERS WITH GUIDES φ12～φ63

CONTENTS

Square, thin body allows selection of mounting and piping direction, and expands flexibility of device design.

JIG CYLINDERS WITH GUIDES
φ12～φ63

Select guide rod bearing according to application

Wide range includes scraper specification to prevent dust from entering.

1.Slide bearing type
Superior wear resistance makes it optimum for stopper or other devices needing resistance to lateral loads with shocks.

2.Rolling bearing type
Smooth operation with high precision makes it optimum for pushers and lifters.

Enables piping from 2 directions

Rational device design allows selection of piping location according to the mounting environment. In addition, the piping for dust collection ports used in cylinders for clean systems can also be approached from 2 directions.

Cylinders for clean systems also in line-up

Cleanliness rating corresponds to Class 5 (FED-STD209E Class 100 equivalent) (according to Koganei test standards).

Slender-figured sensor switch

Magnets for sensor switches are standard on all models. Embedded shape avoids protrusion of switches, to simplify mounting in tight spaces.

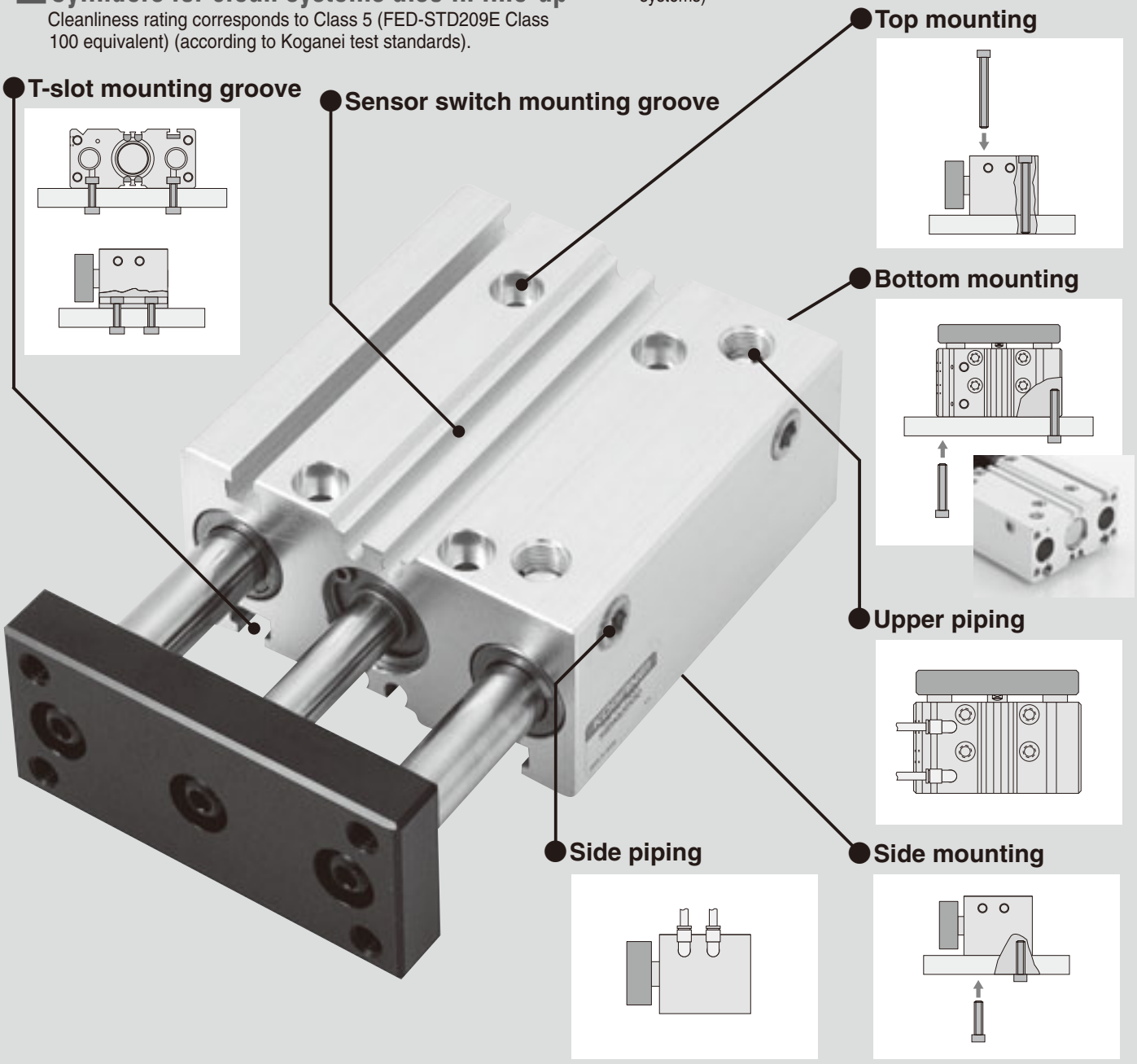
End keep cylinder also available

End keep mechanism supports stable operation in the vertical direction to prevent workpiece from falling caused by shut off in the air supply or any decrease of air pressure.

Four types of mounting possible

Non-ion as a Standard

Can be used on Cathode-ray tube (CRT) manufacturing lines, etc., since copper materials are not used. (Except cylinders for clean systems)



Slim & Compact shape

JIG CYLINDERS WITH GUIDES

Optimum for conveyor line stoppers or lifters.
Moreover, end keep mechanism for greater use!

SQUARE FLEXIBLE POWERFUL

■ Standard Cylinders

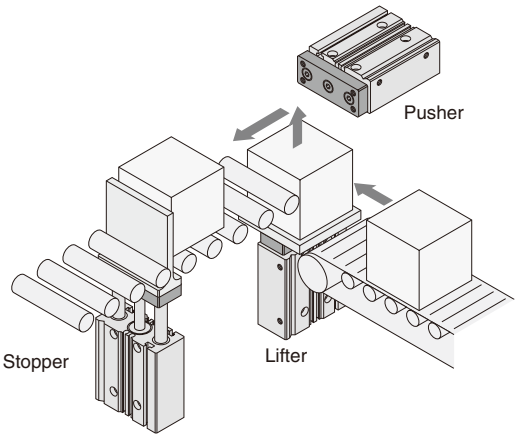
■ Stroke Adjusting Cylinders

■ Sensor Switches

● Stroke Adjusting Cylinders

Adjusting rod can be used to adjust the range of the push-side stroke by 0～10mm [0～0.394in.].

Application example



Handling Instructions and Precautions

Mounting

1. While any mounting direction is allowed, the mounting surface should always be flat. Twisting or bending during mounting may disturb the accuracy and may also result in air leaks or improper operation.
2. Care should be taken that scratches or dents on the cylinder's mounting surface may damage its flatness.
3. The hexagon socket head bolt on the rod end plate has been secured with adhesive. Always confirm that the rod end plate and hexagon socket head bolts are secured before using the cylinder.
4. In applications subject to large shocks, reinforcing the bolt mounting, by installing a support to the cylinder body for example, is recommended.
5. Ensure that the mounting bolts for the cylinder body and end plate are sufficiently strong.
6. Take preventive measures when shocks or vibrations might loosen the bolts.
7. Do not leave scratches or dents in the areas where the piston rod and the guide rod contact. It could result in damage to the seal or in air leaks.
8. The piston rod and guide rod are coated with grease. Do not wipe it off, as it may result in improper operation. Apply grease if no lubrication is visible.
   Grease: General type; Lithium grease No. 2

Sensor switch

The magnet for sensor switches is built into the cylinder. Mounting sensor switch will enable use in sensor switch applications.

Caution: For the sensor switch mounting location and moving instructions, see p.734.

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. Do not use the cylinder in ambient atmospheres that could result in corrosion. Application in this kind of environment may result in damage or in improper operation.
3. Do not use in extremely dry conditions.
4. The most desirable temperature range for cylinders is 5～60°C [41～140°F]. Do not use in condition where temperatures exceed 60°C [140°F], as it could result in damage or in improper operation. In addition, since the moisture content at temperatures below 5°C [41°F] could freeze, resulting in damage or in improper operation, care should be taken to prevent freezing.

General precautions

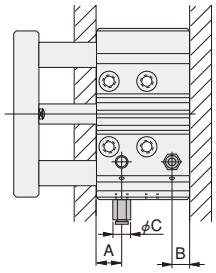
1. Always thoroughly blow off (use compressed air) the tubing before piping. Entering chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.
2. Air used for the cylinder should be clean air that contains no deteriorated compressor oil, etc. Install an air filter (filtration of a minimum 40 μm) near the cylinder or valve to remove collected liquid or dust. In addition, drain the air filter periodically. Collected liquid or dust entering the cylinder may cause improper operation.
3. 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.

When in use

1. Do not place hands, etc., in the cylinder's operating range.
2. Pay full attention to the cylinder operating direction during set up.
3. Care should be taken to avoid trapping body or fingers between the cylinder body and the end plate when the cylinder retracts.
4. Confirm that no residual pressure remains inside the cylinder before commencing maintenance.
5. In its application as a stopper, it is assumed that the carried objects will be cardboard boxes, plastic cases, etc. In cases where steel and other metal blocks are carried, select a sufficiently margined safer product or take measures to fully absorb the impacts.
6. Use the cylinder at speed of 500mm/s [19.7in./sec.] or less. But when the speed and loads are high even within the allowable ranges, install an external stopper, etc., to ensure that the cylinder is not exposed to direct shocks.

Precautions for Mounting of Fittings

● In the installation shown in the diagram below, be aware of the fitting outer diameter.

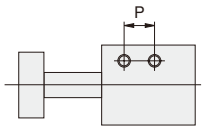


※ Positions A and B are dimensions of the port location closer to the end surface of the body.

mm [in.]

Bore size	Port size	Port location A	Port location B	Fitting outer diameter ϕC
12 [0.472]	10-32 UNF	9 [0.354]	6 [0.236]	ϕ11 [0.433] or less
16 [0.630]			7.5 [0.295]	ϕ13 [0.512]or less
20 [0.787]	NPT 1/8	11 [0.433]	10 [0.394]	ϕ19 [0.748] or less
25 [0.984]		12 [0.472]		
32 [1.260]	NPT 1/8	10 [0.394]	12 [0.472]	ϕ19 [0.748] or less
40 [1.575]		14 [0.551]	13 [0.512]	ϕ25 [0.984] or less
50 [1.969]	NPT 1/4	10 [0.394]	15 [0.591]	ϕ19 [0.748] or less
63 [2.480]			14 [0.551]	

● In products with a stroke of 10mm, be aware of the P dimension when using the side ports.



mm [in.]

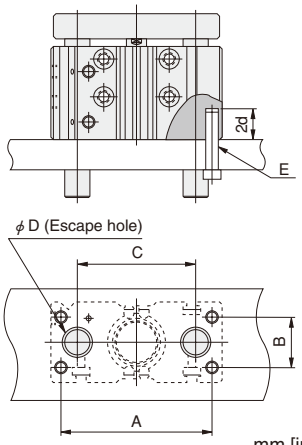
Bore size	Port size	Between-ports dimension P	Fitting outer diameter ϕC
12 [0.472]	10-32 UNF	12 [0.472]	ϕ11 [0.433] or less
16 [0.630]			
20 [0.787]	NPT 1/8	15 [0.591]	ϕ14 [0.551] or less
25 [0.984]			
32 [1.260]			
40 [1.575]			
50 [1.969]	NPT 1/4	16 [0.630]	ϕ15 [0.591] or less
63 [2.480]			

Caution: Apply sealants when re-using a block-off plug. Avoid getting sealant into the cylinder.

Precautions When Bottom Mounting

● Drill the guide rod escape hole when the stroke is 75mm or longer

● When using as a stopper, etc., subject to shocks, the mounting screw's mating thread length should be as close to 2d as possible.

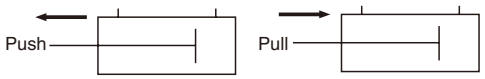


mm [in.]

Bore size	A	B	C	ϕD SGDA□ Slide bearing	Bolt E for mounting
12 [0.472]	51 [2.008]	18 [0.709]	42 [1.654]	10 [0.394]	M4×0.7
16 [0.630]	60 [2.362]	20 [0.787]	47 [1.850]	12 [0.472]	M5×0.8
20 [0.787]	72 [2.835]	26 [1.024]	58 [2.283]	16 [0.630]	M6×1
25 [0.984]	80 [3.150]	30 [1.181]	63 [2.480]	18 [0.709]	M6×1
32 [1.260]	100 [3.937]	34 [1.339]	80 [3.150]	22 [0.866]	M8×1.25
40 [1.575]	106 [4.173]	40 [1.575]	90 [3.543]	22 [0.866]	M8×1.25
50 [1.969]	130 [5.118]	44 [1.732]	110 [4.331]	27 [1.063]	M10×1.5
63 [2.480]	144 [5.669]	44 [1.732]	122 [4.803]	27 [1.063]	M10×1.5

Cylinder Thrust

Select a suitable cylinder 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 application).



N [lbf.]

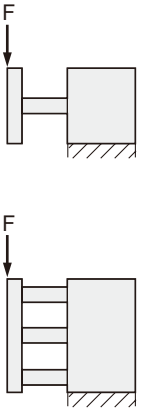
Bore size mm [in.]	Piston rod diameter mm [in.]	Operation	Pressure area mm² [in²]	Air pressure MPa [psi.]									
				0.1 [15]	0.2 [29]	0.3 [44]	0.4 [58]	0.5 [73]	0.6 [87]	0.7 [102]	0.8 [116]	0.9 [131]	1.0 [145]
12 [0.472]	6 [0.236]	Push side	113.0 [0.1752]	11.3 [2.54]	22.6 [5.08]	33.9 [7.62]	45.2 [10.2]	56.5 [12.7]	67.8 [15.2]	79.1 [17.8]	90.4 [20.3]	101.7 [22.86]	113.0 [25.40]
		Pull side	84.8 [0.1314]	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 [17.15]	84.8 [19.06]
		Stroke adjustment	84.8 [0.1314]	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 [17.15]	84.8 [19.06]
16 [0.630]	8 [0.315]	Push side	201.0 [0.3116]	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]
		Pull side	150.7 [0.2336]	15.1 [3.39]	30.1 [6.77]	45.2 [10.2]	60.3 [13.6]	75.4 [16.95]	90.4 [20.32]	105.5 [23.72]	120.6 [27.11]	135.6 [30.48]	150.7 [33.88]
		Stroke adjustment	150.7 [0.2336]	15.1 [3.39]	30.1 [6.77]	45.2 [10.2]	60.3 [13.6]	75.4 [16.95]	90.4 [20.32]	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 [0.4867]	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	235.5 [0.3650]	23.6 [5.31]	47.1 [10.6]	70.7 [15.9]	94.2 [21.18]	117.8 [26.48]	141.3 [31.76]	164.9 [37.07]	188.4 [42.35]	212.0 [47.66]	235.5 [52.94]
		Stroke adjustment	235.5 [0.3650]	23.6 [5.31]	47.1 [10.6]	70.7 [15.9]	94.2 [21.18]	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 [0.7604]	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 [88.24]	441.6 [99.27]	490.6 [110.3]
		Pull side	377.6 [0.5853]	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 [84.89]
		Stroke adjustment	377.6 [0.5853]	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 [84.89]
32 [1.260]	16 [0.630]	Push side	803.8 [1.2459]	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	602.9 [0.9345]	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]
		Stroke adjustment	602.9 [0.9345]	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 [1.9468]	125.6 [28.23]	254.2 [57.14]	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	1055.0 [1.6353]	105.5 [23.72]	211.0 [47.43]	316.5 [71.15]	422.0 [94.87]	527.0 [118.5]	633.0 [142.3]	738.5 [166.0]	844.0 [189.7]	949.5 [213.4]	1055.0 [237.2]
		Stroke adjustment	1055.0 [1.6353]	105.5 [23.72]	211.0 [47.43]	316.5 [71.15]	422.0 [94.87]	527.0 [118.5]	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 [3.0419]	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	1648.5 [2.5552]	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]
		Stroke adjustment	1648.5 [2.5552]	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 [4.8293]	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	2801.7 [4.3426]	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 [503.9]	2521.5 [566.9]	2801.7 [629.9]
		Stroke adjustment	2801.7 [4.3426]	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 [503.9]	2521.5 [566.9]	2801.7 [629.9]

Allowable Lateral Load

● **Lateral load (F) on the rod end should be at or below the figures in the table below.**

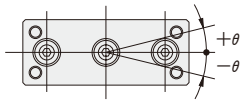
N [lbf.]

Bore mm [in.] \ Stroke mm / Type		10	20	30	40	50	75	100	125	150	175	200
12 [0.472]	Slide bearing type	29 [6.5]	23 [5.2]	19 [4.3]	16.5 [3.7]	15 [3.4]	27.5 [6.2]	23 [5.2]	—	—	—	—
16 [0.630]	Slide bearing type	37 [8.3]	30.5 [6.9]	26 [5.8]	22.5 [5.1]	20 [4.5]	35 [7.9]	30 [6.7]	—	—	—	—
20 [0.787]	Slide bearing type	69 [15.5]	58 [13.0]	50 [11.2]	44 [9.9]	40 [9.0]	91 [20.5]	78 [17.5]	68 [15.3]	60 [13.5]	54 [12.1]	49 [11.0]
25 [0.984]	Slide bearing type	95 [21.4]	80.5 [18.1]	70 [15.7]	61 [13.7]	55 [12.4]	116 [26.1]	100 [22.5]	87 [19.6]	77 [17.3]	70 [15.7]	63 [14.2]
32 [1.260]	Slide bearing type	273 [61.4]	237 [53.3]	209 [47.0]	188 [42.3]	170 [38.2]	195 [43.8]	160 [36.0]	150 [33.7]	134 [30.1]	122 [27.4]	111 [25.0]
40 [1.575]	Slide bearing type	273 [61.4]	237 [53.3]	209 [47.0]	188 [42.3]	170 [38.2]	195 [43.8]	160 [36.0]	150 [33.7]	134 [30.1]	122 [27.4]	111 [25.0]
50 [1.969]	Slide bearing type	398 [89.5]	351 [78.9]	314 [70.6]	284 [63.8]	260 [58.4]	272 [61.1]	240 [54.0]	213 [47.9]	193 [43.4]	176 [39.6]	161 [36.2]
63 [2.480]	Slide bearing type	398 [89.5]	351 [78.9]	314 [70.6]	284 [63.8]	260 [58.4]	272 [61.1]	240 [54.0]	213 [47.9]	193 [43.4]	176 [39.6]	161 [36.2]



End Plate Non-rotation Accuracy θ

Bore size mm [in.]	SGDA
12 [0.472]	±0.1°
16 [0.630]	±0.09°
20 [0.787]	±0.08°
25 [0.984]	±0.07°
32 [1.260]	±0.06°
40 [1.575]	±0.06°
50 [1.969]	±0.05°
63 [2.480]	±0.05°

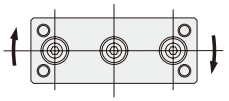


Note: When cylinder is retracted (initial value).
Guide rod deflection excluded.

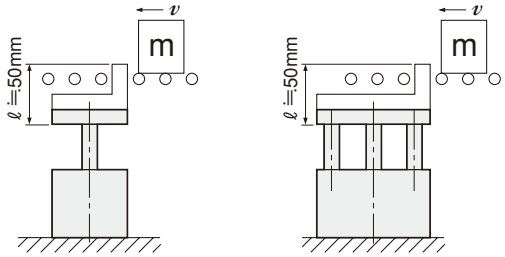
Allowable Twisting Torque for the End Plate

N·m [ft·lbf]

Bore mm [in.] \ Stroke mm / Type		10	20	30	40	50	75	100	125	150	175	200
12 [0.472]	Slide bearing type	0.30 [0.221]	0.24 [0.178]	0.20 [0.148]	0.17 [0.125]	0.16 [0.118]	0.29 [0.214]	0.24 [0.177]	—	—	—	—
16 [0.630]	Slide bearing type	0.43 [0.317]	0.36 [0.266]	0.31 [0.229]	0.26 [0.192]	0.24 [0.177]	0.41 [0.302]	0.35 [0.258]	—	—	—	—
20 [0.787]	Slide bearing type	1.00 [0.738]	0.84 [0.620]	0.73 [0.538]	0.64 [0.472]	0.58 [0.428]	1.32 [0.974]	1.13 [0.833]	0.99 [0.730]	0.87 [0.642]	0.78 [0.575]	0.71 [0.524]
25 [0.984]	Slide bearing type	1.50 [1.106]	1.27 [0.937]	1.10 [0.811]	0.96 [0.708]	0.87 [0.642]	1.83 [1.350]	1.58 [1.165]	1.37 [1.011]	1.21 [0.892]	1.10 [0.811]	0.99 [0.730]
32 [1.260]	Slide bearing type	5.46 [4.027]	4.74 [3.496]	4.18 [3.083]	3.76 [2.773]	3.40 [2.508]	3.90 [2.877]	3.20 [2.360]	3.00 [2.213]	2.68 [1.976]	2.44 [1.800]	2.22 [1.637]
40 [1.575]	Slide bearing type	6.14 [4.529]	5.33 [3.931]	4.70 [3.467]	4.23 [3.120]	3.83 [2.825]	4.39 [3.238]	3.60 [2.655]	3.38 [2.493]	3.02 [2.228]	2.75 [2.028]	2.50 [1.844]
50 [1.969]	Slide bearing type	10.95 [8.077]	9.65 [7.118]	8.64 [6.373]	7.81 [5.761]	7.15 [5.274]	7.48 [5.517]	6.60 [4.868]	5.86 [4.322]	5.31 [3.917]	4.84 [3.570]	4.43 [3.268]
63 [2.480]	Slide bearing type	12.05 [8.888]	10.71 [7.900]	9.58 [7.066]	8.66 [6.388]	7.93 [5.849]	8.30 [6.122]	7.32 [5.399]	6.50 [4.794]	5.89 [4.344]	5.37 [3.961]	4.91 [3.622]



Allowable Range When Used as a Stopper

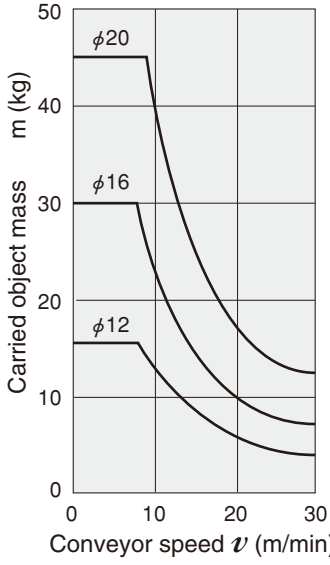


※ For product selection when the ℓ dimension is longer, select one with a sufficient cylinder bore.

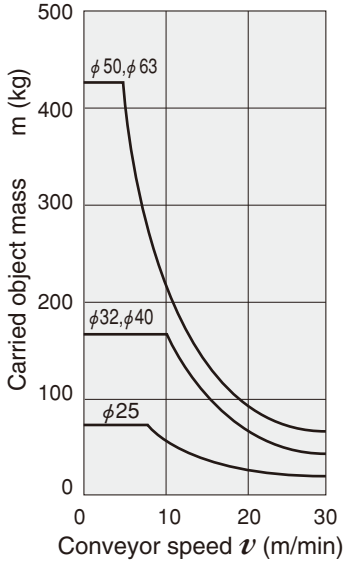
Precautions for handling

Notes: 1. When using as a stopper, select product with a stroke of 50mm or less.
2. The rolling bearing type cannot be used as a stopper.
3. When the stopper becomes subject to friction force generated by friction between the carried object and the conveyor, etc., keep the friction force at the allowable lateral load or below .

ϕ12 [0.472in.] ~ ϕ20 [0.787in.] (Slide bearing)



ϕ25 [0.984in.] ~ ϕ63 [2.480in.] (Slide bearing)



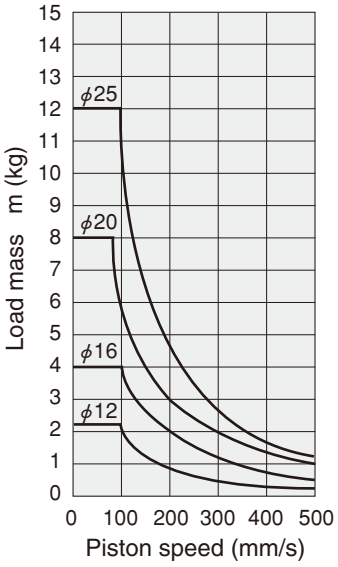
Notes: 1. Figures assume that the carried objects are plastic containers.
2. Figures for ϕ12~ϕ25 are st = 30, and for ϕ32~ϕ63 are st = 50.

1kg = 2.205lb. 1m/min. = 3.281ft./min.

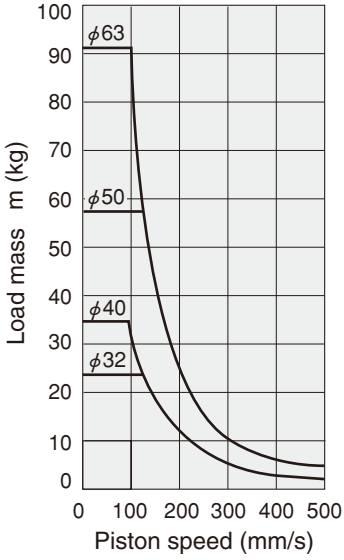
Allowable Load Range

Use the graph values below for the relation between the load and piston speed. When these values are exceeded, install an external stopper.

ϕ12 [0.472in.] ~ ϕ25 [0.984in.]



ϕ32 [1.260in.] ~ ϕ63 [2.480in.]

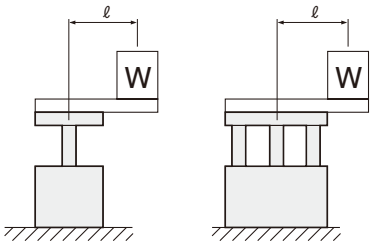


1kg = 2.205lb. 1mm/s = 0.0394in./sec.

Allowable Range When Used as a Lifter

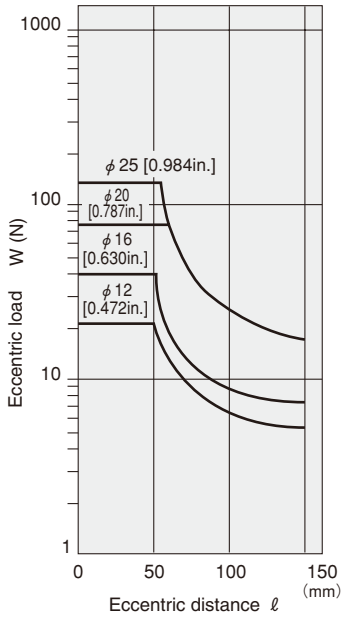
● Select a cylinder bore so that the total mass of the load is the theoretical output (in the graphs below) or less.

Bore size mm [in.]	Theoretical output
ϕ12 [0.472], ϕ16 [0.630]	40% or less
ϕ20 [0.787], ϕ25 [0984]	50% or less
ϕ32 [1.260]～ϕ63 [2.480]	60% or less

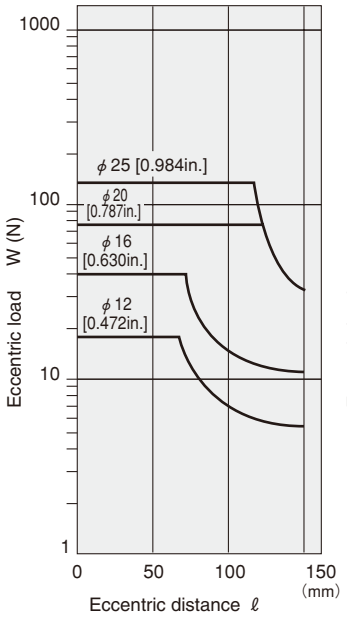


■ Slide bearing type (Applied pressure P = 0.5MPa [73psi.])

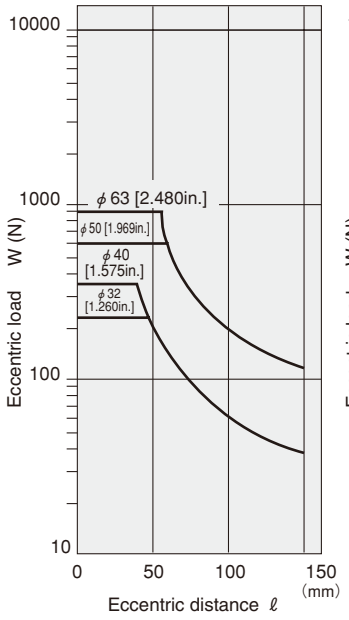
● ϕ12 [0.472in.] ～ ϕ25 [0.984in.] (50mm or shorter strokes)



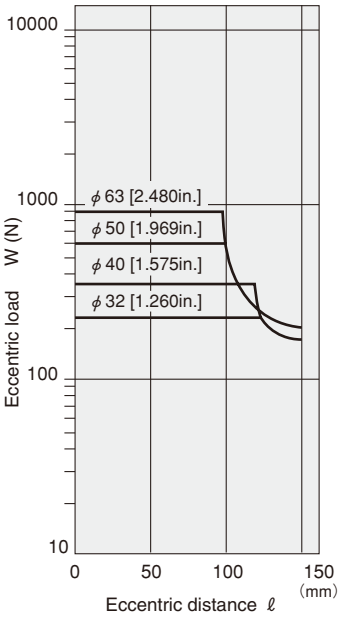
(75mm or longer strokes)



● ϕ32 [1.260in.] ～ ϕ63 [2.480in.] (50mm or shorter strokes)



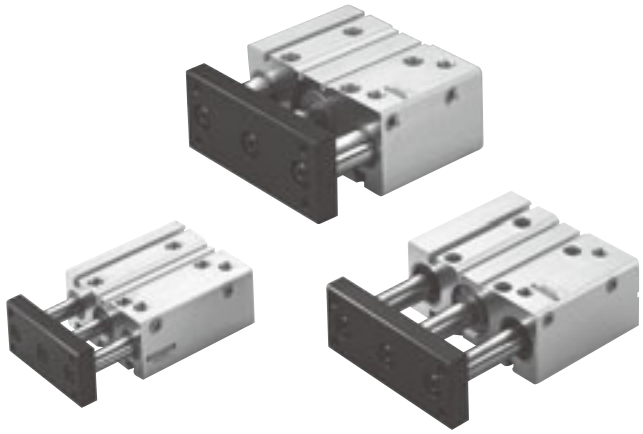
(75mm or longer strokes)



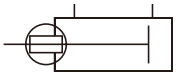
1N = 0.2248lbf.
1mm = 0.0394in.

JIG CYLINDERS WITH GUIDES

Standard Cylinders ϕ12～ϕ63



Symbol



Specifications

Item \ Bore 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]
Operation type		Double acting type							
Media		Air							
Operating pressure range MPa [psi.]	Standard specification	0.15～1.0 [22～145]			0.1～1.0 [15～145]				
	Scraper specification	0.2～1.0 [29～145]			0.15～1.0 [22～145]				
Proof pressure MPa [psi.]		1.5 [218]							
Operating temperature range °C [°F]		0～60 [32～140] (Heat resistant specification is 120 [248].)							
Operating speed range mm/s [in./sec.]		100～500 [3.9～19.7]							
Cushion		Rubber bumper							
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)							
Port size		10-32 UNF		NPT1/8				NPT1/4	
Stroke tolerance mm [in.]		$^{+1.5}_{0}$ [$^{+0.059}_{0}$]							

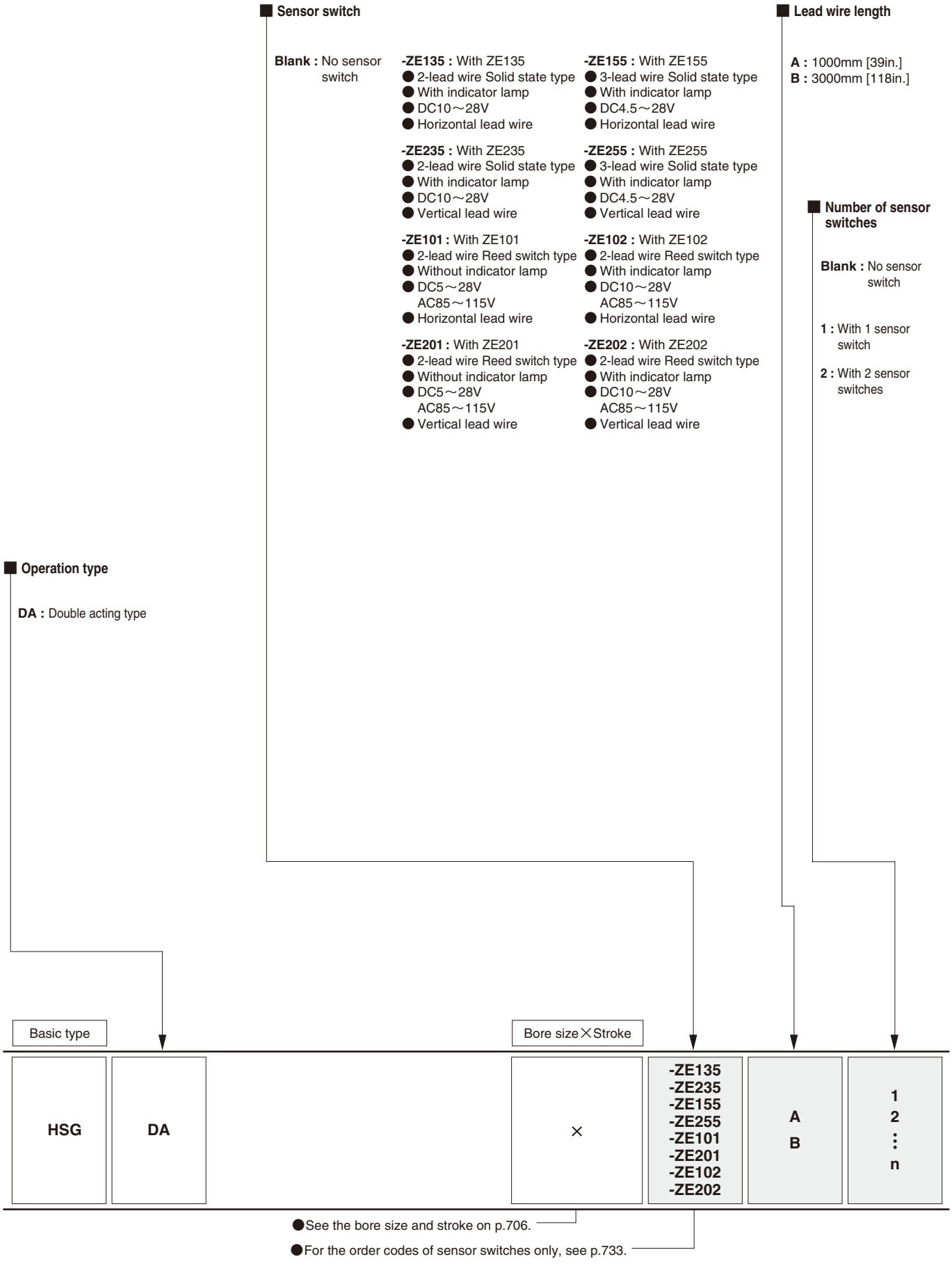
Bore Size and Stroke

inch

Bore size	Standard strokes	Maximum available stroke
12	1/2, 1, 1 1/2, 2, 3, 4	4
16		
20	1/2, 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8	8
25		
32		
40		
50		
63		

Remarks: 1. For strokes of 3inches or longer, use long bushing type.

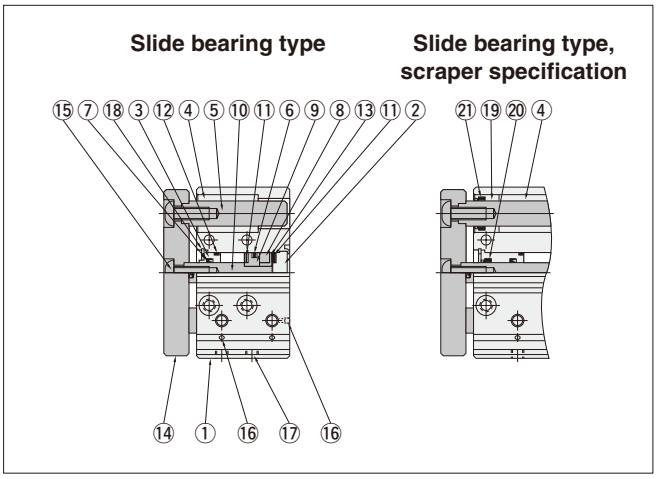
Order Codes for Standard Cylinder



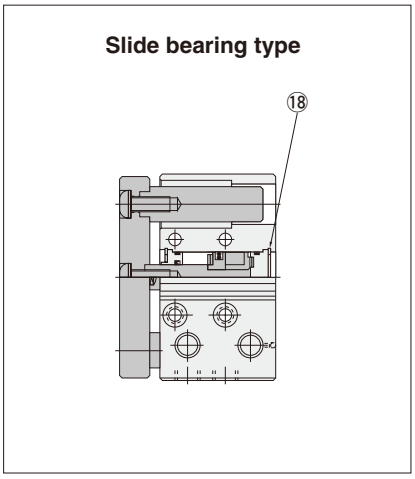
Inner Construction and Major Parts

■ Standard cylinder

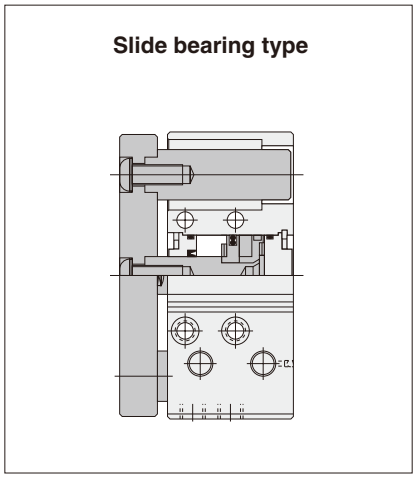
● φ12



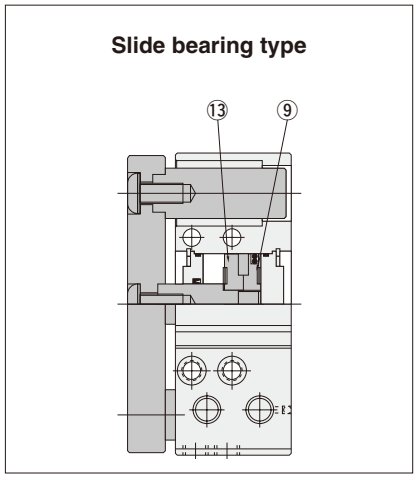
● φ16, φ20, φ25 ※



● φ32, φ40 ※



● φ50, φ63 ※



Remark: The number of bearings for 2inches stroke or shorter is 1 bearing per shaft. At 3inches stroke or longer, 2 bearings per shaft. The plate, piston rod, and guide rod cannot be disassembled.

Major Parts and Materials

No.	Parts / Bore 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]
①	Cylinder body	Aluminum alloy (anodized)							
②	Head cover	Aluminum alloy (anodized)							
③	Rod cover	Aluminum alloy (special wear-resistant treatment)							
④	Slide bearing	Aluminum alloy (special wear-resistant treatment)							
⑤	Guide rod	Steel (hard chrome-plated) 〔rolling bearing type: Steel〕							
⑥	Piston seal	Synthetic rubber (NBR)							
⑦	Rod seal	Synthetic rubber (NBR)							
⑧	Magnet	Plastic magnet							
⑨	Piston	Aluminum alloy (special rust prevention treatment)							
⑩	Piston rod	Stainless steel (hard chrome plated)				Steel (hard chrome plated)			
⑪	Bumper	Synthetic rubber (NBR)							
⑫	O-ring	Synthetic rubber (NBR)							
⑬	Support	Aluminum alloy (special rust prevention treatment)							
⑭	Plate	Aluminum alloy (black anodized)							
⑮	Bolt	Steel (nickel plated)							
⑯	Steel ball	Steel							
⑰	Plug	Mild steel (zinc plated)							
⑱	Snap ring	Steel (phosphate coating)							
⑲	Scraper holder	Aluminum alloy (anodized)							
⑳	Scraper (cylinder)	Synthetic rubber (NBR)							
㉑	Scraper (guide)	Synthetic rubber (NBR)							

Seals

Type / Parts / Bore size mm	Standard cylinder			
	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
12	MYR-6	COP-12	Y090260	None
16	MYR-8	COP-16	Y090207	Y090207
20	MYR-10	COP-20	Y090216	Y090216
25	MYR-12	COP-25	Y090210	Y090210
32	MYR-16	COP-32	L090084	L090084
40	MYR-16	COP-40	L090151	L090151
50	MYR-20	COP-50	L090174	L090174
63	MYR-20	COP-63	L090180	L090180

Mass

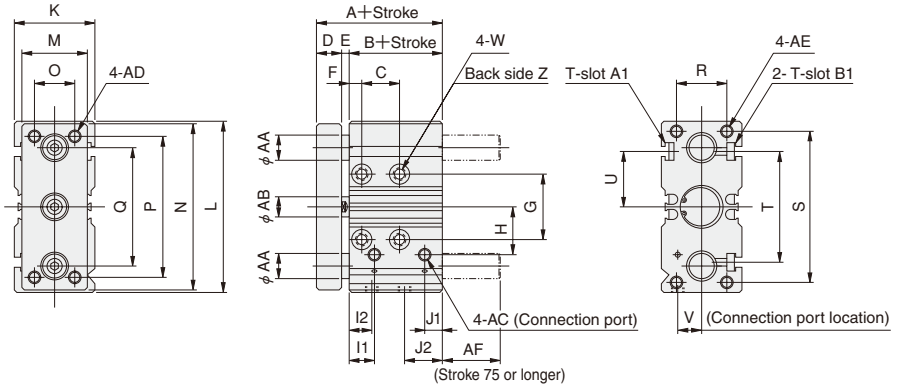
g [oz.]

Bore size mm [in.] / Type / Mass		Standard cylinder		Option	
		Slide bearing type		Additional mass of sensor switch	
		Zero stroke mass	Additional mass for each 1mm [0.0394in.] stroke	ZE□□□A	ZE□□□B
12 [0.472]	50st or shorter	130 [4.59]	3.99 [0.1407]	15 [0.53]	35 [1.23]
	75st or longer	140 [4.94]	3.99 [0.1407]		
16 [0.630]	50st or shorter	250 [8.82]	5.2 [0.183]		
	75st or longer	280 [9.88]	5.2 [0.183]		
20 [0.787]	50st or shorter	450 [15.87]	9.0 [0.317]		
	75st or longer	500 [17.64]	9.0 [0.317]		
25 [0.984]	50st or shorter	642 [22.65]	10.81 [0.3813]		
	75st or longer	720 [25.40]	10.81 [0.3813]		
32 [1.260]	50st or shorter	923 [32.56]	16 [0.56]		
	75st or longer	1300 [45.86]	16 [0.56]		
40 [1.575]	50st or shorter	1200 [42.33]	17.61 [0.6212]		
	75st or longer	1440 [50.79]	17.61 [0.6212]		
50 [1.969]	50st or shorter	1903 [67.13]	26.5 [0.935]		
	75st or longer	2206 [77.81]	26.5 [0.935]		
63 [2.480]	50st or shorter	2470 [87.13]	29.65 [1.0459]		
	75st or longer	2770 [97.71]	29.65 [1.0459]		

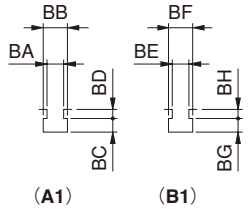
Dimensions of Standard Cylinder (mm)

Slide bearing type HSGDA [Bore size] × [Stroke]

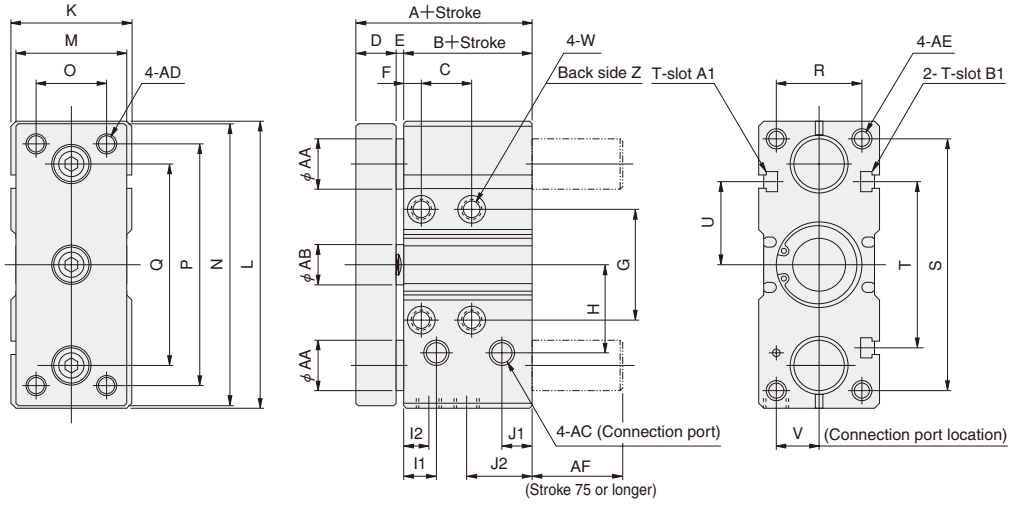
● φ12, φ16 (Drawings show φ16.)



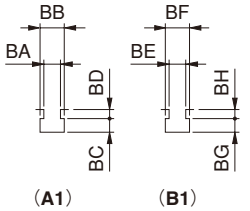
● T-slot **A1**, **B1** dimensions



● φ20～φ63 (Drawings show φ32.)



●T-slot **A1**, **B1** dimensions



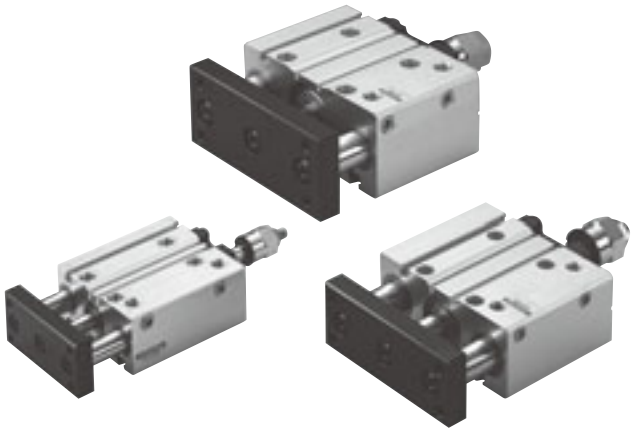
Code / Bore mm [in.]	A	B	C Stroke 10	20	30	40	50～100	125 or more	D	E	F	G	H	I1	I2	J1	J2	K	L	M	N	O	P	Q	R	S	T	U	V Note	W
12 [0.472]	36	25	15	25	35	45	55	—	8	3	5	22	17	10	9	6	14	28	58	22	56	14	48	42	18	51	37	18.5	8.5	φ4.2 (Thru hole) Counterbore φ8 Depth 4.5
16 [0.630]	40	27	15	25	35	45	55	—	10	3	5	26	19	10	9	7.5	16	32	68	26	66	16	56	47	20	60	44	22	9.5	φ4.2 (Thru hole) Counterbore φ8 Depth 4.5
20 [0.787]	52	36	20	30	40	50	60	110	12	4	6	30	27	11	11	10	20	40	82	36	80	24	66	58	26	72	54	27	13.5	φ5.2 (Thru hole) Counterbore φ9.5 Depth 5.5
25 [0.984]	54	38	20	30	40	50	60	110	12	4	6	33	29	12	12	10	21	42	92	38	90	26	76	63	30	80	54	27	14.5	φ5.2 (Thru hole) Counterbore φ9.5 Depth 5.5
32 [1.260]	59	40	20	30	40	50	60	110	15	4	7	44	35	13	10	12	25	48	114	44	112	28	96	80	34	100	66	33	17	φ6.8 (Thru hole) Counterbore φ11 Depth 7
40 [1.575]	63	44	20	30	40	50	60	110	15	4	7	52	40	14	14	13	25	54	124	50	122	34	106	90	40	106	82	41	18	φ6.8 (Thru hole) Counterbore φ11 Depth 7
50 [1.969]	70	47	20	30	40	50	60	110	18	5	8	66	52.5	15.5	10	15	31	66	150	62	148	42	120	110	44	130	100	50	22	φ8.6 (Thru hole) Counterbore φ14 Depth 9
63 [2.480]	70	47	20	30	40	50	60	110	18	5	8	78	60	17	10	14	31	76	162	72	160	52	132	122	44	144	120	60	24	φ8.6 (Thru hole) Counterbore φ14 Depth 9

Note: The **V** dimension shows the side connection port location.

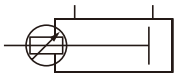
Code / Bore mm [in.]	Z	AA	AB	AC	AD	AE	AF	T-slot A1	T-slot B1	BA	BB	BC	BD	BE	BF	BG	BH
12 [0.472]	10-32 UNF Depth 8	8	6	10-32 UNF	8-32 UNC	8-32 UNC Depth 8	15	M3×0.5	M4×0.7	3.3	5.8	3	1.5	4.3	7.3	3.5	2.5
16 [0.630]	10-32 UNF Depth 11	10	8	10-32 UNF	10-32 UNF	10-32 UNFDepth 10	23	M4×0.7	M4×0.7	4.3	7.3	3.5	1.5	4.3	7.3	3.5	3
20 [0.787]	1/4-20UNC Depth 12	14	10	NPT1/8	1/4-20 UNC	1/4-20 UNC Depth 12	27	M4×0.7	M5×0.8	4.3	7.3	4	3	5.3	8.3	4.5	3
25 [0.984]	1/4-20 UNC Depth 12	16	12	NPT1/8	1/4-20 UNC	1/4-20 UNC Depth 12	28	M4×0.7	M5×0.8	4.3	7.3	4	3	5.3	8.3	4.5	3
32 [1.260]	5/16-18 UNC Depth 16	20	16	NPT1/8	5/16-18 UNC	5/16-18 UNC Depth 16	36	M5×0.8	M5×0.8	5.3	8.3	4.5	3	5.3	8.3	4.5	3
40 [1.575]	5/16-18 UNC Depth 16	20	16	NPT1/8	5/16-18 UNC	5/16-18 UNC Depth 16	32	M5×0.8	M6×1	5.3	8.3	4.5	3	6.3	10.3	5.5	3
50 [1.969]	3/8-16 UNC Depth 20	25	20	NPT1/4	3/8-16 UNC	3/8-16 UNC Depth 20	39	M5×0.8	M8×1.25	5.3	8.3	4.5	3	8.3	13.3	7	4.5
63 [2.480]	3/8-16 UNC Depth 20	25	20	NPT1/4	3/8-16 UNC	3/8-16 UNC Depth 20	39	M5×0.8	M8×1.25	5.3	8.3	4.5	3	8.3	13.3	7	4.5

JIG CYLINDERS WITH GUIDES

Stroke Adjusting Cylinders ϕ12～ϕ63



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]
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.]	100～500 [3.9～19.7]							
Cushion	Rubber bumper							
Lubrication	Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)							
Port size	10-32 UNF		NPT1/8				NPT1/4	
Push side stroke adjusting range mm [in.]	0～−10 [0～−0.394] (With respect to the specification stroke)							

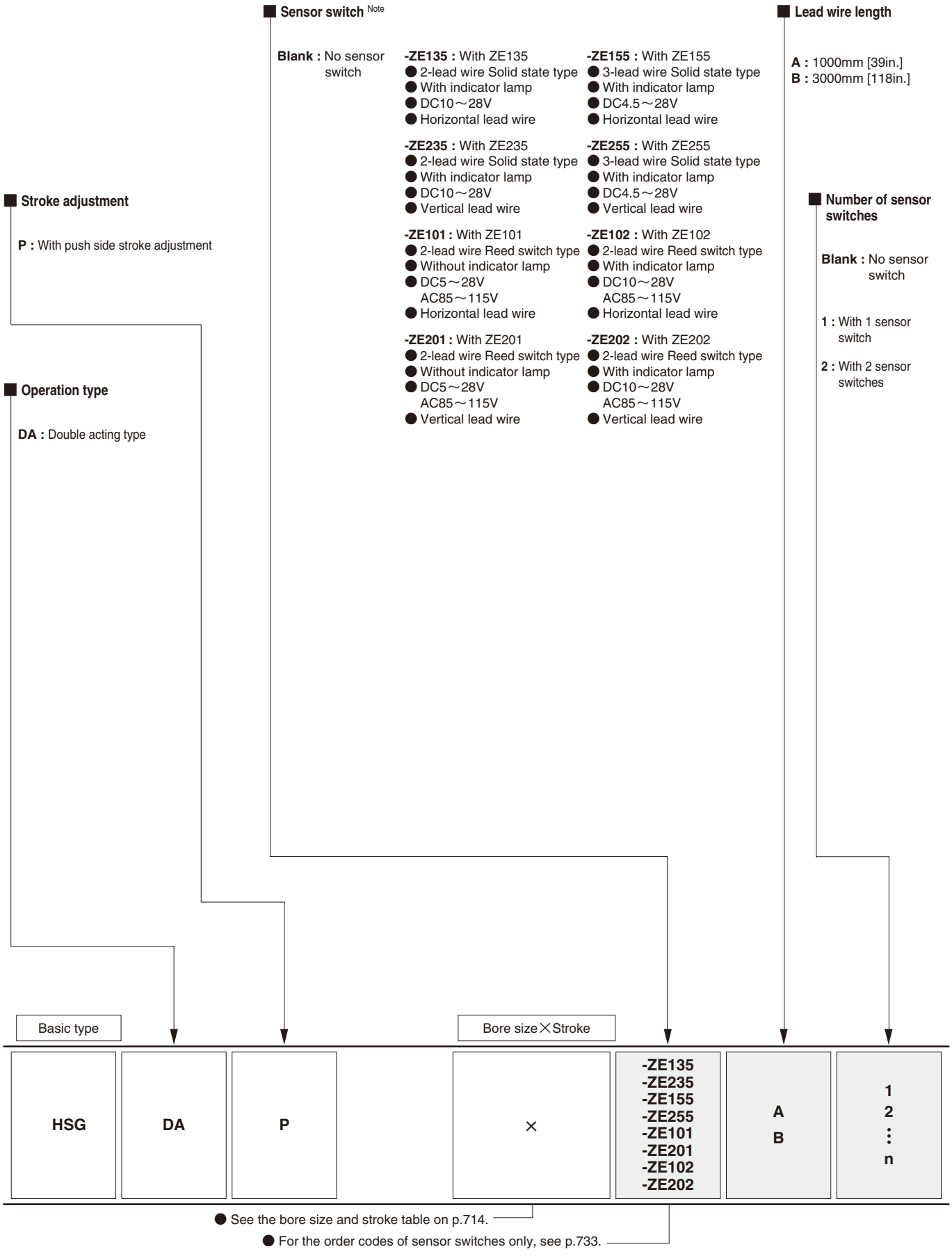
Bore Size and Stroke

inch

Bore size	Standard strokes	Maximum available stroke
12	1/2, 1, 1 1/2, 2, 3, 4	4
16		
20	1/2, 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8	8
25		
32		
40		
50		
63		

Remark: For strokes of 3inches or longer, use long bushing type.

Order Codes for Stroke Adjusting Cylinder

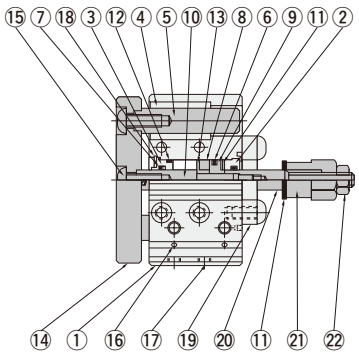


Inner Construction and Major Parts

■Stroke adjusting cylinder

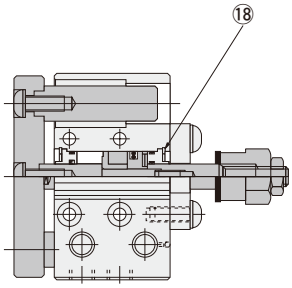
● φ12

Slide bearing type



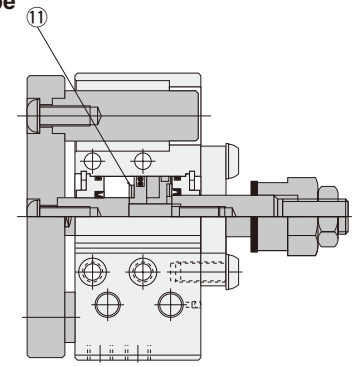
● φ16, φ20, φ25 ※

Slide bearing type



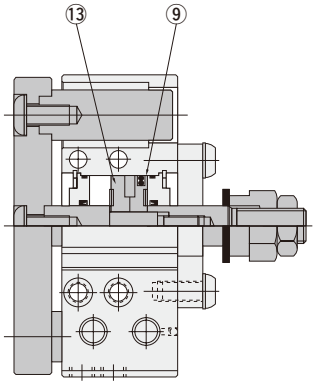
● φ32, φ40 ※

Slide bearing type



● φ50, φ63 ※

Slide bearing type



Remark: The number of bearings for 2inches stroke or shorter is 1 bearing per shaft. At 3inches stroke or longer, 2 bearings per shaft. The plate, piston rod, and guide rod cannot be disassembled.

Major Parts and Materials

No.	Parts / Bore 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]
①	Cylinder body	Aluminum alloy (anodized)							
②	Head cover	Aluminum alloy (special wear-resistant treatment)							
③	Rod cover	Aluminum alloy (special wear-resistant treatment)							
④	Slide bearing	Aluminum alloy (special wear-resistant treatment)							
⑤	Guide rod	Steel (hard chrome plated) 〔rolling bearing type: Steel〕							
⑥	Piston seal	Synthetic rubber (NBR)							
⑦	Rod seal	Synthetic rubber (NBR)							
⑧	Magnet	Plastic magnet							
⑨	Piston	Aluminum alloy (special rust prevention treatment)							
⑩	Piston rod	Stainless steel (hard chrome plated)				Steel (hard chrome plated)			
⑪	Bumper	Synthetic rubber (NBR)							
⑫	O-ring	Synthetic rubber (NBR)							
⑬	Support	Aluminum alloy (special rust prevention treatment)							
⑭	Plate	Aluminum alloy (black anodized)							
⑮	Bolt	Steel (nickel plated)							
⑯	Steel ball	Steel							
⑰	Plug	Mild steel (zinc plated)							
⑱	Snap ring	Steel (phosphate coating)							
⑲	Stopper	Aluminum alloy (black anodized)							
⑳	Adjusting rod	Stainless steel (hard chrome plated)				Steel (hard chrome plated)			
㉑	Adjusting nut	Mild steel (zinc plated)							
㉒	Hexagon nut	MIld steel (zinc plated)							

Seals

Type / Parts / Bore size mm	Stroke adjusting cylinder			
	Rod seal	Piston seal	Tube gasket	
			Rod side	Head side
12	MYR-6	COP-12	Y090260	None
16	MYR-8	COP-16	Y090207	Y090207
20	MYR-10	COP-20	Y090216	Y090216
25	MYR-12	COP-25	Y090210	Y090210
32	MYR-16	COP-32	L090084	L090084
40	MYR-16	COP-40	L090151	L090151
50	MYR-20	COP-50	L090174	L090174
63	MYR-20	COP-63	L090180	L090180

Mass

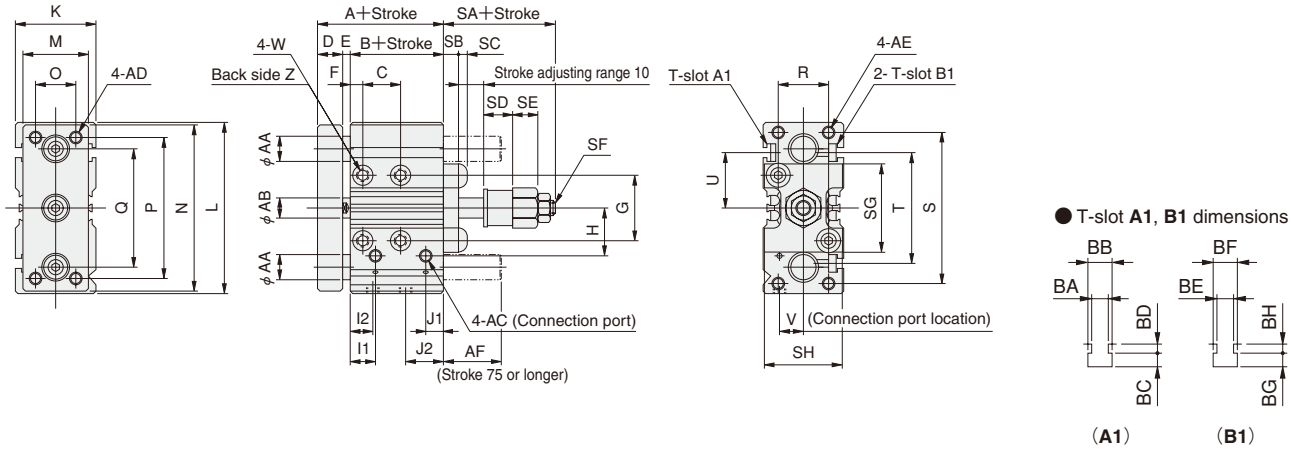
g [oz.]

Type / Mass / Bore size mm [in.]		Stroke adjusting cylinder		Option	
		Slide bearing type		Additional mass of sensor switch	
		Zero stroke mass	Additional mass for each 1mm [0.0394in.] stroke	ZE□□□A	ZE□□□B
12 [0.472]	50st or shorter	178 [6.28]	4.18 [0.1474]	15 [0.53]	35 [1.23]
	75st or longer	188 [6.63]	4.18 [0.1474]		
16 [0.630]	50st or shorter	323 [11.39]	5.54 [0.1954]		
	75st or longer	369 [13.02]	5.54 [0.1954]		
20 [0.787]	50st or shorter	630 [22.22]	9.54 [0.3365]		
	75st or longer	720 [25.40]	9.54 [0.3365]		
25 [0.984]	50st or shorter	870 [30.69]	11.58 [0.4085]		
	75st or longer	950 [33.51]	11.58 [0.4085]		
32 [1.260]	50st or shorter	1200 [42.32]	17.4 [0.6138]		
	75st or longer	1400 [49.38]	17.4 [0.6138]		
40 [1.575]	50st or shorter	1520 [53.62]	18.98 [0.6695]		
	75st or longer	1720 [60.67]	18.98 [0.6695]		
50 [1.969]	50st or shorter	2600 [91.71]	28.5 [1.0053]		
	75st or longer	2970 [104.76]	28.5 [1.0053]		
63 [2.480]	50st or shorter	3130 [110.41]	31.79 [1.1213]		
	75st or longer	3430 [120.99]	31.79 [1.1213]		

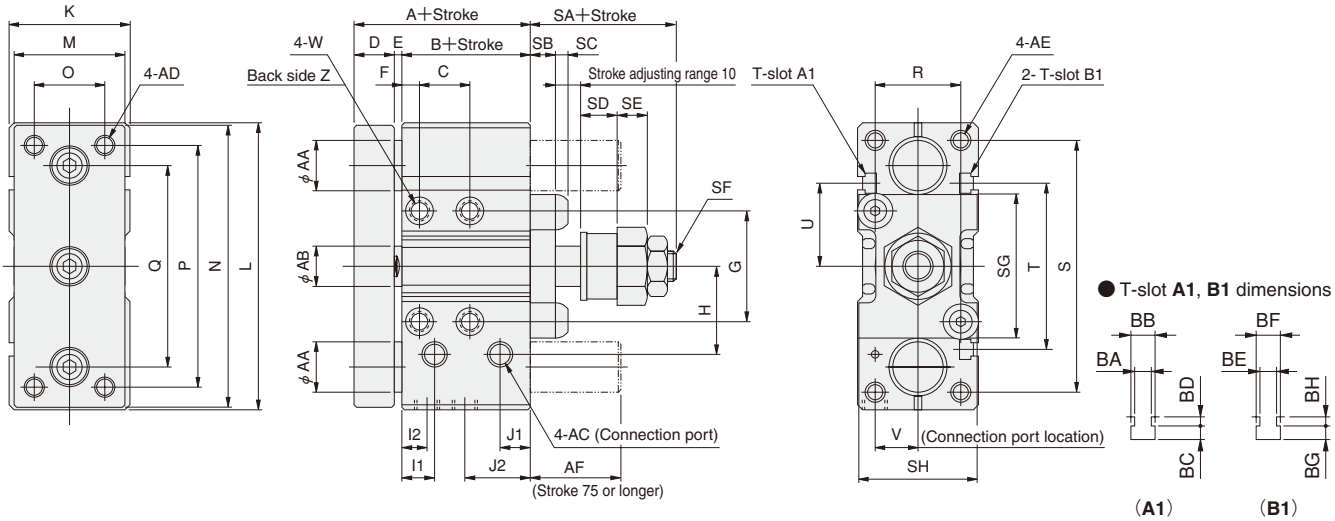
Dimensions of Stroke Adjusting Cylinder (mm)

Slide bearing type HSGDAP Bore size × Stroke

● **φ12, φ16** (Drawings show φ16.)



● **φ20～φ63** (Drawings show φ32.)



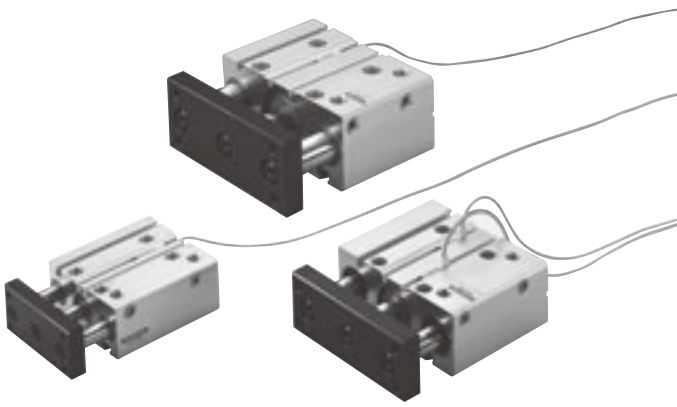
Code / Bore mm [in.]	A	B	C Stroke 10	20	30	40	50～100	125 or more	D	E	F	G	H	I1	I2	J1	J2	K	L	M	N	O	P	Q	R	S	T	U	V Note	W
12 [0.472]	36	25	15	25	35	45	55	—	8	3	5	22	17	10	9	6	14	28	58	22	56	14	48	42	18	51	37	18.5	8.5	φ4.2 (Thru hole) Counterbore φ8 Depth 4.5
16 [0.630]	40	27	15	25	35	45	55	—	10	3	5	26	19	10	9	7.5	16	32	68	26	66	16	56	47	20	60	44	22	9.5	φ4.2 (Thru hole) Counterbore φ8 Depth 4.5
20 [0.787]	52	36	20	30	40	50	60	110	12	4	6	30	27	11	11	10	20	40	82	36	80	24	66	58	26	72	54	27	13.5	φ5.2 (Thru hole) Counterbore φ9.5 Depth 5.5
25 [0.984]	54	38	20	30	40	50	60	110	12	4	6	33	29	12	12	10	21	42	92	38	90	26	76	63	30	80	54	27	14.5	φ5.2 (Thru hole) Counterbore φ9.5 Depth 5.5
32 [1.260]	59	40	20	30	40	50	60	110	15	4	7	44	35	13	10	12	25	48	114	44	112	28	96	80	34	100	66	33	17	φ6.8 (Thru hole) Counterbore φ11 Depth 7
40 [1.575]	63	44	20	30	40	50	60	110	15	4	7	52	40	14	14	13	25	54	124	50	122	34	106	90	40	106	82	41	18	φ6.8 (Thru hole) Counterbore φ11 Depth 7
50 [1.969]	70	47	20	30	40	50	60	110	18	5	8	66	52.5	15.5	10	15	31	66	150	62	148	42	120	110	44	130	100	50	22	φ8.6 (Thru hole) Counterbore φ14 Depth 9
63 [2.480]	70	47	20	30	40	50	60	110	18	5	8	78	60	17	10	14	31	76	162	72	160	52	132	122	44	144	120	60	24	φ8.6 (Thru hole) Counterbore φ14 Depth 9

Note: The **V** dimension shows the side connection port location.

Code / Bore mm [in.]	Z	AA	AB	AC	AD	AE	AF	Stroke adjustment SA	SB	SC	SD	SE	SF	SG	SH	T-slot A1	T-slot B1	BA	BB	BC	BD	BE	BF	BG	BH
12 [0.472]	10-32 UNF Depth 8	8	6	10-32 UNF	8-32 UNC	8-32 UNC Depth 8	15	31.5	6	0.6	9.7	10	M5×21	32	27	M3×0.5	M4×0.7	3.3	5.8	3	1.5	4.3	7.3	3.5	2.5
16 [0.630]	10-32 UNF Depth 11	10	8	10-32 UNF	10-32 UNF	10-32 UNF Depth 10	23	34.4	6	3.4	11.5	10	M6×23	35.5	31	M4×0.7	M4×0.7	4.3	7.3	3.5	1.5	4.3	7.3	3.5	3
20 [0.787]	1/4-20UNC Depth 12	14	10	NPT1/8	1/4-20UNC	1/4-20UNC Depth 12	27	36.8	8	4	12	10	M8×25	42	36.5	M4×0.7	M5×0.8	4.3	7.3	4	3	5.3	8.3	4.5	3
25 [0.984]	1/4-20UNC Depth 12	16	12	NPT1/8	1/4-20UNC	1/4-20UNC Depth 12	28	40.5	8	4	12.5	12	M10×27	45	40.5	M4×0.7	M5×0.8	4.3	7.3	4	3	5.3	8.3	4.5	3
32 [1.260]	5/16-18UNC Depth 16	20	16	NPT1/8	5/16-18UNC	5/16-18UNC Depth 16	36	48.5	10	5	14.5	12	M14×31	58	48	M5×0.8	M5×0.8	5.3	8.3	4.5	3	5.3	8.3	4.5	3
40 [1.575]	5/16-18UNC Depth 16	20	16	NPT1/8	5/16-18UNC	5/16-18UNC Depth 16	32	47	10	5	14.5	12	M14×31	67	54	M5×0.8	M6×1	5.3	8.3	4.5	3	6.3	10.3	5.5	3
50 [1.969]	3/8-16UNC Depth 20	25	20	NPT1/4	3/8-16UNC	3/8-16UNC Depth 20	39	53	12	6	13	15	M18×35	83.5	62	M5×0.8	M8×1.25	5.3	8.3	4.5	3	8.3	13.3	7	4.5
63 [2.480]	3/8-16UNC Depth 20	25	20	NPT1/4	3/8-16UNC	3/8-16UNC Depth 20	39	54	12	6	13	15	M18×35	95.5	64	M5×0.8	M8×1.25	5.3	8.3	4.5	3	8.3	13.3	7	4.5

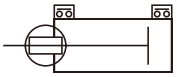
SENSOR SWITCHES FOR JIG CYLINDERS WITH GUIDES

Solid State Type, Reed Switch Type

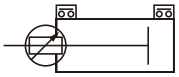


Symbols

● **Standard cylinder**



● **Stroke adjusting cylinder**



Order Codes

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

Sensor switch

ZE135	Solid state type with indicator lamp	DC10V～28V	Horizontal lead wire
ZE235	Solid state type with indicator lamp	DC10V～28V	Vertical lead wire
ZE101	Reed switch type without indicator lamp	DC5V～28V AC85～115V	Horizontal lead wire
ZE201	Reed switch type without indicator lamp	DC5V～28V AC85～115V	Vertical lead wire
ZE155	Solid state type with indicator lamp	DC4.5V～28V	Horizontal lead wire
ZE255	Solid state type with indicator lamp	DC4.5V～28V	Vertical lead wire
ZE102	Reed switch type with indicator lamp	DC10V～28V AC85～115V	Horizontal lead wire
ZE202	Reed switch type with indicator lamp	DC10V～28V AC85～115V	Vertical lead wire

Minimum Cylinder Strokes When Using Sensor Switches

●Solid state type

mm

Bore size mm [in.]	2 pcs. mounting Note		1 pc. mounting
	1-surface mounting	2-surface mounting	
12～63 [0.472～2.480]	10		5

Note: 2 pcs. mounting is possible at stroke 5mm.
Be aware, however, that overlapping may occur.

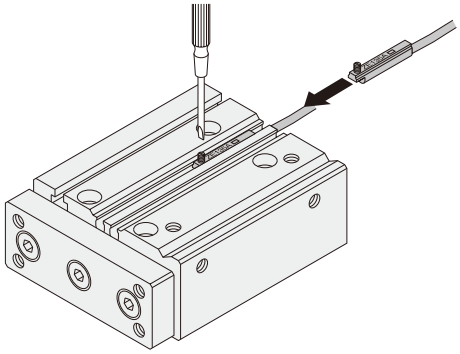
●Reed switch type

mm

Bore size mm [in.]	2 pcs. mounting		1 pc. mounting
	1-surface mounting	2-surface mounting	
12～63 [0.472～2.480]	10		10

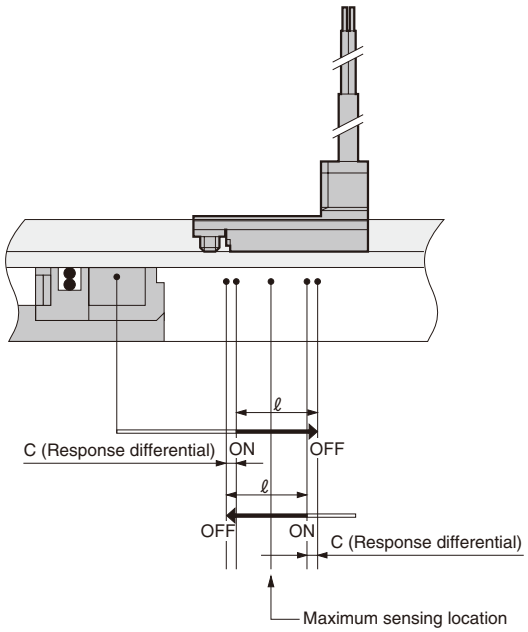
Moving Sensor Switch

- Loosening the mounting screw allows the sensor switch to be moved along the switch mounting groove on the cylinder body.
- Tighten the mounting screw with a tightening torque of 0.1～0.2N·m [0.9～1.8in·lbf].



Sensor Switch Operating Range, Response Differential, and Maximum Sensing Location

- **Operating range: ℓ**
  The distance the piston travels in one direction, while the switch is in the ON position.
- **Response differential: C**
  The distance between the point where the piston turns the switch ON and the point where the switch is turned OFF as the piston travels in the opposite direction.



●Solid state type

mm [in.]

Item \ Bore size	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
Operating range: ℓ	2～4 [0.079～0.157]	2～5 [0.079～0.197]	3.5～7.5 [0.138～0.295]	4～8 [0.157～0.315]	3～7 [0.118～0.276]	3.5～7.5 [0.138～0.295]	3.5～7.5 [0.138～0.295]	4～8.5 [0.157～0.335]
Response differential: C	1.0 [0.039] or less							
Maximum sensing location Note	6 [0.236]							

Note: This is the length measured from the switch's opposite end side to lead wire.
Remark: The above table shows reference values.

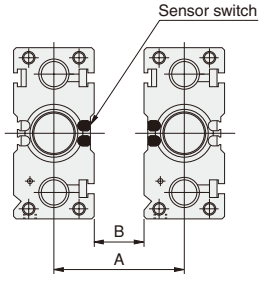
●Reed switch type

mm [in.]

Item \ Bore size	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
Operating range: ℓ	5.5～8 [0.217～0.315]	6.5～9 [0.256～0.354]	10～13 [0.394～0.512]	11.5～15 [0.453～0.591]	9～11.5 [0.354～0.453]	10～13.5 [0.394～0.531]	10.5～14.5 [0.413～0.571]	11～15.5 [0.433～0.610]
Response differential: C	1.0 [0.039] or less	1.5 [0.059] or less						
Maximum sensing location Note	10 [0.394]							

Note: This is the length measured from the switch's opposite end side to lead wire.
Remark: The above table shows reference values.

When Mounting Cylinders with Sensor Switches in Close Proximity



When mounting cylinders in close proximity, install the cylinder so that it exceeds the values in the table below.

The end plates are the same side mm [in.]

Bore size	Solid state type		Reed switch type	
	A	B	A	B
12 [0.472]	33 [1.299]	5 [0.197]	28 [1.102]	0
16 [0.630]	37 [1.457]		32 [1.260]	
20 [0.787]	45 [1.772]		40 [1.575]	
25 [0.984]	50 [1.969]	8 [0.315]	42 [1.654]	
32 [1.260]	56 [2.205]		48 [1.890]	
40 [1.575]	62 [2.441]		54 [2.126]	
50 [1.969]	78 [3.071]	12 [0.472]	66 [2.598]	
63 [2.480]	88 [3.465]		76 [2.992]	

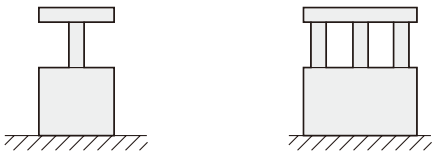
The end plates are the opposite side mm [in.]

Bore size	Solid state type		Reed switch type	
	A	B	A	B
12 [0.472]	34 [1.339]	6 [0.236]	28 [1.102]	0
16 [0.630]	38 [1.496]		32 [1.260]	
20 [0.787]	46 [1.811]		40 [1.575]	
25 [0.984]	54 [2.126]	12 [0.472]	42 [1.654]	
32 [1.260]	60 [2.362]		48 [1.890]	
40 [1.575]	66 [2.598]		54 [2.126]	
50 [1.969]	84 [3.307]	18 [0.709]	66 [2.598]	
63 [2.480]	94 [3.701]		76 [2.992]	

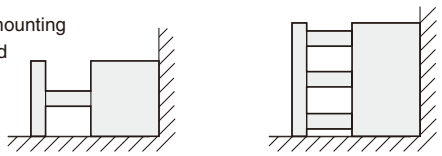
Mounting and Removing Sensor Switches

In Jig Cylinders with Guides of φ12～φ63, be aware that sensor switches cannot be mounted or removed when strokes of 10mm or shorter mounted in the application shown below.

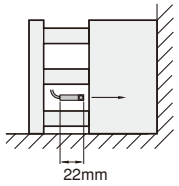
Bottom mounting



Right angled mounting (2 surfaces and 3 surfaces)



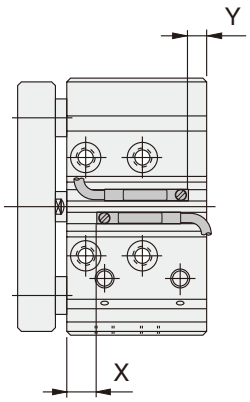
※ For strokes of 20mm or longer, sensor switches can be mounted and removed when the plate (rods extend) is extended.

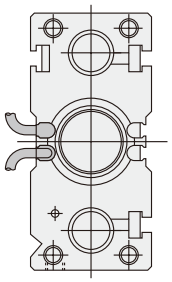


Mounting Location of End of Stroke Detection Sensor Switch

When the sensor switch is mounted in the locations shown below (the figures in the tables are reference values), the magnet comes to the maximum sensing location of the sensor switch at the end of the stroke.

● Standard cylinder





※ The scraper specification has a configuration of the standard cylinder body length +10mm [0.394in.], with the retracted side connection port location shifted 10mm [0.394in.] toward the head side.

■ Solid state type

mm [in.]

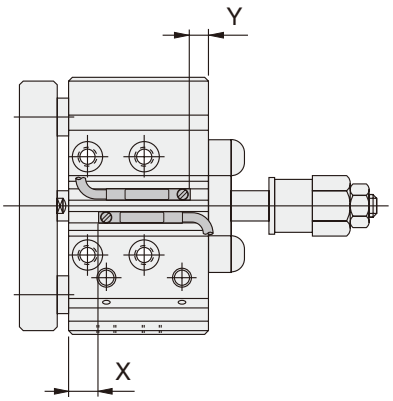
Code	Bore size	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
X	Without scraper	9.5 [0.374]	11 [0.433]	14 [0.551]	16 [0.630]	15 [0.591]	16.5 [0.650]	16.5 [0.650]	16.5 [0.650]
	With scraper	19.5 [0.768]	21 [0.827]	24 [0.945]	26 [1.024]	25 [0.984]	26.5 [1.043]	26.5 [1.043]	26.5 [1.043]
Y	Without scraper	3.5 [0.138]	4.5 [0.177]	10 [0.394]	10 [0.394]	13 [0.512]	15.5 [0.610]	18.5 [0.728]	18.5 [0.728]
	With scraper	3.5 [0.138]	4.5 [0.177]	10 [0.394]	10 [0.394]	13 [0.512]	15.5 [0.610]	18.5 [0.728]	18.5 [0.728]

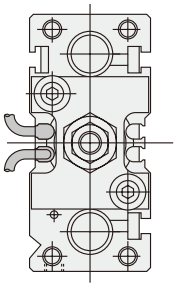
■ Reed switch type

mm [in.]

Code	Bore size	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
X	Without scraper	5.5 [0.217]	7 [0.276]	10 [0.394]	12 [0.472]	11 [0.433]	12.5 [0.492]	12.5 [0.492]	12.5 [0.492]
	With scraper	15.5 [0.610]	17 [0.669]	20 [0.787]	22 [0.866]	21 [0.827]	22.5 [0.886]	22.5 [0.886]	22.5 [0.886]
Y	Without scraper	0 [0]	0 [0]	6 [0.236]	6 [0.236]	9 [0.354]	11.5 [0.453]	14.5 [0.571]	14.5 [0.571]
	With scraper	0 [0]	0 [0]	6 [0.236]	6 [0.236]	9 [0.354]	11.5 [0.453]	14.5 [0.571]	14.5 [0.571]

● Stroke adjusting cylinder





■ Solid state type

mm [in.]

Code	Bore size	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
X		7 [0.276]	7 [0.276]	10 [0.394]	11 [0.433]	15 [0.591]	16.5 [0.650]	16.5 [0.650]	16.5 [0.650]
Y		6 [0.236]	8 [0.315]	14 [0.551]	15 [0.591]	13 [0.512]	15.5 [0.610]	18.5 [0.728]	18.5 [0.728]

■ Reed switch type

mm [in.]

Code	Bore size	12 [0.472]	16 [0.630]	20 [0.787]	25 [0.984]	32 [1.260]	40 [1.575]	50 [1.969]	63 [2.480]
X		3 [0.118]	3 [0.118]	6 [0.236]	7 [0.276]	11 [0.433]	12.5 [0.492]	12.5 [0.492]	12.5 [0.492]
Y		2 [0.079]	4 [0.157]	10 [0.394]	11 [0.433]	9 [0.354]	11.5 [0.453]	14.5 [0.571]	14.5 [0.571]