KOGANEI CLEAN SYSTEM

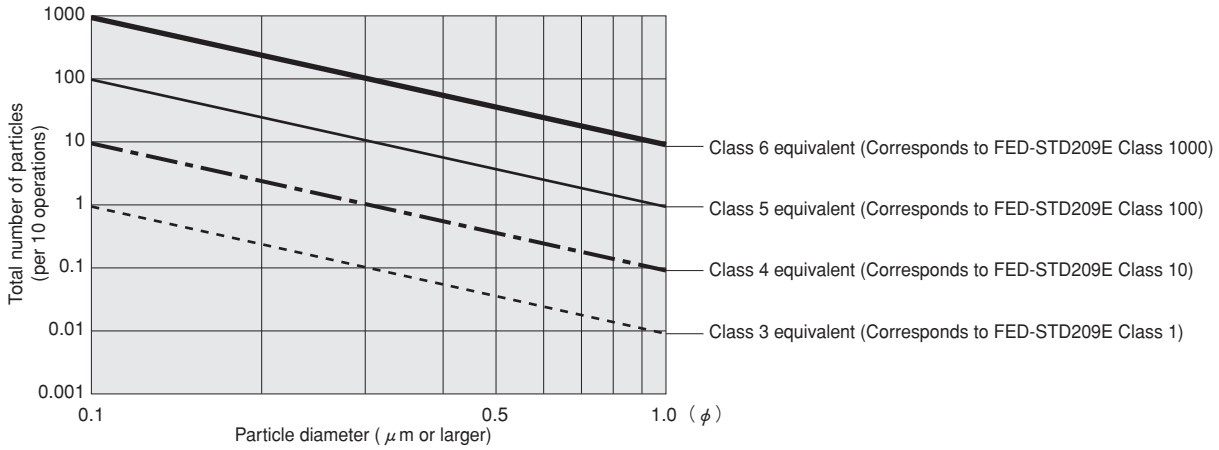
# Koganei Clean System products provide complete support for the maintenance of a clean environment inside the cleanroom.

**Koganei Clean System products meet the needs of the ultra-clean production environment. In everything from actuators and valves to air preparation and auxiliary equipment, anti-corrosion materials processing and other Koganei-developed design concepts serve to prevent particle contamination within the cleanroom. These perfectly designed mechanisms, which resolve even the slightest leaks to the outside during operations, have already won a high level of reliability.**

## Koganei Cleanliness

**There is currently no standard in JIS or elsewhere for methods of evaluating cleanliness for pneumatic equipment in the cleanroom specifications. Therefore, to measure the effects of cleanroom contamination by pneumatic equipment, Koganei has decided to use "number of particles generated per 10 operations," rather than particle density. Koganei has also developed classifications for application classes in cleanroom, based on JIS and other upper limit density tables, and on the company's own experience.**

**Particle generation classification of Koganei pneumatic equipment**




Remarks: 1. In the above table, product performance in terms of the number of particles generated per 10 operations is expressed as the upper limit of particles corresponding to the equivalent JIS or ISO class.
2. In the above table, values in the JIS, ISO, and FED-STD upper limit density tables are calculated as upper density per liter.
3. The classes shown are clean levels as classified in JIS and ISO.

From the above definitions, the Koganei clean level classes can be viewed as the level of average contamination per liter of surrounding air over a period of 10 operations in cleanroom. Air ventilation in cleanrooms is usually faster than 1 cycle per minute, and clean volumetric capacity is usually larger than 1 liter, which should provide a sufficient safety margin in practice.

Caution: The above conclusions are based on an ideal situation in which air ventilation is being implemented. For specific cases where air ventilation is not ensured, caution is needed since the clean classes cannot be maintained.

**The clean system diagrams shown here are for Class 5 equivalent products. For Class 4 or Class 3 equivalent products, consult us.**

## Evaluations of Cleanliness

**Koganei has therefore specified its in-house measurement methods, to conduct evaluations on the cleanroom rating.**

The number of particles of the Air Cylinder Cleanroom Specification is measured as shown in the method below.

**1. Measurement conditions**

1-1 Test circuit: Figure 1 (no suction), Figure 2 (with suction)

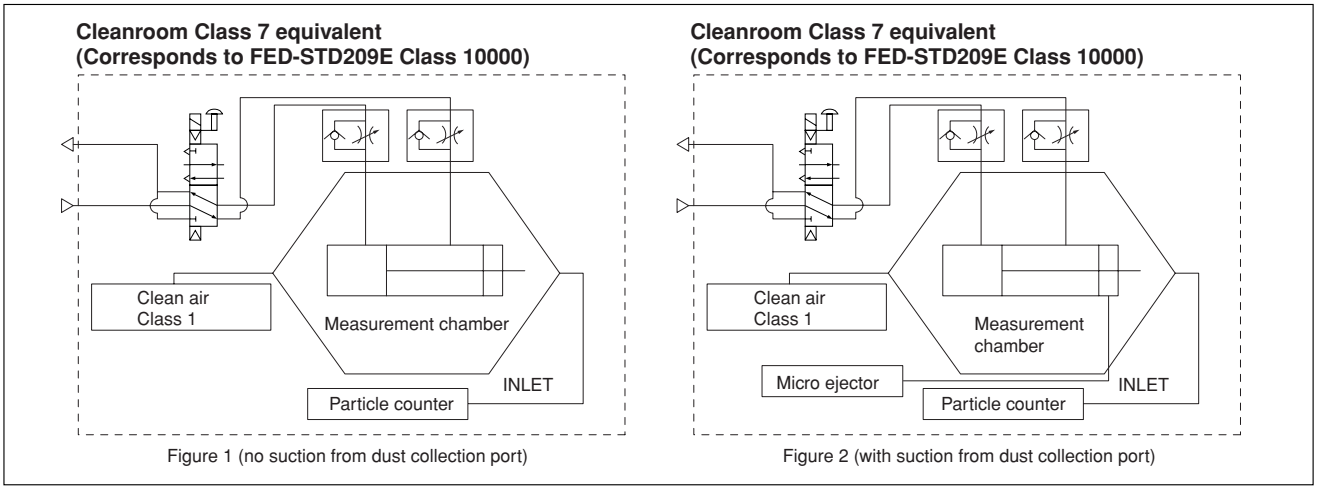



Figure 1 (no suction from dust collection port)

Figure 2 (with suction from dust collection port)

1-2 Operating conditions of tested cylinder
Operating frequency: 1Hz
Average speed: 500mm/s [20in./sec.]
Applied pressure: 0.5MPa [73psi.]
Suction condition: Microejector ME05, Primary side: 0.5MPa [73psi.] applied, Tube: $\phi$6 [0.236in.]
Mounting direction: Vertical
Chamber volume: 8.3 $\ell$ [0.293ft$^3$]

**2. Particle counter**

Manufacturer/model: RION/KM20
Suction flow rate: 28.3 $\ell$ /min [1ft$^3$/min.]
Particle diameter: 0.1 $\mu$m, 0.2 $\mu$m, 0.3 $\mu$m, 0.5 $\mu$m, 0.7 $\mu$m, 1.0 $\mu$m

**3. Measurement method**

3-1 Confirmation of number of particles in the measurement system
Under the conditions in the above 1 and 2, using a particle counter to measure the sample for 9 minutes without operating the measurement sample, and confirmed the measured number of particle is 1 piece or less.

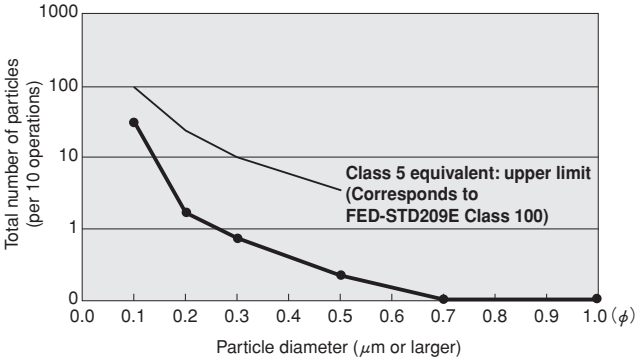
3-2 Measurement under operation
Under the conditions in the above1 and 2, operating the measurement sample for 36 minutes, and measured the total values in the latter half of 18 minutes test.

3-3 Reconfirmation
Performed the measurement in 3-1 again, to reconfirm the number of particles in the measurement system.

**4. Measurement results**

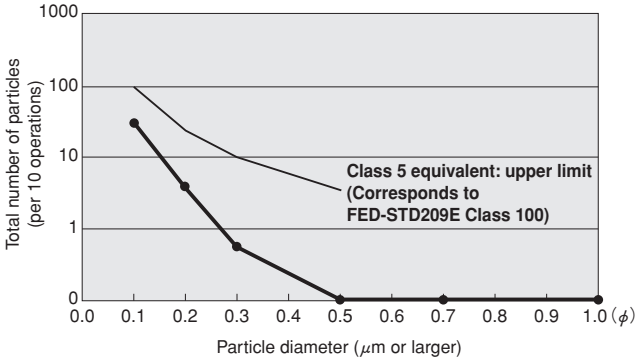
● **Cleanroom specification**
**Jig Cylinder (no suction from dust collection port)**

**Particle generation over 1 million operations (CS-CDA16×30)**




● **Cleanroom specification**
**Slim Cylinder (with suction from dust collection port)**

**Particle generation over 1 million operations (CS-DA20×100)**



## Safety Precautions

**Always read these precautions carefully before use.**

For “safety precautions” listed in the Clean System Product Drawings, see the materials below.

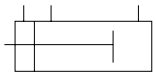
- For actuators, see “Safety Precautions” on p. 45 of the Actuators General Catalog .
- For valves, see “Safety Precautions” on p. 31 of the Valves General Catalog.
- For air treatment and auxiliary equipment, see “Safety Precautions” on p.31 of the General Catalog of Air Treatment, Auxiliary, Vacuum.

KOGANEI CLEAN SYSTEM

# SLIM CYLINDERS

## Double Acting Type

## Symbol



## Specifications

| Item \ Bore size mm [in.] | | ϕ20～ϕ40 [0.787～1.575] | ϕ50, ϕ63 [1.969, 2.480] |
|---|---|---|---|
| Operating type | | Double acting type | |
| Media | | Air | |
| Operating pressure range | MPa [psi.] | 0.1～0.9 [15～131] | 0.1～0.7 [15～102] |
| Proof pressure | MPa [psi.] | 1.32 [191] | 1.03 [149] |
| Operating temperature range | ℃ [°F] | 0～60 [32～140] | |
| Operating speed range | mm/s [in./sec.] | 50～300 [2.0～11.8] | |
| Cushion | | Fixed type (Rubber bumper) | Variable type (15mm [0.591in.] stroke) |
| Lubrication | | Not required | |
| Port size | Supply port | Rc1/8 | Rc1/4 |
| | Dust collection port | M5×0.8 | |

## Bore Size and Stroke

mm [in.]

| Bore size | Mounting type | Standard strokes | Maximum stroke | Maximum available stroke |
|---|---|---|---|---|
| 20 [0.787] | Foot mounting<br>Nose mounting<br>Flange mounting | 25 50 75 100 125 150 | 200 | 1050 [41.3] |
| 25 [0.984] | Foot mounting<br>Nose mounting<br>Flange mounting | 25 50 75 100 125 150 200 | 250 | |
| 32 [1.260] | Foot mounting<br>Nose mounting<br>Flange mounting | 25 50 75 100 125 150 200 | 300 | |
| 40 [1.575] | Foot mounting<br>Nose mounting<br>Flange mounting | 25 50 75 100 125<br>150 200 250 300 | 400 | |
| 50 [1.969] | Foot mounting | 25 50 75 100 150<br>200 250 300 350 400 | 500 | 900 [35.4] |
| | Nose mounting<br>Flange mounting | 25 50 75 100 150 200 | 300 | |
| 63 [2.480] | Foot mounting | 25 50 75 100 150 200<br>250 300 350 400 500 | 600 | |
| | Nose mounting<br>Flange mounting | 25 50 75 100 150 200 | 300 | |

Remarks: 1. Stroke tolerance $^{+1}_{0}$ [$^{+0.039}_{0}$]
2. For non-standard strokes, consult us.
3. The minimum operating pressure when the stroke is over the maximum stroke at bore sizes of ϕ20～ϕ40 is 0.2MPa [29psi.].

## Order Codes

**CS** – **DA** **20×50** – □ – □ – □ – □ □ □

**Clean system product**

**Slim cylinder**
Double acting type

**Bore size**
**×**
**Stroke**

**Head cover type**
**Blank** — Standard head
**A** — Short head

**Mounting type**
**Blank** — Nose mounting type
**1** — Foot mounting type
**3** — Flange mounting type

**Rod end accessory**
**Blank** — Without rod end accessory
**Y** — Y type knuckle (With pin)
**I** — I type knuckle

**Sensor switch**
**Blank** — Without sensor switch
**ZG530** — 2-lead wire Solid state type with indicator lamp DC10～28V
**ZG553** — 3-lead wire Solid state type with indicator lamp DC4.5～28V
**CS3M** — 2-lead wire Reed switch type with indicator lamp DC10～30V, AC85～230V
**CS4M** — 2-lead wire Reed switch type with indicator lamp DC10～30V, AC85～115V
**CS5M** — 2-lead wire Reed switch type without indicator lamp DC3～30V, AC85～115V
**CS2F** — 2-lead wire Reed switch type with indicator lamp AC85～230V
**CS3F** — 2-lead wire Reed switch type with indicator lamp DC10～30V
**CS4F** — 2-lead wire Reed switch type with indicator lamp DC10～30V
**CS5F** — 2-lead wire Reed switch type without indicator lamp DC3～30V

● For details of sensor switches, see p.111～121.

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

**Number of sensor switches**
**1** — With 1 sensor switch
**2** — With 2 sensor switches
**3** — With 3 sensor switches

● For the order codes of additional parts, see p. 64.

## Order Codes of Additional Parts (To be ordered separately) mm [in.]

### ●Mounting bracket type

CS — □ — DA □

**Bore size**
**20** — $\phi$ 20 [0.787]
**25** — $\phi$ 25 [0.984]
**32** — $\phi$ 32 [1.260]
**40** — $\phi$ 40 [1.575]
**50** — $\phi$ 50 [1.969]
**63** — $\phi$ 63 [2.480]

**Slim cylinder**

**Mount bracket**
**1** — Foot bracket (2 pcs.)
**3** — Flange bracket (1 pc.)

**Clean system product**

### ●Knuckle type

CS — □ — □ □

**Bore size** Note
**16** — $\phi$ 16 [0.630]
**20** — $\phi$ 20 [0.787]
**25** — $\phi$ 25 [0.984]
**32** — $\phi$ 32 [1.260]
**40** — $\phi$ 40 [1.575]
**50** — $\phi$ 50 [1.969]
**63** — $\phi$ 63 [2.480]
Note: $\phi$ 50 and $\phi$ 63 are DA type only.

**Cylinder type**
**DA** — All sizes except $\phi$ 16
**DAB** — Only $\phi$ 16 size available

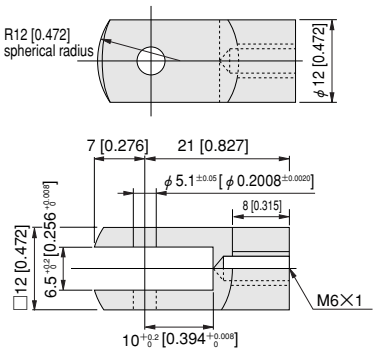
**Mounting bracket**
**Y** — Y type knuckle
**I** — I type knuckle

**Clean system product**

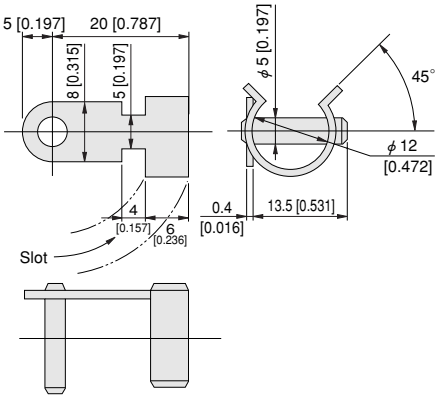
## Dimensions of Additional Parts mm [in.]

### ● $\phi$ 16

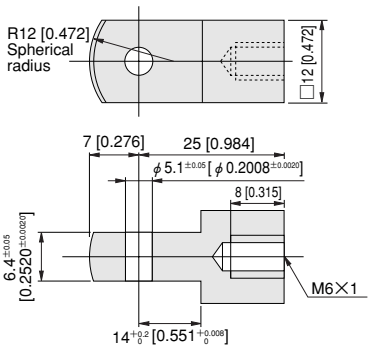
### ●Y type




### Pin for Y type knuckle

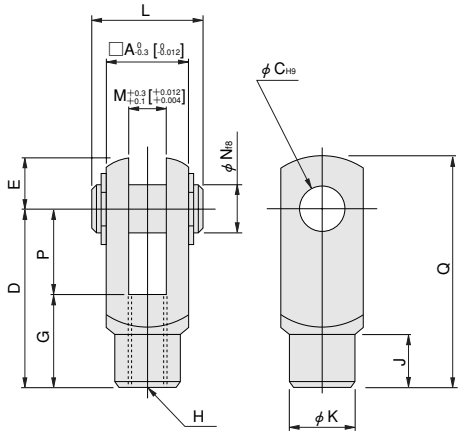



### ●I type

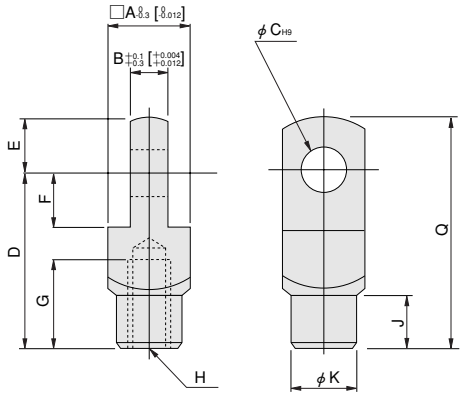



### ● $\phi$ 20～ $\phi$ 63

### ●Y type



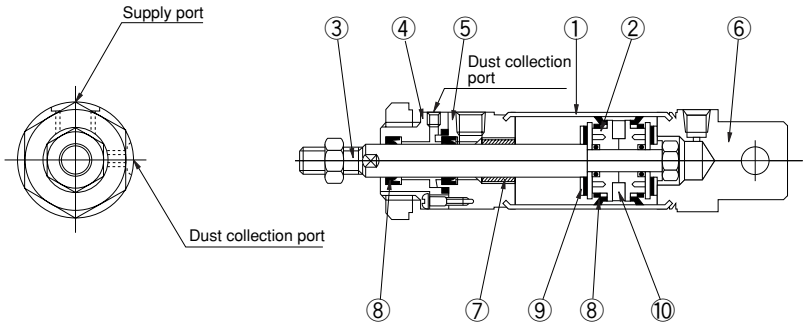

### ●I type



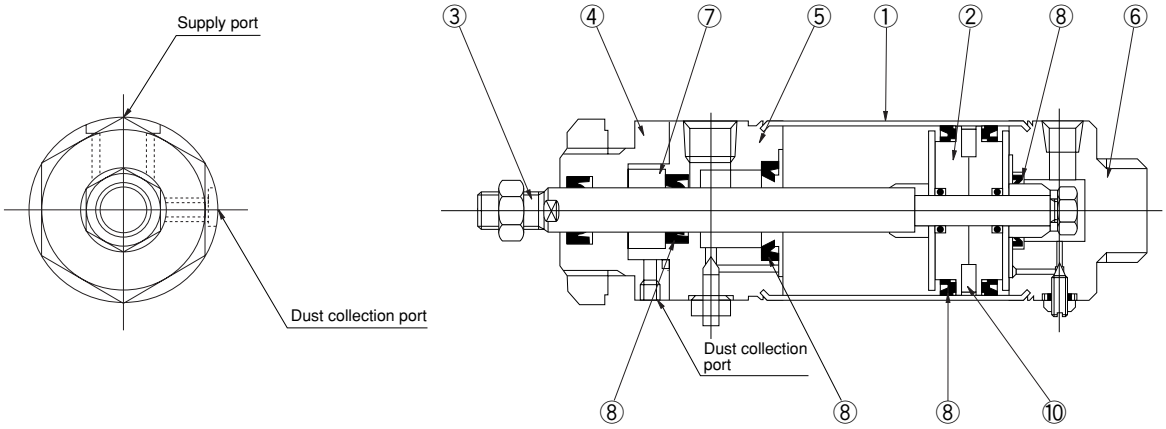

| Bore \ Code | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20** | 16 [0.630] | 8 [0.315] | 8 [0.315] | 30 [1.181] | 10 [0.394] | 11 [0.433] | 15 [0.591] | M8×1 | 10 [0.394] | 14 [0.551] | 21 [0.827] | 8 [0.315] | 8 [0.315] | 15 [0.591] | 40 [1.575] |
| **25, 32** | 19 [0.748] | 10 [0.394] | 10 [0.394] | 40 [1.575] | 12 [0.472] | 13 [0.512] | 20 [0.787] | M10×1.25 | 12 [0.472] | 16 [0.630] | 25 [0.984] | 10 [0.394] | 10 [0.394] | 20 [0.787] | 52 [2.047] |
| **40, 50, 63** | 24 [0.945] | 14 [0.551] | 10 [0.394] | 45 [1.772] | 12 [0.472] | 13 [0.512] | 25 [0.984] | M14×1.5 | 15 [0.591] | 22 [0.866] | 30 [1.181] | 14 [0.551] | 10 [0.394] | 20 [0.787] | 57 [2.244] |

## Inner Construction and Major Parts

### ●φ20～φ40




### ●φ50, φ63




## Major Parts and Materials

| No. | Parts | Materials |
|---|---|---|
| ① | Cylinder tube | Stainless steel |
| ② | Piston | Plastic |
| ③ | Piston rod | Stainless steel |
| ④ | Dust prevention cover | Aluminum alloy (anodized) |
| ⑤ | Rod cover | |
| ⑥ | Head cover | |
| ⑦ | Rod bushing | Plastic |
| ⑧ | Seal | Synthetic rubber (NBR) |
| ⑨ | Bumper | |
| ⑩ | Magnet | Plastic magnet |
| | Mounting bracket | Mild steel (nickel plated) |

## Seals

### ●φ20～φ40

| Parts / Quantity / Bore mm [in.] | Dust leak prevention seal and rod seal | Piston seal |
|---|---|---|
| | 1 each | 2 |
| **20 [0.787]** | NY-12×8×3.5 | PPY-20 |
| **25 [0.984]** | NY-14×10×3.5 | PPY-25 |
| **32 [1.260]** | NY-17×12×4 | PPY-30 |
| **40 [1.575]** | NY-22×16×5 | PPY-40 |

### ●φ50, φ63

| Parts / Quantity / Bore mm [in.] | Dust leak prevention seal and rod seal | Piston seal | Cushion seal |
|---|---|---|---|
| | 1 each | 2 | 2 |
| **50 [1.969]** | NY-22×16×5 | PGY-50 | PCS-20 |
| **63 [2.480]** | NY-22×16×5 | PGY-63 | PCS-20 |

## Mass

### ●φ20～φ40

g [oz]

| Bore size mm [in.] | Zero stroke mass | | | | Additional mass for each 1mm [0.0394 in.] stroke |
|---|---|---|---|---|---|
| | Nose type | Foot type | Flange type | Clevis type | |
| **20 [0.787]** | 172 [6.07] | 312 [11.01] | 252 [8.89] | 232 [8.18] | 0.8 [0.028] |
| **25 [0.984]** | 235 [8.29] | 415 [14.64] | 335 [11.82] | 295 [10.41] | 1.1 [0.039] |
| **32 [1.260]** | 375 [13.23] | 585 [20.63] | 505 [17.81] | 515 [18.17] | 1.5 [0.053] |
| **40 [1.575]** | 540 [19.05] | 870 [30.69] | 710 [25.04] | 680 [23.99] | 2.4 [0.085] |

### ●φ50, φ63

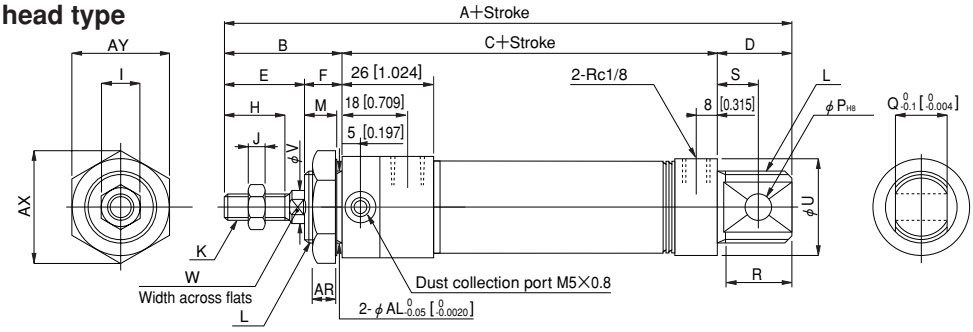
g [oz]

| Bore size mm [in.] | Zero stroke mass | | | Additional mass for each 1mm [0.0394in.] stroke | Mass of mounting bracket | |
|---|---|---|---|---|---|---|
| | Standard head type | Short head type | Clevis head type | | Foot bracket | Flange bracket |
| **50 [1.969]** | 933 [32.91] | 883 [31.15] | 880 [31.04] | 2.8 [0.099] | 550 [19.40] | 280 [9.88] |
| **63 [2.480]** | 1265 [44.62] | 1225 [43.21] | 1195 [42.15] | 3.5 [0.123] | 730 [25.75] | 370 [13.05] |

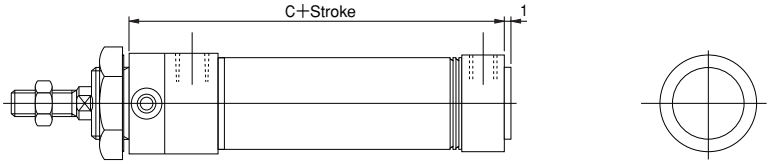
## Dimensions of Basic Type mm [in.]

### ●φ20～φ40 CS-DA Bore size × Stroke

#### ●Standard head type




#### ●Short head type




| Bore \ Code | A | B | C | D | E | F | H | I | J | K | L | M | P | Q | R | S | U | V | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 142 [5.591] | 35 [1.378] | 86 [3.386] | 21 [0.827] | 23 [0.906] | 12 [0.472] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 10 [0.394] | 8 [0.315] | 12 [0.472] | 19 [0.748] | 12 [0.472] | 27 [1.063] | 8 [0.315] | 6 [0.236] |
| **25 [0.984]** | 147 [5.787] | 40 [1.575] | 86 [3.386] | 21 [0.827] | 26 [1.024] | 14 [0.551] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 12 [0.472] | 8 [0.315] | 12 [0.472] | 19 [0.748] | 12 [0.472] | 29 [1.142] | 10 [0.394] | 8 [0.315] |
| **32 [1.260]** | 158 [6.220] | 45 [1.772] | 86 [3.386] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 12 [0.472] | 10 [0.394] | 20 [0.787] | 25 [0.984] | 15 [0.591] | 35 [1.378] | 12 [0.472] | 10 [0.394] |
| **40 [1.575]** | 158 [6.220] | 45 [1.772] | 86 [3.386] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 12 [0.472] | 10 [0.394] | 20 [0.787] | 25 [0.984] | 15 [0.591] | 41.6 [1.638] | 16 [0.630] | 14 [0.551] |

| Bore \ Code | AL | AR | AX | AY |
|---|---|---|---|---|
| **20 [0.787]** | 20 [0.787] | 7.5 [0.295] | 31.2 [1.228] | 27 [1.063] |
| **25 [0.984]** | 22 [0.866] | 9.5 [0.374] | 34.6 [1.362] | 30 [1.181] |
| **32 [1.260]** | 27 [1.063] | 9.5 [0.374] | 41.6 [1.638] | 36 [1.417] |
| **40 [1.575]** | 33 [1.299] | 9.5 [0.374] | 47.3 [1.862] | 41 [1.614] |

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

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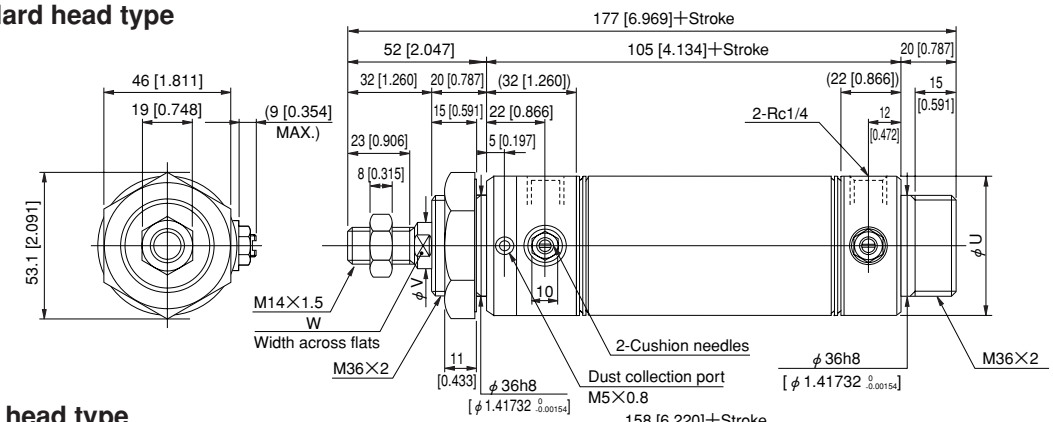
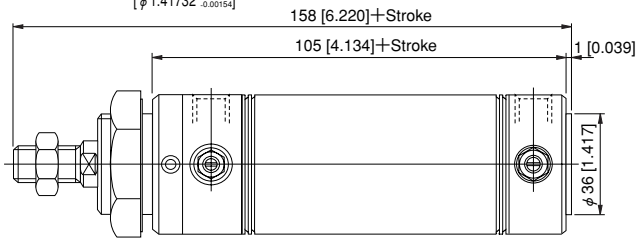
### ●φ50, φ63 CS-DA Bore size × Stroke

#### ●Standard head type



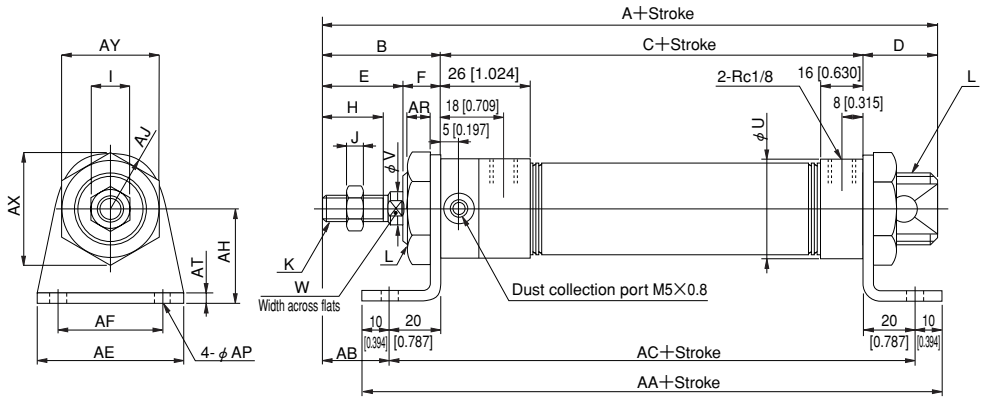

#### ●Short head type




| Bore \ Code | U | V | W | Cushion stroke | Stroke tolerance |
|---|---|---|---|---|---|
| **50 [1.969]** | 52 [2.047] | 16 [0.630] | 14 [0.551] | 15 [0.591] | $^{+1}_{0}$ [$^{+0.039}_{0}$] |
| **63 [2.480]** | 65.4 [2.575] | 16 [0.630] | 14 [0.551] | 15 [0.591] | $^{+1}_{0}$ [$^{+0.039}_{0}$] |

## Dimensions of Foot Mounting Type mm [in.]

### ●φ20～φ40 CS-DA Bore size × Stroke -1

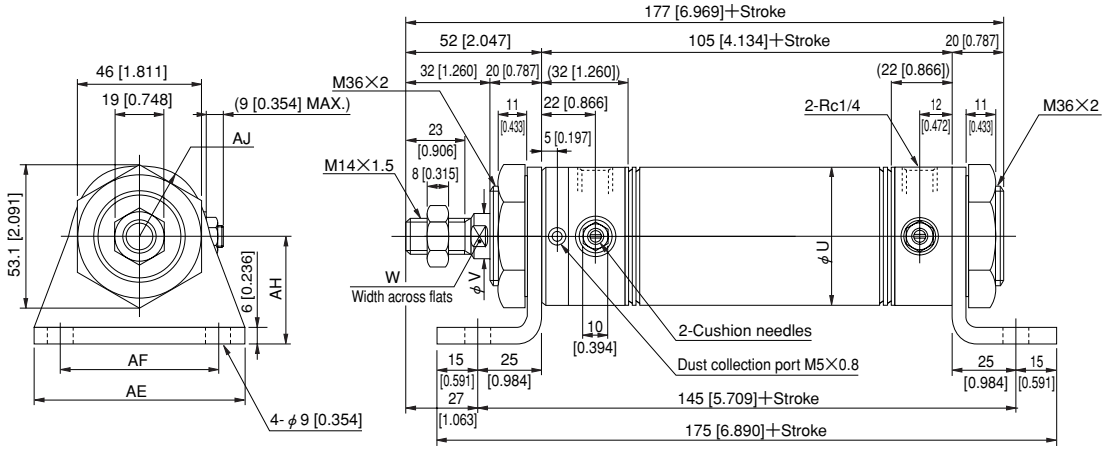



| Bore \ Code | A | B | C | D | E | F | H | I | J | K | L | U | V | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 142 [5.591] | 35 [1.378] | 86 [3.386] | 21 [0.827] | 23 [0.906] | 12 [0.472] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 27 [1.063] | 8 [0.315] | 6 [0.236] |
| **25 [0.984]** | 147 [5.787] | 40 [1.575] | 86 [3.386] | 21 [0.827] | 26 [1.024] | 14 [0.551] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 29 [1.142] | 10 [0.394] | 8 [0.315] |
| **32 [1.260]** | 158 [6.220] | 45 [1.772] | 86 [3.386] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 35 [1.378] | 12 [0.472] | 10 [0.394] |
| **40 [1.575]** | 158 [6.220] | 45 [1.772] | 86 [3.386] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 41.6 [1.638] | 16 [0.630] | 14 [0.551] |

| Bore \ Code | AA | AB | AC | AE | AF | AH | AJ | AP | AR | AT | AX | AY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 146 [5.748] | 15 [0.591] | 126 [4.961] | 55 [2.165] | 40 [1.575] | 25 [0.984] | 15.5 [0.610] | 6.8 [0.268] | 7.5 [0.295] | 3.2 [0.126] | 31.2 [1.228] | 27 [1.063] |
| **25 [0.984]** | 146 [5.748] | 20 [0.787] | 126 [4.961] | 55 [2.165] | 40 [1.575] | 30 [1.181] | 17 [0.669] | 6.8 [0.268] | 9.5 [0.374] | 3.2 [0.126] | 34.6 [1.362] | 30 [1.181] |
| **32 [1.260]** | 146 [5.748] | 25 [0.984] | 126 [4.961] | 55 [2.165] | 40 [1.575] | 35 [1.378] | 20 [0.787] | 6.8 [0.268] | 9.5 [0.374] | 3.2 [0.126] | 41.6 [1.638] | 36 [1.417] |
| **40 [1.575]** | 146 [5.748] | 25 [0.984] | 126 [4.961] | 75 [2.953] | 55 [2.165] | 40 [1.575] | 23.5 [0.925] | 9 [0.354] | 9.5 [0.374] | 4 [0.157] | 47.3 [1.862] | 41 [1.614] |

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

### ●φ50, φ63 CS-DA Bore size × Stroke -1

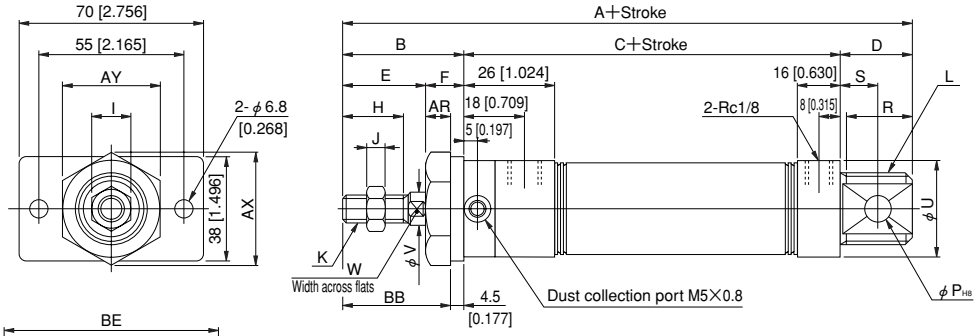



| Bore \ Code | U | V | W | AE | AF | AJ | AH | Cushion stroke | Stroke tolerance |
|---|---|---|---|---|---|---|---|---|---|
| **50 [1.969]** | 52 [2.047] | 16 [0.630] | 14 [0.551] | 80 [3.150] | 60 [2.362] | 26 [1.024] | 40 [1.575] | 15 [0.591] | $^{+1}_{0}$[$^{+0.039}_{0}$] |
| **63 [2.480]** | 65.4 [2.575] | 16 [0.630] | 14 [0.551] | 95 [3.740] | 74 [2.913] | 32 [1.260] | 45 [1.772] | 15 [0.591] | $^{+1}_{0}$[$^{+0.039}_{0}$] |

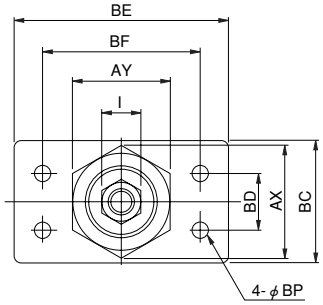
## Dimensions of Flange Mounting Type mm [in.]

● **φ20～φ40** **CS-DA** Bore size × Stroke **-3**

● **φ20, φ25**




● **φ32, φ40**

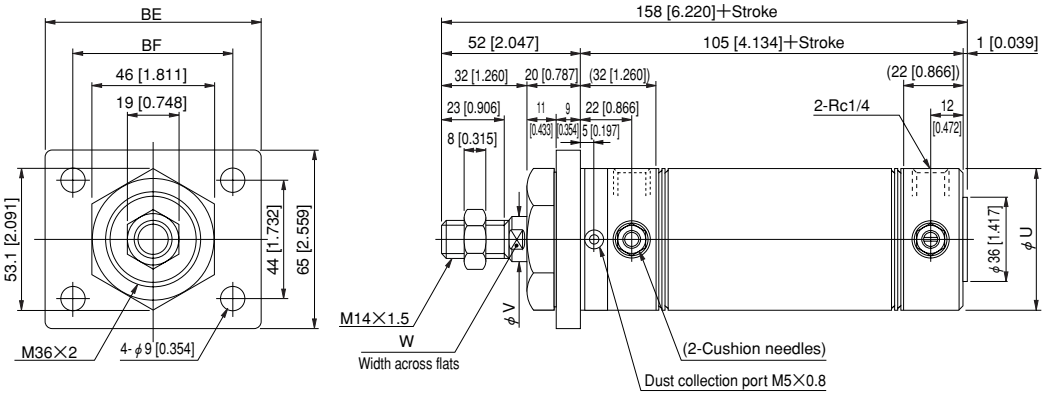



| Bore \ Code | A | B | C | D | E | F | H | I | J | K | L | P | R | S | U | V | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 142 [5.591] | 35 [1.378] | 86 [3.386] | 21 [0.827] | 23 [0.906] | 12 [0.472] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 8 [0.315] | 19 [0.748] | 12 [0.472] | 27 [1.063] | 8 [0.315] | 6 [0.236] |
| **25 [0.984]** | 147 [5.787] | 40 [1.575] | 86 [3.386] | 21 [0.827] | 26 [1.024] | 14 [0.551] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 8 [0.315] | 19 [0.748] | 12 [0.472] | 29 [1.142] | 10 [0.394] | 8 [0.315] |
| **32 [1.260]** | 158 [6.220] | 45 [1.772] | 86 [3.386] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 10 [0.394] | 25 [0.984] | 15 [0.591] | 35 [1.378] | 12 [0.472] | 10 [0.394] |
| **40 [1.575]** | 158 [6.220] | 45 [1.772] | 86 [3.386] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 10 [0.394] | 25 [0.984] | 15 [0.591] | 41.5 [1.634] | 16 [0.630] | 14 [0.551] |

| Bore \ Code | AR | AX | AY | BB | BC | BD | BE | BF | BP |
|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 7.5 [0.295] | 31.2 [1.228] | 27 [1.063] | 30.5 [1.201] | — | — | — | — | — |
| **25 [0.984]** | 9.5 [0.374] | 34.6 [1.362] | 30 [1.181] | 35.5 [1.398] | — | — | — | — | — |
| **32 [1.260]** | 9.5 [0.374] | 41.6 [1.638] | 36 [1.417] | 40.5 [1.594] | 45 [1.772] | 20 [0.787] | 80 [3.150] | 60 [2.362] | 6.8 [0.268] |
| **40 [1.575]** | 9.5 [0.374] | 47.3 [1.862] | 41 [1.614] | 40.5 [1.594] | 50 [1.969] | 30 [1.181] | 100 [3.937] | 80 [3.150] | 9 [0.354] |

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

● **φ50, φ63** **CS-DA** Bore size × Stroke **-3**



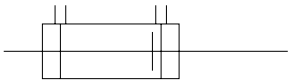

| Bore \ Code | U | V | W | BE | BF | Cushion stroke | Stroke tolerance |
|---|---|---|---|---|---|---|---|
| **50 [1.969]** | 52 [2.047] | 16 [0.630] | 14 [0.551] | 80 [3.150] | 60 [2.362] | 15 [0.591] | $^{+1}_{0}$ [$^{+0.039}_{0}$] |
| **63 [2.480]** | 65.4 [2.575] | 16 [0.630] | 14 [0.551] | 100 [3.937] | 80 [3.150] | 15 [0.591] | $^{+1}_{0}$ [$^{+0.039}_{0}$] |

KOGANEI CLEAN SYSTEM

# SLIM DOUBLE ROD END CYLINDERS

## Double Rod End Double Acting Type

### Symbol



### Specifications

| Item \ Bore size mm [in.] | 20～40 [0.787～1.575] |
|---|---|
| Operating type | Double acting type |
| Media | Air |
| Mounting type | Basic type, Foot type, Flange type |
| Operating pressure range MPa [psi.] | 0.15～0.9 [22～131] |
| Proof pressure MPa [psi.] | 1.32 [191] |
| Operating temperature range °C [°F] | 0～60 [32～140] |
| Operating speed range mm/s [in./sec.] | 50～300 [2.0～11.8] |
| Cushion | Fixed type (Rubber bumper) |
| Lubrication | Not required |
| Port size Rc | 1/8 |

### Bore Size and Stroke

mm [in.]

| Bore size | Standard strokes | Maximum stroke | Maximum available stroke |
|---|---|---|---|
| 20 [0.787] | 25 50 75 100 125 150 | 200 | 400 |
| 25 [0.984] | 25 50 75 100 125 150 200 | 250 | |
| 32 [1.260] | 25 50 75 100 125 150 200 | 300 | 500 |
| 40 [1.575] | 25 50 75 100 125 150 200 250 300 | 400 | |

Remarks: 1. Stroke tolerance $^{+1}_{0}$ [$^{+0.039}_{0}$]
2. For non-standard strokes, consult us.
3. The minimum operating pressure when the stroke is over the maximum stroke at bore size of $\phi$ 20[0.787]～$\phi$ 40[1.575] is 0.2MPa [29psi.].

### Order Codes

**CS** – **DAD** **20×50** – □ – □ – □ □ □

**Clean system product**

**Slim cylinder**
Double rod end double acting type

**Bore size**
**×**
**Stroke**

**Mounting type**
**Blank** — Nose mounting type
**1** ——— Foot mounting type
**3** ——— Flange mounting type
(Mounting brackets are included at shipping.)

**Rod end accessory**
**Blank** — Without rod end accessory
**Y** ——— Y type knuckle (With pin)
**I** ——— I type knuckle (Rod end accessories mounted to one side only.)

**Sensor switch**

| | | | |
|---|---|---|---|
| **Blank** | Without sensor switch | | |
| **ZG530** | 2-lead wire Solid state type | with indicator lamp | DC10～28V |
| **ZG553** | 3-lead wire Solid state type | with indicator lamp | DC4.5～28V |
| **CS3M** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V, AC85～230V |
| **CS4M** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V, AC85～115V |
| **CS5M** | 2-lead wire Reed switch type | without indicator lamp | DC3～30V, AC85～115V |
| **CS2F** | 2-lead wire Reed switch type | with indicator lamp | AC85～230V |
| **CS3F** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V |
| **CS4F** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V |
| **CS5F** | 2-lead wire Reed switch type | without indicator lamp | DC3～30V |

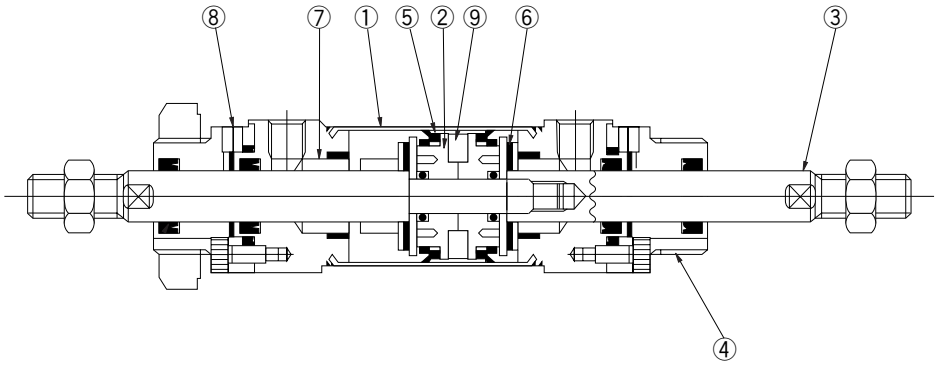
● For details of sensor switches, see p.111～121.

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

**Number of sensor switches**
**1** ——— With 1 sensor switch
**2** ——— With 2 sensor switches
**3** ——— With 3 sensor switches

●For the order codes of additional parts, see p. 64.

## Inner Construction and Major Parts




## Major Parts and Materials

| Parts / Bore size mm | | 20～40 |
|---|---|---|
| ① | Cylinder tube | Stainless steel |
| ② | Piston | Plastic |
| ③ | Piston rod | Steel |
| ④ | Rod cover | Aluminum alloy (anodized) |
| ⑤ | Seal | Synthetic rubber (NBR) |
| ⑥ | Bumper | Synthetic rubber (NBR) |
| ⑦ | Rod bushing | Plastic |
| ⑧ | Dust prevention cover | Aluminum (anodized) |
| ⑨ | Magnet | Plastic magnet |
| | Mounting bracket | Mild steel (nickel plated) |

## Seals

| Parts | Rod seal | Piston seal | Dust leak prevention seal |
|---|---|---|---|
| Bore mm / Quantity | 2 | 2 | 2 |
| **20** | NY-12×8×3.5 | PPY-20 | NY-12×8×3.5 |
| **25** | NY-14×10×3.5 | PPY-25 | NY-14×10×3.5 |
| **32** | NY-17×12×4 | PPY-32 | NY-17×12×4 |
| **40** | NY-22×16×5 | PPY-40 | NY-22×16×5 |

## Mass

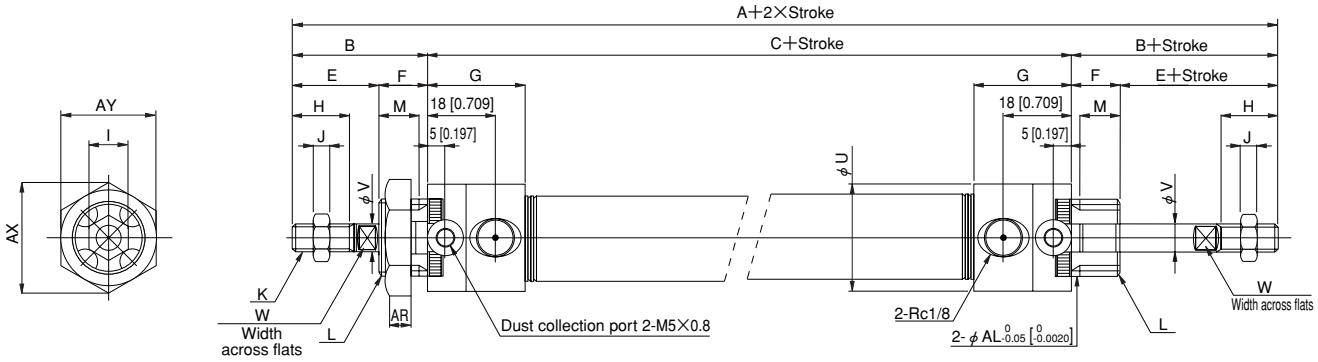
g [oz.]

| Bore size mm [in.] | Zero stroke mass | | | Additional mass for each 1mm [0.0394in.] stroke | Mass of knuckle | |
|---|---|---|---|---|---|---|
| | Basic type | Foot mounting type | Flange mounting type | | Y type knuckle | I type knuckle |
| **20 [0.787]** | 190 [6.70] | 330 [11.64] | 270 [9.52] | 1.2 [0.042] | 41 [1.45] | 36 [1.27] |
| **25 [0.984]** | 290 [10.23] | 450 [15.87] | 370 [13.05] | 1.6 [0.056] | 75 [2.65] | 70 [2.47] |
| **32 [1.260]** | 430 [15.17] | 620 [21.87] | 530 [18.69] | 2.5 [0.088] | 75 [2.65] | 70 [2.47] |
| **40 [1.575]** | 630 [22.22] | 920 [32.45] | 760 [26.81] | 3.9 [0.138] | 120 [4.23] | 132 [4.66] |

Calculation example: For basic type of 40mm bore size and 100mm stroke
630＋(3.9×100)＝1020g [35.98 oz.]

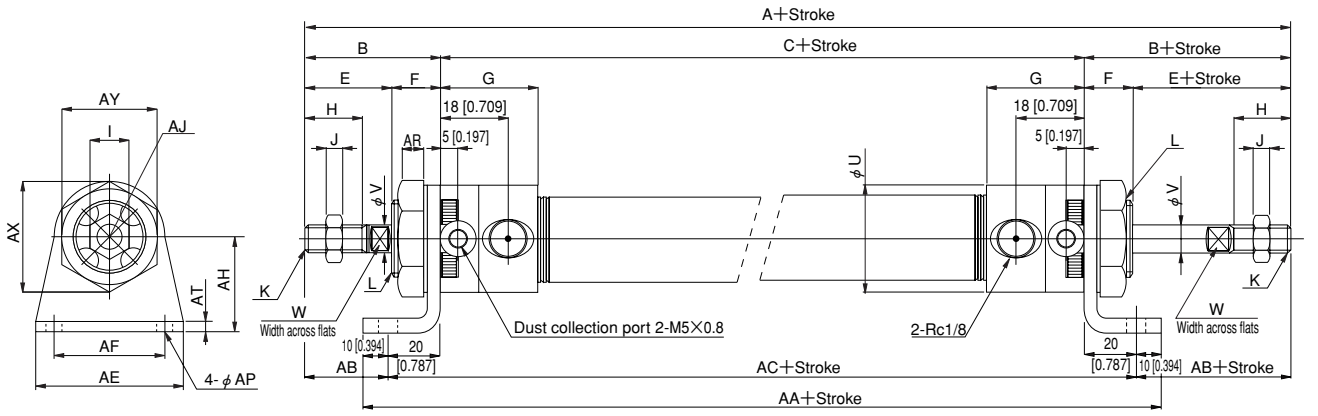
## Dimensions mm [in.]

### ●Basic type
### ●φ20～φ40 CS-DAD Bore size × Stroke




| Bore \ Code | A | B | C | E | F | G | H | I | J | K | L | M | U | V | W | AR | AX | AY | AL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 166 [6.535] | 35 [1.378] | 96 [3.780] | 23 [0.906] | 12 [0.472] | 26 [1.024] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 10 [0.394] | 27 [1.063] | 8 [0.315] | 6 [0.236] | 7.5 [0.295] | 31.2 [1.228] | 27 [1.063] | 20 [0.787] |
| **25 [0.984]** | 176 [6.929] | 40 [1.575] | 96 [3.780] | 26 [1.024] | 14 [0.551] | 26 [1.024] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 12 [0.472] | 29 [1.142] | 10 [0.394] | 8 [0.315] | 9.5 [0.374] | 34.6 [1.362] | 30 [1.181] | 22 [0.866] |
| **32 [1.260]** | 186 [7.323] | 45 [1.772] | 96 [3.780] | 31 [1.220] | 14 [0.551] | 26 [1.024] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 12 [0.472] | 35 [1.378] | 12 [0.472] | 10 [0.394] | 9.5 [0.374] | 41.6 [1.638] | 36 [1.417] | 27 [1.063] |
| **40 [1.575]** | 186 [7.323] | 45 [1.772] | 96 [3.780] | 31 [1.220] | 14 [0.551] | (25 [0.984]) | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 12 [0.472] | 41.6 [1.638] | 16 [0.630] | 14 [0.551] | 9.5 [0.374] | 47.3 [1.862] | 41 [1.614] | 33 [1.299] |

### ●Foot mounting type
### ●φ20～φ40 CS-DAD Bore size × Stroke -1

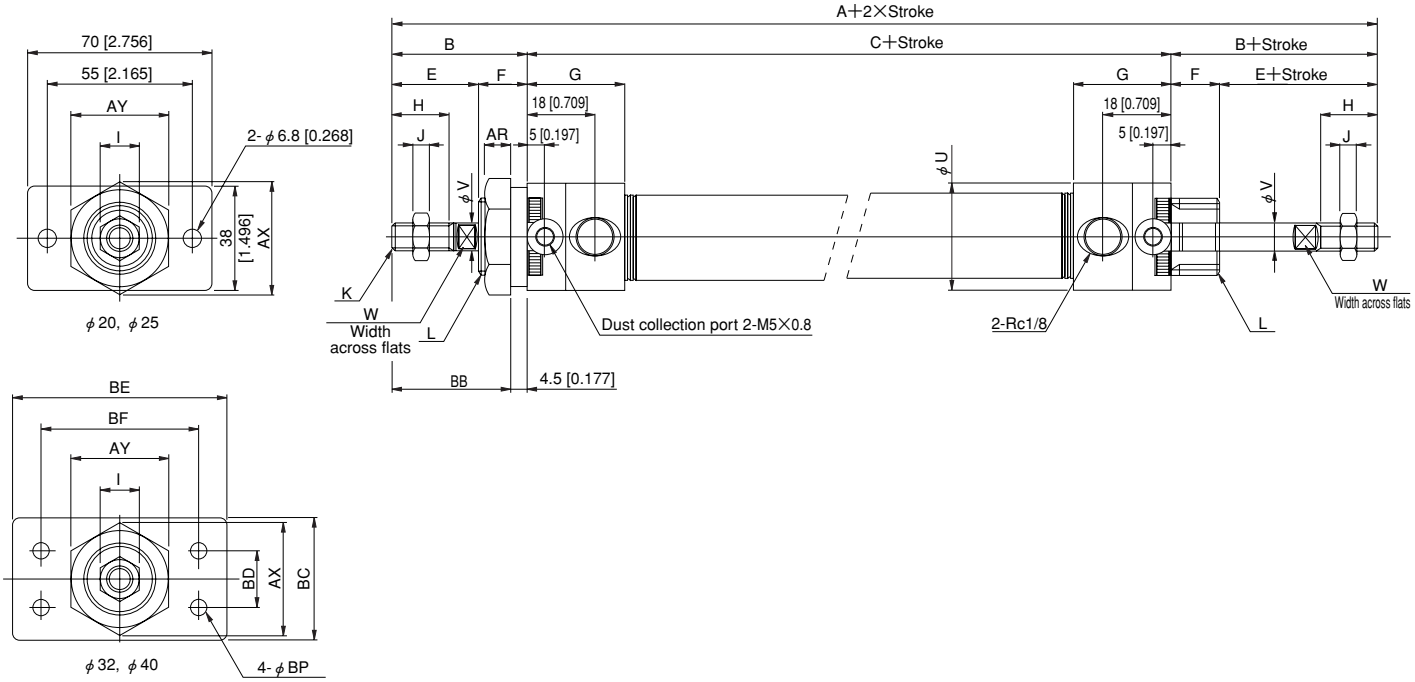



| Bore \ Code | A | B | C | E | F | G | H | I | J | K | L | U | V | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 166 [6.535] | 35 [1.378] | 96 [3.780] | 23 [0.906] | 12 [0.472] | 26 [1.024] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 27 [1.063] | 8 [0.315] | 6 [0.236] |
| **25 [0.984]** | 176 [6.929] | 40 [1.575] | 96 [3.780] | 26 [1.024] | 14 [0.551] | 26 [1.024] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 29 [1.142] | 10 [0.394] | 8 [0.315] |
| **32 [1.260]** | 186 [7.323] | 45 [1.772] | 96 [3.780] | 31 [1.220] | 14 [0.551] | 26 [1.024] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 35 [1.378] | 12 [0.472] | 10 [0.394] |
| **40 [1.575]** | 186 [7.323] | 45 [1.772] | 96 [3.780] | 31 [1.220] | 14 [0.551] | (25 [0.984]) | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 41.6 [1.638] | 16 [0.630] | 14 [0.551] |

| Bore \ Code | AA | AB | AC | AE | AF | AH | AJ | AP | AR | AT | AX | AY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 156 [6.142] | 15 [0.591] | 136 [5.354] | 55 [2.165] | 40 [1.575] | 25 [0.984] | 15.5 [0.610] | 6.8 [0.268] | 7.5 [0.295] | 3.2 [0.126] | 31.2 [1.228] | 27 [1.063] |
| **25 [0.984]** | 156 [6.142] | 20 [0.787] | 136 [5.354] | 55 [2.165] | 40 [1.575] | 30 [1.181] | 17 [0.669] | 6.8 [0.268] | 9.5 [0.374] | 3.2 [0.126] | 34.6 [1.362] | 30 [1.181] |
| **32 [1.260]** | 156 [6.142] | 25 [0.984] | 136 [5.354] | 55 [2.165] | 40 [1.575] | 35 [1.378] | 20 [0.787] | 6.8 [0.268] | 9.5 [0.374] | 3.2 [0.126] | 41.6 [1.638] | 36 [1.417] |
| **40 [1.575]** | 156 [6.142] | 25 [0.984] | 136 [5.354] | 75 [2.953] | 55 [2.165] | 40 [1.575] | 23.5 [0.925] | 9 [0.354] | 9.5 [0.374] | 4 [0.157] | 47.3 [1.862] | 41 [1.614] |

## Dimensions of Flange Mounting Type mm [in.]

● $\phi$20～$\phi$40 **CS-DAD** Bore size × Stroke **-3**



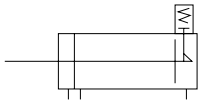

| Bore \ Code | A | B | C | E | F | G | H | I | J | K | L | U | V | W | AR | AX | AY | BB | BC | BD | BE | BF | BP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 166 [6.535] | 35 [1.378] | 96 [3.780] | 23 [0.906] | 12 [0.472] | 26 [1.024] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 27 [1.063] | 8 [0.315] | 6 [0.236] | 7.5 [0.295] | 31.2 [1.228] | 27 [1.063] | 30.5 [1.201] | — | — | — | — | — |
| **25 [0.984]** | 176 [6.929] | 40 [1.575] | 96 [3.780] | 26 [1.024] | 14 [0.551] | 26 [1.024] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 29 [1.142] | 10 [0.394] | 8 [0.315] | 9.5 [0.374] | 34.6 [1.362] | 30 [1.181] | 35.5 [1.398] | — | — | — | — | — |
| **32 [1.260]** | 186 [7.323] | 45 [1.772] | 96 [3.780] | 31 [1.220] | 14 [0.551] | 26 [1.024] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 35 [1.378] | 12 [0.472] | 10 [0.394] | 9.5 [0.374] | 41.6 [1.638] | 36 [1.417] | 40.5 [1.594] | 45 [1.772] | 20 [0.787] | 80 [3.150] | 60 [2.362] | 6.8 [0.268] |
| **40 [1.575]** | 186 [7.323] | 45 [1.772] | 96 [3.780] | 31 [1.220] | 14 [0.551] | 25 [0.984] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 41.6 [1.638] | 16 [0.630] | 14 [0.551] | 9.5 [0.374] | 47.3 [1.862] | 41 [1.614] | 40.5 [1.594] | 50 [1.969] | 30 [1.181] | 100 [3.937] | 80 [3.150] | 9 [0.354] |

KOGANEI CLEAN SYSTEM

# SLIM END KEEP CYLINDERS

## Head Side End Keep Double Acting Type

## Symbol



## Specifications

| Item \ Bore size mm [in.] | 20 [0.787] | 25 [0.984] | 32 [1.260] | 40 [1.575] |
|---|---|---|---|---|
| Operating type | Double acting type, with head side end keep mechanism | | | |
| Media | Air | | | |
| Mounting type | Basic type, Foot type, Flange type | | | |
| Operating pressure range MPa [psi.] | 0.1～0.9 [15～131] | | | |
| Proof pressure MPa [psi.] | 1.32 [191] | | | |
| Operating temperature range °C [°F] | 0～60 [32～140] | | | |
| Operating speed range mm/s [in./sec.] | 50～300 [2.0～11.8] | | | |
| Cushion | Fixed type (Rubber bumper) | | | |
| Lubrication | Not required | | | |
| Maximum holding force (at end keep) N [lbf.] | 194.2 [43.66] | 303 [68.11] | 496.2 [111.5] | 775.7 [174.4] |
| Backlash (at end keep) mm [in.] | 1.4 [0.055] MAX. | | 1.6 [0.063] MAX. | |
| Port size Rc | 1/8 | | | |

## Bore Size and Stroke

mm [in.]

| Bore size | Standard strokes | Maximum stroke | Maximum available stroke |
|---|---|---|---|
| 20 [0.787] | 25 50 75 100 125 150 | 200 | 1050 |
| 25 [0.984] | 25 50 75 100 125 150 200 | 250 | |
| 32 [1.260] | 25 50 75 100 125 150 200 | 300 | |
| 40 [1.575] | 25 50 75 100 125 150 200 250 300 | 400 | |

Remarks: 1. Stroke tolerance $^{+1}_{0}$ [$^{+0.039}_{0}$]
2. For non-standard strokes, consult us.
3. The minimum operating pressure when the stroke is over the maximum stroke at bore size of φ20 [0.787]～φ40 [1.575] is 0.2MPa [29psi.].

## Order Codes

**CS** – **DAK** **20×50** □ – □ – □ – □ – □ □ □

**Clean system product**

**Slim cylinder**
End keep
double acting cylinder

**Bore size**
**×**
**Stroke**

**Head cover type**
**Blank** — Standard head
**A** —— Short head

**End keep position**
**HL** —— Head side end keep

**Mounting type**
**Blank** — Basic type
**1** —— Double foot mounting type
**3** —— Flange mounting type
(Mounting brackets are included at shipping.)

**Rod end accessory**
**Blank** — Without rod end accessory
**Y** —— Y type knuckle (With pin)
**I** —— I type knuckle

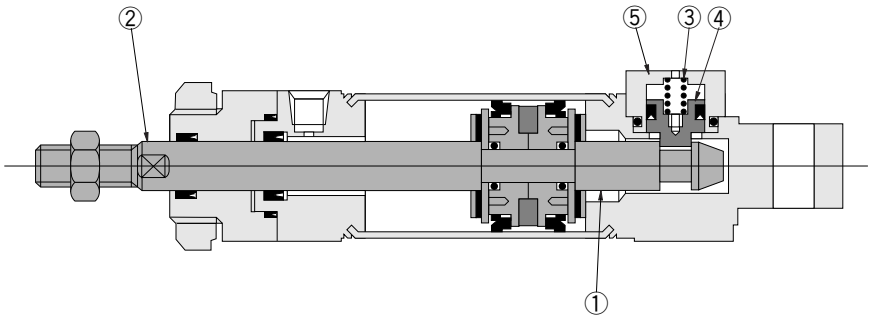
**Sensor switch**
**Blank** — Without sensor switch
**ZG530** — 2-lead wire Solid state type with indicator lamp DC10～28V
**ZG553** — 3-lead wire Solid state type with indicator lamp DC4.5～28V
**CS3M** — 2-lead wire Reed switch type with indicator lamp DC10～30V, AC85～230V
**CS4M** — 2-lead wire Reed switch type with indicator lamp DC10～30V, AC85～115V
**CS5M** — 2-lead wire Reed switch type without indicator lamp DC3～30V, AC85～115V
**CS2F** — 2-lead wire Reed switch type with indicator lamp AC85～230V
**CS3F** — 2-lead wire Reed switch type with indicator lamp DC10～30V
**CS4F** — 2-lead wire Reed switch type with indicator lamp DC10～30V
**CS5F** — 2-lead wire Reed switch type without indicator lamp DC3～30V
● For details of sensor switches, see p.111～121.

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

**Number of sensor switches**
**1** ——With 1 sensor switch
**2** ——With 2 sensor switches
**3** ——With 3 sensor switches

●For the order codes of additional parts, see p. 64.

## Inner Construction and Major Parts




## Major Parts and Materials

| Parts / Bore size mm | | 20, 25 | 32, 40 |
|---|---|---|---|
| ① | Piston rod A | Steel (chrome plated) | |
| ② | Piston rod B | Stainless steel | |
| ③ | Spring | Stainless steel | Piano wire |
| ④ | Lock piston | Stainless steel | |
| ⑤ | Lock cover | Aluminum alloy (anodized) | |
| | Y type knuckle, I type knuckle | Mild steel (nickel plated) | |

Other than the items listed above, they are the same as for the standard Slim Cylinder.

## Seals

| Parts / Quantity / Bore mm | Rod seal | Lock piston seal | Lock cover gasket |
|---|---|---|---|
| | 1 | 1 | 1 |
| **20** | GYH-9 | MYN-5 | — |
| **25** | GYH-11 | MYN-5 | — |
| **32** | — | MYN-10A | S18 |
| **40** | — | MYN10-A | S18 |

Other than the items listed above, they are the same as for the standard Slim Cylinder.

## Mass

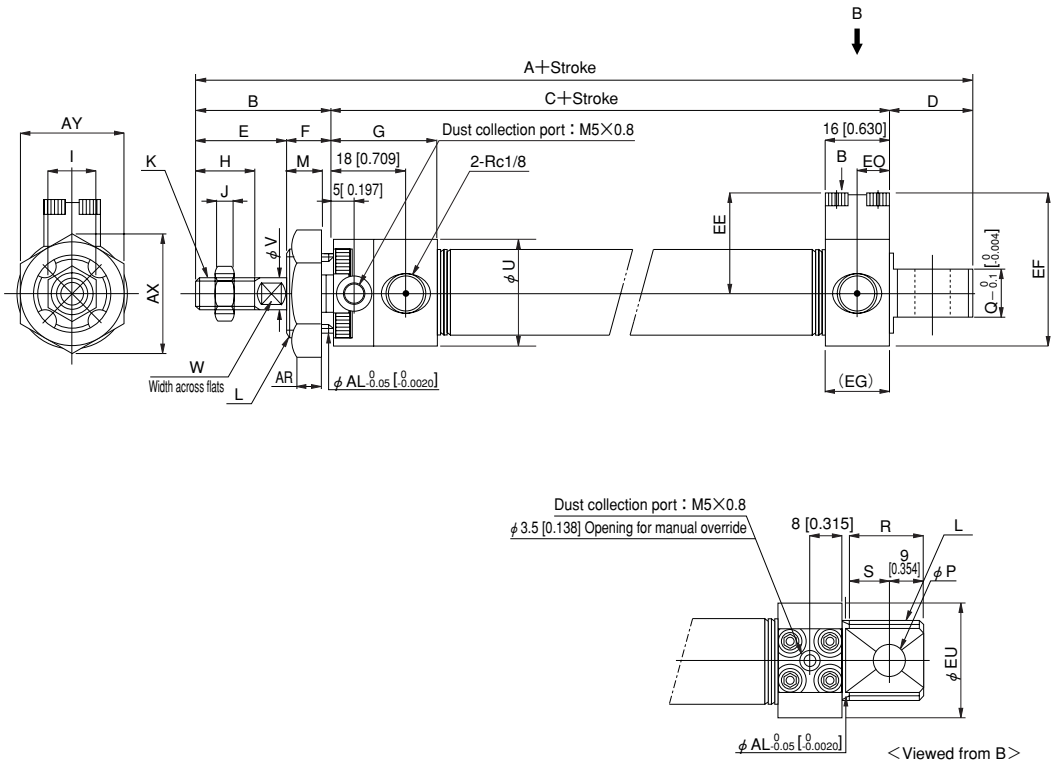
g [oz.]

| Bore size mm [in.] | Zero stroke mass | | Additional mass for each 1mm [0.0394in.] stroke | Mass of mounting bracket | | | | |
|---|---|---|---|---|---|---|---|---|
| | **-HL:** Head side end keep | | | Foot bracket | Flange bracket | Pivot bracket | Y type knuckle | I type knuckle |
| | Basic type | Short head type | | | | | | |
| **20 [0.787]** | 170 [6.00] | 160 [5.64] | 0.8 [0.028] | 140 [4.94] | 80 [2.82] | 60 [2.12] | 41 [1.45] | 36 [1.27] |
| **25 [0.984]** | 240 [8.47] | 230 [8.11] | 1.1 [0.039] | 160 [5.64] | 80 [2.82] | 60 [2.12] | 75 [2.65] | 70 [2.47] |
| **32 [1.260]** | 410 [14.46] | 390 [13.76] | 1.5 [0.053] | 190 [6.70] | 100 [3.53] | 140 [4.94] | | |
| **40 [1.575]** | 580 [20.46] | 560 [19.75] | 2.4 [0.085] | 290 [10.23] | 130 [4.59] | 140 [4.94] | 120 [4.23] | 132 [4.66] |

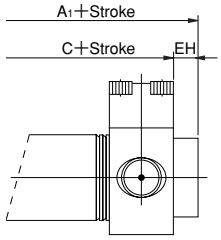
Calculation example: For head side end keep foot mounting type of 32mm bore size and 100mm stroke
410＋190＋(1.5×100)＝750g [26.46 oz.]

# -HL Dimensions of Head Side End Keep Basic Type mm [in.]

## ●φ20～φ40 CS-DAK Bore size × Stroke -HL




## ●Short head




| Bore \ Code | A | A1 | B | C | D | E | F | G | H | I | J | K | L | M | P | Q | R | S | U | V | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 142 [5.591] | 127 [5.000] | 35 [1.378] | 86 [3.386] | 21 [0.827] | 23 [0.906] | 12 [0.472] | 26 [1.024] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | M20×1.5 | 10 [0.394] | 8 [0.315] | 12 [0.472] | 19 [0.748] | 10 [0.394] | 27 [1.063] | 8 [0.315] | 6 [0.236] |
| **25 [0.984]** | 147 [5.787] | 132 [5.197] | 40 [1.575] | 86 [3.386] | 21 [0.827] | 26 [1.024] | 14 [0.551] | 26 [1.024] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | M22×1.5 | 12 [0.472] | 8 [0.315] | 12 [0.472] | 19 [0.748] | 10 [0.394] | 29 [1.142] | 10 [0.394] | 8 [0.315] |
| **32 [1.260]** | 170 [6.693] | 144 [5.669] | 45 [1.772] | 98 [3.858] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 26 [1.024] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | M27×2 | 12 [0.472] | 10 [0.394] | 20 [0.787] | 25 [0.984] | 15 [0.591] | 35 [1.378] | 12 [0.472] | 10 [0.394] |
| **40 [1.575]** | 175 [6.890] | 149 [5.866] | 45 [1.772] | 103 [4.055] | 27 [1.063] | 31 [1.220] | 14 [0.551] | 25 [0.984] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | M33×2 | 12 [0.472] | 10 [0.394] | 20 [0.787] | 25 [0.984] | 15 [0.591] | 41.6 [1.638] | 16 [0.630] | 14 [0.551] |

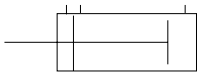
| Bore \ Code | AR | AX | AY | AL | EE | EF | EG | EH | EO |
|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 7.5 [0.295] | 31.2 [1.228] | 27 [1.063] | 20 [0.787] | 24 [0.945] | 38.5 [1.516] | 16 [0.630] | 6 [0.236] | 8 [0.315] |
| **25 [0.984]** | 9.5 [0.374] | 34.6 [1.362] | 30 [1.181] | 22 [0.866] | 25 [0.984] | 42.5 [1.673] | 16 [0.630] | 6 [0.236] | 8 [0.315] |
| **32 [1.260]** | 9.5 [0.374] | 41.6 [1.638] | 36 [1.417] | 27 [1.063] | 30 [1.181] | 47.5 [1.870] | 26 [1.024] | 1 [0.039] | 14 [0.551] |
| **40 [1.575]** | 9.5 [0.374] | 47.3 [1.862] | 41 [1.614] | 33 [1.299] | 32.2 [1.268] | 53 [2.087] | 31 [1.220] | 1 [0.039] | 16 [0.630] |

KOGANEI CLEAN SYSTEM

# SLIM BLOCK CYLINDERS

## Double Acting Type

## Symbol



## Specifications

| Item \ Bore size mm [in.] | 16～40 [0.630～1.575] |
|---|---|
| Operating type | Double acting type |
| Media | Air |
| Mounting type | Side mount, Front mount |
| Operating pressure range MPa [psi.] | 0.1～0.9 [15～131] |
| Proof pressure MPa [psi.] | 1.32 [191] |
| Operating temperature range °C [°F] | 0～60 [32～140] |
| Operating speed range mm/s [in./sec.] | 30～300 [1.2～11.8] |
| Cushion | Fixed type (Rubber bumper) |
| Lubrication | Not required |
| Port size Rc | 1/8 |

## Bore Size and Stroke

mm [in.]

| Bore size | Standard strokes | Maximum stroke | Maximum available stroke |
|---|---|---|---|
| 16 [0.630] | 15 25 50 75 100 | 100 | 300 |
| 20 [0.787] | 25 50 75 100 125 150 | 150 | 500 |
| 25 [0.984] | 25 50 75 100 125 150 200 | 200 | |
| 32 [1.260] | 25 50 75 100 125 150 200 | 200 | |
| 40 [1.575] | 25 50 75 100 125 150 200 250 300 | 300 | |

Remarks: 1. Stroke tolerance $^{+1}_{0}$ [$^{+0.039}_{0}$]
2. For non-standard strokes, consult us.

## Order Codes

CS – DAB 20×50 – □ – □ – □□ □ □

**Clean system product**

**Slim cylinder**
Block double acting type

**Bore size**
**×**
**Stroke**

**Mounting type**
**2** —— Side mount
**4** —— Front mount

**Rod end accessory**
**Blank** — Without rod end accessory
**Y** —— Y type knuckle (With pin)
**I** —— I type knuckle

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

**Number of sensor switches**
**1** —— With 1 sensor switch
**2** —— With 2 sensor switches
**3** —— With 3 sensor switches

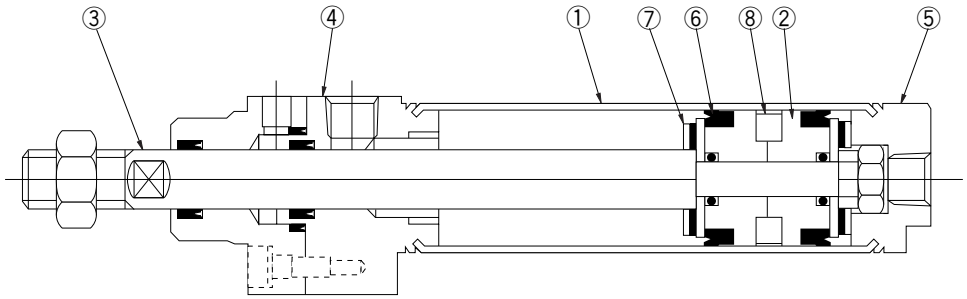
**Sensor switch**

| | | | |
|---|---|---|---|
| **Blank** | Without sensor switch | | |
| **ZG530** | 2-lead wire Solid state type | with indicator lamp | DC10～28V |
| **ZG553** | 3-lead wire Solid state type | with indicator lamp | DC4.5～28V |
| **CS3M** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V, AC85～230V |
| **CS4M** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V, AC85～115V |
| **CS5M** | 2-lead wire Reed switch type | without indicator lamp | DC3～30V, AC85～115V |
| **CS2F** | 2-lead wire Reed switch type | with indicator lamp | AC85～230V |
| **CS3F** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V |
| **CS4F** | 2-lead wire Reed switch type | with indicator lamp | DC10～30V |
| **CS5F** | 2-lead wire Reed switch type | without indicator lamp | DC3～30V |

● For details of sensor switches, see p.111～121.

●For the order codes of additional parts, see p. 64.

## Inner Construction and Major Parts




## Major Parts and Materials

| Parts / Bore size mm | | 16～40 |
|---|---|---|
| ① | Cylinder tube | Stainless steel |
| ② | Piston | Plastic |
| ③ | Piston rod | Stainless steel |
| ④ | Rod cover | Aluminum (anodized) |
| ⑤ | Head cover | |
| ⑥ | Seal | Synthetic rubber (NBR) |
| ⑦ | Bumper | |
| ⑧ | Magnet | Plastic magnet |
| | I type knuckle, Y type knuckle | Mild steel (nickel plated) |

## Seals

| Parts | Rod seal | Piston seal | Dust leak prevention seal |
|---|---|---|---|
| Bore mm / Quantity | 1 | 2 | 1 |
| **16** | NY-3-6 | PPY-16 | NY-3-6 |
| **20** | NY-12×8×3.5 | PPY-20 | NY-12×8×3.5 |
| **25** | NY-14×10×3.5 | PPY-25 | NY-14×10×3.5 |
| **32** | NY-17×12×4 | PPY-32 | NY-17×12×4 |
| **40** | NY-22×16×5 | PPY-40 | NY-22×16×5 |

Other than the items listed above, they are the same as for the standard Slim Cylinder.

## Mass

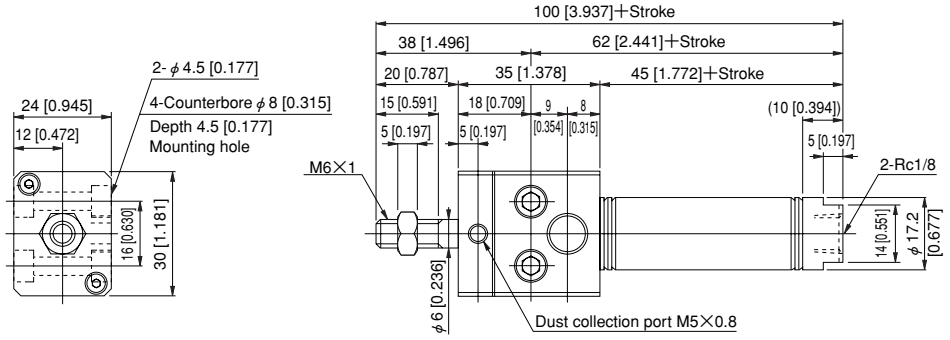
g [oz.]

| Bore size mm [in.] | Zero stroke mass | | Additional mass for each 1mm [0.0394in.] stroke | Mass of knuckle | |
|---|---|---|---|---|---|
| | Side mount | Front mount | | Y type knuckle | I type knuckle |
| **16 [0.630]** | 90 [3.17] | 80 [2.82] | 0.5 [0.018] | 17 [0.60] | 20 [0.71] |
| **20 [0.787]** | 160 [5.64] | 130 [4.59] | 0.8 [0.028] | 41 [1.45] | 36 [1.27] |
| **25 [0.984]** | 220 [7.76] | 190 [6.70] | 1.1 [0.039] | 75 [2.65] | 70 [2.47] |
| **32 [1.260]** | 340 [11.99] | 270 [9.52] | 1.5 [0.053] | 75 [2.65] | 70 [2.47] |
| **40 [1.575]** | 560 [19.75] | 390 [13.76] | 2.4 [0.085] | 120 [4.23] | 132 [4.66] |

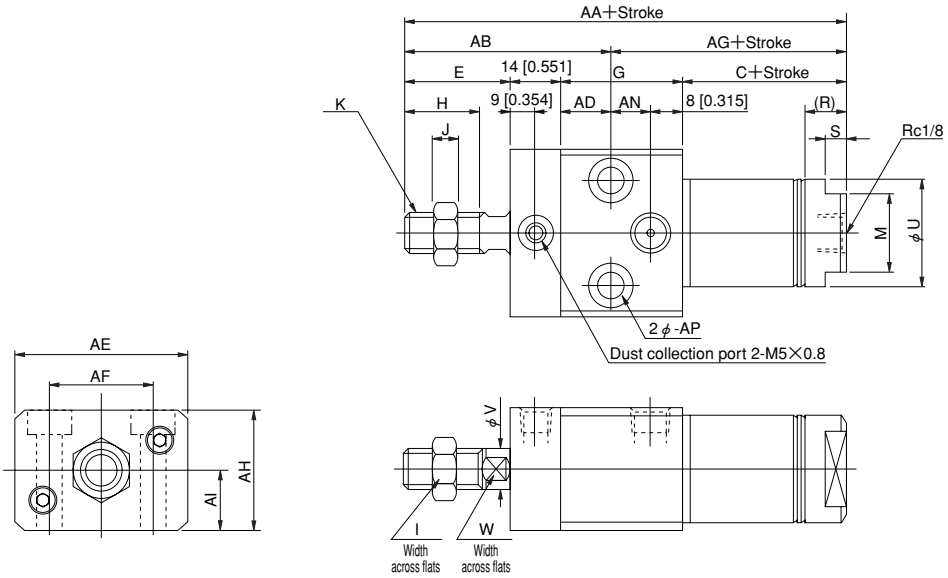
Calculation example: For the mass of side mount type of 32mm bore size and 100mm stroke
340＋(1.5×100)＝490g [17.28 oz.]

## Dimensions of Block Cylinder Side Mounting Type mm [in.]

### ●φ16 CS-DAB16×[Stroke]-2



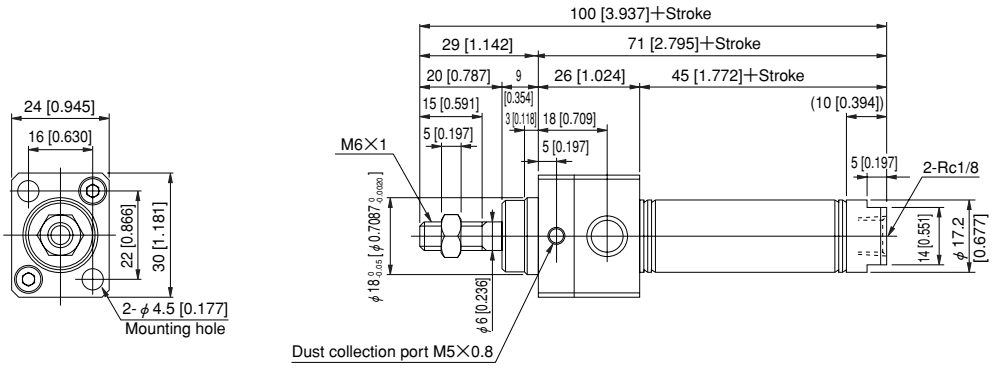

### ●φ20～φ40 CS-DAB×[Bore size]×[Stroke]-2



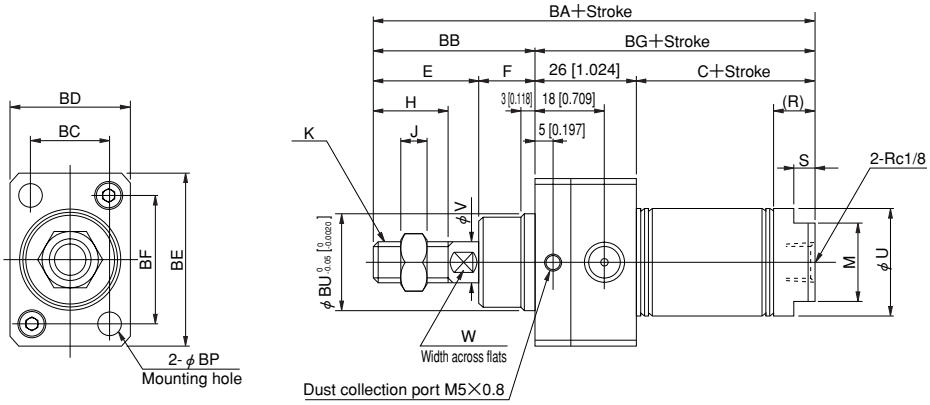

| Bore \ Code | C | E | G | H | I | J | K | M | R | S | U | V | W | AA | AB | AD | AE | AF | AG | AH | AI | AN | AP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 53 [2.087] | 23 [0.906] | 28 [1.102] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | 17 [0.669] | 9 [0.354] | 5 [0.197] | 21.4 [0.843] | 8 [0.315] | 6 [0.236] | 118 [4.646] | 48 [1.890] | 11 [0.433] | 38 [1.496] | 22 [0.866] | 70 [2.756] | 28 [1.102] | 14 [0.551] | 9 [0.354] | φ6.6 [0.260] Counterbore φ11 [0.433] Depth 6.5 [0.256] |
| **25 [0.984]** | 53 [2.087] | 26 [1.024] | 30 [1.181] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | 19 [0.748] | 9 [0.354] | 5 [0.197] | 26.4 [1.039] | 10 [0.394] | 8 [0.315] | 123 [4.843] | 52 [2.047] | 12 [0.472] | 42 [1.654] | 26 [1.024] | 71 [2.795] | 30 [1.181] | 15 [0.591] | 10 [0.394] | φ6.6 [0.260] Counterbore φ11 [0.433] Depth 6.5 [0.256] |
| **32 [1.260]** | 54 [2.126] | 31 [1.220] | 36 [1.417] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | 22 [0.866] | 10 [0.394] | 6 [0.236] | 33.6 [1.323] | 12 [0.472] | 10 [0.394] | 135 [5.315] | 59 [2.323] | 14 [0.551] | 54 [2.126] | 34 [1.339] | 76 [2.992] | 36 [1.417] | 18 [0.709] | 14 [0.551] | φ9 [0.354] Counterbore φ14 [0.551] Depth 8.6 [0.339] |
| **40 [1.575]** | 60 [2.362] | 31 [1.220] | 44 [1.732] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | 22 [0.866] | 12 [0.472] | 6 [0.236] | 41.6 [1.638] | 16 [0.630] | 14 [0.551] | 149 [5.866] | 62 [2.441] | 17 [0.669] | 68 [2.677] | 46 [1.811] | 87 [3.425] | 44 [1.732] | 22 [0.866] | 19 [0.748] | φ11 [0.433] Counterbore φ17.5 [0.689] Depth 10.8 [0.425] |

## Dimensions of Front Mounting Type mm [in.]

### ●φ16 CS-DAB16×[Stroke]-4




### ●φ20～φ40 CS-DAB[Bore size]×[Stroke]-4



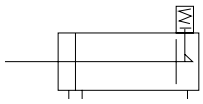

| Bore \ Code | C | E | F | H | I | J | K | M | R | S | U | V | W | BA | BB | BC | BD | BE | BF | BG | BP | BU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 53 [2.087] | 23 [0.906] | 12 [0.472] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | 17 [0.669] | 10 [0.394] | 5 [0.197] | 21.4 [0.843] | 8 [0.315] | 6 [0.236] | 114 [4.488] | 35 [1.378] | 28 [1.102] | 18 [0.709] | 38 [1.496] | 28 [1.102] | 79 [3.110] | 5.5 [0.217] | 22 [0.866] |
| **25 [0.984]** | 53 [2.087] | 26 [1.024] | 14 [0.551] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | 19 [0.748] | 10 [0.394] | 5 [0.197] | 26.4 [1.039] | 10 [0.394] | 8 [0.315] | 119 [4.685] | 40 [1.575] | 30 [1.181] | 20 [0.787] | 42 [1.654] | 32 [1.260] | 79 [3.110] | 5.5 [0.217] | 24 [0.945] |
| **32 [1.260]** | 54 [2.126] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | 22 [0.866] | 11 [0.433] | 6 [0.236] | 33.6 [1.323] | 12 [0.472] | 10 [0.394] | 125 [4.921] | 45 [1.772] | 36 [1.417] | 24 [0.945] | 54 [2.126] | 42 [1.654] | 80 [3.150] | 6.6 [0.260] | 28 [1.102] |
| **40 [1.575]** | 60 [2.362] | 31 [1.220] | 14 [0.551] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | 22 [0.866] | 13 [0.512] | 6 [0.236] | 41.6 [1.638] | 16 [0.630] | 14 [0.551] | 131 [5.157] | 45 [1.772] | 44 [1.732] | 28 [1.102] | 68 [2.677] | 52 [2.047] | 86 [3.386] | 9 [0.354] | 34 [1.339] |

KOGANEI CLEAN SYSTEM

# SLIM BLOCK END KEEP CYLINDERS

## Head Side End Keep Double Acting Type

## Symbols



## Specifications

| Item \ Bore size mm [in.] | 20 [0.787] | 25 [0.984] | 32 [1.260] | 40 [1.575] |
|---|---|---|---|---|
| Operating type | Double acting type, with head side stroke end keep mechanism | | | |
| Media | Air | | | |
| Mounting type | Side mount | | | |
| Operating pressure range MPa [psi.] | 0.1～0.9 [15～131] | | | |
| Proof pressure MPa [psi.] | 1.32 [191] | | | |
| Operating temperature range °C [°F] | 0～60 [32～140] | | | |
| Operating speed range mm/s [in./sec.] | 50～300 [2.0～11.8] | | | |
| Cushion | Fixed type (Rubber bumper) | | | |
| Lubrication | Not required | | | |
| Maximum holding force (at end keep) N [lbf.] | 194.2 [43.66] | 303 [68.11] | 496.2 [111.5] | 775.7 [174.4] |
| Backlash (at end keep) mm [in.] | 1.4 [0.055] MAX. | | 1.6 [0.063] MAX. | |
| Port size Rc | 1/8 | | | |

## Bore Size and Stroke

mm [in.]

| Bore size | Standard strokes | Maximum stroke | Maximum available stroke |
|---|---|---|---|
| 20 [0.787] | 25 50 75 100 125 150 | 150 | 500 |
| 25 [0.984] | 25 50 75 100 125 150 200 | 200 | |
| 32 [1.260] | 25 50 75 100 125 150 200 | 200 | |
| 40 [1.575] | 25 50 75 100 125 150 200 250 300 | 300 | |

Remarks: 1. Stroke tolerance $^{+1}_{0}$ [$^{+0.039}_{0}$]
2. For non-standard strokes, consult us.

## Order Codes

**CS** – **DABK** **20×50** □ – **2** – □ – □ □ □

**Clean system product**

**Slim block**
End keep double acting cylinder

**Bore size**
**×**
**Stroke**

**End keep position**
**HL** — Head side end keep

**Mounting type**
**2** — Side mount

**Rod end accessory**
**Blank** — Without rod end accessory
**Y** — Y type knuckle
**I** — I type knuckle

**Sensor switch**

| | | |
|---|---|---|
| **Blank** | Without sensor switch | |
| **ZG530** | 2-lead wire Solid state type with indicator lamp | DC10～28V |
| **ZG553** | 3-lead wire Solid state type with indicator lamp | DC4.5～28V |
| **CS3M** | 2-lead wire Reed switch type with indicator lamp | DC10～30V, AC85～230V |
| **CS4M** | 2-lead wire Reed switch type with indicator lamp | DC10～30V, AC85～115V |
| **CS5M** | 2-lead wire Reed switch type without indicator lamp | DC3～30V, AC85～115V |
| **CS2F** | 2-lead wire Reed switch type with indicator lamp | AC85～230V |
| **CS3F** | 2-lead wire Reed switch type with indicator lamp | DC10～30V |
| **CS4F** | 2-lead wire Reed switch type with indicator lamp | DC10～30V |
| **CS5F** | 2-lead wire Reed switch type without indicator lamp | DC3～30V |

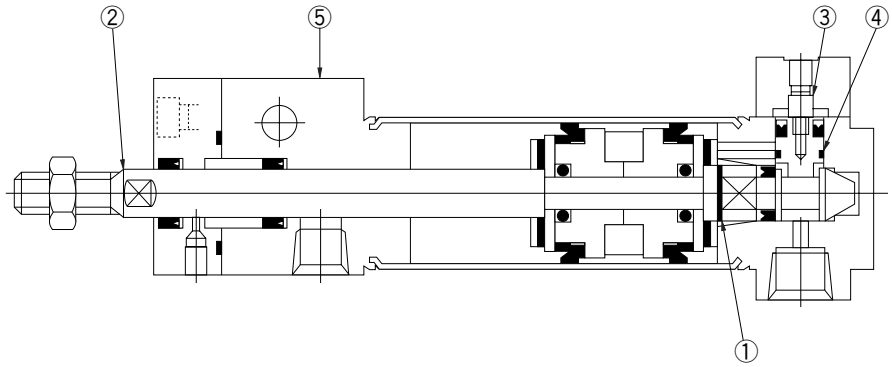
● For details of sensor switches, see p.111～121.

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

**Number of sensor switches**
**1** — With 1 sensor switch
**2** — With 2 sensor switches
**3** — With 3 sensor switches

●For the order codes of additional parts, see p. 64.

## Inner Construction and Major Parts




## Major Parts and Materials

| Parts / Bore size mm | | 20, 25 | 32, 40 |
|---|---|---|---|
| ① | Piston rod A | Steel (chrome plated) | |
| ② | Piston rod B | Stainless steel | |
| ③ | Spring | Stainless steel | Piano wire |
| ④ | Lock piston | Stainless steel | |
| ⑤ | Lock cover | Aluminum (anodized) | |
| | Y type knuckle, I type knuckle | Mild steel (nickel plated) | |

Other than the items listed above, it is the same as for the standard Slim Cylinder.

## Seals

| Parts / Quantity / Bore mm | Rod seal | Lock piston seal | Lock cover gasket |
|---|---|---|---|
| | 1 | 1 | 1 |
| **20** | GYH-9 | MYN-5 | — |
| **25** | GYH-11 | MYN-5 | — |
| **32** | — | MYN-10A | S18 |
| **40** | — | MYN10-A | S18 |

Other than the items listed above, it is the same as for the standard Slim Cylinder.

## Mass

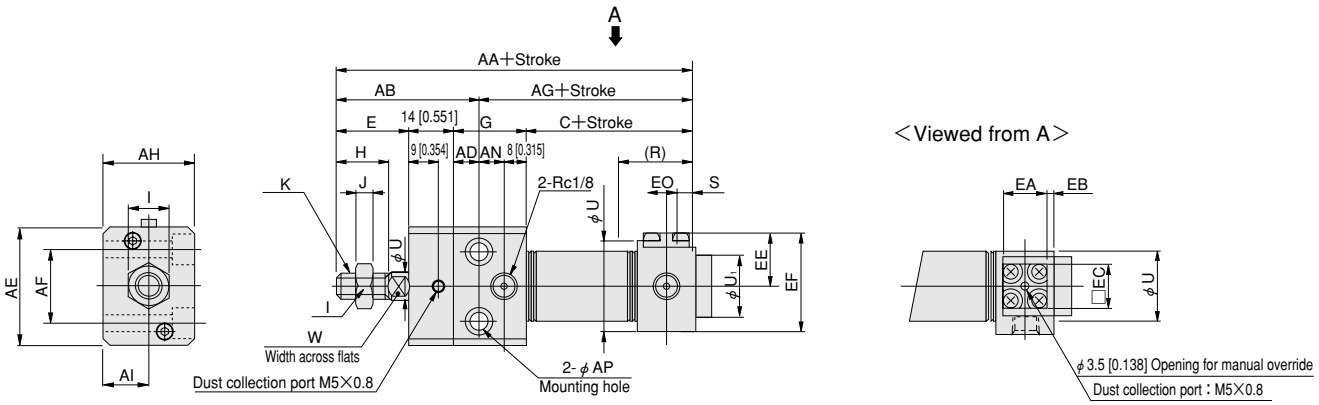
g [oz.]

| Bore size mm [in.] | Zero stroke mass | Additional mass for each 1mm [0.0394in.] stroke | Mass of knuckle | |
|---|---|---|---|---|
| | -HL : Head side end keep Side mount | | Y type knuckle | I type knuckle |
| **20 [0.787]** | 210 [7.41] | 0.8 [0.028] | 41 [1.45] | 36 [1.27] |
| **25 [0.984]** | 310 [10.93] | 1.1 [0.039] | 75 [2.65] | 70 [2.47] |
| **32 [1.260]** | 500 [17.64] | 1.5 [0.053] | | |
| **40 [1.575]** | 900 [31.75] | 2.4 [0.085] | 120 [4.23] | 132 [4.66] |

Calculation example: For head side end keep side mount type of 32mm bore size and 100mm stroke, 500＋(1.5×100)＝650g [22.93 oz.]

# -HL Dimensions of Head Side End Keep, Side Mounting Type mm [in.]

## ●φ20～φ40



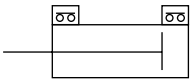

●The drawings for sizes φ32 and φ40 (The outward shape of the size φ20 and φ25 head covers is larger than the block portion.)

| Bore \ Code | C | E | G | H | I | J | K | R | S | U | $U_1$ | V | W |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 60 [2.362] | 23 [0.906] | 28 [1.102] | 15 [0.591] | 12 [0.472] | 5 [0.197] | M8×1 | 16 [0.630] | 6 [0.236] | 29 [1.142] | 20 [0.787] | 8 [0.315] | 6 [0.236] |
| **25 [0.984]** | 60 [2.362] | 26 [1.024] | 30 [1.181] | 18 [0.709] | 14 [0.551] | 6 [0.236] | M10×1.25 | 16 [0.630] | 6 [0.236] | 35 [1.378] | 22 [0.866] | 10 [0.394] | 8 [0.315] |
| **32 [1.260]** | 72 [2.835] | 31 [1.220] | 36 [1.417] | 23 [0.906] | 14 [0.551] | 6 [0.236] | M10×1.25 | 26 [1.024] | 1 [0.039] | 35 [1.378] | 27 [1.063] | 12 [0.472] | 10 [0.394] |
| **40 [1.575]** | 79 [3.110] | 31 [1.220] | 44 [1.732] | 23 [0.906] | 19 [0.748] | 8 [0.315] | M14×1.5 | 32 [1.260] | 1 [0.039] | 41.6 [1.638] | 33 [1.299] | 16 [0.630] | 14 [0.551] |

| Bore \ Code | AA | AB | AD | AE | AF | AG | AH | AI | AN | AP | EA | EB | EC | EE | EF | EO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **20 [0.787]** | 131 [5.157] | 48 [1.890] | 11 [0.433] | 38 [1.496] | 22 [0.866] | 83 [3.268] | 28 [1.102] | 14 [0.551] | 9 [0.354] | φ6.6 [0.260] Counterbore φ11 [0.433] Depth 6.5 [0.256] | 16 [0.630] | — | 16 [0.630] | 24 [0.945] | 38.5 [1.516] | 8 [0.315] |
| **25 [0.984]** | 136 [5.354] | 52 [2.047] | 12 [0.472] | 42 [1.654] | 26 [1.024] | 84 [3.307] | 30 [1.181] | 15 [0.591] | 10 [0.394] | φ6.6 [0.260] Counterbore φ11 [0.433] Depth 6.5 [0.256] | 16 [0.630] | — | 16 [0.630] | 25 [0.984] | 42.5 [1.673] | 8 [0.315] |
| **32 [1.260]** | 154 [6.063] | 59 [2.323] | 14 [0.551] | 54 [2.126] | 34 [1.339] | 95 [3.740] | 36 [1.417] | 18 [0.709] | 14 [0.551] | φ9 [0.354] Counterbore φ14 [0.551] Depth 8.6 [0.339] | 24 [0.945] | 2 [0.079] | 25 [0.984] | 30 [1.181] | (40.5) ([1.594]) | 14 [0.551] |
| **40 [1.575]** | 169 [6.654] | 62 [2.441] | 17 [0.669] | 68 [2.677] | 46 [1.811] | 107 [4.213] | 44 [1.732] | 22 [0.866] | 19 [0.748] | φ11 [0.433] Counterbore φ17.5 [0.689] Depth 10.8 [0.425] | 24 [0.945] | 4 [0.157] | 25 [0.984] | 32.5 [1.280] | (46) ([1.811]) | 16 [0.630] |

**●Since a magnet comes standard in the Slim cylinders series, mounting a sensor switch will enable use in sensor switch applications.**

## Symbol



## Order Codes

### ●Order codes for sensor switch with mounting strap

**CS** — □ □ — □ □

**Sensor switch**

| | | |
|---|---|---|
| **ZG530** | 2-lead wire Solid state type with indicator lamp | DC10～28V |
| **ZG553** | 3-lead wire Solid state type with indicator lamp | DC4.5～28V |
| **CS3M** | 2-lead wire Reed switch type with indicator lamp | DC10～30V, AC85～230V |
| **CS4M** | 2-lead wire Reed switch type with indicator lamp | DC10～30V, AC85～115V |
| **CS5M** | 2-lead wire Reed switch type without indicator lamp | DC3～30V, AC85～115V |
| **CS2F** | 2-lead wire Reed switch type with indicator lamp | AC85～230V |
| **CS3F** | 2-lead wire Reed switch type with indicator lamp | DC10～30V |
| **CS4F** | 2-lead wire Reed switch type with indicator lamp | DC10～30V |
| **CS5F** | 2-lead wire Reed switch type without indicator lamp | DC3～30V |

**Lead wire length**
(Applies to all except **CS□F**)
**A** — 1000mm [39in.]
**B** — 3000mm [118in.]

**Cylinder basic type**
**DA** — Excluding **DAB** ϕ16 and **DABK** ϕ16
**DAB** — For block cylinder ϕ16
**DABK** — For block type end keep cylinder ϕ16
**S** — For sensor switch type **CS□F**

**Bore size** Note
**16** — ϕ16 [0.630in.]
**20** — ϕ20 [0.787in.]
**25** — ϕ25 [0.984in.]
**32** — ϕ32 [1.260in.]
**40** — ϕ40 [1.575in.]
**50** — ϕ50 [1.969in.]
**63** — ϕ63 [2.480in.]
Note: ϕ50 and ϕ63 are DA type only.

**Clean system product**

●For details of sensor switches, see p.111～121.

### ●Order codes for sensor switch only

**CS** — □ □

**Sensor switch**

| | | |
|---|---|---|
| **ZG530** | 2-lead wire Solid state type with indicator lamp | DC10～28V |
| **ZG553** | 3-lead wire Solid state type with indicator lamp | DC4.5～28V |
| **CS3M** | 2-lead wire Reed switch type with indicator lamp | DC10～30V, AC85～230V |
| **CS4M** | 2-lead wire Reed switch type with indicator lamp | DC10～30V, AC85～115V |
| **CS5M** | 2-lead wire Reed switch type without indicator lamp | DC3～30V, AC85～115V |
| **CS2F** | 2-lead wire Reed switch type with indicator lamp | AC85～230V |
| **CS3F** | 2-lead wire Reed switch type with indicator lamp | DC10～30V |
| **CS4F** | 2-lead wire Reed switch type with indicator lamp | DC10～30V |
| **CS5F** | 2-lead wire Reed switch type without indicator lamp | DC3～30V |

**Lead wire length**
(Applies to all except **CS□F**)
**A** — 1000mm [39in.]
**B** — 3000mm [118in.]

● For details of sensor switches, see p.111～121.

**Clean system product**

### ●Order codes for mounting strap only

**CS** — □ — □ □

**Bore size** Note
**16** — ϕ16 [0.630in.]
**20** — ϕ20 [0.787in.]
**25** — ϕ25 [0.984in.]
**32** — ϕ32 [1.260in.]
**40** — ϕ40 [1.575in.]
**50** — ϕ50 [1.969in.]
**63** — ϕ63 [2.480in.]
Note: ϕ50 and ϕ63 are DA type only.

**Cylinder basic type**
**DA** — Excluding **DAB** ϕ16 and **DABK** ϕ16
**DAB** — For block cylinder **DAB** ϕ16
**DABK** — For block end keep cylinder **DABK** ϕ16
**S** — For sensor switch type **CS□F**

**Mounting strap type**
**G5** — Solid state type
For **ZG5□□**
Reed switch type
For **CS□M**
**F** — Reed switch type
For **CS□F**

**Clean system product**

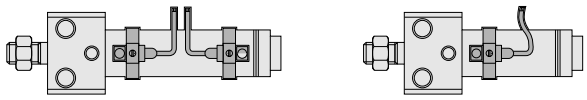
## Minimum Cylinder Strokes When Using Sensor Switches

mm [in.]

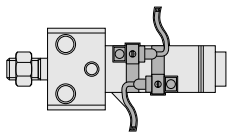
| Sensor switch model | Bore size | 2 pcs. mounting | | 1 pc. mounting |
|---|---|---|---|---|
| | | In-line | In staggered positions | |
| **ZG530** **ZG553** | 16 [0.630] | 20 [0.787] | 10 [0.394] | 10 [0.394] |
| | 20~63 [0.787~2.480] | 20 [0.787] | 10 [0.394] | 10 [0.394] |
| **CS□M** | 16~63 [0.630~2.480] | 20 [0.787] | 15 [0.591] | 15 [0.591] |
| **CS□F** | 20~63 [0.787~2.480] | 40 [1.575] | 21 [0.827] | 15 [0.591] |

### ●Two pieces mounting ●One piece mounting

●When mounted in-line



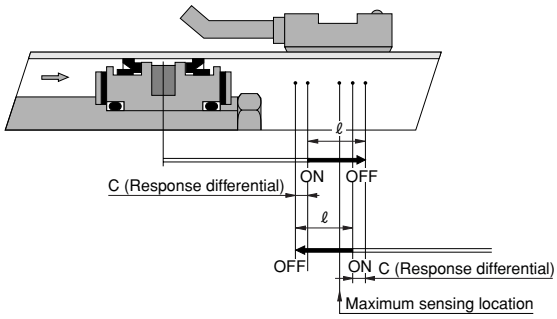
●When mounted in staggered positions



## 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.




mm [in.]

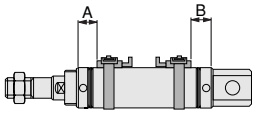
| Item | Bore size | 16 [0.630] | 20 [0.787] | 25 [0.984] | 32 [1.260] | 40 [1.575] | 50 [1.969] | 63 [2.480] |
|---|---|---|---|---|---|---|---|---|
| Operating range : ℓ | **ZG530□** | 2.5～4.1 [0.098～0.161] | 2.5～4.2 [0.098～0.165] | 2.6～4.3 [0.102～0.169] | 3.0～4.8 [0.118～0.189] | 3.1～5.0 [0.122～0.197] | 3.3～5.4 [0.130～0.213] | 3.5～5.7 [0.138～0.224] |
| | **ZG533□** | | | | | | | |
| | **CS□M** | 6.7～7 [0.264～0.276] | 7～8.5 [0.276～0.335] | 7～8.5 [0.276～0.335] | 8～9 [0.315～0.354] | 9～10.5 [0.354～0.413] | 7～8 [0.276～0.315] | 8～9.5 [0.315～0.374] |
| | **CS□F** | — | 7～8.5 [0.276～0.335] | 8.5～10 [0.335～0.394] | 9～10.5 [0.354～0.413] | 10.5～12 [0.413～0.472] | 9～10 [0.354～0.394] | 9～10.5 [0.354～0.413] |
| Response differential : C | **ZG530** | 0.7 [0.028] or less | 0.7 [0.028] or less | 0.8 [0.032] or less | 0.7 [0.028] or less | 0.8 [0.032] or less | 0.8 [0.032] or less | 0.8 [0.032] or less |
| | **ZG533** | 0.7 [0.028] or less | 0.7 [0.028] or less | 0.8 [0.032] or less | 0.7 [0.028] or less | 0.8 [0.032] or less | 0.8 [0.032] or less | 0.8 [0.032] or less |
| | **CS□M** | 1 [0.039] or less | 1 [0.039] or less | 1 [0.039] or less | 1 [0.039] or less | 1 [0.039] or less | 1.2 [0.047] or less | 1.2 [0.047] or less |
| | **CS□F** | — | 1.5 [0.059] or less | 1.5 [0.059] or less | 1.5 [0.059] or less | 1.5 [0.059] or less | 2 [0.079] or less | 1.5 [0.059] or less |
| Maximum sensing location | **ZG530, ZG553** Note 1 | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] |
| | **CS□M** Note 1 | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] | 11 [0.433] |
| | **CS□F** Note 2 | — | 16 [0.630] | 16 [0.630] | 16 [0.630] | 16 [0.630] | 16 [0.630] | 16 [0.630] |

Remark : Figures in the table above are reference values.
Notes: 1. Figures are from the end surface that is opposite to the lead wires.
2. Figures are from the end surface of the connector side.

## Mounting Location of End of Stroke Detection Sensor Switch

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

### ●Double acting cylinder

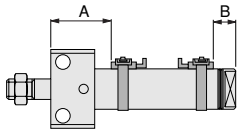



mm [in.]

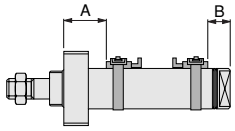
| Sensor switch model | Bore size / Code | Double acting cylinder | | | | | |
|---|---|---|---|---|---|---|---|
| | | **20** | **32** | **32** | **40** | **50** | **63** |
| **ZG530□ ZG553□** | **A** | 37 [1.456] | 37 [1.456] | 37 [1.456] | 38.5 [1.516] | 45 [1.772] | 45 [1.772] |
| | **B** | 27 [1.063] | 27 [1.063] | 27 [1.063] | 27 [1.063] | 36 [1.417] | 36 [1.417] |
| **CS□M** | **A** | 37 [1.456] | 37 [1.456] | 37 [1.456] | 38.5 [1.516] | 45 [1.772] | 45 [1.772] |
| | **B** | 27 [1.063] | 27 [1.063] | 27 [1.063] | 27 [1.063] | 36 [1.417] | 36 [1.417] |
| **CS□F** | **A** | 32 [1.260] | 32 [1.260] | 32 [1.260] | 32 [1.260] | 41 [1.614] | 41 [1.614] |
| | **B** | 22 [0.866] | 22 [0.866] | 22 [0.866] | 22 [0.866] | 32 [1.260] | 32 [1.260] |

### ●Block cylinder

●Side mount




●Front mount

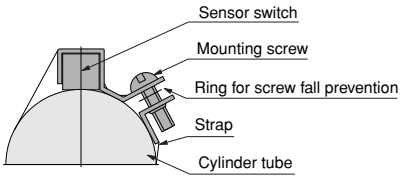



mm [in.]

| Mounting type | | Side mount | | | | | | | Front mount | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bore size | | **16** | **20** | **25** | **32** | **40** | **50** | **63** | **16** | **20** | **25** | **32** | **40** | **50** | **63** |
| **ZG530□ ZG553□** | **A** Rod side | 42 [1.654] | 53 [2.087] | 55 [2.165] | 61 [2.402] | 71 [2.795] | 81 [3.189] | 81 [3.189] | 33 [1.299] | 37 [1.457] | 37 [1.457] | 37 [1.457] | 39 [1.535] | 47 [1.850] | 47 [1.850] |
| | **B** Rod side | 16 [0.630] | 20 [0.787] | 20 [0.787] | 21 [0.827] | 25 [0.984] | 45 [1.772] | 45 [1.772] | 16 [0.630] | 20 [0.787] | 20 [0.787] | 21 [0.827] | 25 [0.984] | 45 [1.772] | 45 [1.772] |
| **CS□M** | **A** Rod side | 42 [1.654] | 53 [2.087] | 55 [2.165] | 61 [2.402] | 71 [2.795] | 80 [3.150] | 80 [3.150] | 33 [1.299] | 37 [1.457] | 37 [1.457] | 37 [1.457] | 39 [1.535] | 46 [1.811] | 46 [1.811] |
| | **B** Rod side | 16 [0.630] | 20 [0.787] | 20 [0.787] | 21 [0.827] | 25 [0.984] | 44 [1.732] | 44 [1.732] | 16 [0.630] | 20 [0.787] | 20 [0.787] | 21 [0.827] | 25 [0.984] | 44 [1.732] | 44 [1.732] |
| **CS□F** | **A** Rod side | — | 50 [1.969] | 52 [2.047] | 58 [2.283] | 66 [2.598] | 78 [3.071] | 78 [3.071] | — | 34 [1.339] | 34 [1.339] | 34 [1.339] | 34 [1.339] | 44 [1.732] | 44 [1.732] |
| | **B** Rod side | — | 17 [0.669] | 17 [0.669] | 18 [0.709] | 20 [0.787] | 42 [1.654] | 42 [1.654] | — | 17 [0.669] | 17 [0.669] | 18 [0.709] | 22 [0.866] | 42 [1.654] | 42 [1.654] |

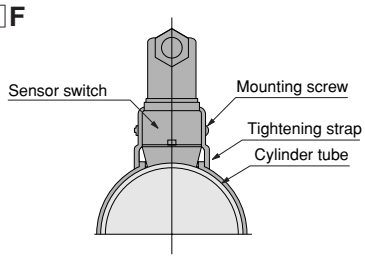
## Moving Sensor Switch

### ●ZG530□ ZG553□ CS□M




- Loosening the mounting screw allows the sensor switch to be moved freely along with the strap in the axial and circumferential direction. The sensor switch alone cannot be moved.
- To remove the sensor switch from the strap, first detach the strap from the cylinder tube and then remove the sensor switch from the strap.
- Tighten the mounting screw with a tightening torque of 49N·cm [4.3in·lbf] or less.

### ●CS□F




- Loosening the mounting screw allows the sensor switch to be moved freely in the axial and circumferential direction.
- Slightly loosening the mounting screw allows fine adjustment of the lead switch only, up to 5mm [0.197in.] in the axial direction.
  Tighten the mounting screw with a tightening torque of 68.6N·cm [6.1in·lbf] or less.

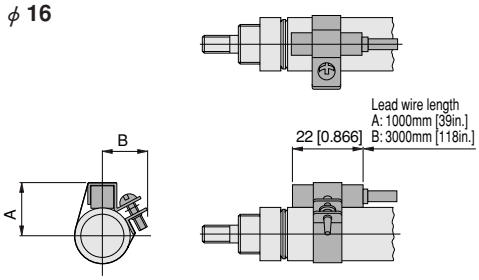
## Dimensions of Sensor Switch mm [in.]

### ●ZG530□ ZG553□ CS□M

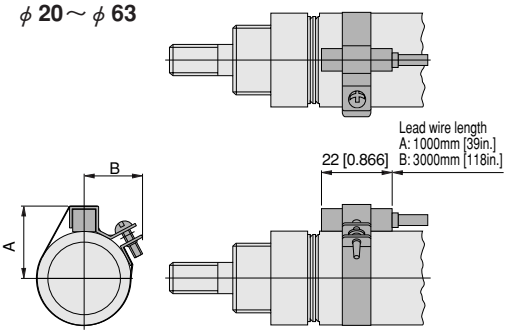
| Bore \ Code | A | B |
|---|---|---|
| **16 [0.630]** | 16 [0.630] | 15 [0.591] |
| **20 [0.787]** | 19 [0.748] | 17 [0.669] |
| **25 [0.984]** | 20.5 [0.807] | 17.5 [0.689] |
| **32 [1.260]** | 25 [0.984] | 19 [0.748] |
| **40 [1.575]** | 29 [1.142] | —※ |
| **50 [1.969]** | 34 [1.339] | —※ |
| **63 [2.480]** | 41 [1.614] | —※ |

※At φ40 [1.575in.] or more, dimension B is the radius of the cylinder tube. Therefore, the protrusion in the B direction of the mounting section disappears.

**φ16**




**φ20～φ63**




### ●CS□F

| Bore \ Code | Y |
|---|---|
| **20 [0.787]** | 59 [2.323] |
| **25 [0.984]** | 61.5 [2.421] |
| **32 [1.260]** | 65 [2.559] |
| **40 [1.575]** | 69 [2.717] |
| **50 [1.969]** | 76 [2.992] |
| **63 [2.480]** | 83 [3.268] |