

# SLIM CYLINDERS

## Double Acting Type



### Symbols

- Without variable cushion
- With variable cushion



### Specifications

Item		Bore size mm [in.]	20, 25 [0.787, 0.984]	32, 40 [1.260, 1.575]	50, 63 [1.969, 2.480]
Operation type		Double acting type			
Media		Air			
Mounting type		Basic type, Foot type, Flange type, Pivot type, Head trunnion type, Rod trunnion type			Basic type, Foot type, Flange type, Pivot type
Operating pressure range MPa [psi.]	Standard cylinder	0.04~0.9 [6~131]			0.04~0.7 [6~102]
	Cylinder with variable cushion	0.15~0.9 [22~131]	0.1~0.9 [15~131]		
Proof pressure	MPa [psi.]	1.32 [191]			1.03 [149]
Operating temperature range	°C [°F]	0~70 [32~158]			
Operating speed range	mm/s [in./sec.]	30~800 [1.2~31.5] (With variable cushion is 30~1000 [1.2~39.4])			30~500 [1.2~19.7]
Cushion	Standard cylinder	Fixed type (Rubber bumper)			Variable type as standard (Stroke 12mm [0.472in.])
	Cylinder with variable cushion	Variable type (12mm [0.472in.] stroke)			
Lubrication		Not required			
Port size	Rc	1/8			1/4

### Bore Size and Stroke

Bore size	Standard strokes	Maximum stroke		Maximum available stroke	
		No bellows	With bellows	No bellows	With bellows
20	25 50 75 100 125 150	200		1050	740
25	25 50 75 100 125 150 200	250			
32	25 50 75 100 125 150 200	300			
40	25 50 75 100 125 150 200 250 300	400	300	900	740
50	25 50 75 100 150 200 [250 300 350 400]	300[500]	300		
63	25 50 75 100 150 200 [250 300 350 400 500]	300[600]	300		

- Remarks: 1. Stroke tolerance  ${}^{+1}_{0}$  [ ${}^{+0.039}_{0}$ in.]  
 2. For non-standard strokes, consult us.  
 3. Items in parentheses [ ] are for cases when foot mounting brackets are used for mounting.  
 4. The minimum operating pressure when the stroke is over the maximum stroke at bore sizes of  $\phi 20 \sim \phi 40$  is 0.2MPa [29psi.].

### Order Codes

**DA** [ ] [ ] **20×50** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

**Bore size**  
 ×  
**Stroke**

**Non-ion specification**  
 Blank — Standard  
 NCU — Non-ion specification

**Bellows or scraper**  
 Blank — No bellows  
 J — With bellows (Made to order)  
 Y — With scraper (Made to order; available at  $\phi 50$  and  $\phi 63$  only)

**With or without variable cushion**  
 Blank — Standard cylinder  
 C — Cylinder with variable cushion (Available at  $\phi 20 \sim \phi 40$  only) (Standard equipment for  $\phi 50$  and  $\phi 63$ )

**Mounting type**  
 Blank — Basic type  
 1 — Double foot mounting type  
 3 — Flange mounting type  
 8B — Pivot mounting type with bushing ( $\phi 50$  and  $\phi 63$  only)  
 8E — Pivot mounting type with supporting bracket (with pin) ( $\phi 20 \sim \phi 40$  only)  
 8B-8E — Pivot mounting type with bushing and supporting bracket ( $\phi 50$  and  $\phi 63$  only)  
 11 — Head trunnion type\*  
 12 — Rod trunnion type\*  
 11-11T — Head trunnion type, with supporting bracket\*  
 12-12T — Rod trunnion type, with supporting bracket\*  
 ● For the pivot mounting type with bushing at  $\phi 20 \sim \phi 40$ , see made to order specifications on p.414.  
 ● Trunnion type is available at  $\phi 20 \sim \phi 40$  only. Moreover, it is not available for the variable cushion type.  
 ● Mounting brackets are included at shipping. (Except pivot type and pivot type with bushing)  
 ※ A head cover for the standard is a short head. Order code "A" is not required.

**Rod end accessory**  
 Blank — No rod end accessory  
 I — I type knuckle  
 Y — Y type knuckle (with pin)  
 ● For the cylinder joint and cylinder rod end, see p.1568.

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

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

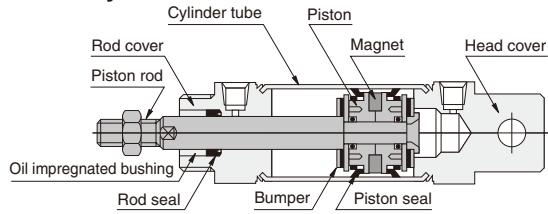
**Sensor switch (for cylinders with sensor switches)**  
 Blank — No sensor switch  
 ZG530 — 2-lead wire Solid state type with indicator lamp DC10~28V  
 ZG553 — 3-lead wire Solid state type with indicator lamp DC4.5~28V  
 CS3M — Reed switch type with indicator lamp AC85~230V  
 CS4M — Reed switch type with indicator lamp DC10~30V  
 CS5M — Reed switch type without indicator lamp AC85~115V  
 CS2F — Reed switch type with indicator lamp AC85~230V  
 CS3F — Reed switch type with indicator lamp DC10~30V  
 CS4F — Reed switch type with indicator lamp DC10~30V  
 CS5F — Reed switch type without indicator lamp DC3~30V  
 ● For details of sensor switches, see p.1544.  
 ● CS□F comes with DIN connector. All others are grommet type.

**Head cover specification**  
 Blank — Standard head  
 A — Short head (For the basic type and flange mounting type only)

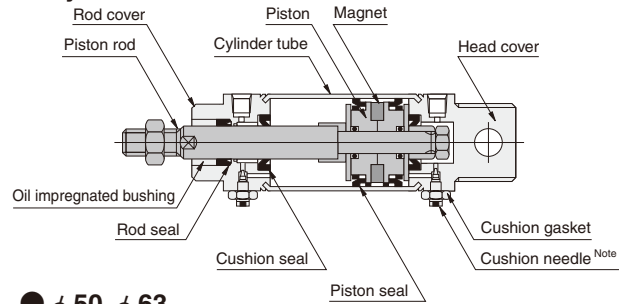
**Slim double acting cylinder**

# Inner Construction and Major Parts (cannot be disassembled)

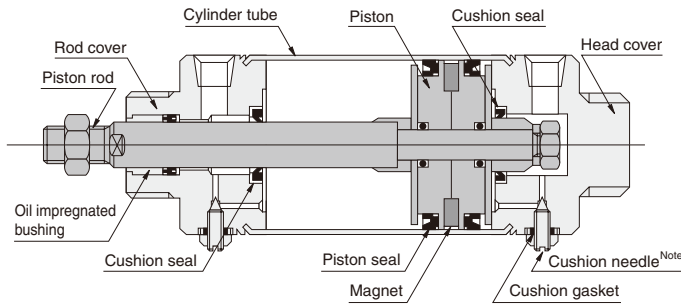
## ● $\phi 20 \sim \phi 40$ Standard cylinder



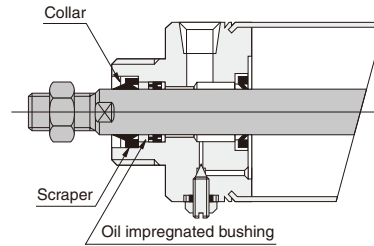
## ● $\phi 20 \sim \phi 40$ Cylinder with variable cushion



## ● $\phi 50, \phi 63$ Standard cylinder



## ● $\phi 50, \phi 63$ With scraper



Note: Set the cushion needle tightening torque to 1.0N·m [8.85in·lbf] or less.

## Major Parts and Materials

Parts	Bore size	20	25~40	50, 63
Cylinder tube		Stainless steel		
Piston		Plastic		
Piston rod		Steel (hard chrome plated)		
Rod cover		Aluminum alloy (anodized)		
Head cover				
Seal		Synthetic rubber (NBR)		
Bumper		Synthetic rubber (NBR)	—	
Scraper		—		Synthetic rubber (NBR)
Collar		—		Aluminum (anodized)
Magnet		Plastic magnet		
Bellows		Nylon tarpaulin (heat resistant temperature 70°C [158°F])		
Y type knuckle, I type knuckle Pivot mounting with supporting bracket		Mild steel (zinc plated)		

## Seals

Note: Seals cannot be replaced.

Parts	Rod seal	Piston seal	Cushion seal	Cushion gasket	Scraper
Quantity	1	2	2	2	1
<b>20 [0.787]</b>	NY-12×8×3.5	PPY-20	GYH-9	DT-1-4	—
<b>25 [0.984]</b>	NY-14×10×3.5	PPY-25	GYH-11	DT-1-4	—
<b>32 [1.260]</b>	NY-17×12×4	PPY-32	PCS-14	DT-1-4	—
<b>40 [1.575]</b>	NY-22×16×5	PPY-40	PCS-18	DT-1-4	—
<b>50 [1.969]</b>	NY-22×16×5	PGY-50	PCS-20	DT-1-5	SCB-16
<b>63 [2.480]</b>	NY-22×16×5	PGY-63	PCS-20	DT-1-5	SCB-16

## Mass

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	Pivot mounting type	Trunnion type		Foot bracket	Flange bracket	Pivot bracket	Y type knuckle	I type knuckle
<b>20 [0.787]</b>	0.16 [0.35] (0.14 [0.31])	0.15 [0.33] (0.13 [0.29])	—	0.35 [0.77]	0.0008 [0.0018]	0.14 [0.31]	0.08 [0.18]	0.06 [0.13]	0.041 [0.090]	0.036 [0.079]
<b>25 [0.984]</b>	0.21 [0.46] (0.18 [0.40])	0.20 [0.44] (0.17 [0.37])	—	0.39 [0.86]	0.0011 [0.0024]	0.16 [0.35]	0.08 [0.18]	0.06 [0.13]	0.075 [0.165]	0.070 [0.154]
<b>32 [1.260]</b>	0.33 [0.73] (0.30 [0.66])	0.31 [0.68] (0.28 [0.62])	—	0.50 [1.10]	0.0015 [0.0033]	0.19 [0.42]	0.10 [0.22]	0.14 [0.31]	0.075 [0.165]	0.070 [0.154]
<b>40 [1.575]</b>	0.49 [1.08] (0.43 [0.95])	0.45 [0.99] (0.39 [0.86])	—	0.65 [1.43]	0.0024 [0.0053]	0.29 [0.64]	0.13 [0.29]	0.14 [0.31]	0.120 [0.265]	0.132 [0.291]
<b>50 [1.969]</b>	0.91 [2.01]	0.86 [1.90]	0.83 [1.83]	—	0.0028 [0.0062]	0.55 [1.21]	0.28 [0.62]	0.24 [0.53]	0.120 [0.265]	0.132 [0.291]
<b>63 [2.480]</b>	1.24 [2.73]	1.20 [2.65]	1.17 [2.58]	—	0.0033 [0.0073]	0.73 [1.61]	0.37 [0.82]	0.24 [0.53]	0.120 [0.265]	0.132 [0.291]

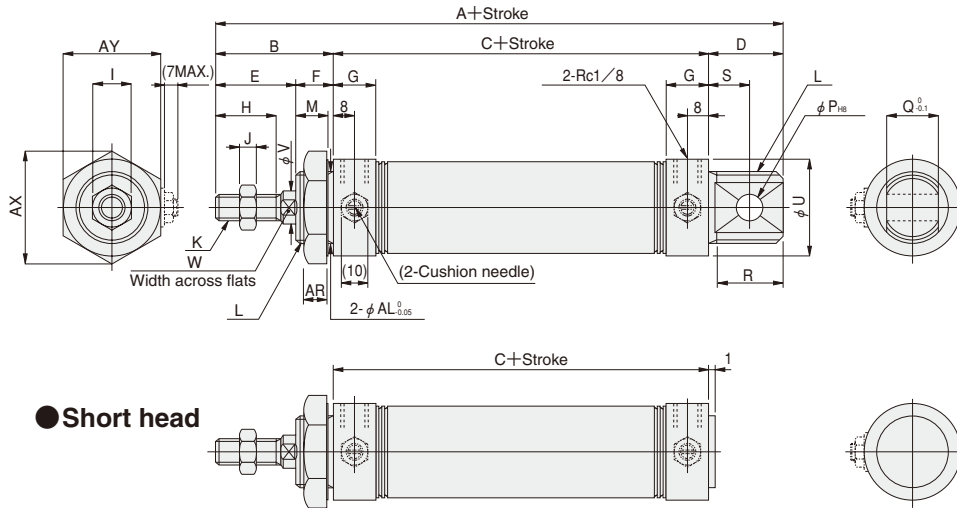
Note: Figures in parentheses ( ) are for cylinders with variable cushions of bore sizes  $\phi 20 \sim \phi 40$ .  
 Calculation example: For foot mounting type of 32mm bore size and 100mm stroke  
 $0.33 + 0.19 + (0.0015 \times 100) = 0.67\text{kg}$  [1.48lb.]

# Dimensions of Basic Type (mm)

●  $\phi 20 \sim \phi 40$  DA  Bore size  Stroke

● Figures in parentheses ( ) are for type with variable cushion.

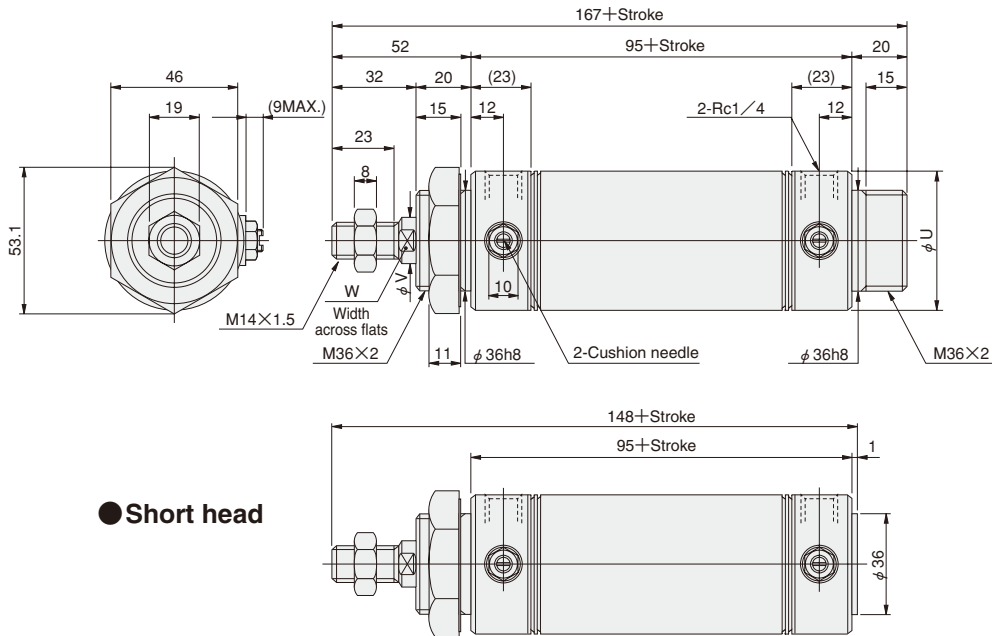
CAD DA-  Bore size SLIM-A



Code	A	B	C	D	E	F	G	H	I	J	K	L	M	P	Q	R	S	U	V	W	AR	AX	AY	AL
20 [0.787]	132	35	76	21	23	12	16	15	12	5	M 8×1	M20×1.5	10	8	12	19	12	27	8	6	7.5	31.2	27	20
25 [0.984]	137	40	76	21	26	14	16	18	14	6	M10×1.25	M22×1.5	12	8	12	19	12	29	10	8	9.5	34.6	30	22
32 [1.260]	148	45	76	27	31	14	16	23	14	6	M10×1.25	M27×2	12	10	20	25	15	35	12	10	9.5	41.6	36	27
40 [1.575]	148	45	76	27	31	14	(14.5)	23	19	8	M14×1.5	M33×2	12	10	20	25	15	41.6	16	14	9.5	47.3	41	33

●  $\phi 50, \phi 63$  DA  Bore size  Stroke

CAD DA-  Bore size SLIM-A

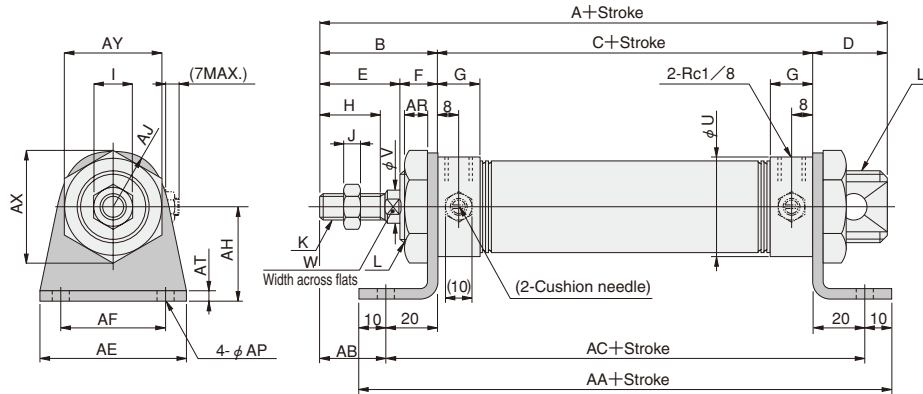


Code	U	V	W
50 [1.969]	52	16	14
63 [2.480]	65.4	16	14

# Dimensions of Foot Mounting Type (mm)

●  $\phi 20 \sim \phi 40$  DA  Bore size  $\times$   Stroke -1 ● Figures in parentheses ( ) are for type with variable cushion.

CAD DA-  Bore size SLIM-F01

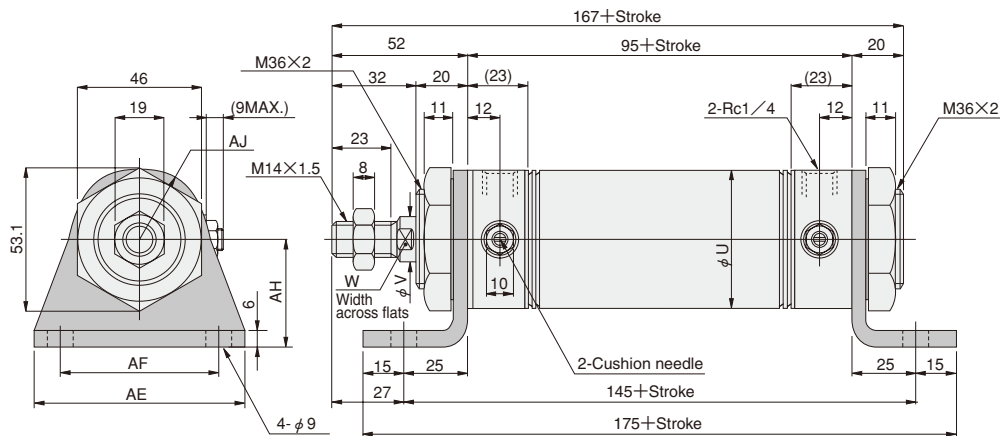


Bore mm [in.]	Code	A	B	C	D	E	F	G	H	I	J	K	L	U	V	W
20 [0.787]		132	35	76	21	23	12	16	15	12	5	M 8×1	M20×1.5	27	8	6
25 [0.984]		137	40	76	21	26	14	16	18	14	6	M10×1.25	M22×1.5	29	10	8
32 [1.260]		148	45	76	27	31	14	16	23	14	6	M10×1.25	M27×2	35	12	10
40 [1.575]		148	45	76	27	31	14	(14.5)	23	19	8	M14×1.5	M33×2	41.6	16	14

Bore mm [in.]	Code	AA	AB	AC	AE	AF	AH	AJ	AP	AR	AT	AX	AY
20 [0.787]		136	15	116	55	40	25	15.5	6.8	7.5	3.2	31.2	27
25 [0.984]		136	20	116	55	40	30	17	6.8	9.5	3.2	34.6	30
32 [1.260]		136	25	116	55	40	35	20	6.8	9.5	3.2	41.6	36
40 [1.575]		136	25	116	75	55	40	23.5	9	9.5	4	47.3	41

●  $\phi 50, \phi 63$  DA  Bore size  $\times$   Stroke -1

CAD DA-  Bore size SLIM-F01



Bore mm [in.]	Code	U	V	W	AE	AF	AH	AJ
50 [1.969]		52	16	14	80	60	40	26
63 [2.480]		65.4	16	14	95	74	45	32

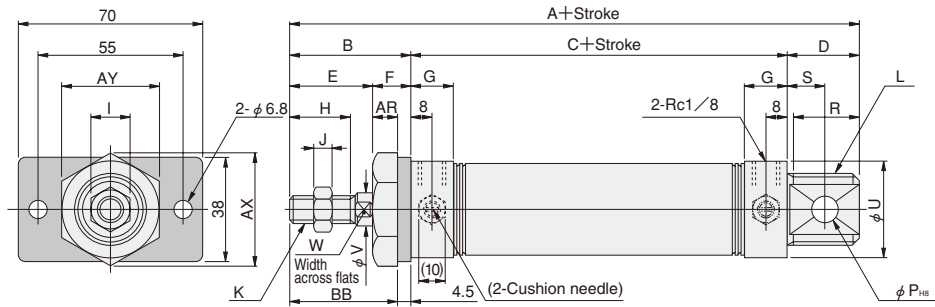
# Dimensions of Flange Mounting Type (mm)

●  $\phi 20 \sim \phi 40$  DA  Bore size  Stroke  -3

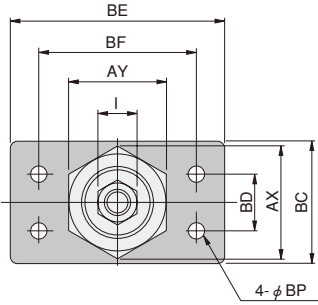
● Figures in parentheses ( ) are for type with variable cushion.

 DA-  Bore size  
SLIM-FL3

●  $\phi 20, \phi 25$




●  $\phi 32, \phi 40$

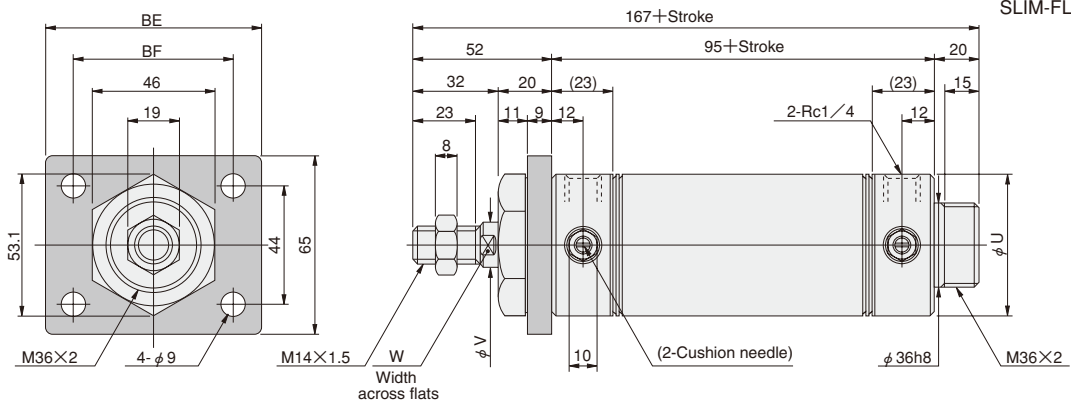


Bore mm [in.]	Code	A	B	C	D	E	F	G	H	I	J	K	L	P	R	S	U	V	W
20 [0.787]	132	35	76	21	23	12	16	15	12	5	M 8×1	M20×1.5	8	19	12	27	8	6	
25 [0.984]	137	40	76	21	26	14	16	18	14	6	M10×1.25	M22×1.5	8	19	12	29	10	8	
32 [1.260]	148	45	76	27	31	14	16	23	14	6	M10×1.25	M27×2	10	25	15	35	12	10	
40 [1.575]	148	45	76	27	31	14	(14.5)	23	19	8	M14×1.5	M33×2	10	25	15	41.6	16	14	

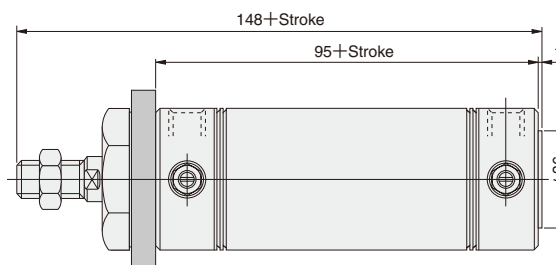
Bore mm [in.]	Code	AR	AX	AY	BB	BC	BD	BE	BF	BP
20 [0.787]		7.5	31.2	27	30.5	—	—	—	—	—
25 [0.984]		9.5	34.6	30	35.5	—	—	—	—	—
32 [1.260]		9.5	41.6	36	40.5	45	20	80	60	6.8
40 [1.575]		9.5	47.3	41	40.5	50	30	100	80	9

●  $\phi 50, \phi 63$  DA  Bore size  Stroke  -3

 DA-  Bore size  
SLIM-A  
SLIM-FL3



● Short head

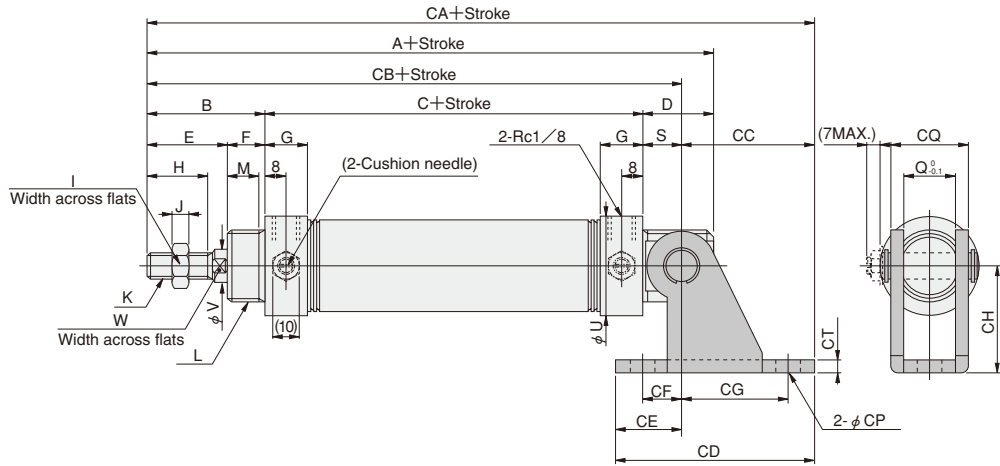


Bore mm [in.]	Code	U	V	W	BE	BF
50 [1.969]		52	16	14	80	60
63 [2.480]		65.4	16	14	100	80

# Dimensions of Pivot Mounting Type (mm)

●  $\phi 20 \sim \phi 40$  DA  Bore size   $\times$   Stroke **-8E** ● Figures in parentheses ( ) are for type with variable cushion.

CAD DA-  Bore size SLIM-CL7

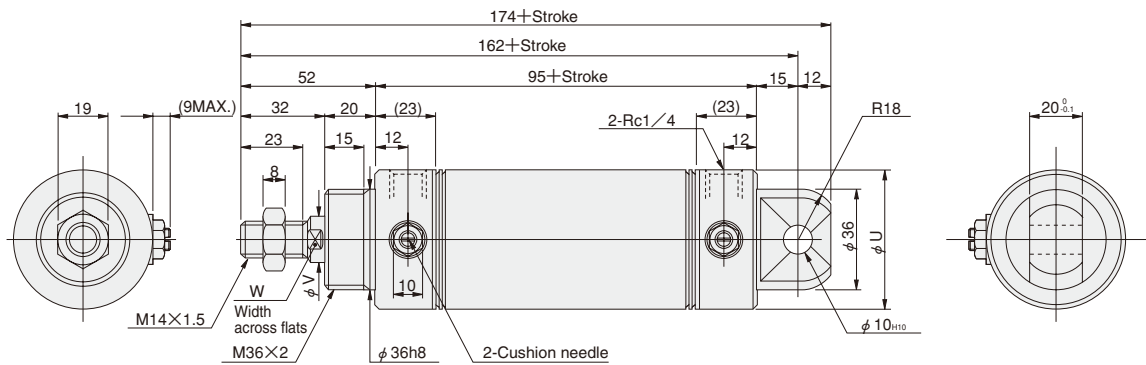


Bore mm [in.]	Code	A	B	C	D	E	F	G	H	I	J	K	L	M	Q	S	U	V	W
20 [0.787]		132	35	76	21	23	12	16	15	12	5	M 8×1	M20×1.5	10	12	12	27	8	6
25 [0.984]		137	40	76	21	26	14	16	18	14	6	M10×1.25	M22×1.5	12	12	12	29	10	8
32 [1.260]		148	45	76	27	31	14	16	23	14	6	M10×1.25	M27×2	12	20	15	35	12	10
40 [1.575]		148	45	76	27	31	14	(14.5)	23	19	8	M14×1.5	M33×2	12	20	15	41.6	16	14

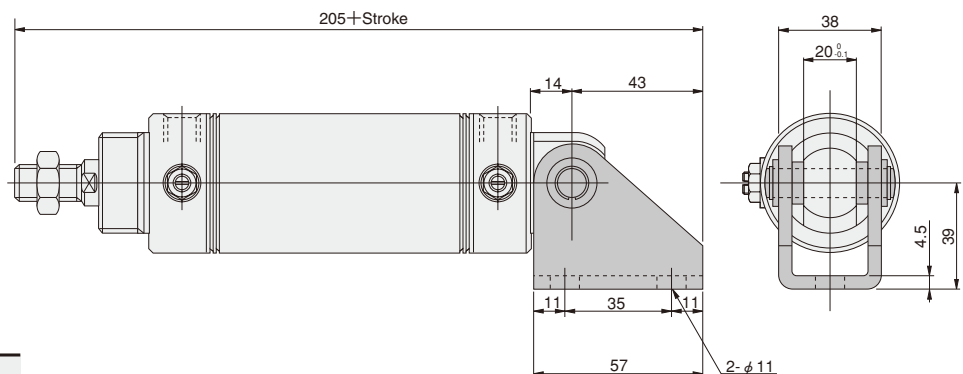
Bore mm [in.]	Code	CA	CB	CC	CD	CE	CF	CG	CH	CP	CQ	CT
20 [0.787]		160	123	37	59	22	15	30	30	6.8	18.4	3.2
25 [0.984]		165	128	37	59	22	15	30	30	6.8	18.4	3.2
32 [1.260]		186	136	50	75	25	15	40	40	9	28	4
40 [1.575]		186	136	50	75	25	15	40	40	9	28	4

●  $\phi 50, \phi 63$

● Pivot mounting type with bushing DA  Bore size   $\times$   Stroke **-8B**



● Pivot mounting type with bushing DA  Bore size   $\times$   Stroke **-8B-8E**  
(With supporting bracket)



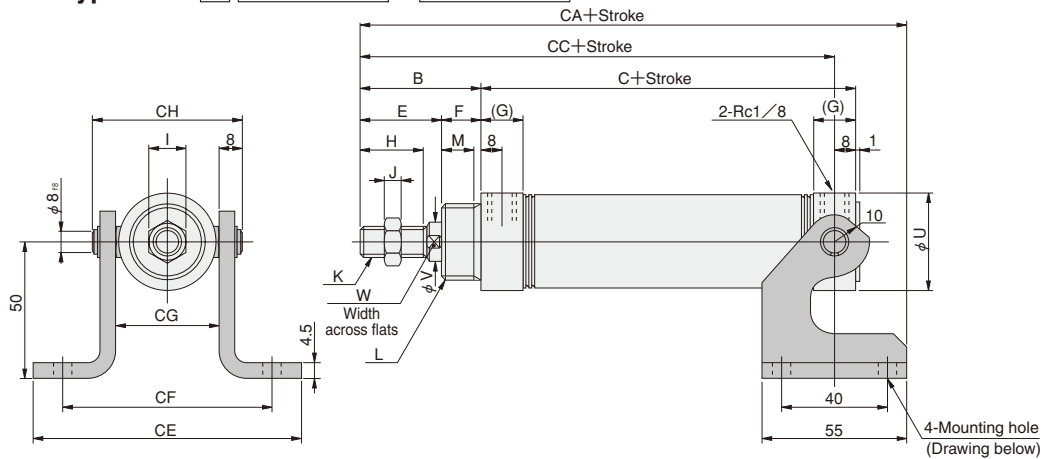
Bore mm [in.]	Code	U	V	W
50 [1.969]		52	16	14
63 [2.480]		65.4	16	14

# Dimensions of Trunnion Type (mm)

●  $\phi 20 \sim \phi 40$

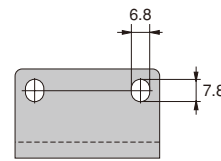
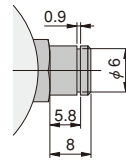
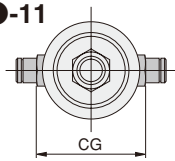
● Head trunnion type DA  Bore size  Stroke  -11-11T

CAD DA- Bore size SLIM-TR



● -11

● Trunnion pin dimensions



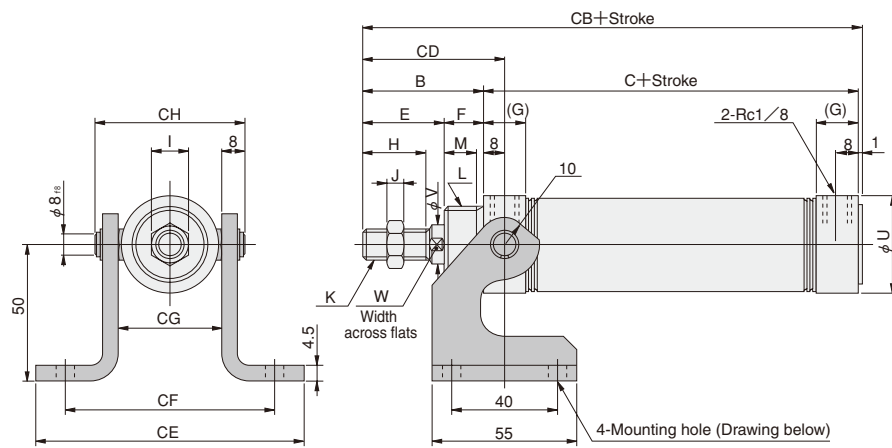
Bore mm [in.]	Code	B	C	E	F	G	H	I	J	K	L	M	U	V	W	CA	CE	CF	CG	CH	CC
20	[0.787]	35	76	23	12	16	15	12	5	M 8×1	M20×1.5	10	27	8	6	130.5	92	72	32	48	103
25	[0.984]	40	76	26	14	16	18	14	6	M10×1.25	M22×1.5	12	29	10	8	135.5	94	74	34	50	108
32	[1.260]	45	76	31	14	16	23	14	6	M10×1.25	M27×2	12	35	12	10	140.5	100	80	40	56	113
40	[1.575]	45	76	31	14	14.5	23	19	8	M14×1.5	M33×2	12	41.6	16	14	140.5	107	87	47	63	113

Remark : Head cover specification for the head trunnion type comes with a short head. Order code -A is not required.

●  $\phi 20 \sim \phi 40$

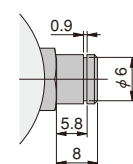
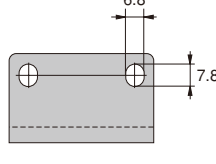
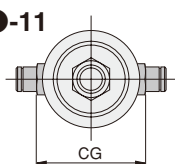
● Rod trunnion type DA  Bore size  Stroke  -12-12T

CAD DA- Bore size SLIM-TR



● -11

● Trunnion pin dimensions



Bore mm [in.]	Code	B	C	E	F	G	H	I	J	K	L	M	U	V	W	CB	CE	CF	CG	CH	CD
20	[0.787]	35	76	23	12	16	15	12	5	M 8×1	M20×1.5	10	27	8	6	112	92	72	32	48	43
25	[0.984]	40	76	26	14	16	18	14	6	M10×1.25	M22×1.5	12	29	10	8	117	94	74	34	50	48
32	[1.260]	45	76	31	14	16	23	14	6	M10×1.25	M27×2	12	35	12	10	122	100	80	40	56	53
40	[1.575]	45	76	31	14	14.5	23	19	8	M14×1.5	M33×2	12	41.6	16	14	122	107	87	47	63	53

Remark : Head cover specification for the rod trunnion type comes with a short head. Order code -A is not required.