Fine Lock Cylinder
Double Acting, Single Rod
Series CLM2
ø20, ø25, ø32, ø40

How to Order

Without auto switch CLM2 **H L 25 — 100 J — E**

With auto switch CDLM2 **H L 25 — 100 J — E — H7BW** ☐

Built-in magnet

Type

Nil	Pneumatic
H	Air-hydro

Mounting style

B	Basic style	T	Head side trunnion style
L	Axial foot style	E	Clevis integrated style
F	Rod side flange style	BZ	Boss-cut basic style
G	Head side flange style	FZ	Boss-cut flange style
C	Single clevis style		
D	Double clevis style		

Bore size

20	20 mm
25	25 mm
32	32 mm
40	40 mm

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 9-2-18.

With rod boot

Nil	None
J	Nylon tarpaulin
K	Heat resistant tarpaulin

Lock operation

E	Spring locking (Exhaust locking)
P	Pneumatic locking (Pressure locking)
D	Spring and pneumatic locking

Auto switch

Nil	Without auto switch (Built-in magnet)

∗ For the applicable auto switch model, refer to the table below.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Applicable Auto Switch/Refer to page 9-15-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model	Lead wire length (m) ∗ 0.5 (Nil)	3 (L)	5 (Z)	None (N)	Pre-wire connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	C76	●	●	—	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V	C73	●	●	●	—	—	—	Relay, PLC
							100 V, 200 V	B54	●	●	●	—	—		
		Connector					—	C73C	●	●	●	●	—		
		Terminal conduit					—	A33A	—	—	—	●	—		
							100 V, 200 V	A34A	—	—	—	●	—		
		DIN terminal						A44A	—	—	—	●	—		
	Diagnostic indication (2-color indication)	Grommet				—	—	B59W	●	●	—	—	—		
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7A1	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				H7A2	●	●	○	—	○		
				2-wire		12 V		H7B	●	●	○	—	○	—	
		Connector						H7C	●	●	●	●	—		
		Terminal conduit		3-wire (NPN)		5 V, 12 V		G39A	—	—	—	●	—	IC circuit	
				2-wire		12 V		K39A	—	—	—	●	—	—	
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		H7NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				H7PW	●	●	○	—	○		
				2-wire		12 V		H7BW	●	●	○	—	○	—	
	Water resistant (2-color indication)							H7BA	—	●	○	—	○		
	With diagnostic output (2-color indication)			3-wire (NPN)		5 V, 12 V		H7NF	●	●	○	—	○	IC circuit	

∗ Lead wire length symbols: 0.5 m ····· Nil (Example) C73C
1 m ····· L (Example) C73CL
5 m ····· Z (Example) C73CZ
None ····· N (Example) C73CN

∗ Solid state switches marked with "○" are produced upon receipt of order.
∗ Do not indicate suffix "N" for no lead wire on D-A3☐A/A44A/G39A/K39A models.

• Since there are other applicable auto switches than listed, refer to page 9-2-20 for details.
• For details about auto switches with pre-wire connector, refer to page 9-15-66.

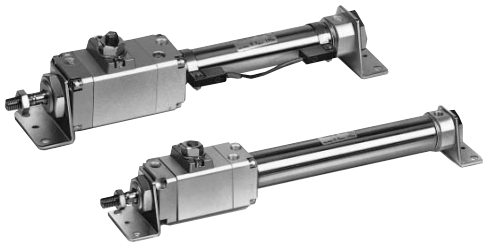
Provided with a compact lock mechanism, it is suitable for intermediate stop, emergency stop, and drop prevention.

Locking in both directions

The piston rod can be locked in either direction of its cylinder stroke.

Maximum piston speed: 500 mm/s

It can be used at 50 to 500 mm/s provided that it is within the allowable kinetic energy range.



Made to Order Specifications (For details, refer to page 7-16-1.)

Symbol	Specifications
-XA□	Change of rod end shape

Rod Boot Material

Symbol	Rod boot material	Maximum ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C *

* Maximum ambient temperature for the rod boot itself.

Specifications

Bore size (mm)	20	25	32	40
Action	Double acting, Single rod			
Type	Air cylinder			
Lock operation	Spring locking (Exhaust locking) Pneumatic locking (Pressurized locking), Spring and pneumatic locking			
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.08 MPa			
Ambient and fluid temperature	Without auto switch: –10 to 70°C (No freezing) With auto switch: –10 to 60°C (No freezing)			
Lubrication	Not required (Non-lube)			
Piston speed	50 to 500 mm/s *			
Thread tolerance	JIS Class 2			
Stroke length tolerance	$^{+1.4}_{0}$			
Piping/Screw-in type	Rc 1/8			Rc 1/4
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Head side trunnion style, Clevis integrated style, Boss cut style, Boss-cut flange style			

* Constraints associated with the allowable kinetic energy are imposed on the speeds at which the piston can be locked. The maximum speed of 750 mm/s can be accommodated if the piston is to be locked in the stationary state for the purpose of drop prevention.

Fine Lock Specifications

Lock operation	Spring locking (Exhaust locking)	Spring and pneumatic locking	Pneumatic locking (Pressure locking)
Fluid	Air		
Maximum operating pressure	0.5 MPa		
Unlocking pressure	0.3 MPa or more		0.1 MPa or more
Lock starting pressure	0.25 MPa or less		0.05 MPa or more
Locking direction	Both directions		

Standard Stroke

Bore size (mm)	Standard stroke (1) (mm)	Long stroke (2) (mm)	Maximum stroke (mm)
20	25, 50, 75, 100, 125, 150, 200, 250, 300	400	1000
25		450	
32		450	
40		500	

Note 1) Intermediate stroke is available, too.
Note 2) The long stroke style is applicable to the axial foot style and the rod side flange style.
For other applications that exceed the mounting support bracket and long stroke limitations, the maximum stroke that can be used is determined by the stroke selection table (reference edition).

Minimum Stroke for Auto Switch Mounting

(mm)

Auto switch model	No. of auto switches mounted				
	2		n		1
	Different sides	Same side	Different sides	Same side	
D-C7□ **D-C80**	15	50	$15 + 45\left(\frac{n-2}{2}\right)$ (n = 2, 4, 6···)	50 + 45 (n – 2)	10
D-H7□ **D-H7□W** **D-H7BAL** **D-H7NF**	15	60		60 + 45 (n – 2)	10
D-C73C **D-C80C** **D-H7C**	15	65	$15 + 50\left(\frac{n-2}{2}\right)$ (n = 2, 4, 6···)	65 + 50 (n – 2)	10
D-B5□ **D-B64**	15	75	$15 + 50\left(\frac{n-2}{2}\right)$ (n = 2, 4, 6···)	75 + 55 (n – 2)	10
D-B59W	20	75	$20 + 50\left(\frac{n-2}{2}\right)$ (n = 2, 4, 6···)		15
D-A3□A **D-G39A** **D-K39A** **D-A44A**	35	100	35 + 30 (n – 2)	100 + 100 (n – 2)	10

Mounting Bracket and Accessory

Mounting \ Accessory	Standard equipment			Option			
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double[3] knuckle joint	Clevis[4] pivot bracket	Rod boot
Basic style	● (1pc.)	●	—	●	●	—	●
Axial foot style	● (2)	●	—	●	●	—	●
Rod side flange style	● (1)	●	—	●	●	—	●
Head side flange style	● (1)	●	—	●	●	—	●
Clevis integrated style	—[1]	●	—	●	●	●	●
Single clevis style	—[1]	●	—	●	●	—	●
Double clevis style[3]	—[1]	●	●	●	●	—	●
Head side trunnion style	● (1)[2]	●	—	●	●	—	●
Boss-cut basic style	● (1)	●	—	●	●	—	●
Boss-cut flange style	● (1)	●	—	●	●	—	●
Note					With pin	With pin	

Note 1) Mounting nut is not equipped with clevis integrated style, single clevis style and double clevis style.
Note 2) Trunnion nuts are attached for head side trunnion style.
Note 3) Pin and snap ring (ø40: cotter pin) are shipped together with double clevis and double knuckle joint.
Note 4) Pin and snap ring are shipped together with clevis pivot bracket.

Weight

(kg)

Bore size (mm)		20	25	32	40
Basic weight	Basic style	0.55	0.87	0.94	1.30
	Axial foot style	0.70	1.03	1.10	1.57
	Flange style	0.61	0.96	1.03	1.42
	Clevis integrated style	0.53	0.85	0.93	1.26
	Single clevis style	0.59	0.91	0.98	1.39
	Double clevis style	0.60	0.93	0.99	1.43
	Trunnion style	0.59	0.94	1.00	1.40
	Boss-cut basic style	0.54	0.85	0.92	1.27
	Boss-cut flange style	0.60	0.94	1.01	1.39
Additional weight per each 50 mm of stroke		0.04	0.06	0.08	0.13
Option bracket	Clevis bracket (With pin)	0.07	0.07	0.14	0.14
	Single knuckle joint	0.06	0.06	0.06	0.23
	Double knuckle joint (With pin)	0.07	0.07	0.07	0.20

Calculation: (Example) CLM2L32-100
- Basic weight····· 1.10 (Foot, ø32)
- Additional weight ···· 0.08/50 stroke
- Cylinder stroke····· 100 stroke

1.10 + 0.08 x 100/50 = 1.26 kg

Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7□/C80 D-H7□	BM2-020	BM2-025	BM2-032	BM2-040
D-B5□/B64 D-G5□	BA2-020	BA2-025	BA2-032	BA2-040
D-A3□A/A44A D-G39A/K39A	BM3-020	BM3-025	BM3-032	BM3-040

[Mounting screws set made of stainless steel]
The following set of mounting screws made of stainless steel is also available. Use it in accordance with the operating environment.
(A switch mounting band is not included, so please order it separately.)
BBA3: For D-B5/B6/G5
BBA4: For D-C7/C8/H7
"D-H7BAL" switch is set on the cylinder with the stainless steel screws above when shipped.
When only a switch is shipped independently, "BBA4" screws are attached.

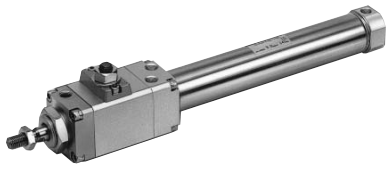
Mounting Bracket Part No.

Bore size (mm)	20	25	32	40
Axial foot *	CM-L020B	CM-L032B		CM-L040B
Flange	CM-F020B	CM-F032B		CM-F040B
Single clevis	CM-C020B	CM-C032B		CM-C040B
Double clevis **	CM-D020B	CM-D032B		CM-D040B
Trunnion (with nut)	CM-T020B	CM-T032B		CM-T040B

* When ordering foot bracket, order 2 pieces per cylinder.
** Clevis pin and snap ring (ø40: cotter pin) are shipped together with double clevis style.

Boss-cut style

Boss for the head side cover bracket is eliminated and the total length of cylinder is shortened.



Comparison of the full length dimension (Versus standard type) (mm)

ø20	ø25	ø32	ø40
▲13	▲13	▲13	▲16

Mounting style
■ Boss-cut basic style (BZ) ■ Boss-cut flange style (FZ)

Air-hydro

CLM2H | **Mounting style** | **Bore size** | **Stroke** | **Rod boot**

• **Air-hydro**

Low hydraulic cylinder 1 MPa or less
Through the concurrent use of a CC series air-hydro unit, it is possible to operate at a constant or low speeds or to effect an intermediate stop, just like a hydraulic unit, while using pneumatic equipment such as a valve.

Specifications

Fluid	Turbine oil (Lock portion is air)
Action	Double acting, Single rod
Bore size (mm)	20, 25, 32, 40
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.2 MPa
Piston speed	15 to 300 mm/s
Cushion	Rubber bumper (Standard equipment)
Piping	Screw-in type
Mounting	Basic style, Axial foot style, Rod side flange style Head side flange style, Single clevis style Double clevis style, Head side trunnion style Clevis integrated style, Boss-cut style

* Auto switch capable
- For an exterior dimension diagram to identify the mounting support types, refer to pages 9-2-22 to 9-2-26 as the dimensions are identical to those of standard.

⚠ Caution/Allowable Kinetic Energy when Locking

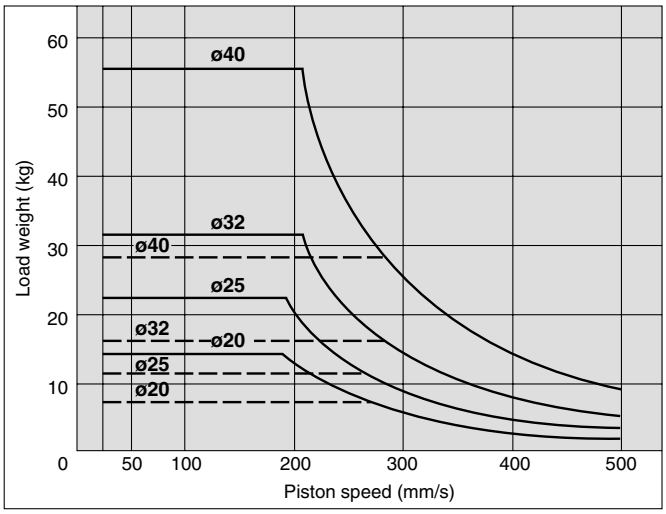
Bore size (mm)	20	25	32	40
Allowable kinetic energy (J)	0.26	0.42	0.67	1.19

1. In terms of specific load conditions, the allowable kinetic energy indicated in the table above is equivalent to a 50% load ratio at 0.5 MPa, and a piston speed of 300 mm/sec. Therefore, if the operating conditions are below these values, calculations are unnecessary.
2. Apply the following formula to obtain the kinetic energy of the load.

$$Ek = \frac{1}{2} m\upsilon^2$$

Ek: Kinetic energy of load (J)
m: Load weight (kg)
υ: Piston speed (m/s)

3. The piston speed will exceed the average speed immediately before locking. To determine the piston speed for the purpose of obtaining the kinetic energy of load, use 1.2 times the average speed as a guide.
4. The relation between the speed and the load of the respective tube bores is indicated in the diagram below. Use the cylinder in the range below the line.
5. During locking, the lock mechanism must sustain the thrust of the cylinder itself, in addition to absorbing the energy of the load. Therefore, even within a given allowable kinetic energy level, there is an upper limit to the size of the load that can be sustained. Thus, a horizontally mounted cylinder must be operated below the solid line, and a vertically mounted cylinder must be operated below the dotted line.



Stopping Accuracy (Not including tolerance of control system.) (mm)

Locking method	Piston speed (mm/s)				
	20 *	50	100	300	500
Spring locking (Exhaust locking)	±0.3	±0.4	0.5	±1.0	±2.0
Pneumatic locking (Pressure locking) Spring and pneumatic locking	±0.15	±0.2	±0.3	0.5	±1.5

Conditions: Load: 25% of thrust force at 0.5 MPa
Solenoid valve: Mounted to the lock port
20 mm/s marked with the asterisk is in the case of actuating hydraulically by means of air-hydro type.

⚠ Caution

Recommended Pneumatic Circuit/Caution on Handling

For detailed speceifications of the fine lock cylinder, Series CLM2 mentioned above, refer to pages 9-2-4 to 9-2-7.

Accessory

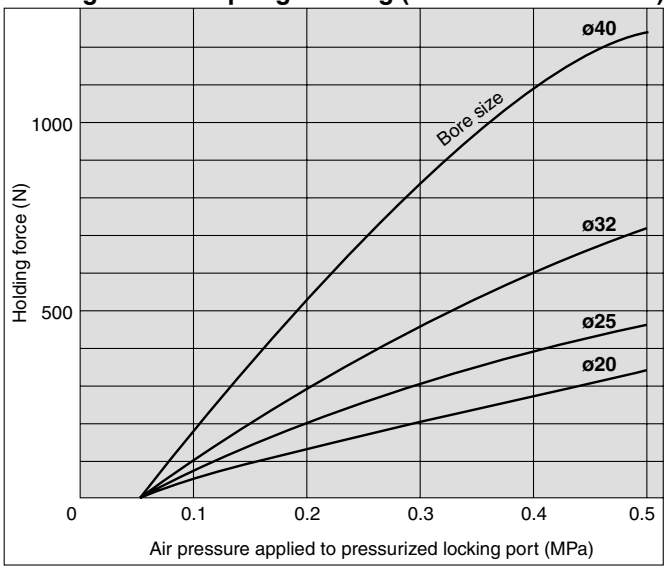
For accessory dimensions, refer to Best Pneumatics Vol. 6, since it is same as Series CM2.

Holding Force of Spring Locking (Maximum static load)

Bore size (mm)	20	25	32	40
Holding force (N)	196	313	443	784

Note) Holding force at piston rod extended side decreases approximately 15%.

Holding Force of Spring Locking (Maximum static load)



⚠ Caution

Caution when Locking

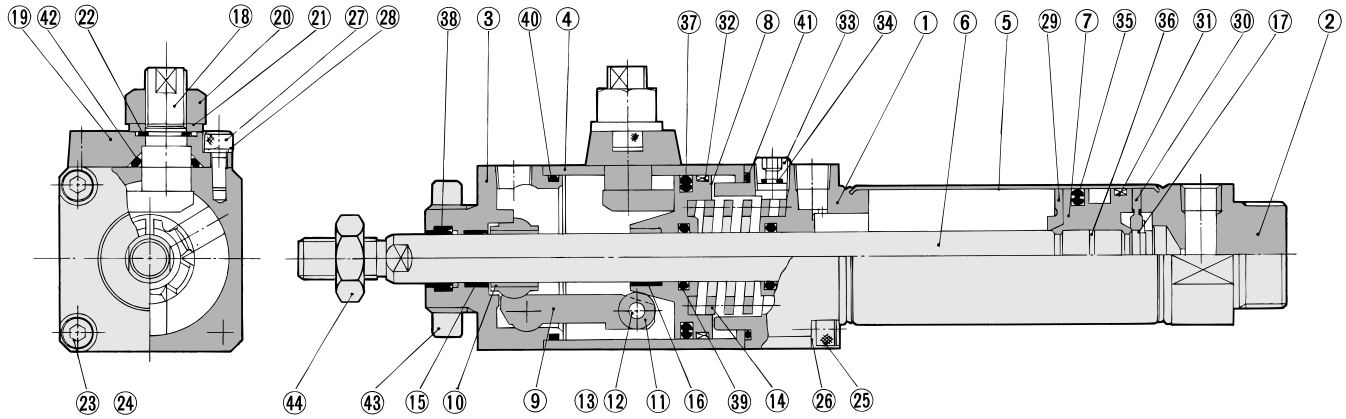
The holding force is the lock's ability to hold a static load that does not involve vibrations or impacts, when it is locked without a load. Therefore, when normally using the cylinder near the upper limit of the holding force, be aware of the points described below.

- If the piston rod slips because the lock's holding force has been exceeded, the brake shoe could be damaged, resulting in a reduced holding force or shortened life.
- Do not use the cylinder in the locked state to sustain a load that involves impact.
- To use the lock for drop prevention purposes, the load to be attached to the cylinder must be within 35% of the cylinder's holding force.

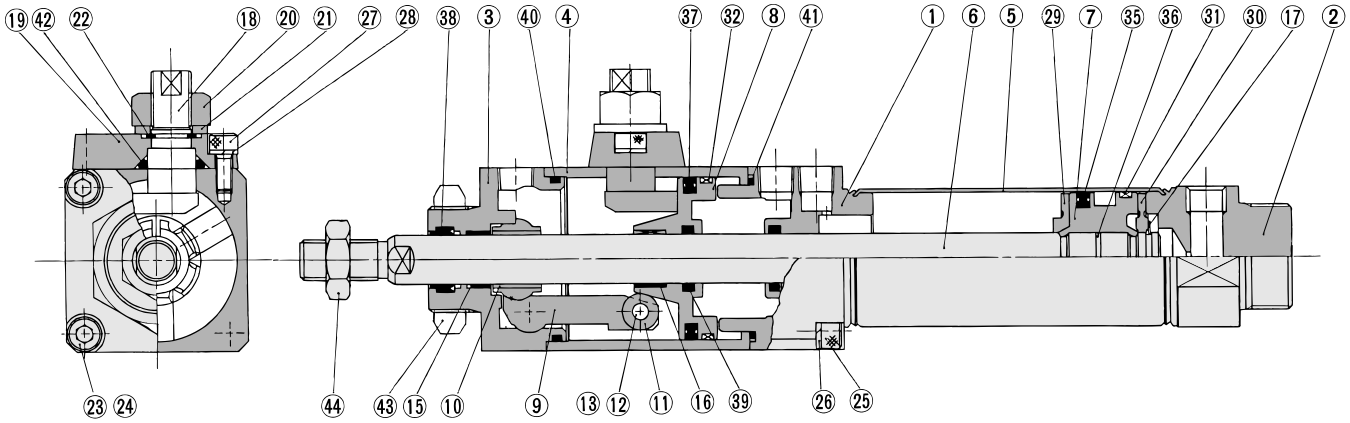
Regarding the installation position and the mounting height of the auto switch, refer to page of Series CDM2 air cylinder (Double acting, Single rod), since the dimensions are the same.

Construction (Not able to disassemble.)

Spring locking (Exhaust locking)
Spring and pneumatic locking



Pneumatic locking (Pressure locking)



Component Parts

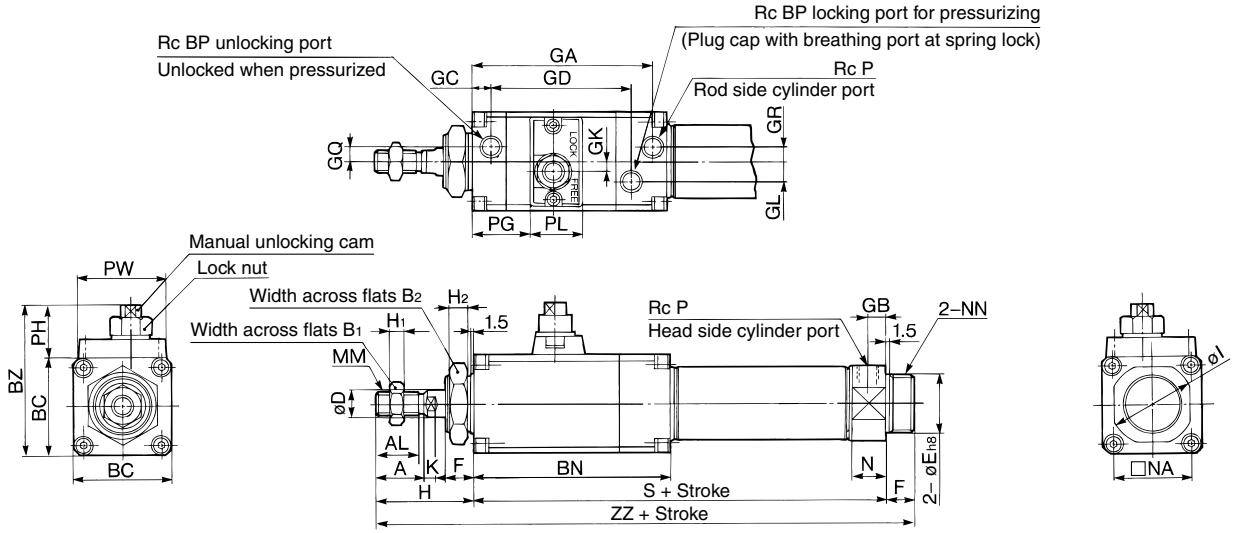
No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear anodized
②	Head cover	Aluminum alloy	Clear anodized
③	Cover	Carbon steel	Nitrided, chrome plated
④	Intermediate cover	Aluminum alloy	Hard anodized
⑤	Cylinder tube	Stainless steel	
⑥	Piston rod	Carbon steel	Hard chrome plated
⑦	Piston	Aluminum alloy	Chromated
⑧	Brake piston	Carbon steel	Nitrided
⑨	Brake arm	Carbon steel	Nitrided
⑩	Brake shoe	Special friction material	
⑪	Roller	Carbon steel	
⑫	Pin	Carbon steel	
⑬	Snap ring	Carbon tool steel	Nickel plated
⑭	Brake spring	Spring steel wire	Dacrodized
⑮	Bushing	Oil-impregnated sintered alloy	
⑯	Bushing	Oil-impregnated sintered alloy	
⑰	Snap ring	Carbon tool steel	Nickel plated
⑱	Manual lock release cam	Chromium molybdenum steel	Nickel plated
⑲	Cam guide	Carbon steel	Nitrided, painted
⑳	Lock nut	Rolled steel	Nickel plated
㉑	Flat washer	Rolled steel	Nickel plated
㉒	Snap ring	Carbon tool steel	Nickel plated
㉓	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated

No.	Description	Material	Note
㉔	Spring washer	Steel wire	Nickel plated
㉕	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉖	Spring washer	Steel wire	Nickel plated
㉗	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉘	Spring washer	Steel wire	Nickel plated
㉙	Bumper A	Urethane	
㉚	Bumper B	Urethane	
㉛	Wear ring	Resin	
㉜	Wear ring	Resin	
㉝	Hexagon socket head plug	Carbon steel	Type E only
㉞	Element	Bronze	Type E only
㉟	Piston seal	NBR	
㊱	Piston gasket	NBR	
㊲	Brake piston seal	NBR	
㊳	Rod seal A	NBR	
㊴	Rod seal B	NBR	
㊵	Middle cover gasket A	NBR	
㊶	Middle cover gasket B	NBR	
㊷	Cam gasket	NBR	
㊸	Mounting nut	Carbon steel	Nickel plated
㊹	Rod end nut	Carbon steel	Nickel plated

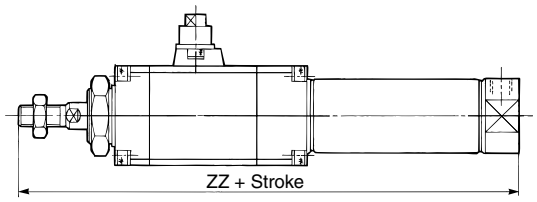
Basic Style (B)

CLM2B Bore size — Stroke

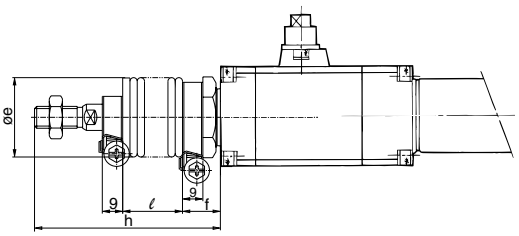
Basic style



Boss-cut



With rod boot



Bore (mm)	Stroke range	A	AL	B1	B2	BC	BN	BP	BQ	BZ	D	E	F	GA	GB	GC	GD	GK	GL	GQ	GR	H	H1	H2	I
20	Up to 300	18	15.5	13	26	38	80	1/8	1/8	57.5	8	20 $^{0}_{-0.033}$	13	73.5	8	8	55	3.5	6	4	4	41	5	8	28
25	Up to 300	22	19.5	17	32	45	90	1/8	1/8	69	10	26 $^{0}_{-0.033}$	13	83.5	8	9	64.5	4	9	7	7	45	6	8	33.5
32	Up to 300	22	19.5	17	32	45	90	1/8	1/8	69	12	26 $^{0}_{-0.033}$	13	83.5	8	9	64.5	4	9	7	7	45	6	8	37.5
40	Up to 300	24	21	22	41	52	100.5	1/8	1/8	76	14	32 $^{0}_{-0.039}$	16	90.5	11	8	70	4	11	8	7	50	8	10	46.5

Bore (mm)	K	MM	N	NA	NN	P	PG	PH	PL	PW	S	ZZ
20	5	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	127	181
25	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	137	195
32	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	139	197
40	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	167	233

Boss-cut

Bore size (mm)	ZZ
20	168
25	182
32	184
40	217

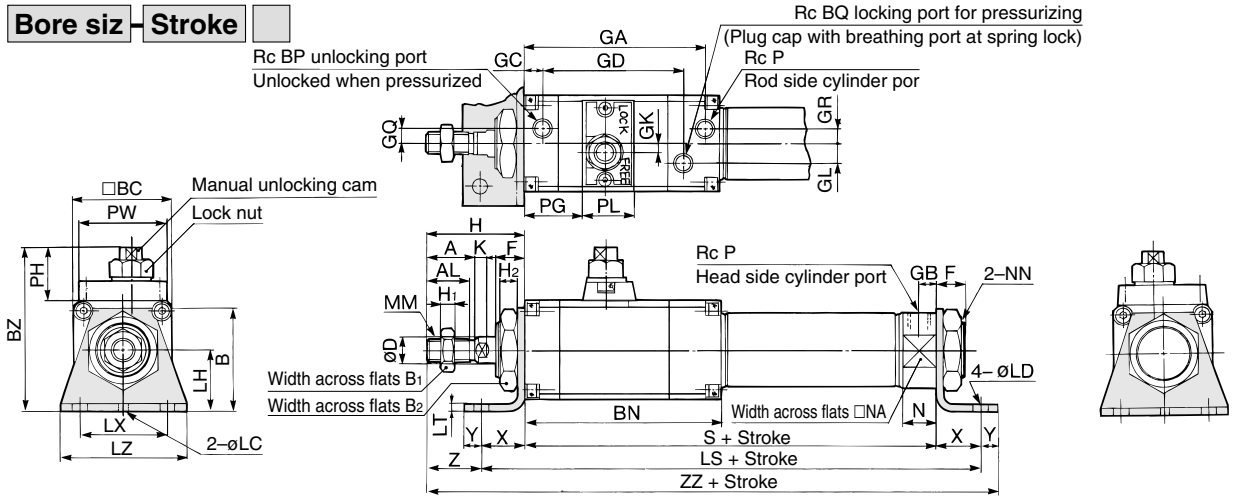
With Rod Boot

Bore size (mm)	e	f	h							ℓ						
			1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500	1 to 50	51 to 100	101 to 150	151 to 200	201 to 300	301 to 400	401 to 500
20	35	17	68	81	93	106	131	156	—	12.5	25	37.5	50	75	100	—
25	35	17	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125
32	35	17	72	85	97	110	135	160	185	12.5	25	37.5	50	75	100	125
40	46	17	77	90	102	115	140	165	190	12.5	25	37.5	50	75	100	125

∗ Over 301 stroke: Long stroke.

Axial Foot Style (L)

CLM2L **Bore siz** – **Stroke** ☐

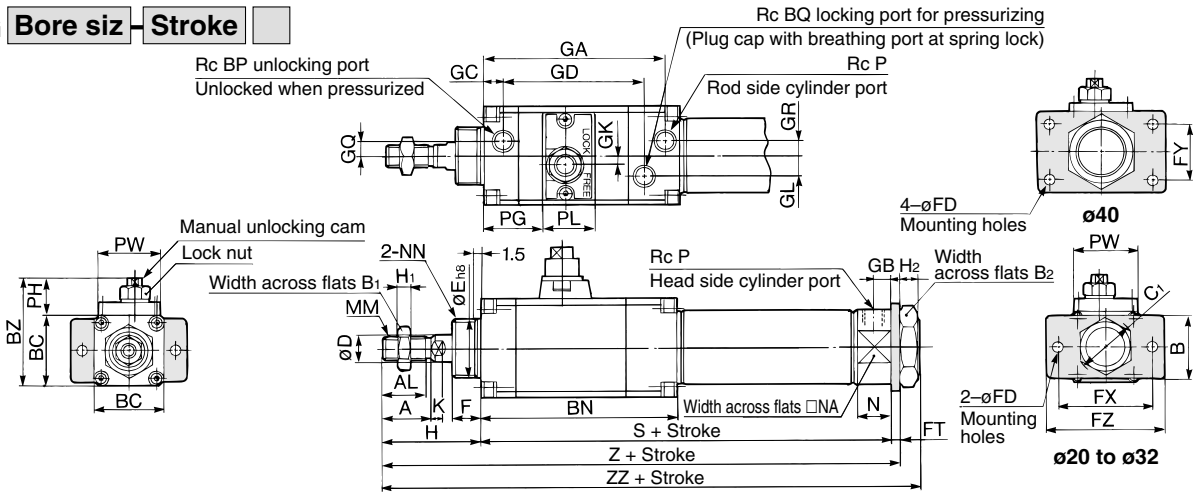


Bore (mm)	Stroke range	A	AL	B	B_1	B_2	BC	BN	BP	BQ	BZ	D	F	GA	GB	GC	GD	GK	GL	GQ	GR	H	H_1	H_2
20	Up to 400	18	15.5	40	13	26	38	80	1/8	1/8	63.5	8	13	73.5	8	8	55	3.5	6	4	4	41	5	8
25	Up to 450	22	19.5	47	17	32	45	90	1/8	1/8	74.5	10	13	83.5	8	9	64.5	4	9	7	7	45	6	8
32	Up to 450	22	19.5	47	17	32	45	90	1/8	1/8	74.5	12	13	83.5	8	9	64.5	4	9	7	7	45	6	8
40	Up to 500	24	21	54	22	41	52	100.5	1/8	1/8	80	14	16	90.5	11	8	70	4	11	8	7	50	8	10

Bore (mm)	K	LC	LD	LH	LS	LT	LX	LZ	MM	N	NA	NN	P	PG	PH	PL	PW	S	X	Y	Z	ZZ
20	5	4	6.8	25	167	3.2	40	55	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	127	20	8	21	196
25	5.5	4	6.8	28	177	3.2	40	55	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	137	20	8	25	210
32	5.5	4	6.8	28	179	3.2	40	55	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	139	20	8	25	212
40	7	4	7	30	213	3.2	55	75	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	167	23	10	27	250

Head Side Flange Style (G)

CLM2G **Bore siz** – **Stroke** ☐

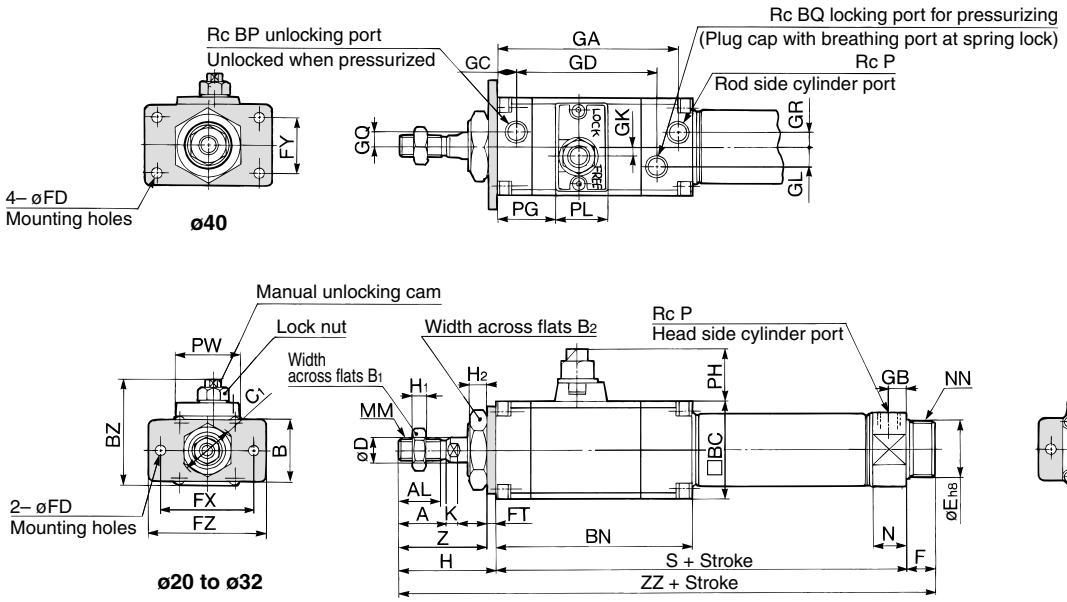


Bore size (mm)	Stroke range	A	AL	B	B_1	B_2	BC	BN	BP	BQ	BZ	C_1	D	E	F	FD	FT	FX	FY	FZ	GA	GB
20	Up to 300	18	15.5	34	13	26	38	80	1/8	1/8	57.5	30	8	$20^{\ 0}_{-0.033}$	13	7	4	60	—	75	73.5	8
25	Up to 300	22	19.5	40	17	32	45	90	1/8	1/8	69	37	10	$26^{\ 0}_{-0.033}$	13	7	4	60	—	75	83.5	8
32	Up to 300	22	19.5	40	17	32	45	90	1/8	1/8	69	37	12	$26^{\ 0}_{-0.033}$	13	7	4	60	—	75	83.5	8
40	Up to 300	24	21	52	22	41	52	100.5	1/8	1/8	76	47.3	14	$32^{\ 0}_{-0.039}$	16	7	5	66	36	82	90.5	11

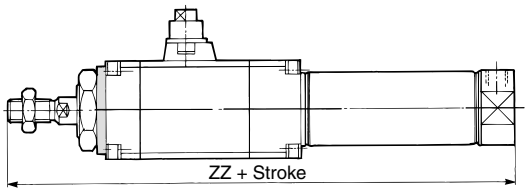
Bore size (mm)	GC	GD	GK	GL	GQ	GR	H	H_1	H_2	K	MM	N	NA	NN	P	PG	PH	PL	PW	S	Z	ZZ
20	8	55	3.5	6	4	4	41	5	8	5	M8x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	127	172	181
25	9	64.5	4	9	7	7	45	6	8	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	137	186	195
32	9	64.5	4	9	7	7	45	6	8	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	139	188	197
40	8	70	4	11	8	7	50	8	10	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	167	222	233

Rod Side Flange Style (F)

CLM2F **Bore size** — **Stroke** ☐



Boss-cut



Bore (mm)	Stroke range	A	AL	B	B_1	B_2	BC	BN	BP	BQ	BZ	C_1	D	E	F	FD	FT	FX	FY	FZ	GA	GB	GC	GD	GK
20	Up to 400	18	15.5	34	13	26	38	80	1/8	1/8	57.5	30	8	$20^{\ 0}_{-0.033}$	13	7	4	60	—	75	73.5	8	8	55	3.5
25	Up to 450	22	19.5	40	17	32	45	90	1/8	1/8	69	37	10	$26^{\ 0}_{-0.033}$	13	7	4	60	—	75	83.5	8	9	64.5	4
32	Up to 450	22	19.5	40	17	32	45	90	1/8	1/8	69	37	12	$26^{\ 0}_{-0.033}$	13	7	4	60	—	75	83.5	8	9	64.5	4
40	Up to 500	24	21	52	22	41	52	100.5	1/8	1/8	76	47.3	14	$32^{\ 0}_{-0.039}$	16	7	5	66	36	82	90.5	11	8	70	4

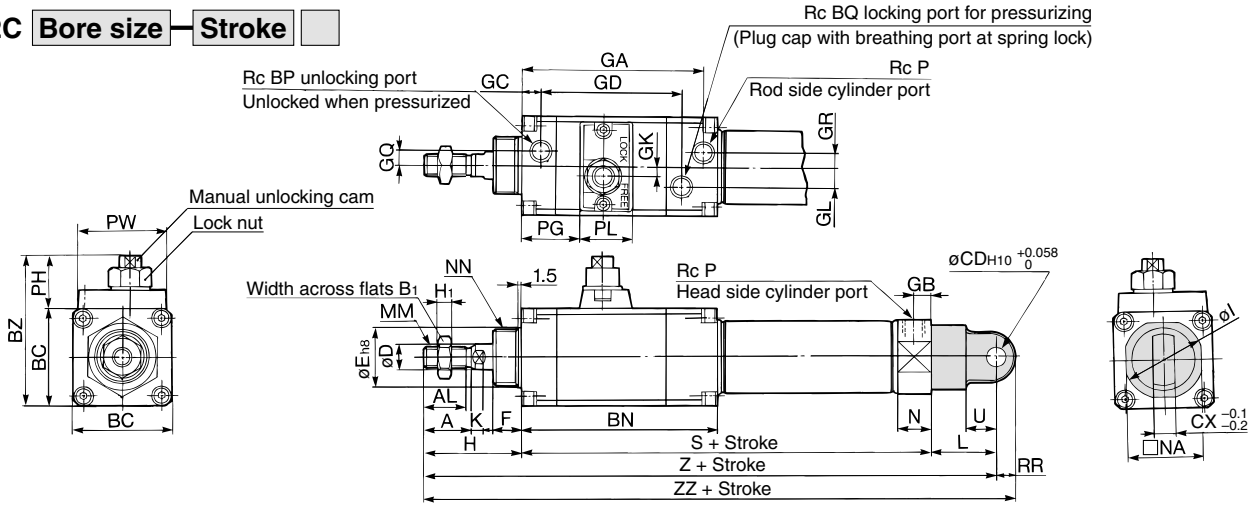
Bore (mm)	GL	GQ	GR	H	H_1	H_2	I	K	MM	N	NA	NN	P	PG	PH	PL	PW	S	Z	ZZ
20	6	4	4	41	5	8	28	5	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	127	37	181
25	9	7	7	45	6	8	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	137	41	195
32	9	7	7	45	6	8	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	139	41	197
40	11	8	7	50	8	10	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	167	45	233

Boss-cut

Bore (mm)	ZZ
20	168
25	182
32	184
40	217

Single Clevis Style (C)

CLM2C **Bore size** — **Stroke** ☐

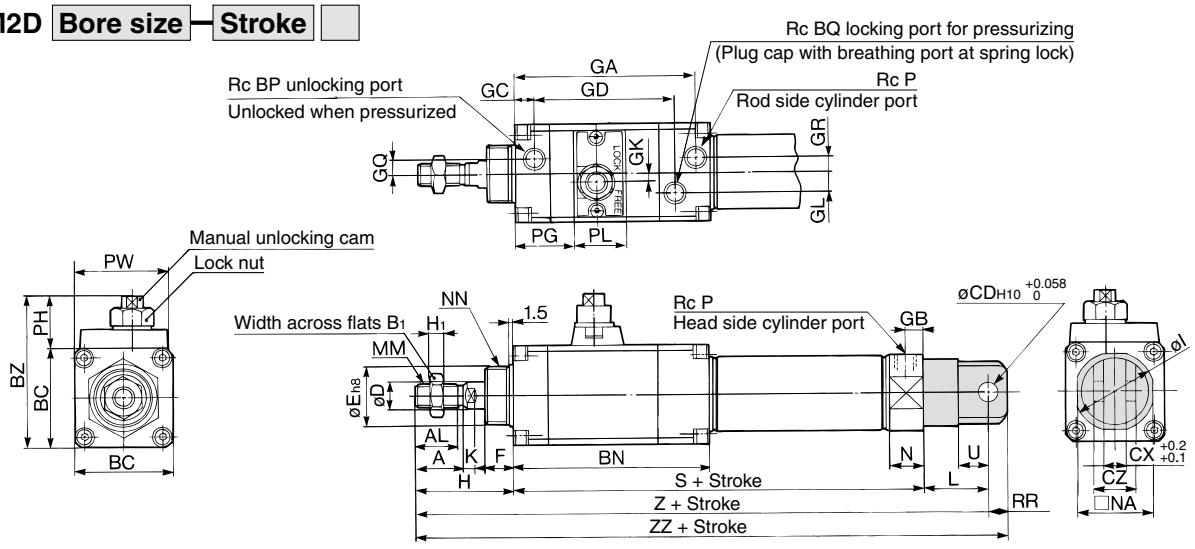


Bore size (mm)	Stroke range	A	AL	B1	BC	BN	BP	BQ	BZ	CD	CX	D	E	F	GA	GB	GC	GD	GK	GL	GQ
20	Up to 300	18	15.5	13	38	80	1/8	1/8	57.5	9	10	8	20 0 −0.033	13	73.5	8	8	55	3.5	6	4
25	Up to 300	22	19.5	17	45	90	1/8	1/8	69	9	10	10	26 0 −0.033	13	83.5	8	9	64.5	4	9	7
32	Up to 300	22	19.5	17	45	90	1/8	1/8	69	9	10	12	26 0 −0.033	13	83.5	8	9	64.5	4	9	7
40	Up to 300	24	21	22	52	100.5	1/8	1/8	76	10	15	14	32 0 −0.039	16	90.5	11	8	70	4	11	8

Bore size (mm)	GR	H	H1	I	K	L	MM	N	NA	NN	P	PG	PH	PL	PW	RR	S	U	Z	ZZ
20	4	41	5	28	5	30	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	9	127	14	198	207
25	7	45	6	33.5	5.5	30	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	9	137	14	212	221
32	7	45	6	37.5	5.5	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	9	139	14	214	223
40	7	50	8	46.5	7	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	11	167	18	256	267

Double Clevis Style (D)

CLM2D **Bore size** — **Stroke** ☐



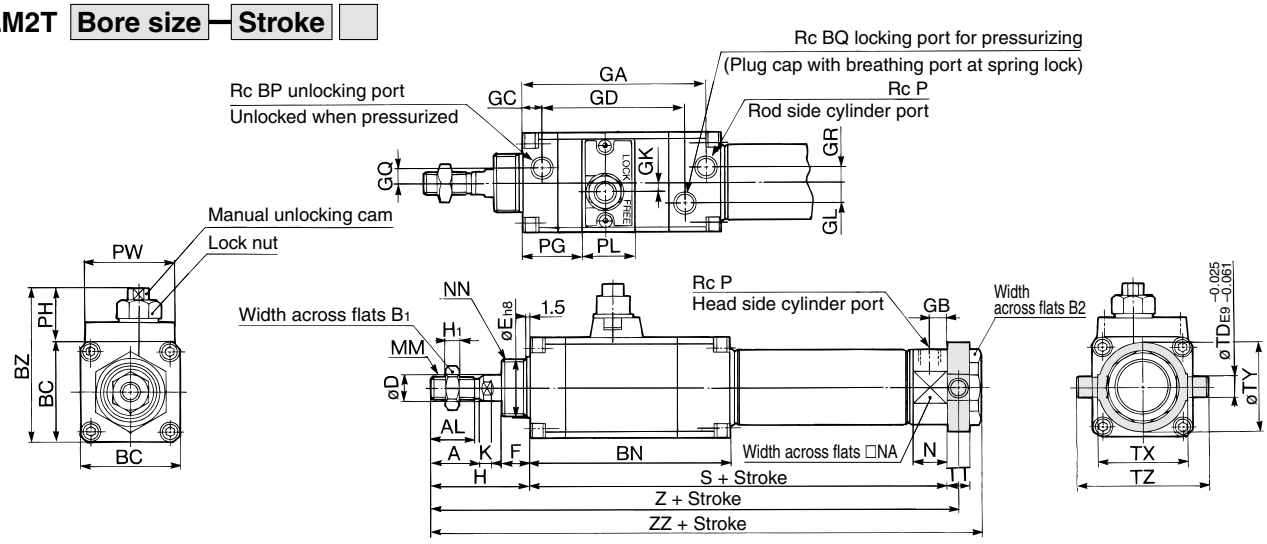
Bore size (mm)	Stroke range	A	AL	B1	BC	BN	BP	BQ	BZ	CD	CX	CZ	D	E	F	GA	GB	GC	GD	GK	GL
20	Up to 300	18	15.5	13	38	80	1/8	1/8	57.5	9	10	19	8	20 0 −0.033	13	73.5	8	8	55	3.5	6
25	Up to 300	22	19.5	17	45	90	1/8	1/8	69	9	10	19	10	26 0 −0.033	13	83.5	8	9	64.5	4	9
32	Up to 300	22	19.5	17	45	90	1/8	1/8	69	9	10	19	12	26 0 −0.033	13	83.5	8	9	64.5	4	9
40	Up to 300	24	21	22	52	100.5	1/8	1/8	76	10	15	30	14	32 0 −0.039	16	90.5	11	8	70	4	11

Bore size (mm)	GQ	GR	H	H1	I	K	L	MM	N	NA	NN	P	PG	PH	PL	PW	RR	S	U	Z	ZZ
20	4	4	41	5	28	5	30	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	9	127	14	198	207
25	7	7	45	6	33.5	5.5	30	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	9	137	14	212	221
32	7	7	45	6	37.5	5.5	30	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	9	139	14	214	223
40	8	7	50	8	46.5	7	39	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	11	167	18	256	267

∗ Clevis pin and snap ring (ø40: cotter pin) are shipped together.

Head Side Trunnion Style (T)

CLM2T Bore size — Stroke

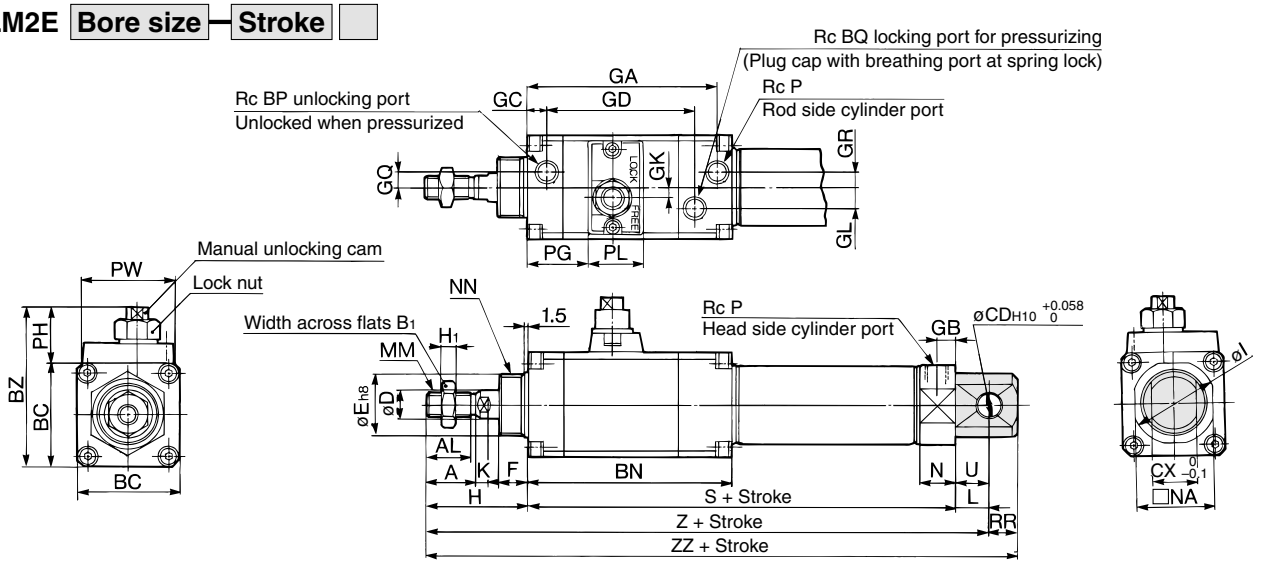


Bore size (mm)	Stroke range	A	AL	B1	B2	BC	BN	BP	BQ	BZ	D	E	F	GA	GB	GC	GD	GK	GL	GQ
20	Up to 300	18	15.5	13	26	38	80	1/8	1/8	57.5	8	20 0 −0.033	13	73.5	8	8	55	3.5	6	4
25	Up to 300	22	19.5	17	32	45	90	1/8	1/8	69	10	26 0 −0.033	13	83.5	8	9	64.5	4	9	7
32	Up to 300	22	19.5	17	32	45	90	1/8	1/8	69	12	26 0 −0.033	13	83.5	8	9	64.5	4	9	7
40	Up to 300	24	21	22	41	52	100.5	1/8	1/8	76	14	32 0 −0.039	16	90.5	11	8	70	4	11	8

Bore size (mm)	GR	H	H1	K	MM	N	NA	NN	P	PG	PH	PL	PW	S	TD	TT	TX	TY	TZ	Z	ZZ
20	4	41	5	5	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	127	8	10	32	32	52	173	183
25	7	45	6	5.5	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	137	9	10	40	40	60	187	197
32	7	45	6	5.5	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	139	9	10	40	40	60	189	199
40	7	50	8	7	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	167	10	11	53	53	77	222.5	233

Clevis Integrated Style (E)

CLM2E Bore size — Stroke



Bore size (mm)	Stroke range	A	AL	B1	BC	BN	BP	BQ	BZ	CD	CX	D	E	F	GA	GB	GC	GD	GK	GL	GQ
20	Up to 300	18	15.5	13	38	80	1/8	1/8	57.5	8	12	8	20 0 −0.033	13	73.5	8	8	55	3.5	6	4
25	Up to 300	22	19.5	17	45	90	1/8	1/8	69	8	12	10	26 0 −0.033	13	83.5	8	9	64.5	4	9	7
32	Up to 300	22	19.5	17	45	90	1/8	1/8	69	10	20	12	26 0 −0.033	13	83.5	8	9	64.5	4	9	7
40	Up to 300	24	21	22	52	100.5	1/8	1/8	76	10	20	14	32 0 −0.039	16	90.5	11	8	70	4	11	8

Bore size (mm)	GR	H	H1	I	K	L	MM	N	NA	NN	P	PG	PH	PL	PW	RR	S	U	Z	ZZ
20	4	41	5	28	5	12	M8 x 1.25	15	24	M20 x 1.5	1/8	22	19.5	20	38	9	127	11.5	180	189
25	7	45	6	33.5	5.5	12	M10 x 1.25	15	30	M26 x 1.5	1/8	27	24	24	41	9	137	11.5	194	203
32	7	45	6	37.5	5.5	15	M10 x 1.25	15	34.5	M26 x 1.5	1/8	27	24	24	41	12	139	14.5	199	211
40	7	50	8	46.5	7	15	M14 x 1.5	21.5	42.5	M32 x 2	1/4	29	24	24	41	12	167	14.5	232	244