

# Cylinder with Lock Double Acting, Single Rod Series **CNG** ø20, ø25, ø32, ø40

## How to Order

**Without auto switch**  
CNG L N 32 [ ] 100 [ ] D

**With auto switch**  
CDNG L N 32 [ ] 100 [ ] D H7BW [ ]

• **Number of auto switches**

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

• **Auto switch**

Nil	Without auto switch
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\* For the applicable auto switch model, refer to the table below.

• **Locking direction**

D	Both directions
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• **With rod boot**

Rod boot	Nil	None
	J	Nylon tarpaulin
	K	Heat resistant tarpaulin

\* When equipped with rod boot, foot and rod side flange type brackets are attached before shipment.

• **Cylinder stroke (mm)**  
Refer to "Standard Stroke" on page 9-5-9.

• **Built-in magnet**

• **Mounting style**

B	Basic style
L	Axial foot style
F	Rod side flange style
G	Head side flange style
U	Rod side trunnion style
T	Head side trunnion style
D	Clevis style

\* Mounting brackets are shipped together, (but not assembled).

• **Thread type**

Nil	Rc
TN	NPT

• **Cushion type**

N	Non-lube/Rubber bumper
A	Non-lube/Air cushion

• **Bore size**

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

**Built-in Magnet Cylinder Model**

In the case of built-in magnet without auto switch, the symbol for auto switch is "Nil".  
(Example) CDNGLN40-100-D

### 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		Auto switch model	Lead wire length (m) *				Pre-wire connector	Applicable load	
					DC	AC		0.5 (Nil)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	C76	●	●	—	—	—		
				2-wire	24 V	12 V		100 V, 200 V	●	●	●		—	
		Grommet				2-wire	12 V	100 V	●	●	●	—	—	Relay, PLC
				12 V	—			●	●	—	—			
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				●	●	○	—	○		
		Connector		2-wire	12 V	●		●	○	—	○			
						●		●	●	●	—	—		
		Grommet		2-wire	12 V	●		●	○	—	○			
						●		●	○	—	○			
						●		●	○	—	○			
						●		●	○	—	○			
						●		●	○	—	○			
						●		●	○	—	○			
Grommet	4-wire (NPN)	5 V, 12 V	●	●	○	—	○							
			●	●	○	—	○							

\* Lead wire length symbols: 0.5 m ..... Nil (Example) C73C  
 3 m ..... L (Example) C73CL  
 5 m ..... Z (Example) C73CZ  
 None ..... N (Example) C73CN

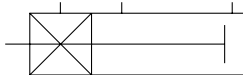
\* Solid state switches marked with "○" are produced upon receipt of order.

- Since there are other applicable auto switches than listed, refer to page 9-5-22 for details.
- For details about auto switches with pre-wire connector, refer to page 9-15-66.

# Cylinder with Lock Double Acting, Single Rod Series CNG



JIS Symbol



**Made to Order Specifications**  
(For details, refer to page 9-16-1.)

Symbol	Specifications
-XA□	Change of rod end shape

## Minimum Stroke for Auto Switch Mounting

Model	No. of auto switches mounted	
	2	1
D-C7/C8 D-B5/B6 D-H7 D-G5NTL	15 mm	10 mm
D-B59W	20 mm	15 mm

## Rod Boot Material

Symbol	Rod boot material	Max. operating temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C *

\* Maximum ambient temperature for the rod boot itself.

## Model

Series	Type	Action	Bore size (mm)	Lock operation
CNG	Non-lube	Double acting	20, 25, 32, 40	Spring locking

## Cylinder Specifications

Type	Non-lube
Fluid	Air
Proof pressure	1.5 MPa
Max. operating pressure	1.0 MPa
Min. operating pressure	0.08 MPa
Piston speed	50 to 1000 mm/s *
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)
Cushion	Rubber bumper, Air cushion
Stroke length tolerance (mm)	Up to 800 st: $^{+1.4}_0$
Thread tolerance	JIS Class 2
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Rod side trunnion style, Head side trunnion style, Clevis style (used for 90° change of port position)

\* When the piston is locked, the load weight is limited by the mounting orientation and the operating pressure.

## Lock Specifications

Bore size (mm)	20	25	32	40
Locking action	Spring locking (Exhaust locking)			
Unlocking pressure	0.20 MPa or more	0.25 MPa or more		
Lock starting pressure	0.15 MPa or less	0.20 MPa or less		
Operating pressure range	0.2 to 1.0 MPa	0.25 to 1.0 MPa		
Locking direction	Both directions			

## Standard Stroke

Bore size (mm)	Standard stroke (mm) <sup>(1)</sup>	Long stroke (mm)	Max. manufacturable stroke (mm)
20	25, 50, 75, 100, 125, 150, 200	201 to 350	1500
25	25, 50, 75, 100, 125, 150, 200, 250, 300	301 to 400	
32		301 to 450	
40		301 to 800	

Note 1) Intermediate strokes other than the above are produced upon receipt of order. Spacers are not used for intermediate strokes.

Note 2) Long strokes are applicable to the axial foot style and rod side flange style.

In the case of other mounting brackets or when long stroke limits are exceeded, the maximum useable stroke is determined by the stroke selection table (information edition).

## Stopping Accuracy

Lock type	Piston speed (mm/s)			
	100	300	500	1000
Spring locking	±0.3	±0.6	±1.0	±2.0

Condition: Lateral, Supply pressure P = 0.5 MPa

Load weight ..... Upper limit of allowed value

Solenoid valve for locking: Mounted directly to unlocking port

Maximum value of stopping position dispersion from 100 measurements

## Holding Force of Spring Locking (Maximum static load)

Bore size (mm)	20	25	32	40
Holding force (N)	215	335	550	860

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

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20-

Data

# Series CNG

## Mounting Bracket Part No.

Mounting bracket	Bore size (mm)			
	20	25	32	40
Axial foot *	CNG-L020	CNG-L025	CNG-L032	CNG-L040
Flange	CNG-F020	CNG-F025	CNG-F032	CNG-F040
Trunnion pin	CG-T020	CG-T025	CG-T032	CG-T040
Clevis **	CG-D020	CG-D025	CG-D032	CG-D040
Rod side pivot bracket	CNG-020-24	CNG-025-24	CNG-032-24	CNG-040-24
Head side pivot bracket	CG-020-24A	CG-025-24A	CG-032-24A	CG-040-24A

- \* When ordering foot bracket, order 2 pieces per cylinder.
- \*\* Clevis pin, snap ring, and mounting bolt are shipped together with double clevis style.
- \*\*\* Mounting bolts are included with the foot and flange types.

## Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
<b>D-C7/C8</b>	BMA2-020	BMA2-025	BMA2-032	BMA2-040
<b>D-H7</b>				
<b>D-B5/B6</b>	BA-01	BA-02	BA-32	BA-04
<b>D-G5NTL</b>				

- \* 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. (Please order the mounting band separately, since it is not included.)
- 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 the switches are shipped as individual parts, the BBA4 is included.

## Accessory

Mounting		Basic style	Axial foot style	Rod side flange style	Head side flange style	Rod side trunnion style	Head side trunnion style	Clevis style
Standard equipment	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	—	●
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin) *	●	●	●	●	●	●	●
	Pivot bracket	—	—	—	—	●	●	●
	Rod boot	●	●	●	●	●	●	●

\* Pin and snap ring are shipped together with double knuckle joint.

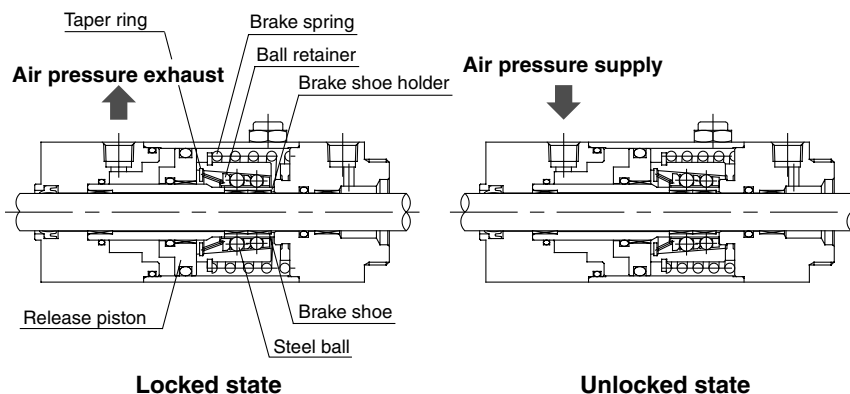
## Weight

Bore size (mm)		20	25	32	40
Basic weight	Basic style	0.52	0.83	0.91	1.24
	Axial foot style	0.63	0.96	1.07	1.46
	Flange style	0.64	1.01	1.08	1.47
	Trunnion style	0.53	0.85	0.94	1.29
	Clevis style	0.57	0.91	1.06	1.47
Rod side pivot bracket		0.11	0.13	0.20	0.27
Head side pivot bracket		0.08	0.09	0.17	0.25
Single knuckle joint		0.05	0.09	0.09	0.10
Double knuckle joint (with pin)		0.05	0.09	0.09	0.13
Additional weight per each 50 mm of stroke		0.05	0.07	0.09	0.15
Additional weight with air cushion		0.01	0.01	0.02	0.02
Additional weight for long stroke		0.01	0.01	0.02	0.03

Calculation: (Example) CNGLA20-100-D (Foot type, ø20, 100 st)

Basic weight..... 0.63 kg (Foot type, ø20)  
 Additional weight ..... 0.05 kg/50 st  
 Air cylinder stroke ..... 100 st  
 Air cushion additional weight ..... 0.01 kg  
 $0.63 + 0.05 \times 100/50 + 0.01 = 0.74$  kg

## Construction Principle

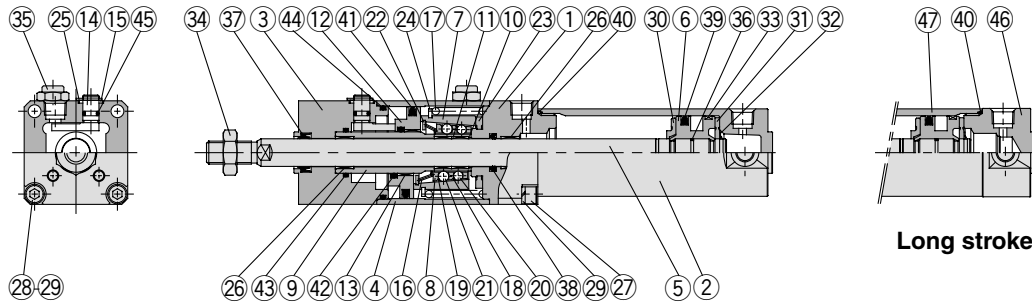


Spring locking (Exhaust locking)  
 The spring force which acts upon the taper ring is magnified by a wedge effect, and is conveyed to all of the numerous steel balls which are arranged in two circles. These act on the brake shoe holder and brake, which locks the piston rod by tightening against it with a large force.  
 Unlocking is accomplished when air pressure is supplied to the unlocking port. The release piston and taper ring oppose the spring force, moving to the right side, and the ball retainer strikes the cover section. The braking force is released as the steel balls are removed from the taper ring by the ball retainer.

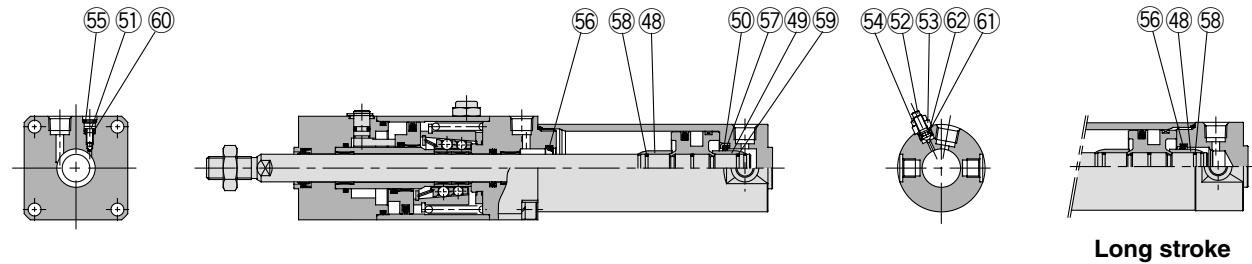
# Cylinder with Lock Double Acting, Single Rod Series CNG

## Construction

### With rubber bumper: CNGBN



### With air cushion: CNGBA



## Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear hard anodized
②	Tube cover	Aluminum alloy	Clear hard anodized
③	Cover	Aluminum alloy	Clear hard anodized
④	Intermediate cover	Aluminum alloy	Clear hard anodized
⑤	Piston rod	Carbon steel	Hard chrome plated
⑥	Piston	Aluminum alloy	Chromated
⑦	Taper ring	Carbon steel*	Heat treated
⑧	Ball retainer	Special resin	
⑨	Piston guide	Carbon steel	Zinc chromated
⑩	Brake shoe holder	Special steel	Heat treated
⑪	Brake shoe	Special friction material	
⑫	Release piston	Carbon steel	Zinc chromated
⑬	Release piston bushing	ø20	Oil-impregnated sintered alloy
		ø25,ø32,ø40	Steel + Special resin
⑭	Unlocking cam	Chromium molybdenum steel	Electroless nickel plated
⑮	Washer	Rolled steel plate	Electroless nickel plated
⑯	Retainer pre-load spring	Steel wire	Zinc chromated
⑰	Brake spring	Steel wire	Zinc chromated
⑱	Clip A	Stainless steel	ø25, ø32 only
⑲	Clip B	Stainless steel	ø25, ø32 only
⑳	Steel ball A	Carbon steel	
㉑	Steel ball B	Carbon steel	
㉒	Tooth ring	Stainless steel	
㉓	Bumper	Urethane	
㉔	C type retaining ring for taper ring	Carbon steel	
㉕	C type retaining ring for unlocking cam shaft	Carbon steel	
㉖	Bushing	Oil-impregnated sintered alloy	ø40 is lead-bronze casted
㉗	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉘	Hexagon socket head cap screw	Chromium molybdenum steel	Nickel plated
㉙	Spring washer for hex. socket head cap screw	Steel wire	Nickel plated
㉚	Bumper A	Urethane	
㉛	Bumper B	Urethane	ø40 is the same as damper A
㉜	Snap ring	Stainless steel	
㉝	Wear ring	Resin	
㉞	Rod end nut	Rolled steel	Nickel plated
㉟	BC element	Bronze	
㊱	Piston gasket	NBR	

Note) In the case of cylinders with auto switches, magnets are installed in the piston.

\* The material for ø20 and ø25 cylinders equipped with auto switches is stainless steel.

No.	Description	Material	Note
㉞	Rod seal A	NBR	
㉟	Rod seal B	NBR	
㊱	Piston seal	NBR	
㊲	Cylinder tube gasket	NBR	
㊳	Release piston seal	NBR	
㊴	Rod seal C	NBR	
㊵	Piston guide gasket	NBR	
㊶	Intermediate cover gasket	NBR	
㊷	Unlocking cam gasket	NBR	
㊸	Head cover	Aluminum alloy	Clear hard anodized
㊹	Cylinder tube	Aluminum alloy	Hard anodized
㊺	Cushion ring A	Brass	
㊻	Cushion ring B	Brass	Same as cushion ring A except ø20, 25 standard stroke
㊼	Seal retainer	Rolled steel	Zinc chromated long strokes not available
㊽	Cushion valve A	Chromium molybdenum steel	Electroless nickel plated
㊾	Cushion valve B	Rolled steel	Electroless nickel plated
㊿	Valve retainer	Rolled steel	Electroless nickel plated
1	Lock nut	Rolled steel	Nickel plated
2	Snap ring	Stainless steel	
3	Cushion seal A	Urethane	
4	Cushion seal B	Urethane	Same as cushion seal A except ø20, 25 standard stroke
5	Cushion ring gasket A	NBR	
6	Cushion ring gasket B	NBR	Same as cushion ring gasket A except ø20, 25 standard stroke
7	Valve seal A	NBR	
8	Valve seal B	NBR	
9	Valve retainer gasket	NBR	

## Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
20	CG1N20-PS	Set of above nos. ㉞, ㉟, ㊱
25	CG1N25-PS	
32	CG1N32-PS	
40	CG1N40-PS	

\* Since the lock section for Series CNG is normally replaced as a unit, kits are for the cylinder section only. These can be ordered using the order number for each bore size.

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

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-X

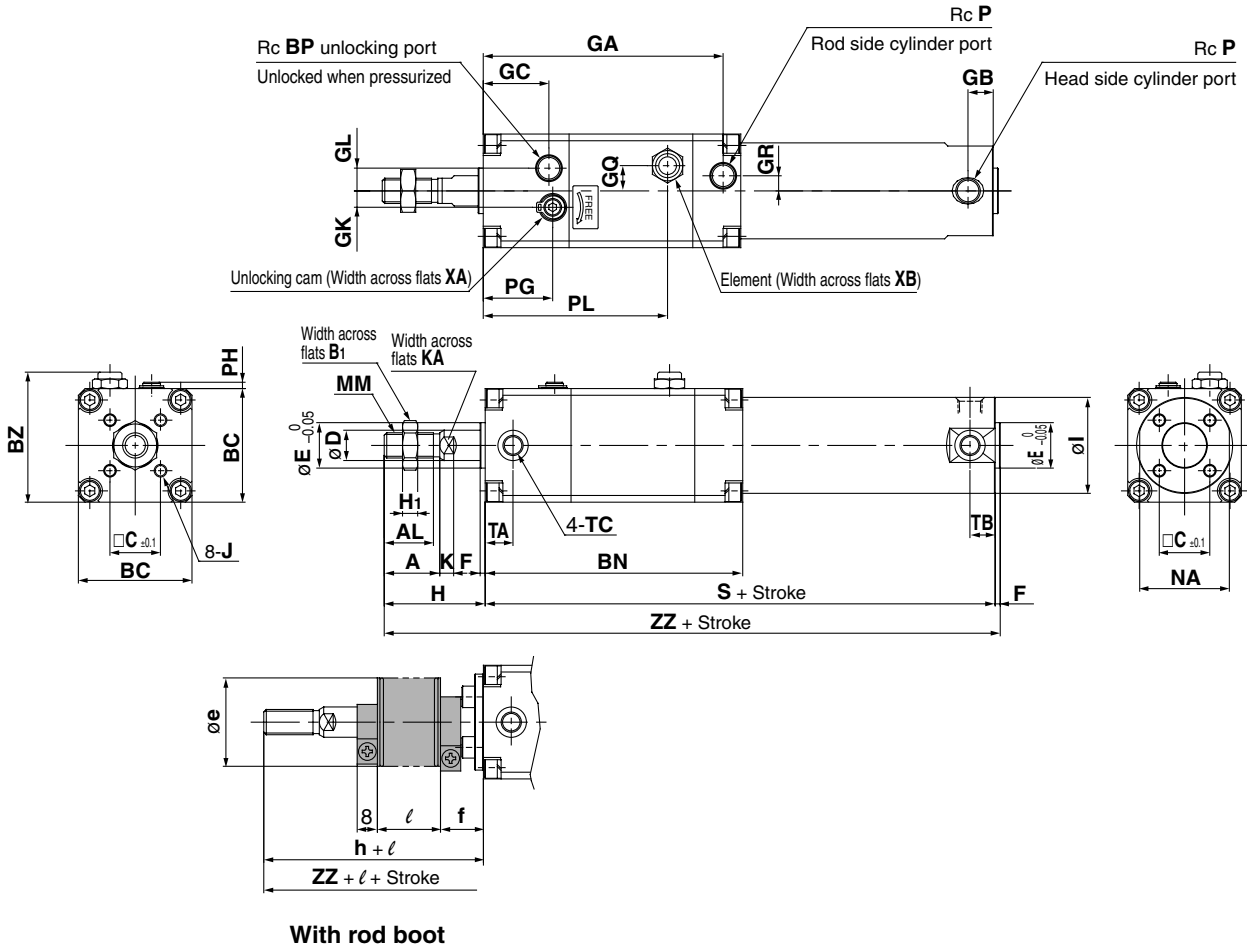
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Data

# Series CNG

## Dimensions

### Basic style (B): With rubber bumper CNGBN



With rod boot

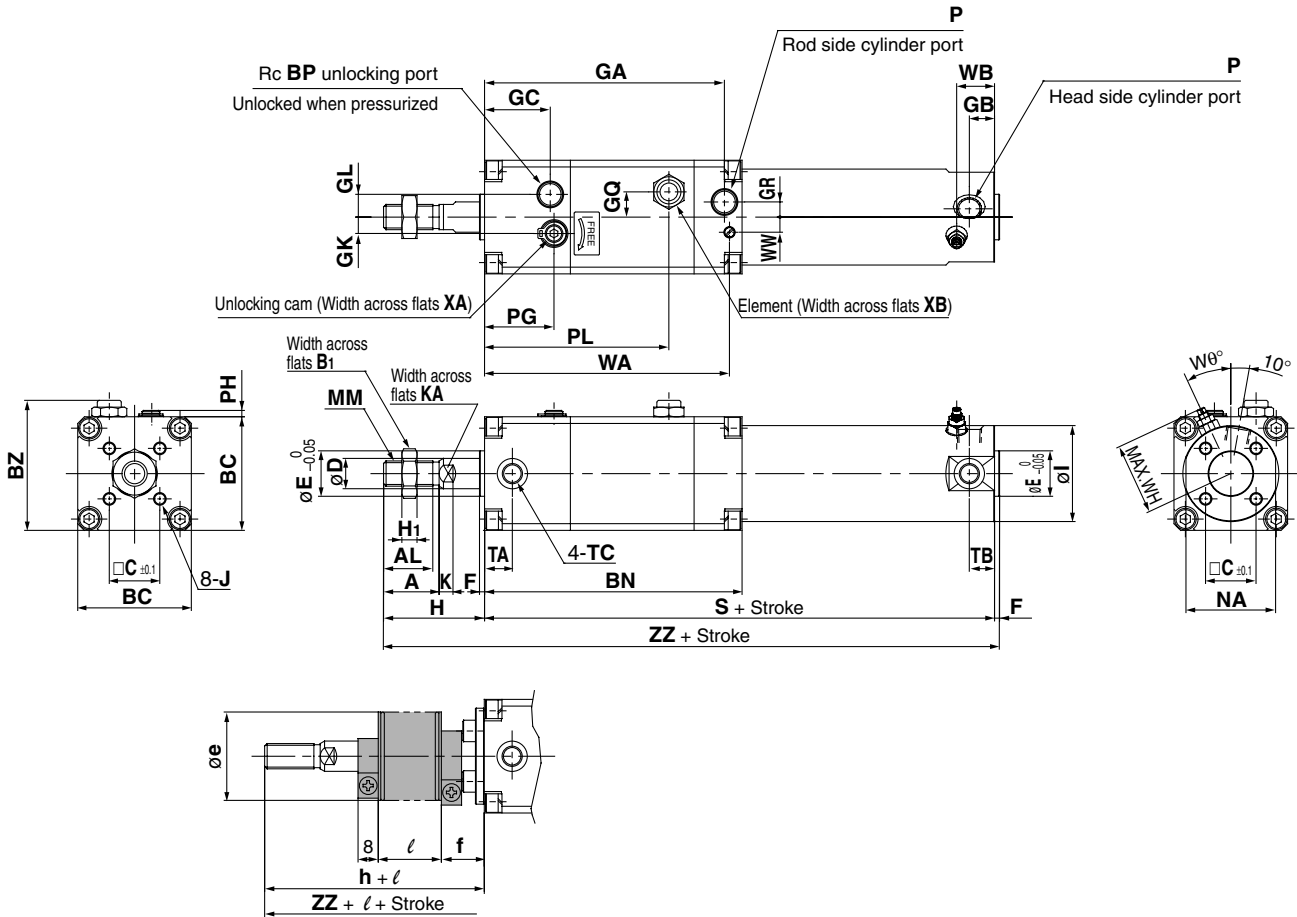
Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H1	I
	Standard	Long stroke	Standard	Long stroke																				
20	Up to 200	201 to 350	20 to 200	201 to 350	18	15.5	13	38	93	1/8	44.5	14	8	12	2	85	10 (12)	18	5.5	6	4	8	5	26
25	Up to 300	301 to 400	20 to 300	301 to 400	22	19.5	17	45	103	1/8	51.5	16.5	10	14	2	96	10 (12)	25	6.5	9	7	10	6	31
32	Up to 300	301 to 450	20 to 300	301 to 450	22	19.5	17	45	104	1/8	51.5	20	12	18	2	97	10 (12)	25	6.5	9	7	10	6	38
40	Up to 300	301 to 800	20 to 300	301 to 800	30	27	19	52	112	1/8	58.5	26	16	25	2	104	10 (13)	26	7	11	7	12	8	47

Bore size (mm)	J	K	KA	MM	NA	P	PG	PH	PL	S	TA	TB	TC	XA	XB	Without rod boot		With rod boot				
																H	ZZ	e	f	h	l	ZZ
20	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	1/8	21.5	2	65	141 (149)	11	11	M5 x 0.8	3	12	35	178 (186)	30	16	55	0.25 x Stroke	198 (206)
25	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	1/8	26.5	2.5	73	151 (159)	11	11	M6 x 0.75	3	12	40	193 (201)	30	17	62		215 (223)
32	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	1/8	26.5	2.5	73	154 (162)	11	10 (11)	M8 x 1.0	3	12	40	196 (204)	35	17	62		218 (226)
40	M6 x 1 depth 12	6	14	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	12	10 (12)	M10 x 1.25	4	12	50	221 (230)	35	17	70		241 (250)

Note ( ) : Denotes the dimensions for long stroke.

# Cylinder with Lock Double Acting, Single Rod Series **CNG**

## Basic style (B): With air cushion CNGBA



**With rod boot**

Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H <sub>1</sub>	I
	Standard	Long stroke	Standard	Long stroke																				
20	Up to 200	201 to 350	20 to 200	201 to 350	18	15.5	13	38	93	1/8	44.5	14	8	12	2	87	10 (12)	18	5.5	6	4	8	5	26
25	Up to 300	301 to 400	20 to 300	301 to 400	22	19.5	17	45	103	1/8	51.5	16.5	10	14	2	97	10 (12)	25	6.5	9	7	10	6	31
32	Up to 300	301 to 450	20 to 300	301 to 450	22	19.5	17	45	104	1/8	51.5	20	12	18	2	97	10 (12)	25	6.5	9	7	10	6	38
40	Up to 300	301 to 800	20 to 300	301 to 800	30	27	19	52	112	1/8	58.5	26	16	25	2	104	10 (13)	26	7	11	7	12	8	47

Bore size (mm)	J	K	KA	MM	NA	P	PG	PH	PL	S	TA	TB	TC	WA	WB	WH	WW	Wθ	XA	XB
20	M4 x 0.7 depth 7	5	6	M8 x 1.25	24	M5 x 0.8	21.5	2	65	141 (149)	11	11	M5 x 0.8	88	15 (16)	23	5.5	30°	3	12
25	M5 x 0.8 depth 7.5	5.5	8	M10 x 1.25	29	M5 x 0.8	26.5	2.5	73	151 (159)	11	11	M6 x 0.75	98	15 (16)	25	6	30°	3	12
32	M5 x 0.8 depth 8	5.5	10	M10 x 1.25	35.5	Rc 1/8	26.5	2.5	73	154 (162)	11	10 (11)	M8 x 1.0	99	15 (16)	28.5	6	25°	3	12
40	M6 x 1 depth 12	6	14	M14 x 1.5	44	Rc 1/8	28	2.5	81	169 (178)	12	10 (12)	M10 x 1.25	107	15 (16)	33	8	20°	4	12

Bore size (mm)	Without rod boot		With rod boot					
	H	ZZ	e	f	h	l	ZZ	
20	35	178 (186)	30	16	55	0.25 x Stroke	198 (206)	
25	40	193 (201)	30	17	62		215 (223)	
32	40	196 (204)	35	17	62		218 (226)	
40	50	221 (230)	35	17	70		241 (250)	

Note) ( ): Denotes the dimensions for long stroke.  
Dimensions with mounting bracket are the same as dimensions with rubber bumper.

CL

CL1

MLGC

**CNG**

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

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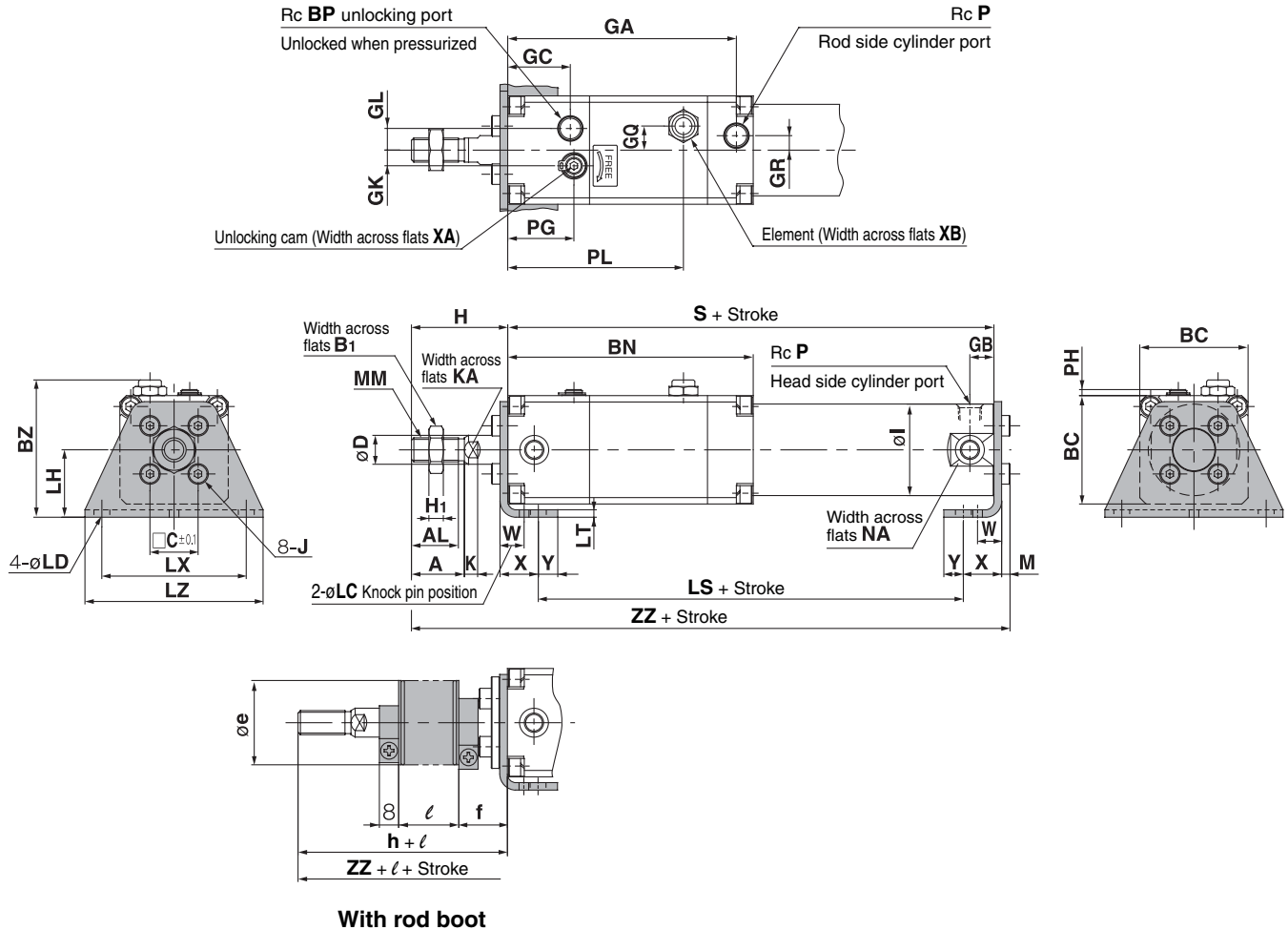
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Data

# Series CNG

## Dimensions

### Axial foot style (L): With rubber bumper CNGLN



Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BN	BP	BZ	□C	D	GA	GB	GC	GK	GL	GR	GQ	H1	I	J
	Standard	Long stroke	Standard	Long stroke																			
20	Up to 200	201 to 350	20 to 200	201 to 350	18	15.5	13	38	93	1/8	50.5	14	8	85	10 (12)	18	5.5	6	4	8	5	26	M4 x 0.7
25	Up to 300	301 to 400	20 to 300	301 to 400	22	19.5	17	45	103	1/8	57	16.5	10	96	10 (12)	25	6.5	9	7	10	6	31	M5 x 0.8
32	Up to 300	301 to 450	20 to 300	301 to 450	22	19.5	17	45	104	1/8	57	20	12	97	10 (12)	25	6.5	9	7	10	6	38	M5 x 0.8
40	Up to 300	301 to 800	20 to 300	301 to 800	30	27	19	52	112	1/8	65.5	26	16	104	10 (13)	26	7	11	7	12	8	47	M6 x 1

Bore size (mm)	K	KA	M	MM	NA	P	PG	PH	PL	S	LC	LD	LH	LS	LT	LX	LZ	X	Y	W	XA	XB
20	5	6	3	M8 x 1.25	24	1/8	21.5	2	65	141 (149)	4	6	25	117 (125)	3	50	62	15	7	10	3	12
25	5.5	8	3.5	M10 x 1.25	29	1/8	26.5	2.5	73	151 (159)	4	6	28	127 (135)	3	57	70	15	7	10	3	12
32	5.5	10	3.5	M10 x 1.25	35.5	1/8	26.5	2.5	73	154 (162)	4	6.6	28	128 (136)	3	60	74	16	8	10	3	12
40	6	14	4	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	4	6.6	33	142 (151)	3	68	84	16.5	8.5	10	4	12

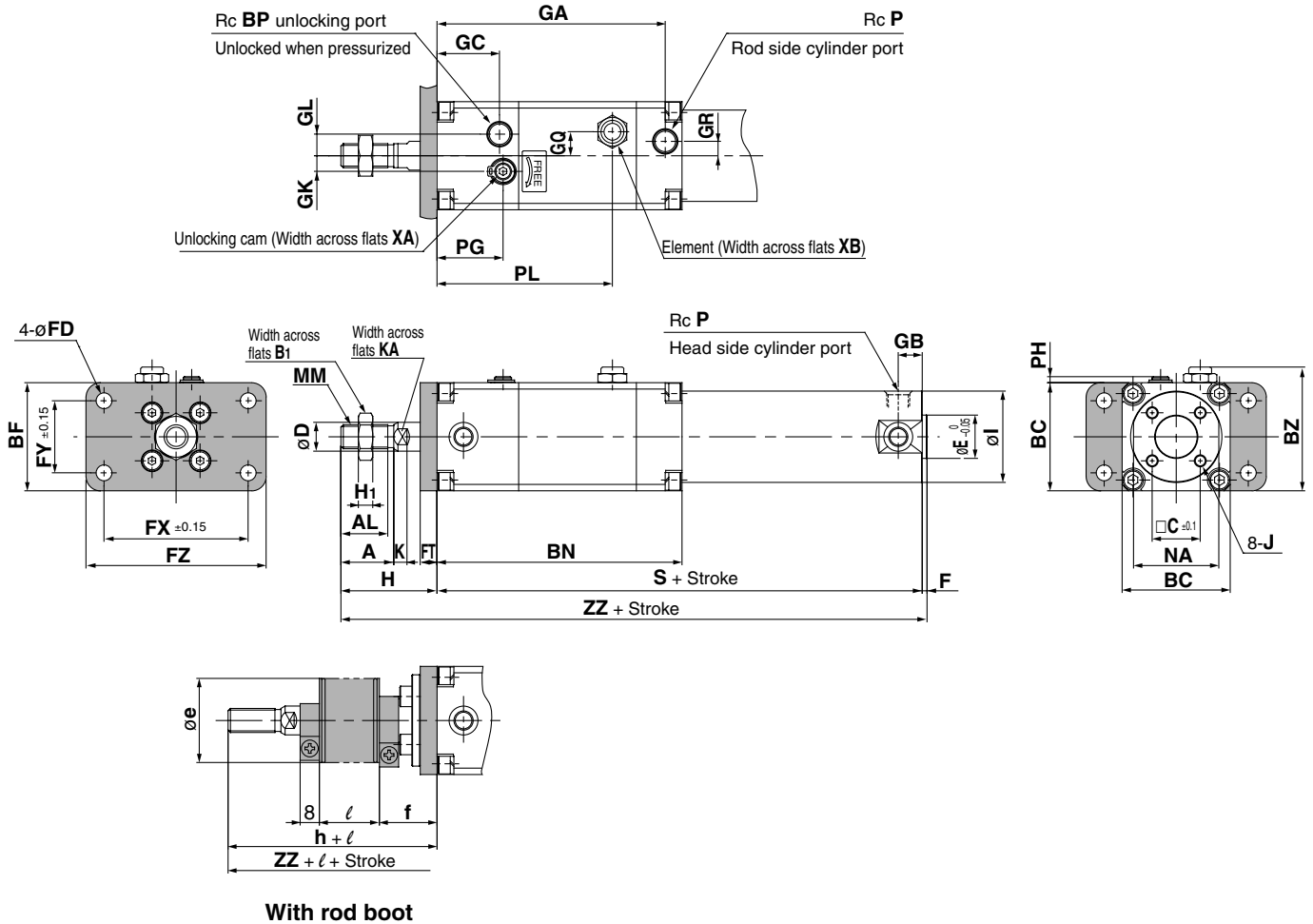
Bore size (mm)	Without rod boot		With rod boot					
	H	ZZ	e	f	h	l	ZZ	
20	35	182 (190)	30	19	55	0.25 x Stroke	202 (210)	
25	40	197.5 (205.5)	30	20	62		219.5 (227.5)	
32	40	200.5 (208.5)	35	20	62		222.5 (230.5)	
40	50	226 (235)	35	20	70		246 (255)	

Note) ( ): Denotes the dimensions for long stroke.



# Cylinder with Lock Double Acting, Single Rod Series CNG

## Rod side flange style (F): With rubber bumper CNGFN



With rod boot

Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BF	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H1
	Standard	Long stroke	Standard	Long stroke																				
20	Up to 200	201 to 350	20 to 200	201 to 350	18	15.5	13	38	38	93	1/8	44.5	14	8	12	2	85	10 (12)	18	5.5	6	4	8	5
25	Up to 300	301 to 400	20 to 300	301 to 400	22	19.5	17	45	45	103	1/8	51.5	16.5	10	14	2	96	10 (12)	25	6.5	9	7	10	6
32	Up to 300	301 to 450	20 to 300	301 to 450	22	19.5	17	45	45	104	1/8	51.5	20	12	18	2	97	10 (12)	25	6.5	9	7	10	6
40	Up to 300	301 to 800	20 to 300	301 to 800	30	27	19	52	52	112	1/8	58.5	26	16	25	2	104	10 (13)	26	7	11	7	12	8

Bore size (mm)	I	J	K	KA	MM	NA	P	PG	PH	PL	S	FD	FT	FX	FY	FZ	XA	XB	Without rod boot		With rod boot					
																			H	ZZ	e	f	h	ℓ	ZZ	
20	26	M4 x 0.7	5	6	M8 x 1.25	24	1/8	21.5	2	65	141 (149)	5.5	6	52	25	65	3	12	35	178 (186)	30	22	55	0.25 x Stroke	198 (206)	
25	31	M5 x 0.8	5.5	8	M10 x 1.25	29	1/8	26.5	2.5	73	151 (159)	5.5	7	60	30	75	3	12	40	193 (201)	30	24	62		215 (223)	
32	38	M5 x 0.8	5.5	10	M10 x 1.25	35.5	1/8	26.5	2.5	73	154 (162)	6.6	7	60	30	75	3	12	40	196 (204)	35	24	62		218 (226)	
40	47	M6 x 1	6	14	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	6.6	8	66	36	82	4	12	50	221 (230)	35	25	70		241 (250)	

Note) ( ): Denotes the dimensions for long stroke.

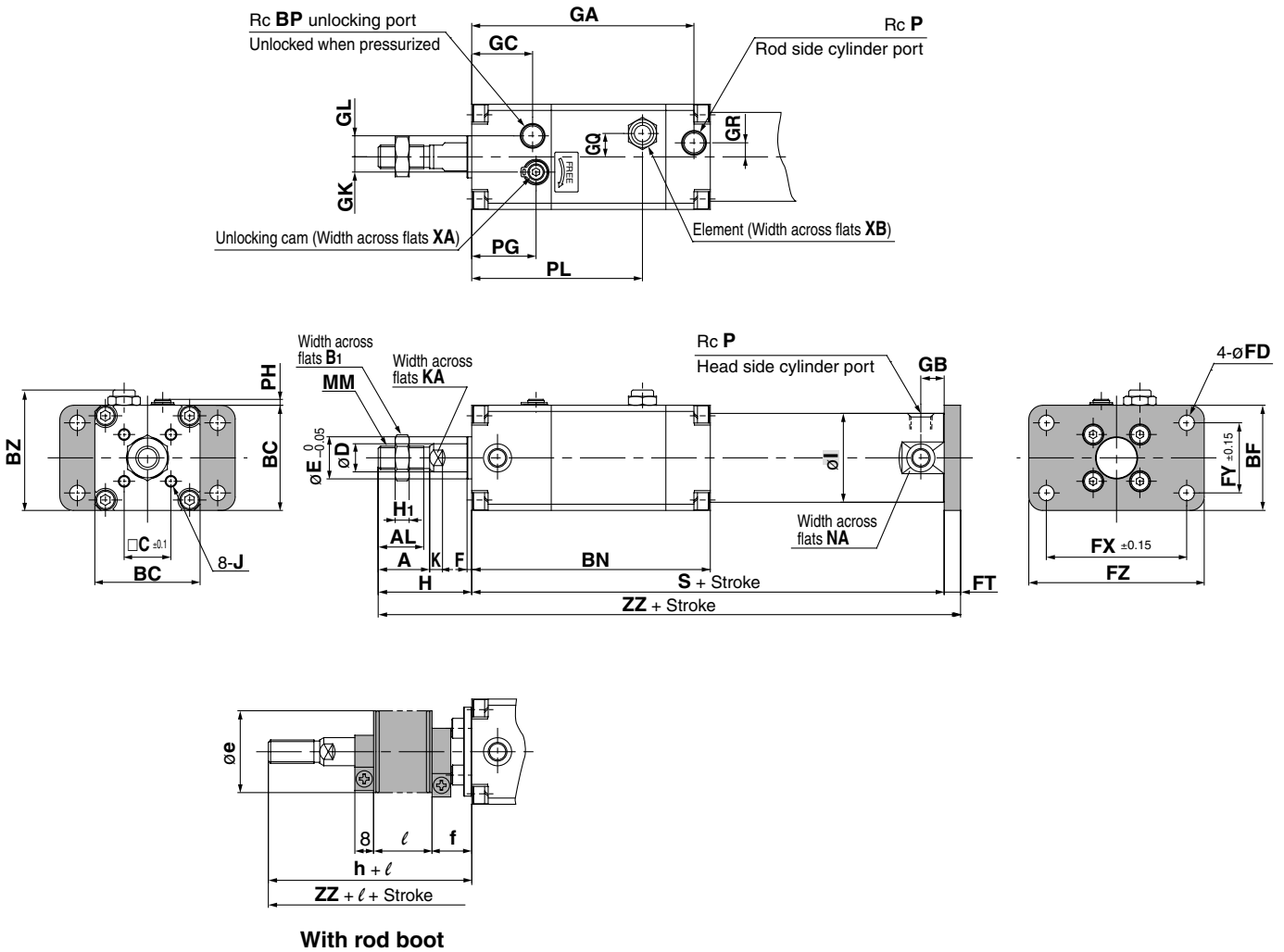
- CL
- CL1
- MLGC
- CNG**
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data



# Series CNG

## Dimensions

### Head side flange style (G): With rubber bumper CNGGN



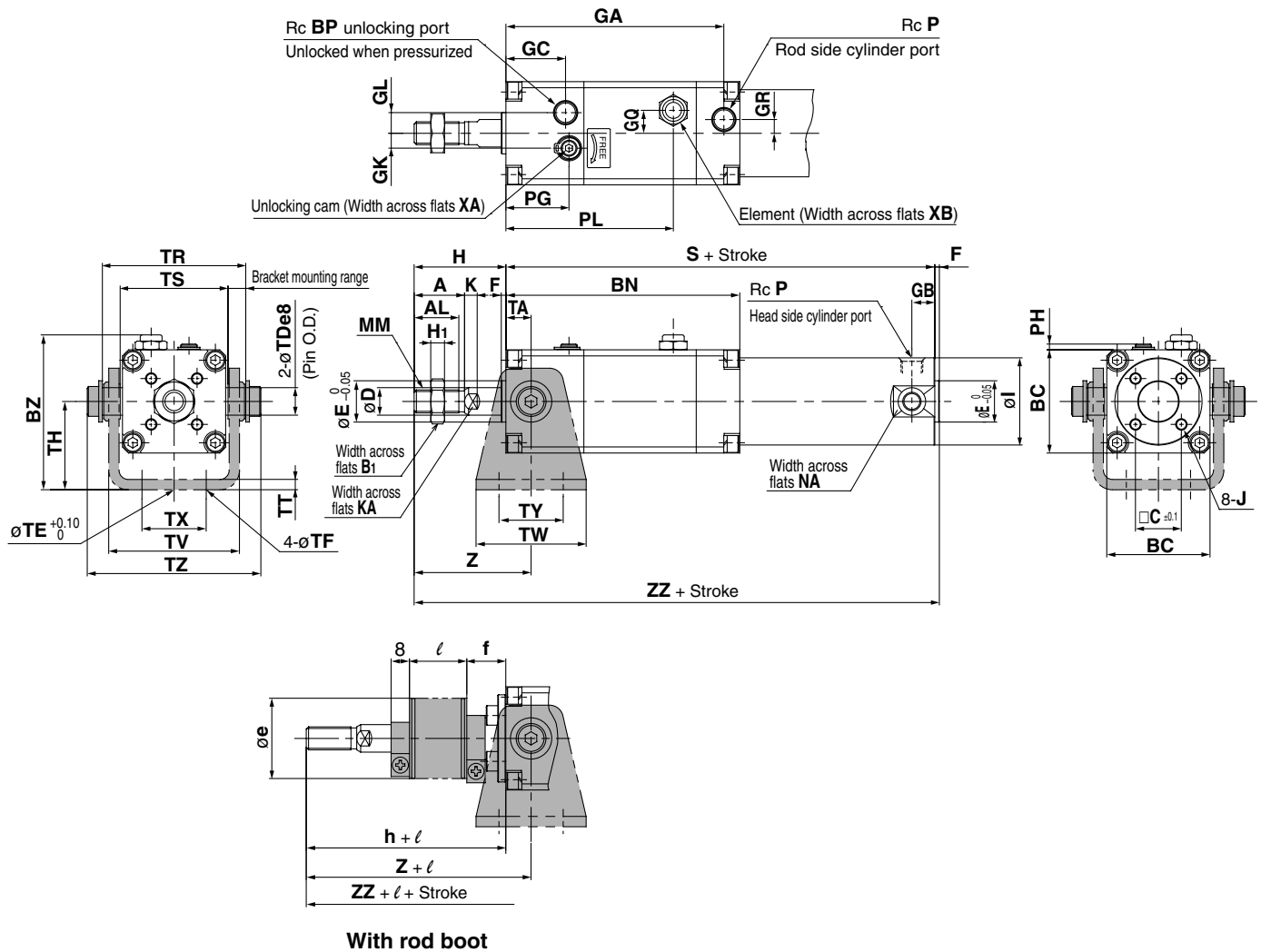
Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BF	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H <sub>1</sub>	I
	Standard	Long stroke	Standard	Long stroke																					
20	Up to 200	—	20 to 200	—	18	15.5	13	38	38	93	1/8	44.5	14	8	12	2	85	10	18	5.5	6	4	8	5	26
25	Up to 300	—	20 to 300	—	22	19.5	17	45	45	103	1/8	51.5	16.5	10	14	2	96	10	25	6.5	9	7	10	6	31
32	Up to 300	—	20 to 300	—	22	19.5	17	45	45	104	1/8	51.5	20	12	18	2	97	10	25	6.5	9	7	10	6	38
40	Up to 300	301 to 500	20 to 300	301 to 500	30	27	19	52	52	112	1/8	58.5	26	16	25	2	104	10 (13)	26	7	11	7	12	8	47

Bore size (mm)	J	K	KA	MM	NA	P	PG	PH	PL	S	FD	FT	FX	FY	FZ	XA	XB	Without rod boot		With rod boot				
																		H	ZZ	e	f	h	l	ZZ
20	M4 x 0.7	5	6	M8 x 1.25	24	1/8	21.5	2	65	141	5.5	6	52	25	65	3	12	35	182	30	16	55	0.25 x Stroke	202
25	M5 x 0.8	5.5	8	M10 x 1.25	29	1/8	26.5	2.5	73	151	5.5	7	60	30	75	3	12	40	198	30	17	62		220
32	M5 x 0.8	5.5	10	M10 x 1.25	35.5	1/8	26.5	2.5	73	154	6.6	7	60	30	75	3	12	40	201	35	17	62		223
40	M6 x 1	6	14	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	6.6	8	66	36	82	4	12	50	227 (236)	35	17	70		247 (256)

Note) ( ): Denotes the dimensions for long stroke.

# Cylinder with Lock Double Acting, Single Rod Series CNG

## Rod side trunnion style (U): With rubber bumper CNGUN



Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H <sub>1</sub>	I
	Standard	Long stroke	Standard	Long stroke																				
20	Up to 200	—	20 to 200	—	18	15.5	13	38	93	1/8	56.5	14	8	12	2	85	10	18	5.5	6	4	8	5	26
25	Up to 300	—	20 to 300	—	22	19.5	17	45	103	1/8	66	16.5	10	14	2	96	10	25	6.5	9	7	10	6	31
32	Up to 300	—	20 to 300	—	22	19.5	17	45	104	1/8	67.5	20	12	18	2	97	10	25	6.5	9	7	10	6	38
40	Up to 300	301 to 500	20 to 300	301 to 500	30	27	19	52	112	1/8	75	26	16	25	2	104	10 (13)	26	7	11	7	12	8	47

Bore size (mm)	J	K	KA	MM	NA	P	PG	PH	PL	S	TA	TDe8	TE	TF	TH	TR	TS	TT	TV	TW	TX	TY	TZ	XA	XB
20	M4 x 0.7	5	6	M8 x 1.25	24	1/8	21.5	2	65	141	11	8 <sup>-0.025</sup> <sub>-0.047</sub>	10	5.5	31	51	40	3.2	47.8	42	26	28	59.6	3	12
25	M5 x 0.8	5.5	8	M10 x 1.25	29	1/8	26.5	2.5	73	151	11	10 <sup>-0.025</sup> <sub>-0.047</sub>	10	5.5	37	58	47	3.2	54.8	42	28	28	68	3	12
32	M5 x 0.8	5.5	10	M10 x 1.25	35.5	1/8	26.5	2.5	73	154	11	12 <sup>-0.032</sup> <sub>-0.059</sub>	10	6.6	38.5	62.5	47	4.5	57.4	48	28	28	75.7	3	12
40	M6 x 1	6	14	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	12	14 <sup>-0.032</sup> <sub>-0.059</sub>	10	6.6	42.5	72.5	54	4.5	65.4	56	36	30	85.7	4	12

Bore size (mm)	Without rod boot			With rod boot							
	H	Z	ZZ	e	f	h	l	Z	ZZ		
20	35	46	178	30	16	55	0.25 x Stroke	66	198		
25	40	51	193	30	17	62		73	215		
32	40	51	196	35	17	62		73	218		
40	50	62	221 (230)	35	17	70		82	241 (250)		

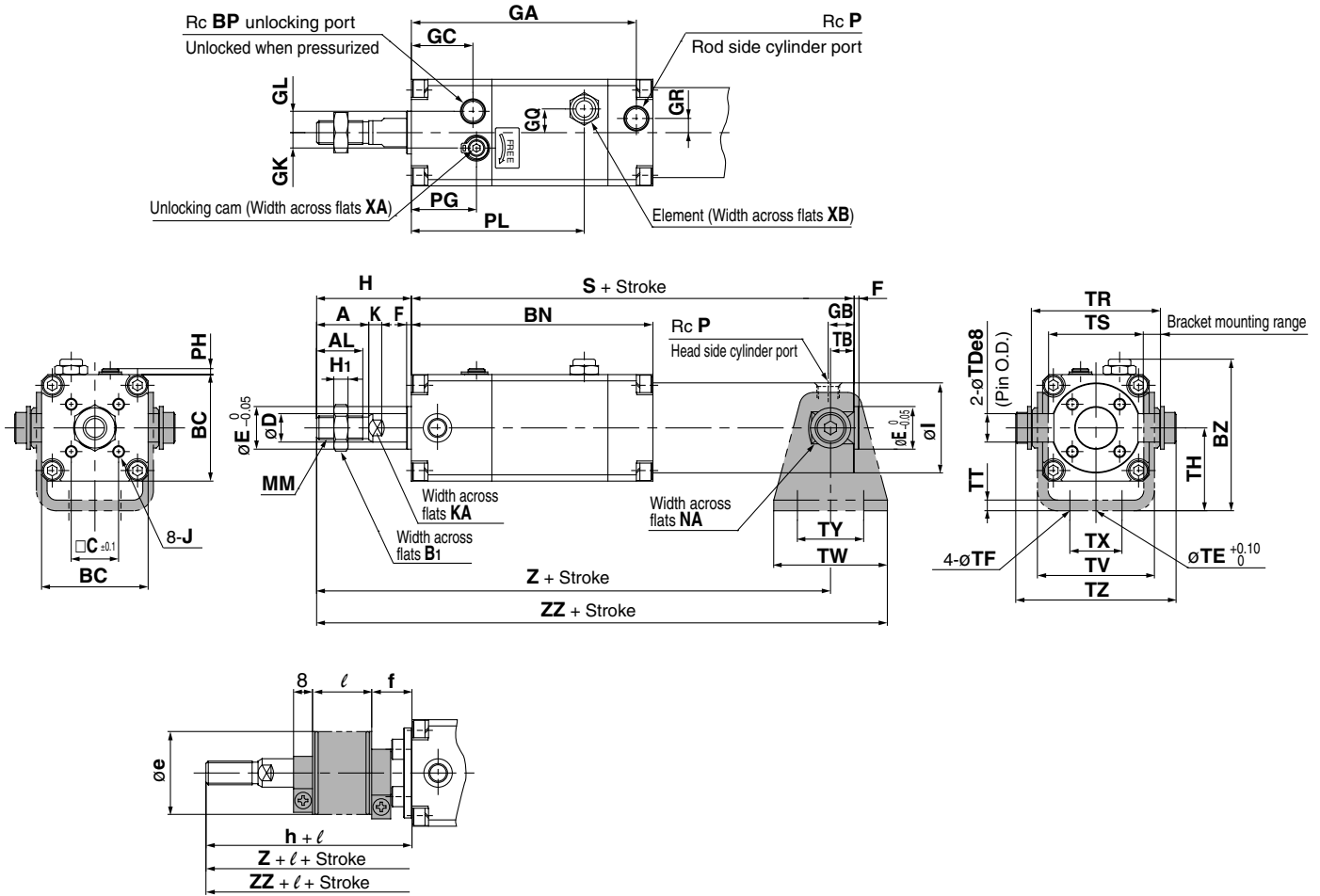
Note ( ): Denotes the dimensions for long stroke.  
For the pivot bracket, refer to page 9-5-20.

- CL
- CL1
- MLGC
- CNG**
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data

# Series CNG

## Dimensions

### Head side trunnion style (T): With rubber bumper CNGTN



With rod boot

Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H <sub>1</sub>	I
	Standard	Long stroke	Standard	Long stroke																				
20	Up to 200	—	20 to 200	—	18	15.5	13	38	93	1/8	50.5	14	8	12	2	85	10	18	5.5	6	4	8	5	26
25	Up to 300	—	20 to 300	—	22	19.5	17	45	103	1/8	59	16.5	10	14	2	96	10	25	6.5	9	7	10	6	31
32	Up to 300	—	20 to 300	—	22	19.5	17	45	104	1/8	64	20	12	18	2	97	10	25	6.5	9	7	10	6	38
40	Up to 300	301 to 500	20 to 300	301 to 500	30	27	19	52	112	1/8	72.5	26	16	25	2	104	10 (13)	26	7	11	7	12	8	47

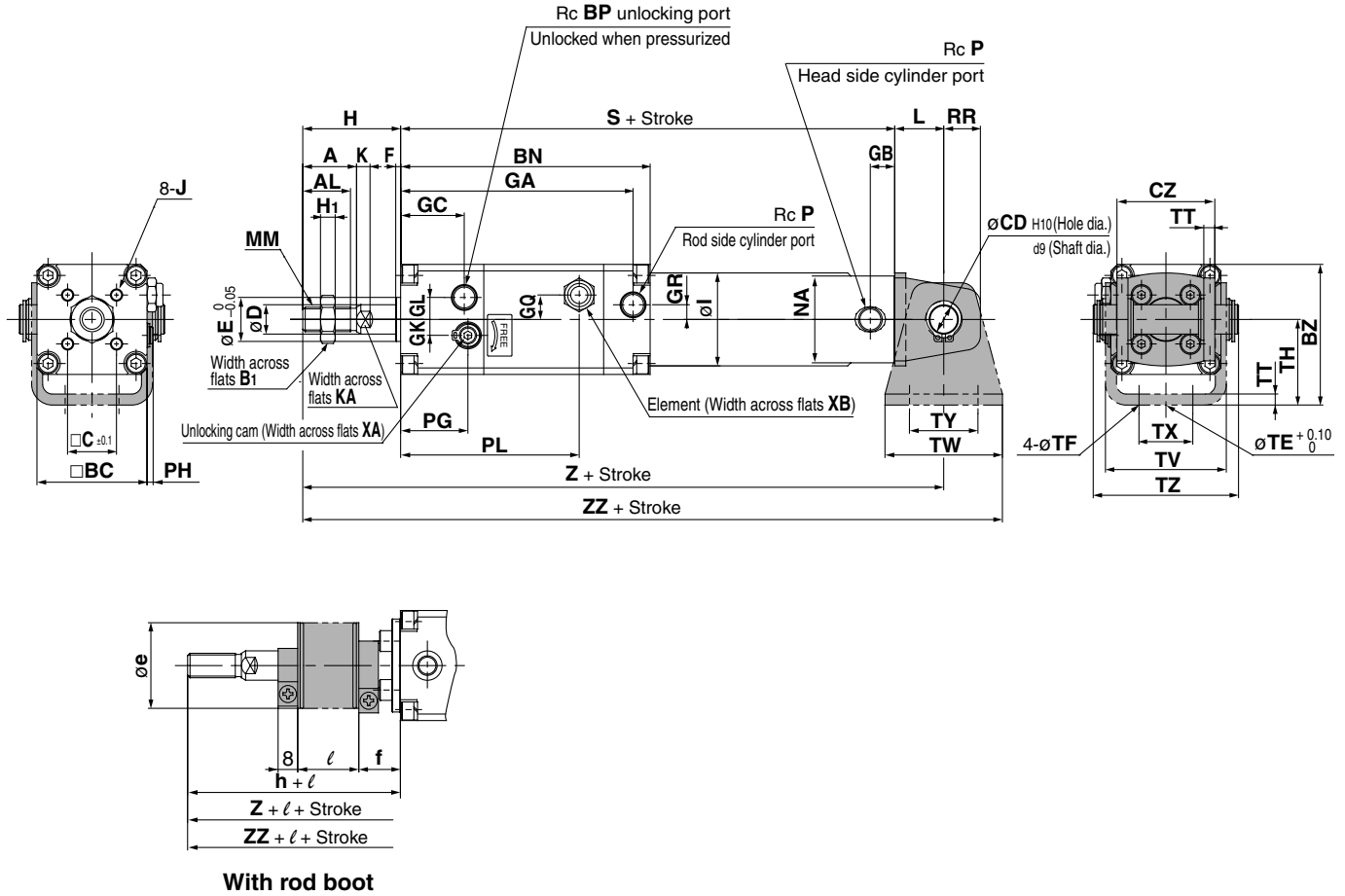
Bore size (mm)	J	K	KA	MM	NA	P	PG	PH	PL	S	TB	TDe8	TE	TF	TH	TR	TS	TT	TV	TW	TX	TY	TZ	XA	XB
20	M4 x 0.7	5	6	M8 x 1.25	24	1/8	21.5	2	65	141	11	8 <sup>-0.025/-0.047</sup>	10	5.5	25	39	28	3.2	35.8	42	16	28	47.6	3	12
25	M5 x 0.8	5.5	8	M10 x 1.25	29	1/8	26.5	2.5	73	151	11	10 <sup>-0.025/-0.047</sup>	10	5.5	30	43	33	3.2	39.8	42	20	28	53	3	12
32	M5 x 0.8	5.5	10	M10 x 1.25	35.5	1/8	26.5	2.5	73	154	10	12 <sup>-0.032/-0.059</sup>	10	6.6	35	54.5	40	4.5	49.4	48	22	28	67.7	3	12
40	M6 x 1	6	14	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	10 (12)	14 <sup>-0.032/-0.059</sup>	10	6.6	40	65.5	49	4.5	58.4	56	30	30	78.7	4	12

Bore size (mm)	Without rod boot			With rod boot			l	Z	ZZ
	H	Z	ZZ	e	f	h			
20	35	165	186	30	16	55	0.25 x Stroke	185	206
25	40	180	201	30	17	62		202	223
32	40	184	208	35	17	62		206	230
40	50	209 (216)	237 (244)	35	17	70		229 (236)	257 (264)

Note) ( ): Denotes the dimensions for long stroke.  
For the pivot bracket, refer to page 9-5-20.

# Cylinder with Lock Double Acting, Single Rod Series CNG

## Clevis style (D): With rubber bumper CNGDN



With rod boot

Bore size (mm)	Stroke range without rod boot		Stroke range with rod boot		A	AL	B <sub>1</sub>	BC	BN	BP	BZ	□C	D	E	F	GA	GB	GC	GK	GL	GR	GQ	H <sub>1</sub>	I
	Standard	Long stroke	Standard	Long stroke																				
20	Up to 200	—	20 to 200	—	18	15.5	13	38	93	1/8	44	14	8	12	2	85	10	18	5.5	6	4	8	5	26
25	Up to 300	—	20 to 300	—	22	19.5	17	45	103	1/8	52.5	16.5	10	14	2	96	10	25	6.5	9	7	10	6	31
32	Up to 300	—	20 to 300	—	22	19.5	17	45	104	1/8	57.5	20	12	18	2	97	10	25	6.5	9	7	10	6	38
40	Up to 300	301 to 500	20 to 300	301 to 500	30	27	19	52	112	1/8	66	26	16	25	2	104	10 (13)	26	7	11	7	12	8	47

Bore size (mm)	J	K	KA	MM	NA	P	PG	PH	PL	S	CD	CZ	L	RR	TE	TF	TH	TT	TV	TW	TX	TY	TZ	XA	XB
20	M4 x 0.7	5	6	M8 x 1.25	24	1/8	21.5	2	65	141	8	29	14	11	10	5.5	25	3.2	35.8	42	16	28	43.4	3	12
25	M5 x 0.8	5.5	8	M10 x 1.25	29	1/8	26.5	2.5	73	151	10	33	16	13	10	5.5	30	3.2	39.8	42	20	28	48	3	12
32	M5 x 0.8	5.5	10	M10 x 1.25	35.5	1/8	26.5	2.5	73	154	12	40	20	15	10	6.6	35	4.5	49.4	48	22	28	59.4	3	12
40	M6 x 1	6	14	M14 x 1.5	44	1/8	28	2.5	81	169 (178)	14	49	22	18	10	6.6	40	4.5	58.4	56	30	30	71.4	4	12

Bore size (mm)	Without rod boot			With rod boot					
	H	Z	ZZ	e	f	h	l	Z	ZZ
20	35	190	211	30	16	55	0.25 x Stroke	210	231
25	40	207	228	30	17	62		229	250
32	40	214	238	35	17	62		236	260
40	50	241 (250)	269 (278)	35	17	70		261 (270)	289 (298)

Note) ( ): Denotes the dimensions for long stroke.  
Clevis pin and snap ring are attached.  
For the pivot bracket, refer to page 9-5-20.

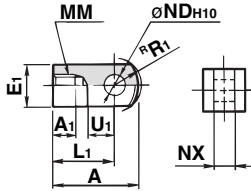
- CL
- CL1
- MLGC
- CNG**
- MNB
- CNA
- CNS
- CLS
- CLQ
- MLGP
- RLQ
- MLU
- ML1C
- D-
- X
- 20-
- Data

# Accessory Bracket Dimensions

## Single Knuckle Joint

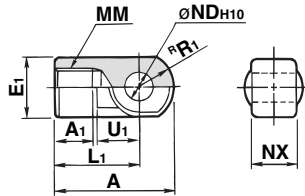
### I-G02/G03

Material: Rolled steel



### I-G04

Material: Cast iron



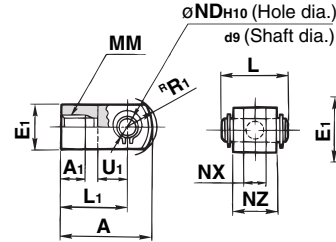
Part no.	Applicable bore size (mm)	A	A <sub>1</sub>	E <sub>1</sub>	L <sub>1</sub>	MM	<sup>R</sup> R <sub>1</sub>	U <sub>1</sub>	NDH <sub>10</sub>	NX
I-G02	2	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8 <sup>+0.058</sup> <sub>0</sub>	8 <sup>-0.2</sup> <sub>-0.4</sub>
I-G03	25, 32	41	10.5	□20	30	M10 x 1.25	12.8	14	10 <sup>+0.058</sup> <sub>0</sub>	10 <sup>-0.2</sup> <sub>-0.4</sub>
I-G04	40	42	14	∅22	30	M14 x 1.5	12	14	10 <sup>+0.058</sup> <sub>0</sub>	18 <sup>-0.3</sup> <sub>-0.5</sub>

## Double Knuckle Joint

\* Knuckle pin and snap ring are attached.

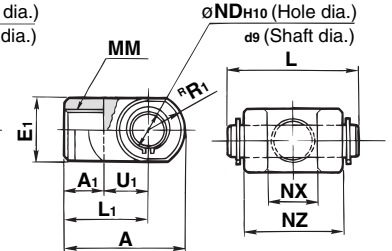
### Y-G02/G03

Material: Rolled steel



### Y-G04

Material: Cast iron

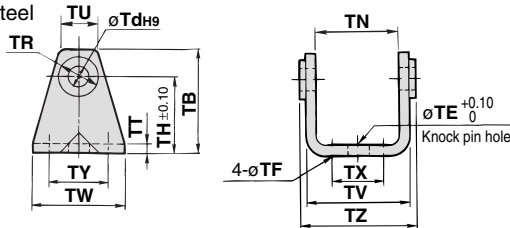


Part no.	Applicable bore size (mm)	A	A <sub>1</sub>	E <sub>1</sub>	L <sub>1</sub>	MM	<sup>R</sup> R <sub>1</sub>	U <sub>1</sub>	ND	NX	NZ	L	Applicable pin part no.
Y-G02	20	34	8.5	□16	25	M8 x 1.25	10.3	11.5	8	8 <sup>+0.4</sup> <sub>+0.2</sub>	16	21	IY-G02
Y-G03	25, 32	41	10.5	□20	30	M10 x 1.25	12.8	14	10	10 <sup>+0.4</sup> <sub>+0.2</sub>	20	25.6	IY-G03
Y-G04	40	42	16	∅22	30	M14 x 1.5	12	14	10	18 <sup>+0.5</sup> <sub>+0.3</sub>	36	41.6	IY-G04

## Rod Side Pivot Bracket

### ∅20 to ∅40

Material: Rolled steel



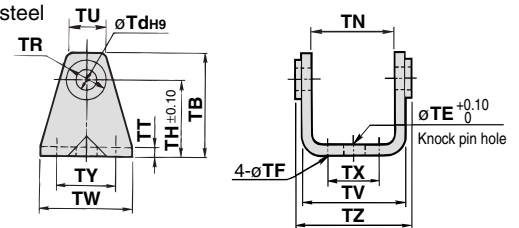
Part no.	Applicable bore size (mm)	TB	TdH <sub>9</sub>	TE	TF	TH	TN
CNG-020-24	20	42	8 <sup>+0.036</sup> <sub>0</sub>	10	5.5	31	41 <sup>+0.4</sup> <sub>+0.1</sub>
CNG-025-24	25	48	10 <sup>+0.036</sup> <sub>0</sub>	10	5.5	37	48 <sup>+0.4</sup> <sub>+0.1</sub>
CNG-032-24	32	53	12 <sup>+0.043</sup> <sub>0</sub>	10	6.6	38.5	48 <sup>+0.5</sup> <sub>+0.1</sub>
CNG-040-24	40	60	14 <sup>+0.043</sup> <sub>0</sub>	10	6.6	42.5	56 <sup>+0.5</sup> <sub>+0.1</sub>

Part no.	Applicable bore size (mm)	TR	TT	T	TV	TW	TX	TY	TZ
CNG-020-24	20	13	3.2	21.2	47.8	42	26	28	50
CNG-025-24	25	15	3.2	21.3	54.8	42	28	28	57
CNG-032-24	32	17	4.5	25.6	57.4	48	28	28	61.4
CNG-040-24	40	21	4.5	26.3	65.4	56	36	30	71.4

## Head Side Pivot Bracket

### ∅20 to ∅40

Material: Rolled steel

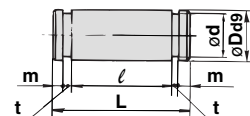


Part no.	Applicable bore size (mm)	TB	TdH <sub>9</sub>	TE	TF	TH	TN
CG-020-24A	20	36	8 <sup>+0.036</sup> <sub>0</sub>	10	5.5	25	(29.3)
CG-025-24A	25	43	10 <sup>+0.036</sup> <sub>0</sub>	10	5.5	30	(33.1)
CG-032-24A	32	50	12 <sup>+0.043</sup> <sub>0</sub>	10	6.6	35	(40.4)
CG-040-24A	40	58	14 <sup>+0.043</sup> <sub>0</sub>	10	6.6	40	(49.2)

Part no.	Applicable bore size (mm)	TR	TT	TU	TV	TW	TX	TY	TZ
CG-020-24A	20	13	3.2	18.1	35.8	42	16	28	38.3
CG-025-24A	25	15	3.2	20.7	39.8	42	20	28	42.1
CG-032-24A	32	17	4.5	23.6	49.4	48	22	28	53.8
CG-040-24A	40	21	4.5	27.3	58.4	56	30	30	64.6

## Knuckle Pin

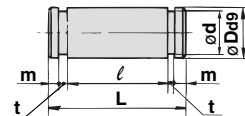
Material: Carbon steel



Part no.	Applicable bore size (mm)	Dd <sub>9</sub>	L	d	ℓ	m	t	Applicable snap ring
IY-G02	20	8 <sup>-0.040</sup> <sub>-0.076</sub>	21	7.6	16.2	1.5	0.9	Type C 8 for axis
IY-G03	25, 32	10 <sup>-0.040</sup> <sub>-0.076</sub>	25.6	9.6	20.2	1.55	1.15	Type C 10 for axis
IY-G04	40	10 <sup>-0.040</sup> <sub>-0.076</sub>	41.6	9.6	36.2	1.55	1.15	Type C 10 for axis

## Clevis Pin

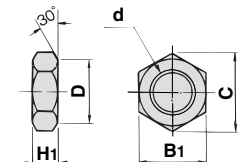
Material: Carbon steel



Part no.	Applicable bore size (mm)	Dd <sub>9</sub>	L	d	ℓ	m	t	Applicable snap ring
CD-G02	20	8 <sup>-0.040</sup> <sub>-0.076</sub>	43.4	7.6	38.6	1.5	0.9	Type C 8 for axis
CD-G25	25	10 <sup>-0.040</sup> <sub>-0.076</sub>	48	9.6	42.6	1.55	1.15	Type C 10 for axis
CD-G03	32	12 <sup>-0.050</sup> <sub>-0.093</sub>	59.4	11.5	54	1.55	1.15	Type C 12 for axis
CD-G04	40	14 <sup>-0.050</sup> <sub>-0.093</sub>	71.4	13.4	65	2.05	1.15	Type C 14 for axis

## Rod End Nut

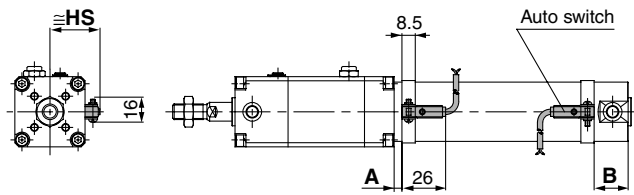
Material: Rolled steel



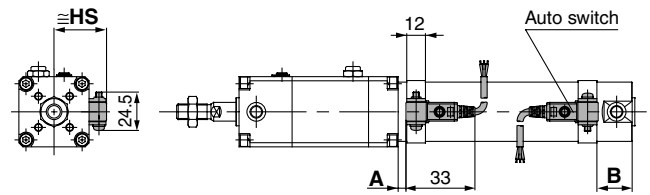
Part no.	Applicable bore size (mm)	B <sub>1</sub>	C	D	d	H <sub>1</sub>
NT-02	20	13	(15)	12.5	M8 x 1.25	5
NT-03	25, 32	17	(19.6)	16.5	M10 x 1.25	6
NT-G04	40	19	(21.9)	18	M14 x 1.5	8

## Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height

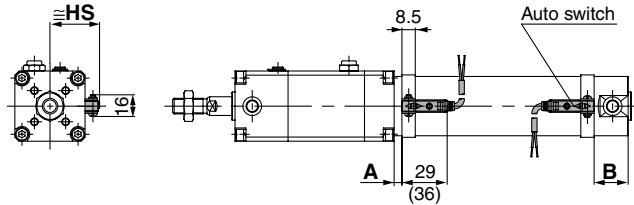
**D-C7, D-C8**



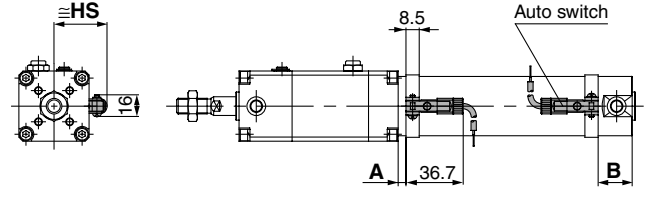
**D-G5NTL**



**D-H7□, D-H7□W  
D-H7NF, D-H7BAL**

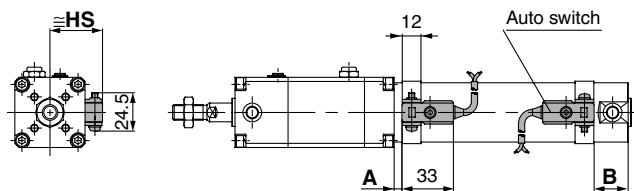


**D-C73C, D-C80C**

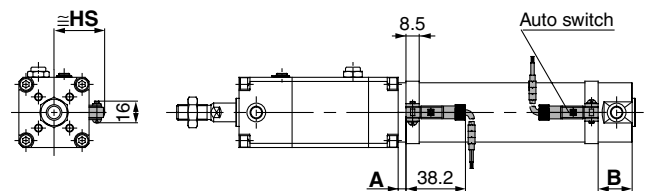


\* ( ) : denotes the values of D-H7LF.

**D-B5, D-B6, D-B59W**



**D-H7C**



### Proper Auto Switch Mounting Position

Auto switch model	D-C7□/C80 D-C73C D-C80C		D-B5□/B64		D-B59W		D-H7□ D-H7C D-H7□W D-H7BAL D-H7NF		D-G5NTL	
	A	B	A	B	A	B	A	B	A	B
20	8.5	20.5 (28.5)	2.5	14.5 (22.5)	5.5	17.5 (25.5)	7.5	19.5 (27.5)	4	16 (24)
25	8.5	20.5 (28.5)	2.5	14.5 (22.5)	5.5	17.5 (25.5)	7.5	19.5 (27.5)	4	16 (24)
32	9.5	21.5 (29.5)	3.5	15.5 (23.5)	6.5	18.5 (26.5)	8.5	20.5 (28.5)	5	17 (25)
40	14.5	23.5 (33)	8.5	17.5 (27)	11	20.5 (30)	13.5	22.5 (32)	10	19 (28.5)

( ) : Denotes the dimensions for long stroke.

### Auto Switch Mounting Height

D-C7□/C80 D-H7□ D-H7□W D-H7NF D-H7BAL		D-C73C D-C80C	D-B5□/B64 D-B59W	D-G5NTL D-H7C
HS		HS	HS	
24.5		27	27.5	
27		29.5	30	
30.5		33	33.5	
35		37.5	38	

### Operating Range

Auto switch model	Bore size (mm)			
	20	25	32	40
D-C7□/C-80 D-C73C/C-80C	8	10	9	10
D-B5□/B64	8	10	9	10
D-B59W	13	13	14	14
D-H7□, D-H7□W H7BAL/H7NF	4	4	4.5	5
D-H7C	7	8.5	9	10
D-G5NTL	4	4	4.5	5
D-G5NBL	35	40	40	45

\* Since this is a guideline including hysteresis, not meant to be guaranteed.  
(Assuming approximately ±30% dispersion.)  
There may be the case it will vary substantially depending on an ambient environment.

CL

CL1

MLGC

CNG

MNB

CNA

CNS

CLS

CLQ

MLGP

RLQ

MLU

ML1C

D-

-X

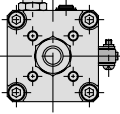
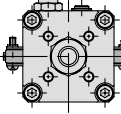
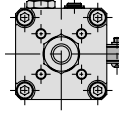
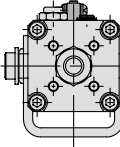
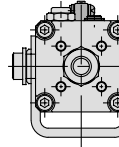
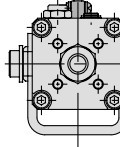
20-

Data

# Series CNG

## Auto Switch Mounting Brackets by Stroke/Mounting Surfaces

st: Stroke (mm)

Mounting bracket	Basic style, Foot style, Flange style, Clevis style			Trunnion style		
	1 (Rod cover side)	2 (Different sides)	2 (Mounted on the same side)	1	2 (Different sides)	2 (Mounted on the same side)
Switch mounting surface	Port surface 	Port surface 	Port surface 			
Switch type						
<b>D-C7□/C80</b>	10 st or more	15 to 49 st	50 st or more	10 st or more	15 to 49 st	50 st or more
<b>D-H7□/H7□W</b> <b>D-H7BAL/H7NF</b>	10 st or more	15 to 59 st	60 st or more	10 st or more	15 to 59 st	60 st or more
<b>D-C73C/C80C/H7C</b>	10 st or more	15 to 64 st	65 st or more	10 st or more	15 to 64 st	65 st or more
<b>D-B5□/B64/G5NTL</b>	10 st or more	15 to 74 st	75 st or more	10 st or more	15 to 74 st	75 st or more
<b>D-B59W</b>	15 st or more	20 to 74 st	75 st or more	15 st or more	20 to 74 st	75 st or more

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to page 9-15-1.

Type	Model	Electrical entry	Features	Applicable bore size (mm)
Reed switch	D-C80	Grommet	Without indicator light	20 to 40
	D-C80C	Connector		
	D-B53	Grommet	—	
	D-B64	Grommet	Without indicator light	
Solid state switch	D-G5NTL	Grommet	With timer	

\* Wide range detection type, solid state auto switch (D-G5NBL type) is also available. For details, refer to page 9-15-65.

\* With pre-wire connector is available for D-G5NTL, G5NBL type, too. For details, refer to page 9-15-66.