

Fine Lock Cylinder

Double Acting, Single Rod

Series CLA2

∅40, ∅50, ∅63, ∅80, ∅100

How to Order

CLA2 L [] 50 [] - 100 JN - E - []

With auto switch CDLA2 L [] 50 [] - 100 JN - E - M9BW [] - []

With auto switch (Built-in magnet)

Mounting

| | |
|----------|-------------|
| B | Basic |
| L | Axial foot |
| F | Rod flange |
| G | Head flange |

| | |
|----------|-----------------|
| C | Single clevis |
| D | Double clevis |
| T | Center trunnion |

Tube material

| | |
|------------|----------------|
| Nil | Aluminum tube |
| F* | Steel tube |
| H | Air-hydro type |

* Not available with auto switch.

Port thread type

| | |
|------------|-----|
| Nil | Rc |
| TN | NPT |

Bore size

| | |
|------------|--------|
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |

Cylinder stroke [mm]
For details, refer to page 2.

Auto switch

| | |
|------------|---------------------|
| Nil | Without auto switch |
|------------|---------------------|

* For applicable auto switches, refer to the table below.

Lock operation

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

Number of auto switches

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

Made to Order
For details, refer to page 2.

With rod boot/cushion

| | | |
|----------|------------|----------------------------|
| Rod boot | Nil | Without rod boot |
| | J | Nylon tarpaulin |
| | K | Heat resistant tarpaulin |
| Cushion | Nil | With cushion on both sides |
| | N | Without cushion |

* Air-hydro type has no cushion.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDLA2L40-100-E

Applicable Auto Switches/Refer to the Best Pneumatics No. 3 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-wired connector | Applicable load | | | |
|-------------------------|---|--|-----------------|-------------------------|------------------|--------------|-------------------|---------------|----------------------|-------------|------------|-------|---------------------|-----------------|------------|---|------------|
| | | | | | DC | AC | Tie-rod mounting | Band mounting | 0.5 (Nil) | 1 (M) | 3 (L) | 5 (Z) | | IC circuit | Relay, PLC | | |
| Solid state auto switch | — | Grommet | — | 3-wire (NPN) | 24 V | 5 V, 12 V | — | M9N | ● | ● | ● | ○ | — | | | — | — |
| | | | | 3-wire (PNP) | | | | — | ● | ● | ● | ○ | | IC circuit | | | |
| | | | | 2-wire | Terminal conduit | 3-wire (NPN) | 24 V | 12 V | — | M9P | — | ● | ● | | ● | ○ | — |
| | | 2-wire | | M9B | | — | | | | ● | ● | ● | ○ | — | | | |
| | | 3-wire (NPN) | | Grommet | | 3-wire (NPN) | 24 V | 5 V, 12 V | — | G39C | G39 | — | — | | — | — | — |
| | | 3-wire (PNP) | | | K39C | K39 | | | | — | — | — | — | IC circuit | | | |
| | 2-wire | Grommet | 3-wire (NPN) | 24 V | 12 V | — | M9NW | — | ● | ● | ● | ○ | — | | — | | |
| | 3-wire (PNP) | | M9PW | | | | — | ● | ● | ● | ○ | — | | | | | |
| | Water resistant (2-color indication) | Grommet | 2-wire | 24 V | 12 V | — | M9BW | — | ● | ● | ● | | ○ | — | — | | |
| | With diagnostic output (2-color indication) | | 3-wire (NPN) | | | | M9NA** | — | ○ | ○ | ● | ○ | — | | | | |
| | Magnetic field resistant (2-color indication) | Grommet | 3-wire (PNP) | 24 V | 5 V, 12 V | — | M9PA** | — | ○ | ○ | ● | ○ | | — | — | | |
| | — | | 2-wire | | | | M9BA** | — | ○ | ○ | ● | ○ | — | | | | |
| Reed auto switch | — | Grommet | Yes | 3-wire (NPN equivalent) | 24 V | 12 V | — | A96 | — | ● | — | — | | — | — | — | |
| | | | | 2-wire | | | | A93 | — | ● | — | ● | — | | | | IC circuit |
| | | | | — | Terminal conduit | 100 V | 24 V | 12 V | — | A90 | — | ● | — | ● | — | — | |
| | | | | 100 V or less | | A54 | | | | B54 | ● | — | ● | ● | — | | |
| | | | | 100 V, 200 V | | A64 | | | | B64 | ● | — | ● | — | | | — |
| | | 200 V or less | | Grommet | — | 24 V | 12 V | — | A33C | A33 | — | — | — | — | — | — | |
| | | — | | | A34C | | | | A34 | — | — | — | — | — | | | |
| | | Diagnostic indication (2-color indication) | | Grommet | 100 V, 200 V | 24 V | 12 V | — | A44C | A44 | — | — | — | | — | — | — |
| | | — | | | A59W | | | | B59W | ● | — | ● | — | — | | | |

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Please contact SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW * Solid state auto switches marked with "○" are produced upon receipt of order.
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWX

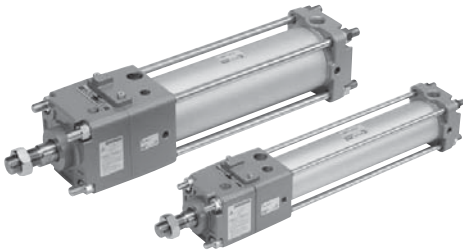
* Since there are other applicable auto switches than listed above, refer to page 23 for details.

* For details about auto switches with pre-wired connector, refer to the Best Pneumatics No. 3. For the D-P3DWA□, refer to the **WEB catalog**.

* The D-A9□/M9□□□/P3DWA□ auto switches are shipped together, (but not assembled). (However, auto switch mounting brackets are assembled for the D-A9□/M9□□□ before shipment.)

Series CLA2

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



Made to Order

| Symbol | Specifications |
|--------|--|
| -XA□ | Change of rod end shape |
| -XC3 | Special port location |
| -XC6 | Piston rod and rod end nut made of stainless steel |
| -XC11 | Dual stroke cylinder/Single rod type |
| -XC14 | Change of trunnion bracket mounting position |
| -XC15 | Change of tie-rod length |
| -XC22 | Fluororubber seal |
| -XC35 | With coil scraper |

Caution

Recommended Pneumatic Circuit/Caution on Handling

For detailed specifications mentioned above, refer to "Specific Product Precautions 3".

Refer to pages 18 to 23 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Operating range
- Auto switch mounting brackets/Part no.

Minimum Stroke for Auto Switch Mounting

Caution

1. The minimum stroke for mounting varies with the auto switch type and cylinder mounting type. In particular, the center trunnion type needs careful attention. (For details, refer to pages 20 and 21.)

Accessories

| Mounting | | Basic | Axial foot | Rod flange | Head flange | Single clevis | Double clevis | Center trunnion |
|----------|---------------------------------|-------|------------|------------|-------------|---------------|---------------|-----------------|
| Standard | Rod end nut | ● | ● | ● | ● | ● | ● | ● |
| | Clevis pin | — | — | — | — | — | ● | — |
| Option | Single knuckle joint | ● | ● | ● | ● | ● | ● | ● |
| | Double knuckle joint (with pin) | ● | ● | ● | ● | ● | ● | ● |
| | With rod boot | ● | ● | ● | ● | ● | ● | ● |

Specifications

| Bore size [mm] | 40 | 50 | 63 | 80 | 100 | 40 | 50 | 63 | 80 | 100 |
|-------------------------------|---|----|----|----|-----|-----------------------------------|----|----|----|-----|
| Type | Non-lube | | | | | Air-hydro | | | | |
| Fluid | Air | | | | | Turbine oil (Lock portion is air) | | | | |
| Action | Double acting | | | | | | | | | |
| Proof pressure | 1.5 MPa | | | | | | | | | |
| Maximum operating pressure | 1.0 MPa | | | | | | | | | |
| Minimum operating pressure | 0.08 MPa | | | | | 0.2 MPa | | | | |
| Piston speed | 50 to 500 mm/sec* | | | | | 15 to 300 mm/sec* | | | | |
| Ambient and fluid temperature | Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing) | | | | | 5°C to 60°C | | | | |
| Cushion | Air cushion | | | | | None | | | | |
| Stroke length tolerance | Up to 250: $^{+1.0}_0$, 251 to 1000: $^{+1.4}_0$, 1001 to 1500: $^{+1.8}_0$ | | | | | | | | | |
| Mounting | Basic, Axial foot, Rod flange, Head flange, Single clevis, Double clevis, Center trunnion | | | | | | | | | |

* Constraints associated with the allowable kinetic energy are imposed on the speeds at which the piston can be locked.

Lock Specifications

| Lock operation | Spring locking (Exhaust locking) | Spring and pneumatic locking | Pneumatic locking (Pressure locking) |
|----------------------------------|----------------------------------|------------------------------|--------------------------------------|
| Unlocking pressure [MPa] | 0.3 or more | | 0.1 or more |
| Lock starting pressure [MPa] | 0.25 or less | | 0.05 or more |
| Maximum operating pressure [MPa] | 1.0 | 0.5 | |
| Locking direction | Both directions | | |

Standard Strokes

| Bore size [mm] | Standard stroke [mm] ^{Note 1)} | Long stroke [mm] ^{Note 2)} |
|----------------|---|-------------------------------------|
| 40 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500 | 800 |
| 50, 63 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600 | 1200 |
| 80, 100 | 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700 | ø80: 1400 ø100: 1500 |

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

Note 2) Long strokes are applicable for the axial foot and rod flange types.

Rod Boot Material

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

* Maximum ambient temperature for the rod boot

Fine Lock Cylinder: Double Acting, Single Rod *Series CLA2*

Weights

[kg]

| Bore size [mm] | | 40 | 50 | 63 | 80 | 100 | | |
|----------------|---------------------------------------|-----------------------|---------------|------|------|------|-------|------|
| Basic weight | Basic | Aluminum tube | 1.77 | 2.68 | 4.27 | 6.95 | 9.86 | |
| | | Steel tube | 1.82 | 2.72 | 4.31 | 7.11 | 10.07 | |
| | Axial foot | Aluminum tube | 1.96 | 2.90 | 4.61 | 7.62 | 10.85 | |
| | | Steel tube | 2.01 | 2.94 | 4.65 | 7.78 | 11.06 | |
| | Flange | Aluminum tube | 2.14 | 3.13 | 5.06 | 8.40 | 11.78 | |
| | | Steel tube | 2.19 | 3.17 | 5.10 | 8.56 | 11.99 | |
| | Single clevis | Aluminum tube | 2.00 | 3.02 | 4.90 | 8.06 | 11.64 | |
| | | Steel tube | 2.05 | 3.06 | 4.94 | 8.22 | 11.85 | |
| | Double clevis | Aluminum tube | 2.04 | 3.11 | 5.06 | 8.35 | 12.16 | |
| | | Steel tube | 2.09 | 3.15 | 5.10 | 8.51 | 12.37 | |
| | Center trunnion | Aluminum tube | 2.22 | 3.21 | 5.16 | 8.65 | 12.26 | |
| | | Steel tube | 2.32 | 3.31 | 5.36 | 8.94 | 12.65 | |
| | Additional weight per 50 mm of stroke | All mounting brackets | Aluminum tube | 0.20 | 0.25 | 0.31 | 0.46 | 0.58 |
| | | | Steel tube | 0.28 | 0.35 | 0.43 | 0.70 | 0.87 |
| Accessories | Single knuckle | | 0.23 | 0.26 | 0.26 | 0.60 | 0.83 | |
| | Double knuckle (with pin) | | 0.37 | 0.43 | 0.43 | 0.87 | 1.27 | |

Calculation: (Example) **CLA2L40-100-E** Basic weight.....1.96 (Axial foot, ø40)
 Additional weight.....0.20/50 stroke
 Cylinder stroke.....100 stroke
 $1.96 + 0.20 \times 100/50 = 2.36$ kg

Mounting Brackets/Part No.

| Bore size [mm] | 40 | 50 | 63 | 80 | 100 |
|-----------------|---------|---------|---------|---------|---------|
| Axial foot* | CA2-L04 | CA2-L05 | CA2-L06 | CA2-L08 | CA2-L10 |
| Flange | CA2-F04 | CA2-F05 | CA2-F06 | CA2-F08 | CA2-F10 |
| Single clevis | CA2-C04 | CA2-C05 | CA2-C06 | CA2-C08 | CA2-C10 |
| Double clevis** | CA2-D04 | CA2-D05 | CA2-D06 | CA2-D08 | CA2-D10 |

* When axial foot brackets are used, order two pieces per cylinder.

** A clevis pin, flat washers and split pins are shipped together with double clevis.

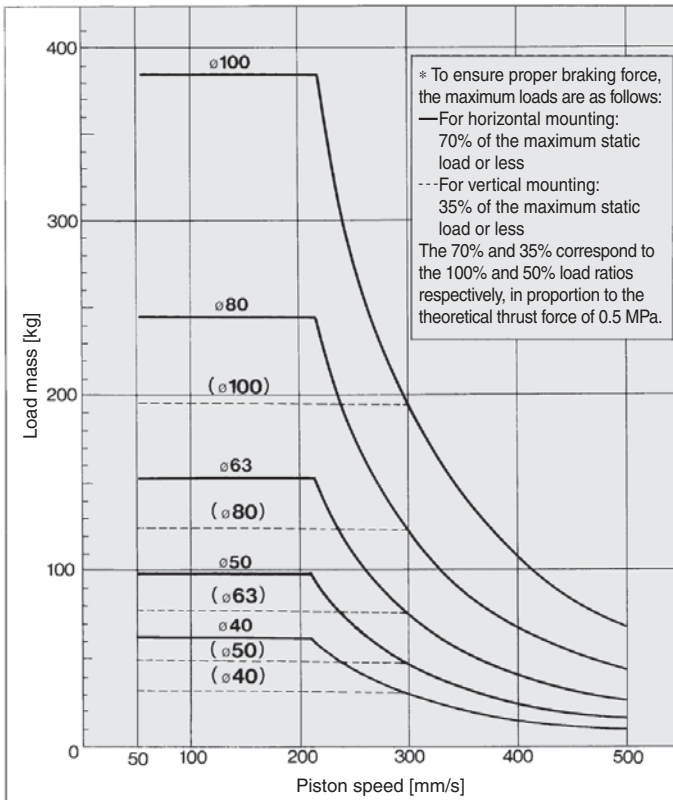
Series CLA2

⚠ Caution/Allowable Kinetic Energy when Locking

| Bore size [mm] | 40 | 50 | 63 | 80 | 100 |
|------------------------------|------|------|------|------|------|
| Allowable kinetic energy [J] | 1.42 | 2.21 | 3.53 | 5.69 | 8.83 |

- 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/s. Therefore, if the operating conditions are below these values, calculations are unnecessary.
- Apply the following formula to obtain the kinetic energy of the load.

$$E_k = \frac{1}{2} m v^2$$
 Ek: Kinetic energy of load [J]
 m: Load mass [kg]
 v: Piston speed [m/s]
- 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.
- The relationship between the speed and the load is indicated in the diagram below. The area below the line is the allowable kinetic energy range.
- 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/sec] | | | |
|---|-----------------------|------|------|------|
| | 50 | 100 | 300 | 500 |
| Spring locking | ±0.4 | ±0.5 | ±1.0 | ±2.0 |
| Pneumatic locking Spring and pneumatic locking | ±0.2 | ±0.3 | ±0.5 | ±1.5 |

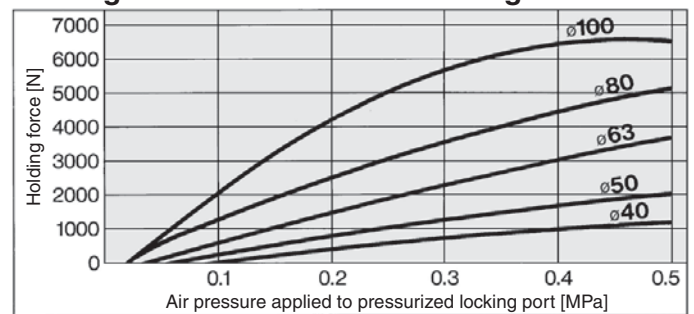
Conditions/Load: 25% of output at 0.5 MPa
 Solenoid valve: Mounted to the lock port

Holding Force of Spring Locking (Maximum static load)

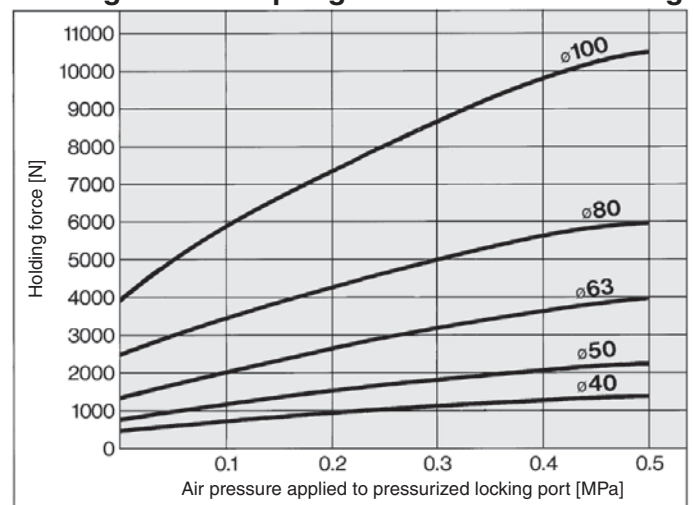
| Bore size [mm] | 40 | 50 | 63 | 80 | 100 |
|-------------------|-----|------|------|------|------|
| Holding force [N] | 882 | 1370 | 2160 | 3430 | 5390 |

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

Holding Force of Pneumatic Locking



Holding Force of Spring and Pneumatic Locking



* When selecting a cylinder, refer to the Actuator Precautions on pages 3 and 4 in Best Pneumatics No. 3, Specific Product Precautions and Allowable Kinetic Energy when Locking.

⚠ Caution

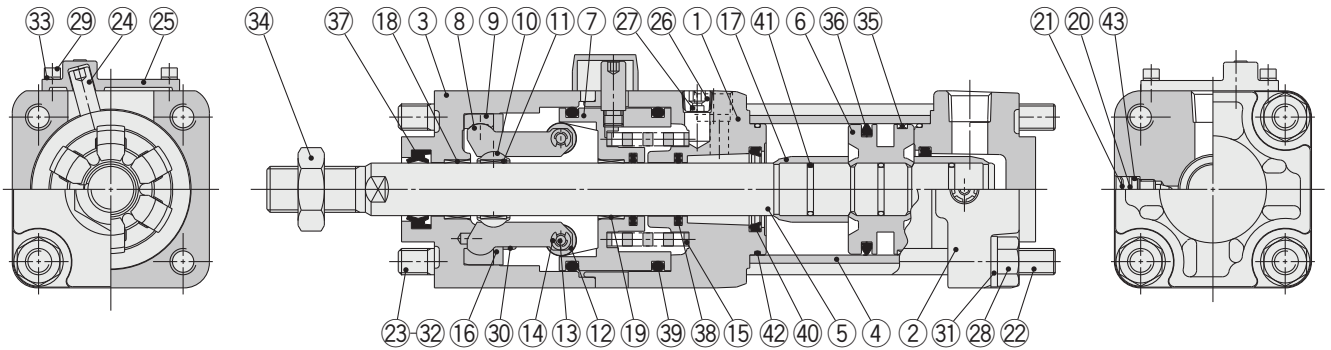
Caution when Locking

Holding force (maximum static load) means the maximum capability of holding a static load that is not accompanied by vibration or impact under the condition that no load is applied. Therefore, it does not refer to a load that can be held constantly. When using (selecting) this product, carefully check the following points.

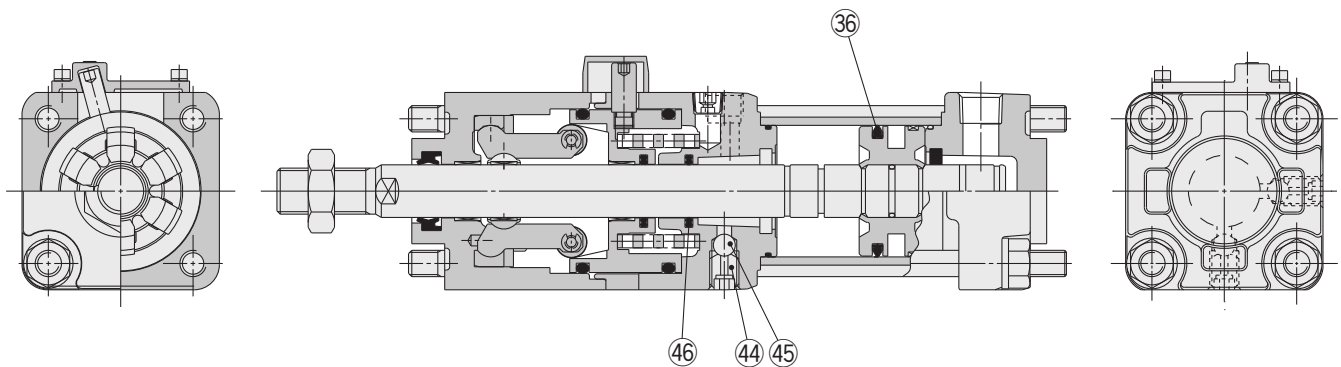
- If the piston rod slips because the lock's holding force has been exceeded, the brake shoe could be damaged, resulting in a reduced holding force or shortened life.
- The upper limit of the load that is used under the conditions not associated with the kinetic energy when locking, such as drop prevention must be 35% or less of the holding force.
- Do not use the cylinder in the locked state to sustain a load that involves impact.

Construction

Non-lube type



Air-hydro type



Component Parts

| No. | Description | Material | Note |
|-----|-------------------------------|---------------------------|---|
| 1 | Rod cover | Aluminum alloy | Metallic painted after hard anodized |
| 2 | Head cover | Aluminum alloy | Metallic painted |
| 3 | Cover | Aluminum alloy | Metallic painted after hard anodized |
| 4 | Cylinder tube | Aluminum alloy | Hard anodized |
| 5 | Piston rod | Carbon steel | Hard chrome plating |
| 6 | Piston | Aluminum alloy | Chromated |
| 7 | Brake piston | Carbon steel | Nitriding |
| 8 | Brake arm | Carbon steel | Nitriding |
| 9 | Arm holder | Carbon steel | Nitriding |
| 10 | Brake shoe holder | Carbon steel | Nitriding |
| 11 | Brake shoe | Special friction material | |
| 12 | Roller | Chromium molybdenum steel | Nitriding |
| 13 | Pin | Chrome bearing steel | Heat treated |
| 14 | Retaining ring | Carbon tool steel | |
| 15 | Brake spring | Steel wire | Anti-corrosive treatment: Except type P |
| 16 | Retaining plate | Rolled steel | Zinc chromated |
| 17 | Cushion ring | Aluminum alloy | Anodized |
| 18 | Bushing | Copper alloy | |
| 19 | Bushing | Copper alloy | |
| 20 | Cushion valve | Steel wire | Electroless nickel plating |
| 21 | Retaining ring | Spring steel | |
| 22 | Tie-rod | Carbon steel | Zinc chromated |
| 23 | Unit holding tie-rod | Carbon steel | Chromated |
| 24 | Non-rotating pin | Carbon steel | Heat treated |
| 25 | Pin guide | Carbon steel | Metallic painted after nitriding |
| 26 | Hexagon socket head plug | Carbon steel | Type E only |
| 27 | Element | Bronze | Type E only |
| 28 | Tie-rod nut | Rolled steel | |
| 29 | Hexagon socket head cap screw | Chromium molybdenum steel | |
| 30 | Retaining plate mounting bolt | Chromium molybdenum steel | |
| 31 | Spring washer | Steel wire | |
| 32 | Spring washer | Steel wire | |
| 33 | Spring washer | Steel wire | |
| 34 | Rod end nut | Rolled steel | |
| 35 | Wear ring | Resin | |
| 36 | Piston seal | NBR | |
| 37 | Rod seal A | NBR | |
| 38 | Rod seal B | NBR | |
| 39 | Brake piston seal | NBR | |
| 40 | Cushion seal | Urethane | |
| 41 | Piston gasket | NBR | |

| No. | Description | Material | Note |
|-----|--------------------|---------------------------|----------------------|
| 42 | Tube gasket | NBR | |
| 43 | Cushion valve seal | NBR | |
| 44 | Air release valve | Chromium molybdenum steel | Black zinc chromated |
| 45 | Check ball | Chrome bearing steel | |
| 46 | Rod seal C | NBR | |

Replacement Parts: Seal Kit

| Bore size [mm] | Kit no. | Contents |
|----------------|-------------|--------------------------------|
| 40 | MB1-40Z-PS | Set of the nos. 36, 37, 40, 42 |
| 50 | MB1-50Z-PS | |
| 63 | MB1-63Z-PS | |
| 80 | MB1-80Z-PS | |
| 100 | MB1-100Z-PS | |

* Since the lock of the CLA2 series cannot be disassembled and 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.

* Seal kit includes a grease pack (ø40, ø50: 10 g, ø63, ø80: 20 g, ø100: 30 g). Order with the following part number when only the grease pack is needed.

Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)

* Please consult with SMC for seal kits of the air-hydro type.

Replacement Fine Lock Unit

CLA2 - 40 - E

Bore size

| | |
|-----|--------|
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |
| 80 | 80 mm |
| 100 | 100 mm |

Port thread type

| | |
|-----|----------|
| Nil | Rc port |
| TN | NPT port |

Suffix

| | |
|-----|-------------|
| Nil | Standard |
| L* | Long stroke |

* The lock unit for a long-stroke cylinder is only applicable for flange type with bore size ø50 to ø100 and stroke 1001 or more. (Example: CLA2-100-EL)

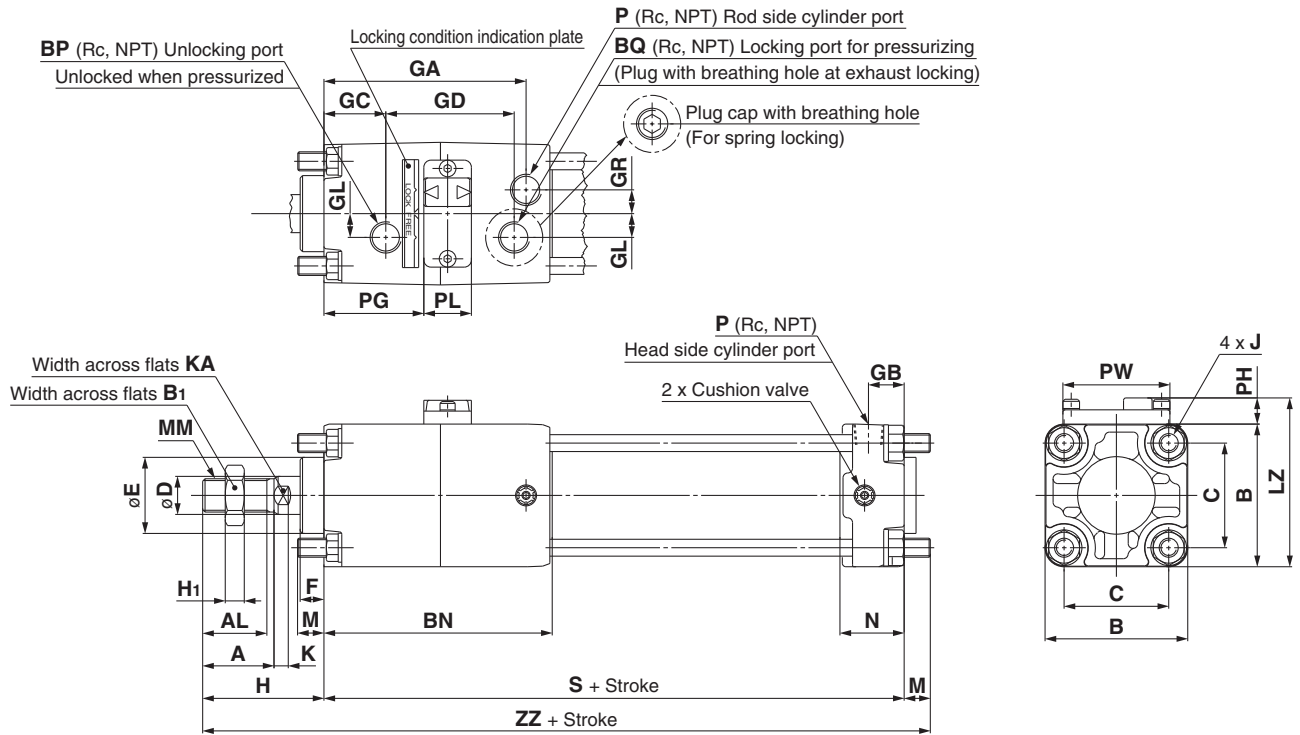
Lock operation

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

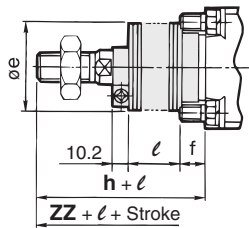
* Please consult with SMC for replacement fine lock units of the air-hydro type.

Series CLA2

Basic: CLA2B



With rod boot



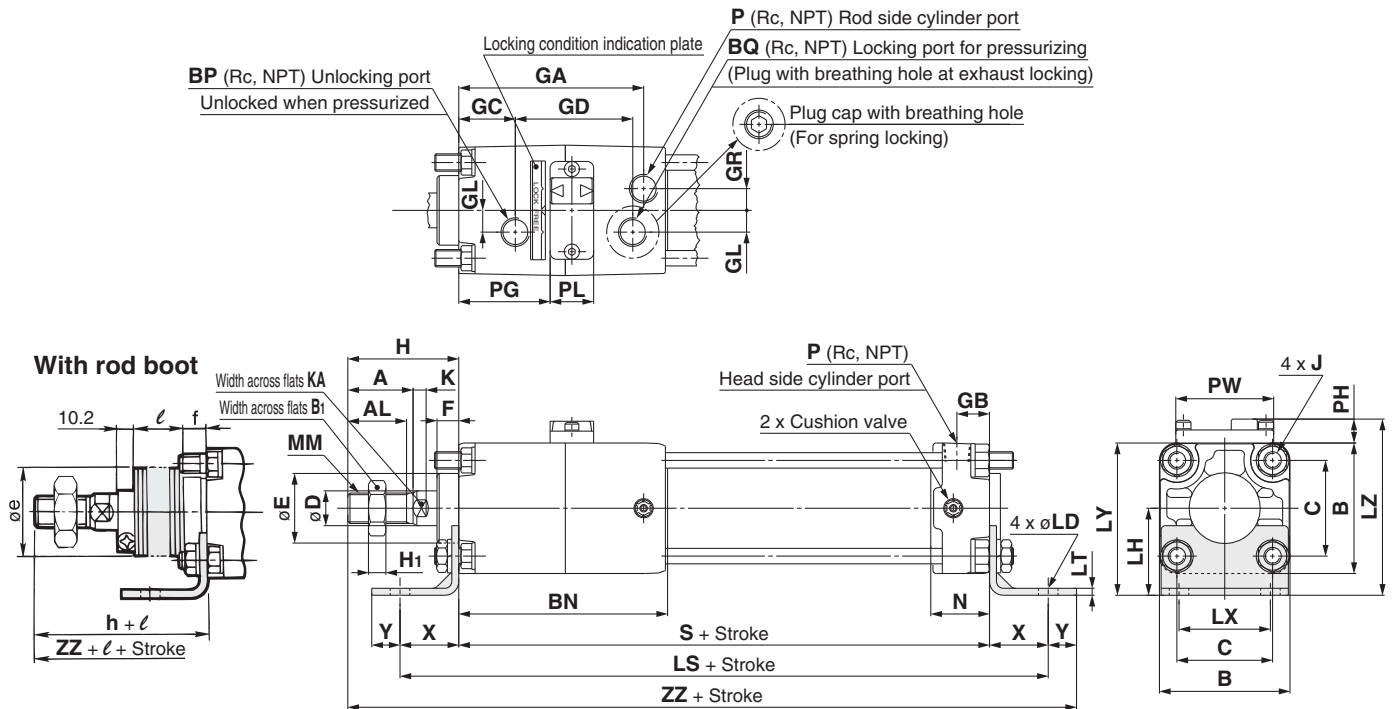
[mm]

| Bore size [mm] | Stroke range [mm] | | A | AL | B | B ₁ | BN | BP | BQ | C | D | E | F | GA | GB | GC | GD | GL | GR | H ₁ | J |
|----------------|-------------------|---------------|----|----|-----|----------------|-----|-----|-----|----|----|----|----|-----|----|----|----|----|----|----------------|------------|
| | Without rod boot | With rod boot | | | | | | | | | | | | | | | | | | | |
| 40 | Up to 500 | 20 to 500 | 30 | 27 | 60 | 22 | 96 | 1/4 | 1/4 | 44 | 16 | 32 | 10 | 85 | 15 | 26 | 54 | 10 | 10 | 8 | M8 x 1.25 |
| 50 | Up to 600 | 20 to 600 | 35 | 32 | 70 | 27 | 108 | 1/4 | 1/4 | 52 | 20 | 40 | 10 | 95 | 17 | 27 | 59 | 13 | 12 | 11 | M8 x 1.25 |
| 63 | Up to 600 | 20 to 600 | 35 | 32 | 86 | 27 | 115 | 1/4 | 1/4 | 64 | 20 | 40 | 10 | 102 | 17 | 26 | 67 | 18 | 15 | 11 | M10 x 1.25 |
| 80 | Up to 750 | 20 to 750 | 40 | 37 | 102 | 32 | 129 | 1/4 | 1/4 | 78 | 25 | 52 | 14 | 113 | 21 | 30 | 72 | 23 | 17 | 13 | M12 x 1.75 |
| 100 | Up to 750 | 20 to 750 | 40 | 37 | 116 | 41 | 140 | 1/4 | 1/4 | 92 | 30 | 52 | 14 | 124 | 21 | 31 | 76 | 25 | 19 | 16 | M12 x 1.75 |

| Bore size [mm] | K | KA | LZ | M | MM | N | P | PG | PH | PL | PW | S | Without rod boot | | With rod boot | | | | |
|----------------|----|----|-----|----|-----------|----|-----|------|----|----|----|-----|------------------|-----|---------------|------|----|------------|-----|
| | | | | | | | | | | | | | H | ZZ | e | f | h | ℓ | ZZ |
| 40 | 6 | 14 | 71 | 11 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | 153 | 51 | 215 | 43 | 11.2 | 59 | 1/4 stroke | 223 |
| 50 | 7 | 18 | 80 | 11 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 168 | 58 | 237 | 52 | 11.2 | 66 | 1/4 stroke | 245 |
| 63 | 7 | 18 | 99 | 14 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 182 | 58 | 254 | 52 | 11.2 | 66 | 1/4 stroke | 262 |
| 80 | 10 | 22 | 117 | 17 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 208 | 71 | 296 | 65 | 12.5 | 80 | 1/4 stroke | 305 |
| 100 | 10 | 26 | 131 | 17 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 226 | 72 | 315 | 65 | 14 | 81 | 1/4 stroke | 324 |

Fine Lock Cylinder: Double Acting, Single Rod *Series CLA2*

Axial Foot: CLA2L



Long stroke
(Stroke of 1001 mm or more)
ø50 to ø100

When the stroke is 1001 mm or longer,
a tie-rod reinforcement ring is attached.

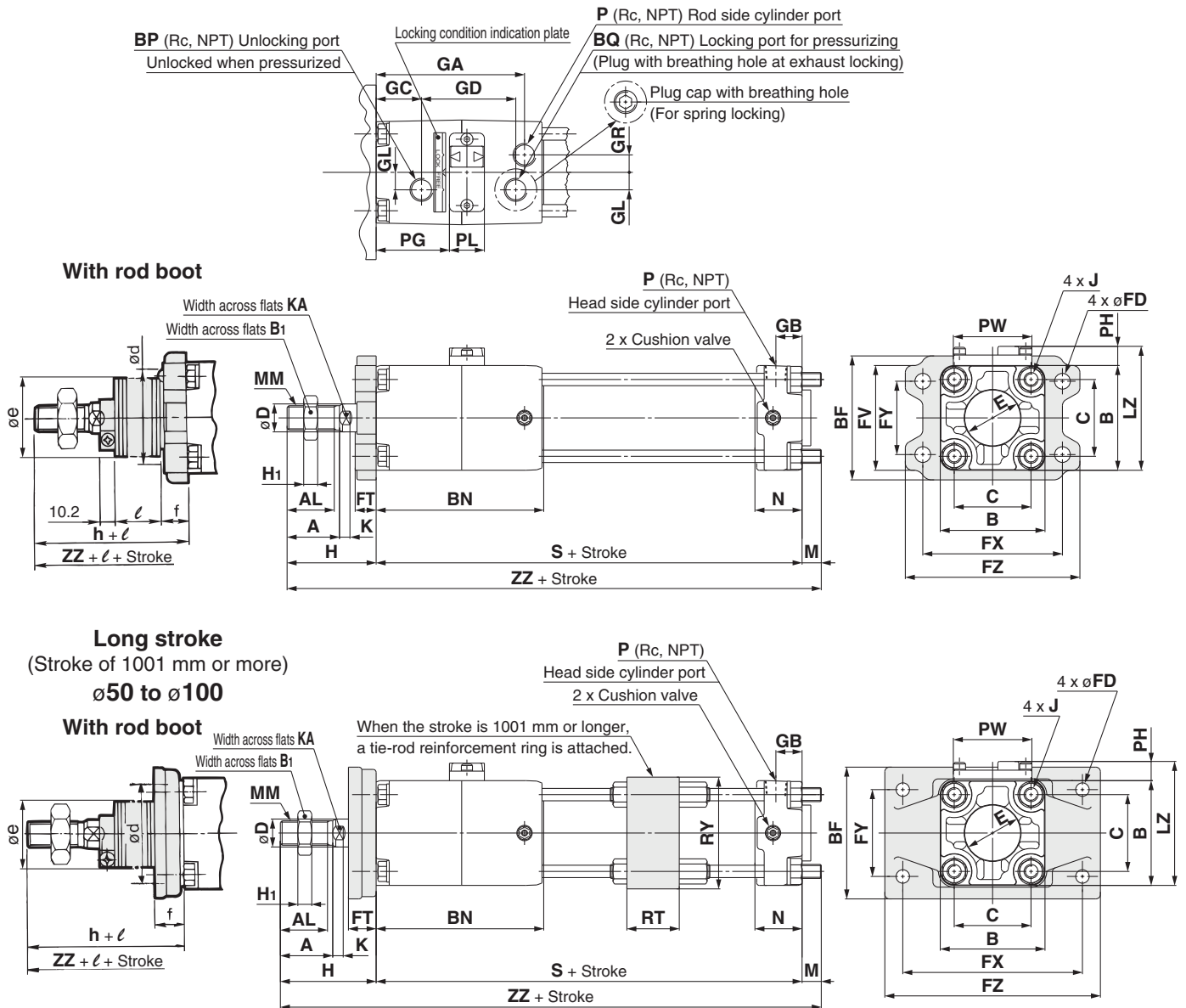
| Bore size [mm] | Stroke range [mm] | | A | AL | B | B ₁ | BN | BP | BQ | C | D | E | F | GA | GB | GC | GD | GL | GR |
|----------------|-------------------|---------------|----|----|-----|----------------|-----|-----|-----|----|----|----|----|-----|----|----|----|----|----|
| | Without rod boot | With rod boot | | | | | | | | | | | | | | | | | |
| 40 | Up to 800 | 20 to 800 | 30 | 27 | 60 | 22 | 96 | 1/4 | 1/4 | 44 | 16 | 32 | 10 | 85 | 15 | 26 | 54 | 10 | 10 |
| 50 | Up to 1200 | 20 to 1200 | 35 | 32 | 70 | 27 | 108 | 1/4 | 1/4 | 52 | 20 | 40 | 10 | 95 | 17 | 27 | 59 | 13 | 12 |
| 63 | Up to 1200 | 20 to 1200 | 35 | 32 | 86 | 27 | 115 | 1/4 | 1/4 | 64 | 20 | 40 | 10 | 102 | 17 | 26 | 67 | 18 | 15 |
| 80 | Up to 1400 | 20 to 1400 | 40 | 37 | 102 | 32 | 129 | 1/4 | 1/4 | 78 | 25 | 52 | 14 | 113 | 21 | 30 | 72 | 23 | 17 |
| 100 | Up to 1500 | 20 to 1500 | 40 | 37 | 116 | 41 | 140 | 1/4 | 1/4 | 92 | 30 | 52 | 14 | 124 | 21 | 31 | 76 | 25 | 19 |

| Bore size [mm] | H ₁ | J | K | KA | LD | LH | LS | LT | LX | LY | LZ | MM | N | P | PG | PH | PL | PW | RT | RY | S | X |
|----------------|----------------|------------|----|----|------|----|-----|-----|----|-----|-----|-----------|----|-----|------|----|----|----|----|-----|-----|----|
| 40 | 8 | M8 x 1.25 | 6 | 14 | 9 | 40 | 207 | 3.2 | 42 | 70 | 81 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | — | — | 153 | 27 |
| 50 | 11 | M8 x 1.25 | 7 | 18 | 9 | 45 | 222 | 3.2 | 50 | 80 | 90 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 30 | 76 | 168 | 27 |
| 63 | 11 | M10 x 1.25 | 7 | 18 | 11.5 | 50 | 250 | 3.2 | 59 | 93 | 106 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 40 | 92 | 182 | 34 |
| 80 | 13 | M12 x 1.75 | 10 | 22 | 13.5 | 65 | 296 | 4.5 | 76 | 116 | 131 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 45 | 112 | 208 | 44 |
| 100 | 16 | M12 x 1.75 | 10 | 26 | 13.5 | 75 | 312 | 6 | 92 | 133 | 148 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 50 | 136 | 226 | 43 |

| Bore size [mm] | Y | Without rod boot | | With rod boot | | | | |
|----------------|----|------------------|-----|---------------|------|----|------------|-----|
| | | H | ZZ | e | f | h | ℓ | ZZ |
| 40 | 13 | 51 | 244 | 43 | 11.2 | 59 | 1/4 stroke | 252 |
| 50 | 13 | 58 | 266 | 52 | 11.2 | 66 | 1/4 stroke | 274 |
| 63 | 16 | 58 | 290 | 52 | 11.2 | 66 | 1/4 stroke | 298 |
| 80 | 16 | 71 | 339 | 65 | 12.5 | 80 | 1/4 stroke | 348 |
| 100 | 17 | 72 | 358 | 65 | 14.0 | 81 | 1/4 stroke | 367 |

Series CLA2

Rod Flange: CLA2F



| Bore size [mm] | Stroke range [mm] | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|-------------------|---------------|----|----|-----|----------------|-----|-----|-----|-----|----|----|----|-----|----|----|----|----|----|----------------|------------|----|----|-----|
| | Without rod boot | With rod boot | A | AL | B | B ₁ | BF | BN | BP | BQ | C | D | E | GA | GB | GC | GD | GL | GR | H ₁ | J | K | KA | LZ |
| 40 | Up to 800 | 20 to 800 | 30 | 27 | 60 | 22 | 71 | 96 | 1/4 | 1/4 | 44 | 16 | 32 | 85 | 15 | 26 | 54 | 10 | 10 | 8 | M8 x 1.25 | 6 | 14 | 71 |
| 50 | Up to 1000 | 20 to 1000 | 35 | 32 | 70 | 27 | 81 | 108 | 1/4 | 1/4 | 52 | 20 | 40 | 95 | 17 | 27 | 59 | 13 | 12 | 11 | M8 x 1.25 | 7 | 18 | 80 |
| 63 | Up to 1000 | 20 to 1000 | 35 | 32 | 86 | 27 | 101 | 115 | 1/4 | 1/4 | 64 | 20 | 40 | 102 | 17 | 26 | 67 | 18 | 15 | 11 | M10 x 1.25 | 7 | 18 | 99 |
| 80 | Up to 1000 | 20 to 1000 | 40 | 37 | 102 | 32 | 119 | 129 | 1/4 | 1/4 | 78 | 25 | 52 | 113 | 21 | 30 | 72 | 23 | 17 | 13 | M12 x 1.75 | 10 | 22 | 117 |
| 100 | Up to 1000 | 20 to 1000 | 40 | 37 | 116 | 41 | 133 | 140 | 1/4 | 1/4 | 92 | 30 | 52 | 124 | 21 | 31 | 76 | 25 | 19 | 16 | M12 x 1.75 | 10 | 26 | 131 |

| Bore size [mm] | M | MM | N | P | PG | PH | PL | PW | S | FV | FD | FT | FX | FY | FZ | Without rod boot | | With rod boot | | | | | |
|----------------|----|-----------|----|-----|------|----|----|----|-----|-----|------|----|-----|----|-----|------------------|-----|---------------|----|------|----|------------|-----|
| | | | | | | | | | | | | | | | | H | ZZ | d* | e* | f | h | ℓ | ZZ |
| 40 | 11 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | 153 | 60 | 9 | 12 | 80 | 42 | 100 | 51 | 215 | 52 | 43 | 15 | 59 | 1/4 stroke | 223 |
| 50 | 11 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 168 | 70 | 9 | 12 | 90 | 50 | 110 | 58 | 237 | 58 | 52 | 15 | 66 | 1/4 stroke | 245 |
| 63 | 14 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 182 | 86 | 11.5 | 15 | 105 | 59 | 130 | 58 | 254 | 58 | 52 | 17.5 | 66 | 1/4 stroke | 262 |
| 80 | 17 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 208 | 102 | 13.5 | 18 | 130 | 76 | 160 | 71 | 296 | 80 | 65 | 21.5 | 80 | 1/4 stroke | 305 |
| 100 | 17 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 226 | 116 | 13.5 | 18 | 150 | 92 | 180 | 72 | 315 | 80 | 65 | 21.5 | 81 | 1/4 stroke | 324 |

Long Stroke

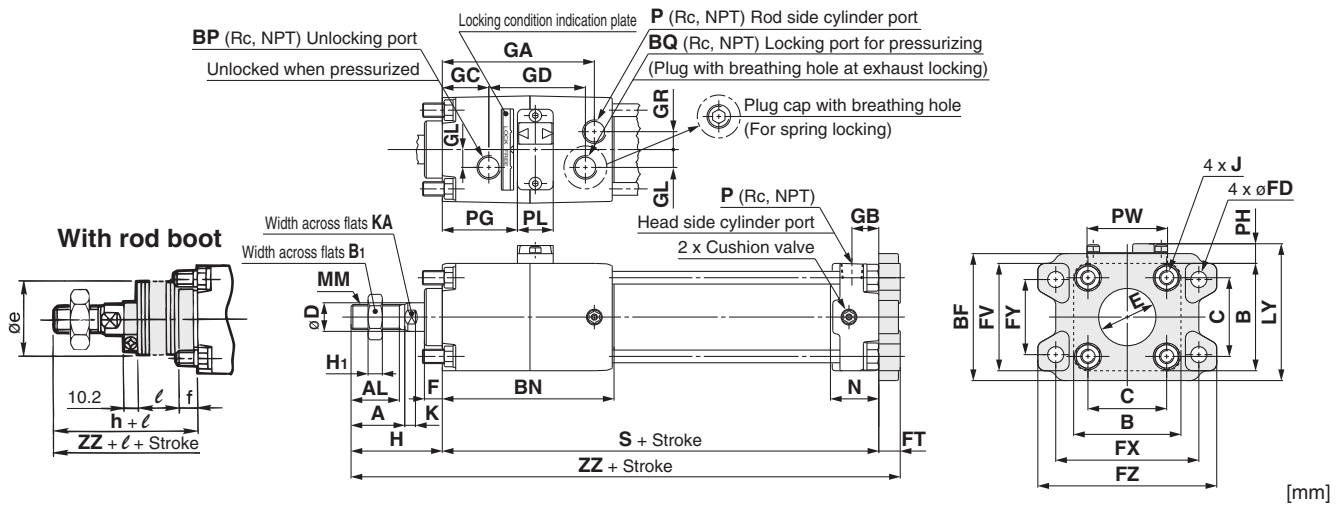
Dimensions other than below are the same as the table above.

| Bore size [mm] | Stroke range [mm] | BF | M | RT | RY | FT | FX | FY | FZ | Without rod boot | | With rod boot | | |
|----------------|-------------------|-----|----|----|-----|----|-----|-----|-----|------------------|-----|---------------|----|-----|
| | | | | | | | | | | H | ZZ | f | h | ZZ |
| 50 | 1001 to 1200 | 88 | 6 | 30 | 76 | 20 | 120 | 58 | 144 | 67 | 241 | 19 | 66 | 240 |
| 63 | 1001 to 1200 | 105 | 10 | 40 | 92 | 23 | 140 | 64 | 170 | 71 | 263 | 19 | 66 | 258 |
| 80 | 1001 to 1400 | 124 | 12 | 45 | 112 | 28 | 164 | 84 | 198 | 87 | 307 | 21 | 80 | 300 |
| 100 | 1001 to 1500 | 140 | 12 | 50 | 136 | 29 | 180 | 100 | 220 | 89 | 327 | 21 | 81 | 319 |

* When a hole must be made to accommodate the rod portion, make sure to machine a hole that is larger than the outer diameter of the rod boot mounting bracket øD for the standard stroke and the rod boot outer diameter øe for a long stroke.

Fine Lock Cylinder: Double Acting, Single Rod *Series CLA2*

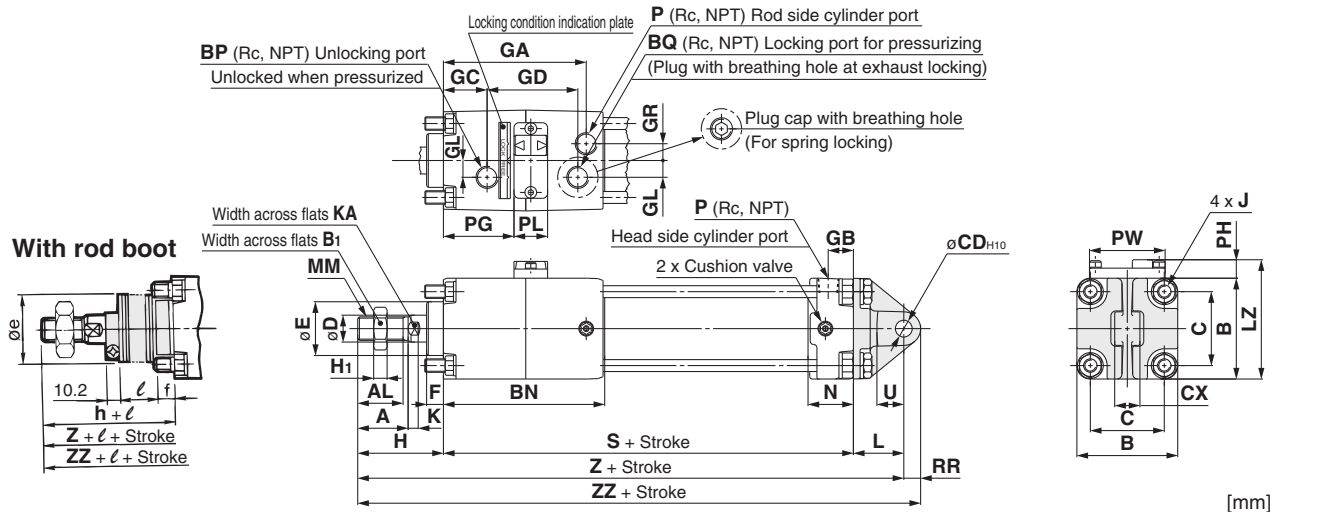
Head Flange: CLA2G



| Bore size [mm] | Stroke range [mm] | | A | AL | B | B ₁ | BF | BN | BP | BQ | C | D | E | F | FV | FD | FT | FX | FY | FZ | GA | GB | GC | GD | GL |
|----------------|-------------------|---------------|----|----|-----|----------------|-----|-----|-----|-----|----|----|----|----|-----|------|----|-----|----|-----|-----|----|----|----|----|
| | Without rod boot | With rod boot | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | Up to 500 | 20 to 500 | 30 | 27 | 60 | 22 | 71 | 96 | 1/4 | 1/4 | 44 | 16 | 32 | 10 | 60 | 9 | 12 | 80 | 42 | 100 | 85 | 15 | 26 | 54 | 10 |
| 50 | Up to 600 | 20 to 600 | 35 | 32 | 70 | 27 | 81 | 108 | 1/4 | 1/4 | 52 | 20 | 40 | 10 | 70 | 9 | 12 | 90 | 50 | 110 | 95 | 17 | 27 | 59 | 13 |
| 63 | Up to 600 | 20 to 600 | 35 | 32 | 86 | 27 | 101 | 115 | 1/4 | 1/4 | 64 | 20 | 40 | 10 | 86 | 11.5 | 15 | 105 | 59 | 130 | 102 | 17 | 26 | 67 | 18 |
| 80 | Up to 750 | 20 to 750 | 40 | 37 | 102 | 32 | 119 | 129 | 1/4 | 1/4 | 78 | 25 | 52 | 14 | 102 | 13.5 | 18 | 130 | 76 | 160 | 113 | 21 | 30 | 72 | 23 |
| 100 | Up to 750 | 20 to 750 | 40 | 37 | 116 | 41 | 133 | 140 | 1/4 | 1/4 | 92 | 30 | 52 | 14 | 116 | 13.5 | 18 | 150 | 92 | 180 | 124 | 21 | 31 | 76 | 25 |

| Bore size [mm] | GR | H ₁ | J | K | KA | LY | MM | N | P | PG | PH | PL | PW | S | Without rod boot | | With rod boot | | | | | |
|----------------|----|----------------|------------|----|----|-------|-----------|----|-----|------|----|----|----|-----|------------------|-----|---------------|------|----|------------|-----|--|
| | | | | | | | | | | | | | | | H | ZZ | e | f | h | ℓ | ZZ | |
| 40 | 10 | 8 | M8 x 1.25 | 6 | 14 | 76.5 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | 153 | 51 | 216 | 43 | 11.2 | 59 | 1/4 stroke | 224 | |
| 50 | 12 | 11 | M8 x 1.25 | 7 | 18 | 85.5 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 168 | 58 | 238 | 52 | 11.2 | 66 | 1/4 stroke | 246 | |
| 63 | 15 | 11 | M10 x 1.25 | 7 | 18 | 106.5 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 182 | 58 | 255 | 52 | 11.2 | 66 | 1/4 stroke | 263 | |
| 80 | 17 | 13 | M12 x 1.75 | 10 | 22 | 125.5 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 208 | 71 | 297 | 65 | 12.5 | 80 | 1/4 stroke | 306 | |
| 100 | 19 | 16 | M12 x 1.75 | 10 | 26 | 139.5 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 226 | 72 | 316 | 65 | 14.0 | 81 | 1/4 stroke | 325 | |

Single Clevis: CLA2C

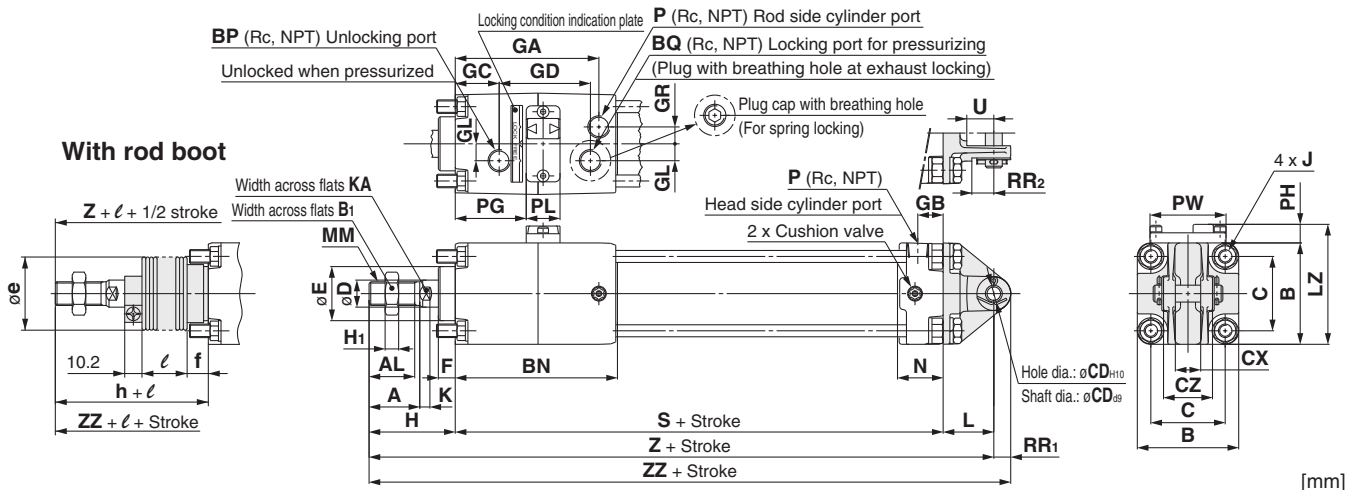


| Bore size [mm] | Stroke range [mm] | | A | AL | B | B ₁ | BN | BP | BQ | C | CD _{H10} | CX | D | E | F | GA | GB | GC | GD | GL | GR | H ₁ |
|----------------|-------------------|---------------|----|----|-----|----------------|-----|-----|-----|----|-----------------------------------|--------------------------------------|----|----|----|-----|----|----|----|----|----|----------------|
| | Without rod boot | With rod boot | | | | | | | | | | | | | | | | | | | | |
| 40 | Up to 500 | 20 to 500 | 30 | 27 | 60 | 22 | 96 | 1/4 | 1/4 | 44 | 10 ^{+0.058} ₀ | 15 ^{-0.1} _{-0.3} | 16 | 32 | 10 | 85 | 15 | 26 | 54 | 10 | 10 | 8 |
| 50 | Up to 600 | 20 to 600 | 35 | 32 | 70 | 27 | 108 | 1/4 | 1/4 | 52 | 12 ^{+0.070} ₀ | 18 ^{-0.1} _{-0.3} | 20 | 40 | 10 | 95 | 17 | 27 | 59 | 13 | 12 | 11 |
| 63 | Up to 600 | 20 to 600 | 35 | 32 | 86 | 27 | 115 | 1/4 | 1/4 | 64 | 16 ^{+0.070} ₀ | 25 ^{-0.1} _{-0.3} | 20 | 40 | 10 | 102 | 17 | 26 | 67 | 18 | 15 | 11 |
| 80 | Up to 750 | 20 to 750 | 40 | 37 | 102 | 32 | 129 | 1/4 | 1/4 | 78 | 20 ^{+0.084} ₀ | 31.5 ^{-0.1} _{-0.3} | 25 | 52 | 14 | 113 | 21 | 30 | 72 | 23 | 17 | 13 |
| 100 | Up to 750 | 20 to 750 | 40 | 37 | 116 | 41 | 140 | 1/4 | 1/4 | 92 | 25 ^{+0.084} ₀ | 35.5 ^{-0.1} _{-0.3} | 30 | 52 | 14 | 124 | 21 | 31 | 76 | 25 | 19 | 16 |

| Bore size [mm] | J | K | KA | L | LZ | MM | N | P | PG | PH | PL | PW | RR | S | U | Without rod boot | | With rod boot | | | | | | |
|----------------|------------|----|----|----|-----|-----------|----|-----|------|----|----|----|----|-----|----|------------------|-----|---------------|----|------|----|------------|-----|-----|
| | | | | | | | | | | | | | | | | H | Z | ZZ | e | f | h | ℓ | Z | ZZ |
| 40 | M8 x 1.25 | 6 | 14 | 30 | 71 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | 10 | 153 | 16 | 51 | 234 | 244 | 43 | 11.2 | 59 | 1/4 stroke | 242 | 252 |
| 50 | M8 x 1.25 | 7 | 18 | 35 | 80 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 12 | 168 | 19 | 58 | 261 | 273 | 52 | 11.2 | 66 | 1/4 stroke | 269 | 281 |
| 63 | M10 x 1.25 | 7 | 18 | 40 | 99 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 16 | 182 | 23 | 58 | 280 | 296 | 52 | 11.2 | 66 | 1/4 stroke | 288 | 304 |
| 80 | M12 x 1.75 | 10 | 22 | 48 | 117 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 20 | 208 | 28 | 71 | 327 | 347 | 65 | 12.5 | 80 | 1/4 stroke | 336 | 356 |
| 100 | M12 x 1.75 | 10 | 26 | 58 | 131 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 25 | 226 | 36 | 72 | 356 | 381 | 65 | 14.0 | 81 | 1/4 stroke | 365 | 390 |

Series CLA2

Double Clevis: CLA2D

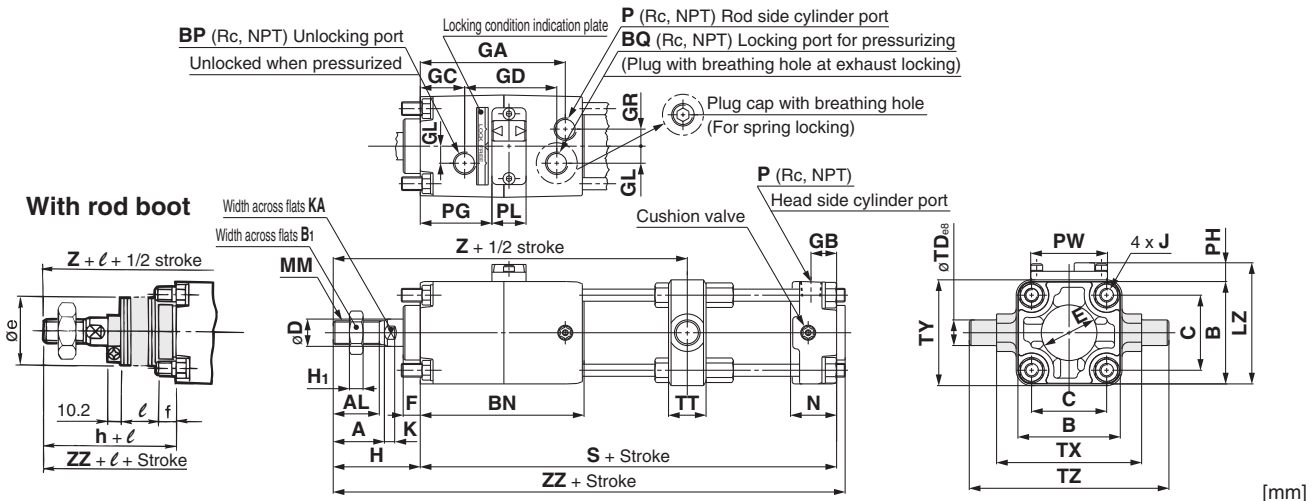


| Bore size [mm] | Stroke range [mm] | | [mm] | | | | | | | | | | | | | | | | | | | | |
|----------------|-------------------|---------------|------|----|-----|----------------|-----|-----|-----|----|------------------------------------|--------------------------------------|------|----|----|----|-----|----|----|----|----|----|----------------|
| | Without rod boot | With rod boot | A | AL | B | B ₁ | BN | BP | BQ | C | CD _{H10} | CX | CZ | D | E | F | GA | GB | GC | GD | GL | GR | H ₁ |
| 40 | Up to 500 | 20 to 500 | 30 | 27 | 60 | 22 | 96 | 1/4 | 1/4 | 44 | ø10 ^{+0.058} ₀ | 15 ^{+0.3} _{-0.1} | 29.5 | 16 | 32 | 10 | 85 | 15 | 26 | 54 | 10 | 10 | 8 |
| 50 | Up to 600 | 20 to 600 | 35 | 32 | 70 | 27 | 108 | 1/4 | 1/4 | 52 | ø12 ^{+0.070} ₀ | 18 ^{+0.3} _{-0.1} | 38 | 20 | 40 | 10 | 95 | 17 | 27 | 59 | 13 | 12 | 11 |
| 63 | Up to 600 | 20 to 600 | 35 | 32 | 86 | 27 | 115 | 1/4 | 1/4 | 64 | ø16 ^{+0.070} ₀ | 25 ^{+0.3} _{-0.1} | 49 | 20 | 40 | 10 | 102 | 17 | 26 | 67 | 18 | 15 | 11 |
| 80 | Up to 750 | 20 to 750 | 40 | 37 | 102 | 32 | 129 | 1/4 | 1/4 | 78 | ø20 ^{+0.084} ₀ | 31.5 ^{+0.3} _{-0.1} | 61 | 25 | 52 | 14 | 113 | 21 | 30 | 72 | 23 | 17 | 13 |
| 100 | Up to 750 | 20 to 750 | 40 | 37 | 116 | 41 | 140 | 1/4 | 1/4 | 92 | ø25 ^{+0.084} ₀ | 35.5 ^{+0.3} _{-0.1} | 64 | 30 | 52 | 14 | 124 | 21 | 31 | 76 | 25 | 19 | 16 |

| Bore size [mm] | Without rod boot | | | | | | | | | | | | | | With rod boot | | | | | | | | | | |
|----------------|------------------|----|----|----|-----|-----------|----|-----|------|----|----|----|-----------------|-----------------|---------------|----|----|-----|-----|----|------|----|------------|-----|-----|
| | J | K | KA | L | LZ | MM | N | P | PG | PH | PL | PW | RR ₁ | RR ₂ | S | U | H | Z | ZZ | e | f | h | l | Z | ZZ |
| 40 | M8 x 1.25 | 6 | 14 | 30 | 71 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | 10 | 16 | 153 | 16 | 51 | 234 | 244 | 43 | 11.2 | 59 | 1/4 stroke | 242 | 252 |
| 50 | M8 x 1.25 | 7 | 18 | 35 | 80 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 12 | 19 | 168 | 19 | 58 | 261 | 273 | 52 | 11.2 | 66 | 1/4 stroke | 269 | 281 |
| 63 | M10 x 1.25 | 7 | 18 | 40 | 99 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 16 | 23 | 182 | 23 | 58 | 280 | 296 | 52 | 11.2 | 66 | 1/4 stroke | 288 | 304 |
| 80 | M12 x 1.75 | 10 | 22 | 48 | 117 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 20 | 28 | 208 | 28 | 71 | 327 | 347 | 65 | 12.5 | 80 | 1/4 stroke | 336 | 356 |
| 100 | M12 x 1.75 | 10 | 26 | 58 | 131 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 25 | 23.5 | 226 | 36 | 72 | 356 | 381 | 65 | 14.0 | 81 | 1/4 stroke | 365 | 390 |

* A clevis pin, flat washers and split pins are included.

Center Trunnion: CLA2T



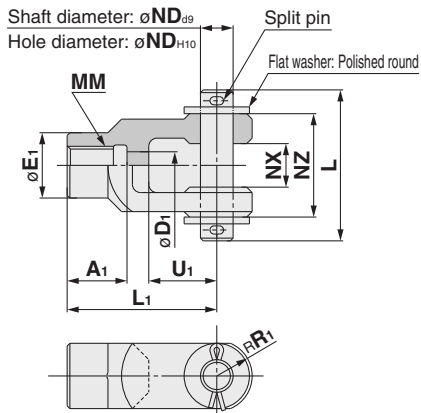
| Bore size [mm] | Stroke range [mm] | | [mm] | | | | | | | | | | | | | | | | | | | | | |
|----------------|-------------------|---------------|------|----|-----|----------------|-----|-----|-----|----|----|----|----|-----|----|----|----|----|----|----------------|------------|----|----|-----|
| | Without rod boot | With rod boot | A | AL | B | B ₁ | BN | BP | BQ | C | D | E | F | GA | GB | GC | GD | GL | GR | H ₁ | J | K | KA | LZ |
| 40 | 25 to 500 | 25 to 500 | 30 | 27 | 60 | 22 | 96 | 1/4 | 1/4 | 44 | 16 | 32 | 10 | 85 | 15 | 26 | 54 | 10 | 10 | 8 | M8 x 1.25 | 6 | 14 | 71 |
| 50 | 25 to 600 | 25 to 600 | 35 | 32 | 70 | 27 | 108 | 1/4 | 1/4 | 52 | 20 | 40 | 10 | 95 | 17 | 27 | 59 | 13 | 12 | 11 | M8 x 1.25 | 7 | 18 | 80 |
| 63 | 32 to 600 | 32 to 600 | 35 | 32 | 86 | 27 | 115 | 1/4 | 1/4 | 64 | 20 | 40 | 10 | 102 | 17 | 26 | 67 | 18 | 15 | 11 | M10 x 1.25 | 7 | 18 | 99 |
| 80 | 41 to 750 | 41 to 750 | 40 | 37 | 102 | 32 | 129 | 1/4 | 1/4 | 78 | 25 | 52 | 14 | 113 | 21 | 30 | 72 | 23 | 17 | 13 | M12 x 1.75 | 10 | 22 | 117 |
| 100 | 45 to 750 | 45 to 750 | 40 | 37 | 116 | 41 | 140 | 1/4 | 1/4 | 92 | 30 | 52 | 14 | 124 | 21 | 31 | 76 | 25 | 19 | 16 | M12 x 1.75 | 10 | 26 | 131 |

| Bore size [mm] | Without rod boot | | | | | | | | | | | | | | With rod boot | | | | | | | | | |
|----------------|------------------|----|-----|------|----|----|----|-----|--|----|-----|-----|-----|----|---------------|-----|----|------|----|------------|-----|-----|--|--|
| | MM | N | P | PG | PH | PL | PW | S | TD _{es} | TT | TX | TY | TZ | H | Z | ZZ | e | f | h | l | Z | ZZ | | |
| 40 | M14 x 1.5 | 27 | 1/4 | 42 | 11 | 20 | 45 | 153 | 15 ^{-0.032} _{-0.059} | 22 | 85 | 62 | 117 | 51 | 162 | 209 | 43 | 11.2 | 59 | 1/4 stroke | 170 | 217 | | |
| 50 | M18 x 1.5 | 30 | 3/8 | 46 | 10 | 21 | 50 | 168 | 15 ^{-0.032} _{-0.059} | 22 | 95 | 74 | 127 | 58 | 181 | 232 | 52 | 11.2 | 66 | 1/4 stroke | 189 | 240 | | |
| 63 | M18 x 1.5 | 31 | 3/8 | 48.5 | 13 | 23 | 60 | 182 | 18 ^{-0.032} _{-0.059} | 28 | 110 | 90 | 148 | 58 | 191 | 246 | 52 | 11.2 | 66 | 1/4 stroke | 199 | 254 | | |
| 80 | M22 x 1.5 | 37 | 1/2 | 55 | 15 | 23 | 70 | 208 | 25 ^{-0.040} _{-0.073} | 34 | 140 | 110 | 192 | 71 | 221 | 286 | 65 | 12.5 | 80 | 1/4 stroke | 230 | 295 | | |
| 100 | M26 x 1.5 | 40 | 1/2 | 56.5 | 15 | 25 | 80 | 226 | 25 ^{-0.040} _{-0.073} | 40 | 162 | 130 | 214 | 72 | 235 | 306 | 65 | 14.0 | 81 | 1/4 stroke | 244 | 315 | | |

Series CLA2

Dimensions of Accessories

Y Type Double Knuckle Joint



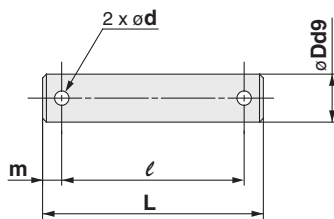
Material: Cast iron

[mm]

| Part no. | Applicable bore size [mm] | A ₁ | D ₁ | E ₁ | L | L ₁ | MM | ND | NX | NZ | R ₁ | U ₁ | Split pin size | Flat washer size |
|----------|---------------------------|----------------|----------------|----------------|------|----------------|-----------|----|------------------------------------|----|----------------|----------------|----------------|-------------------|
| Y-04D | 40 | 22 | 10 | 24 | 55.5 | 55 | M14 x 1.5 | 12 | 16 ^{+0.3} _{+0.1} | 38 | 13 | 25 | ø3 x 18ℓ | Polished round 12 |
| Y-05D | 50, 63 | 27 | 14 | 28 | 55.5 | 60 | M18 x 1.5 | 12 | 16 ^{+0.3} _{+0.1} | 38 | 15 | 27 | ø3 x 18ℓ | Polished round 12 |
| Y-08D | 80 | 37 | 18 | 36 | 76.5 | 71 | M22 x 1.5 | 18 | 28 ^{+0.3} _{+0.1} | 55 | 19 | 28 | ø4 x 25ℓ | Polished round 18 |
| Y-10D | 100 | 37 | 21 | 40 | 83 | 83 | M26 x 1.5 | 20 | 30 ^{+0.3} _{+0.1} | 61 | 21 | 38 | ø4 x 30ℓ | Polished round 20 |

* A knuckle pin, split pins and flat washers are included.

Clevis Pin/Knuckle Pin



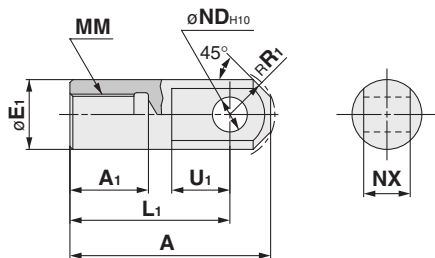
Material: Carbon steel

[mm]

| Part no. | Applicable bore size | | Dd9 | d Drill through | L | ℓ | m | Included split pin | Included flat washer |
|----------|----------------------|------------|--|--------------------|------|------|---|--------------------|----------------------|
| | Clevis | Knuckle | | | | | | | |
| CDP-2A | 40 | — | 10 ^{-0.040} _{-0.076} | 3 | 46 | 38 | 4 | ø3 x 18 ℓ | Polished round 10 |
| CDP-3A | 50 | 40, 50, 63 | 12 ^{-0.050} _{-0.093} | 3 | 55.5 | 47.5 | 4 | ø3 x 18 ℓ | Polished round 12 |
| CDP-4A | 63 | — | 16 ^{-0.050} _{-0.093} | 4 | 71 | 61 | 5 | ø4 x 25 ℓ | Polished round 16 |
| CDP-5A | — | 80 | 18 ^{-0.050} _{-0.093} | 4 | 76.5 | 66.5 | 5 | ø4 x 25 ℓ | Polished round 18 |
| CDP-6A | 80 | 100 | 20 ^{-0.065} _{-0.117} | 4 | 83 | 73 | 5 | ø4 x 30 ℓ | Polished round 20 |
| CDP-7A | 100 | — | 25 ^{-0.065} _{-0.117} | 4 | 88 | 78 | 5 | ø4 x 36 ℓ | Polished round 24 |

* Split pins and flat washers are included.

I Type Single Knuckle Joint

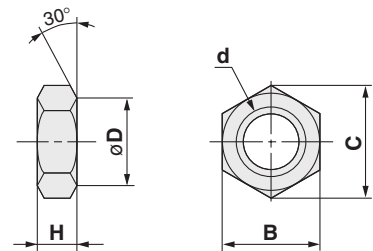


Material: Free cutting sulfur steel

[mm]

| Part no. | Applicable bore size [mm] | A | A ₁ | E ₁ | L ₁ | MM | ND _{H10} | NX | R ₁ | U ₁ |
|----------|---------------------------|-----|----------------|----------------|----------------|-----------|-----------------------------------|------------------------------------|----------------|----------------|
| I-04A | 40 | 69 | 22 | 24 | 55 | M14 x 1.5 | 12 ^{+0.070} ₀ | 16 ^{-0.1} _{-0.3} | 15.5 | 20 |
| I-05A | 50, 63 | 74 | 27 | 28 | 60 | M18 x 1.5 | 12 ^{+0.070} ₀ | 16 ^{-0.1} _{-0.3} | 15.5 | 20 |
| I-08A | 80 | 91 | 37 | 36 | 71 | M22 x 1.5 | 18 ^{+0.070} ₀ | 28 ^{-0.1} _{-0.3} | 22.5 | 26 |
| I-10A | 100 | 105 | 37 | 40 | 83 | M26 x 1.5 | 20 ^{+0.084} ₀ | 30 ^{-0.1} _{-0.3} | 24.5 | 28 |

Rod End Nut (Standard)



Material: Rolled steel

[mm]

| Part no. | Applicable bore size [mm] | B | C | D | d | H |
|----------|---------------------------|----|------|----|-----------|----|
| NT-04 | 40 | 22 | 25.4 | 21 | M14 x 1.5 | 8 |
| NT-05 | 50, 63 | 27 | 31.2 | 26 | M18 x 1.5 | 11 |
| NT-08 | 80 | 32 | 37.0 | 31 | M22 x 1.5 | 13 |
| NT-10 | 100 | 41 | 47.3 | 39 | M26 x 1.5 | 16 |