# Stroke Reading Cylinder with Brake <br> CE2 Series <br> $\varnothing 40, \varnothing 50, \varnothing 63, \varnothing 80, \varnothing 100$ 

Note) CE-compliant: When connecting to a multi-counter (CEU5ロロ-D, power supply voltage 24 VDC ). Refer to the counter operation manual for details.


Applicable Auto Switches/Refer to pages 941 to 1067 for further information on auto switches.


[^0]* Since there are other applicable auto switches than listed, refer to page 697 for details.
* For details about auto switches with pre-wired connector, refer to pages 1014 and 1015.
* D-A9 $\square / \mathrm{M} 9 \square / \mathrm{M} 9 \square \mathrm{~W} / \mathrm{M} 9 \square \mathrm{~A}(\mathrm{~V})$ auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)



## Model

| Series | Type | Action | Bore size <br> $(\mathrm{mm})$ | Lock <br> action |
| :---: | :---: | :---: | :---: | :---: |
| CE2 | Non-lube | Double <br> acting | $40,50,63$ <br> 80,100 | Spring and <br> pneumatic lock |

## Rod Boot Material

| Symbol | Rod boot material | Maximum ambient temperature |
| :---: | :---: | :---: |
| $\mathbf{J}$ | Nylon tarpaulin | $60^{\circ} \mathrm{C}$ |
| $\mathbf{K}$ | Neoprene cross | $110^{\circ} \mathrm{C}^{*}$ |

* Maximum ambient temperature for the rod boot itself.

Refer to pages 692 to 697 for cylinders with auto switches.

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


## Cylinder Specifications

| Bore size (mm) |  | ø40 | $\varnothing 50$ | ø63 | ø80 | $\varnothing 100$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Fluid |  | Air (Non-lube) |  |  |  |  |
| Proof pressure | Drive | 1.5 MPa |  |  |  |  |
|  | Brake | 0.75 MPa |  |  |  |  |
| Maximum operating pressure | Drive | 1 MPa |  |  |  |  |
|  | Brake | 0.5 MPa |  |  |  |  |
| Minimum operating pressure | Drive | 0.1 MPa |  |  |  |  |
|  | Brake | 0.3 MPa |  |  |  |  |
| Piston speed |  | 50 to $500 \mathrm{~mm} / \mathrm{s}^{*}$ |  |  |  |  |
| Ambient temperature |  | 00 to $60^{\circ} \mathrm{C}$ (No freezing) |  |  |  |  |
| Brake system |  | Spring and pneumatic lock type |  |  |  |  |
| Sensor cord length |  | $\varnothing 7-500 \mathrm{~mm}$ Oil-resistant |  |  |  |  |
| Stroke length tolerance |  | Up to $250 \mathrm{~mm}:{ }_{0}^{+1.0}, 251 \mathrm{~mm}$ to $1000 \mathrm{~mm}{ }_{0}^{+1.4}$ |  |  |  |  |

* Be aware of the constraints in the allowable kinetic energy.


## Sensor Specifications

| Cable | $\varnothing 7,6$ core twisted pair shielded wire (Oil, Heat and Flame resistant cable) |
| :---: | :---: |
| Maximum transmission distance | 20.5 m (when using SMC cable while using controller or counter) |
| Position detection method | Magnetic scale rod/Sensor head <Incremental type> |
| Magnetic field resistance | 14.5 mT |
| Power supply | 10.8 to 26.4 VDC (Power supply ripple: $1 \%$ or less) |
| Current consumption | 50 mA |
| Resolution | $0.1 \mathrm{~mm} /$ pulse |
| Accuracy | $\pm 0.2 \mathrm{~mm}$ Note) |
| Output type | Open collector (Max. 35 VDC, 80 mA ) Note) |
| Output signal | A/B phase difference output |
| Insulation resistance | $50 \mathrm{M} \Omega$ or more ( 500 VDC measured via megohmmeter) (between case and 12E) |
| Vibration resistance | 33.3 Hz, 6.8 G 2 hrs. each in X, Y directions 4 hrs. in $Z$ direction based upon JIS D 1601 |
| Impact resistance | $30 \mathrm{G}, 3$ times at $\mathrm{X}, \mathrm{Y}, \mathrm{Z}$ |
| Enclosure | IP65 (IEC standard) Except connector part |
| Extension cable (Option) | $5 \mathrm{~m}, 10 \mathrm{~m}, 15 \mathrm{~m}, 20 \mathrm{~m}$ |

Note) Digital error under Controller (CEU2), Counter (CEU5) is included. Besides, the whole accuracy after mounting on an equipment may be varied depending on the mounting condition and surroundings. As an equipment, calibration should be done by customer.

## Standard Stroke

| Bore size (mm) | Standard stroke (mm) |  | Range of manufacturable stroke* |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Without rod boot | With rod boot | Without rod boot | With rod boot |
| $\mathbf{4 0}$ | 25 to 850 | 25 to 700 | Up to 1200 | Up to 950 |
| $\mathbf{5 0}$ | 25 to 800 | 25 to 650 | Up to 1150 | Up to 900 |
| $\mathbf{6 3}$ | 25 to 800 | 25 to 650 | Up to 1150 | Up to 900 |
| $\mathbf{8 0}$ | 25 to 750 | 25 to 600 | Up to 1100 | Up to 900 |
| $\mathbf{1 0 0}$ | 25 to 750 | 25 to 600 | Up to 1100 | Up to 850 |

* Strokes longer than the standard stroke are made-to-order products.

Weight

| Bore size (mm) |  |  |  | $\mathbf{4 0}$ | $\mathbf{5 0}$ | $\mathbf{6 3}$ |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| Basic weight | Basic type | 2.18 | 3.39 | 5.29 | 8.66 | 100 |
|  | Foot type | 2.37 | 3.61 | 5.63 | 9.33 | 13.08 |
|  | Flange type | 2.55 | 3.84 | 6.08 | 10.11 | 14.01 |
|  | Single clevis type | 2.41 | 3.73 | 5.92 | 9.77 | 13.87 |
|  | Double clevis type | 2.45 | 3.82 | 6.08 | 10.06 | 14.39 |
|  | Trunnion type | 3.63 | 3.92 | 6.18 | 10.36 | 14.49 |
| Additional weight per <br> each 50 mm of stroke | Aluminum <br> tube | Mounting <br> bracket | 0.22 | 0.28 | 0.37 | 0.52 |
|  | Single knuckle | 0.23 | 0.26 | 0.26 | 0.60 | 0.83 |
|  | Double knuckle | 0.32 | 0.38 | 0.38 | 0.73 | 1.08 |
|  | Knuckle pin | 0.05 | 0.05 | 0.05 | 0.14 | 0.19 |

Calculation example: CE2L40-100

- Basic weight.....................2.37 (Foot type, ø40)
- Additional weight $\cdots \cdots \cdots \cdots \cdots \cdot 0.22 / 50$ stroke
- Cylinder stroke.................. 100 stroke
$2.37+0.22 \times 100 / 50=2.81 \mathrm{~kg}$


## Accessories

| Mounting |  | Basic | Axial <br> foot | Rod <br> flange | Head <br> flange | Single <br> clevis | Double <br> clevis | Center <br> trunnion |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Standard | Rod end nut | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
|  | Clevis pin | - | - | - | - | - | $\bullet$ | - |
| Option | Single knuckle joint | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
|  | Double knuckle joint <br> (with pin) | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |
|  | With rod boot | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ | $\bullet$ |

* Refer to page 690 for dimensions and part numbers of the option. Refer to page 688 for dimensions of the rod boot.


[^0]:    *1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
    Consult with SMC regarding water resistant types with the above model numbers.

    * Lead wire length symbols: $0.5 \mathrm{~m} \ldots \ldots . . .$. Nil (Example) M9NW

    | $1 \mathrm{~m} \ldots \ldots . . . . . \mathrm{M}$ | (Example) M9NWM |
    | :--- | :--- |
    | $3 \mathrm{~m} \ldots \ldots \ldots . \mathrm{L}$ | (Example) M9NWL |
    | $5 \mathrm{~m} \ldots \ldots \ldots .$. | (Example) M9NWZ |

    * Solid state auto switches marked with "○" are produced upon receipt of order.
    $5 \mathrm{~m} \ldots \ldots . . . \mathrm{Z}$ (Example) M9NWZ
    ** Since D-A9 $\square$ and D-A9 $\square \mathrm{V}$ cannot be mounted on ø50, use of D-Z7 $\square$ or
    $\mathrm{D}-\mathrm{Z} 80$ is recommended.

