## Magnetically Coupled Rodless Cylinder: Direct Mount Type

### Series CY3R

ø6, ø10, ø15, ø20, ø25, ø32, ø40, ø50, ø63

### How to Order

<table>
<thead>
<tr>
<th>CY3R</th>
<th>ø6</th>
<th>ø10</th>
<th>ø15</th>
<th>ø20</th>
<th>ø25</th>
<th>ø32</th>
<th>ø40</th>
<th>ø50</th>
<th>ø63</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>25</td>
<td>300</td>
<td>M9B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Direct mount type**
- **Piping type**
- **Bore size**
- **Port thread type**
- **Number of auto switches**
- **Auto switch type**
- **Switch rail**
- **Standard stroke**

### Applicable Auto Switches

The applicable auto switch is determined by the bore size. Refer to pages 21 to 23 for further information on auto switches.

#### How to Order

- **Symbol**: Nil, TN, TF
- **Type**: M thread, Rc, NPT

#### Load voltage

- **24 V**: 5 V, 12 V, 100 V or less
- **12 V**: 12 V, 100 V
- **5 V**: 5 V

#### Lead wire length

- **0.5 m**: Nil, TN, TF
- **3 m**: M9N, M9P, M9B, F9NW, F9PW, F9BW
- **5 m**: M9B, F9BW

#### Pre-wired connector

- **Relay, PLC**: A90, A93, A96, M9N, M9P, M9B, F9NW, F9PW, F9BW

#### Applicable load

- **Relay, PLC**: A90, A93, M9N, M9P, M9B, F9NW, F9PW, F9BW

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### Notes

1. In case of ø20 with switch rail but without switch, the cylinder construction is for reed switch.
2. The auto switch is shipped together, but not assembled.
3. The auto switch is determined by the bore size. Refer to pages 21 to 23 for further information on auto switches.
4. A type with switch rail has built-in switch magnets.
5. ø15 has built-in switch magnets even without switch rail.

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### Symbols

- **Nil**: Without auto switch
- **S**: 1 pc., "n" pcs.
- **N**: With switch rail
- **T**: Without switch rail

### Specifications

- **Load voltage**: 100 V or less
- **Pre-wired connector**: /L1152, /L50263
- **Wiring**: 2-wire, 3-wire (NPN, PNP)
- **Applicable load**: Relay, PLC

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### Additional Notes

- For ø25, 32, 40, 50, and 63, other than the applicable auto switches listed in “How to Order”, the other auto switches can be mounted. For detailed specifications, refer to page 18.
- With pre-wired connector is also available in solid state auto switches. For specifications, refer to “SMC Best Pneumatics” catalog vol. 8, page 8-30-52.

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### Standards

- **ISO**: 1219-2
- **JIS**: B7901

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**Approved**
**Magnetically Coupled Rodless Cylinder**

**Direct Mount Type Series CY3R**

### Specifications

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proof pressure</td>
<td>1.05 MPa</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.7 MPa</td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>Refer to the minimum operating pressure table.</td>
</tr>
</tbody>
</table>

**Ambient and fluid temperature** -10 to 60°C

**Piston speed** 50 to 500 mm/s

**Cushion** Rubber bumper on both ends

**Lubrication** Non-lube

**Stroke length tolerance** 0 to 250 st: ±0.8, 251 to 1000 st: ±1.3, 1001 st to: ±1.8

### Minimum Operating Pressure

- X116 Hydro specifications
- X160 High speed specifications
- X168 Interchangeable specification with CY1
- XC57 With floating joint

### Theoretical Cylinder Thrust

#### Bore sizes 6, 10

![Graph showing theoretical thrust for bore sizes 6 and 10](image)

#### Bore sizes 15, 20, 25, 32, 40

![Graph showing theoretical thrust for bore sizes 15 to 40](image)

#### Bore sizes 50, 63

![Graph showing theoretical thrust for bore sizes 50 to 63](image)

### Weight

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>6</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>63</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic weight (at 0 st)</td>
<td>With switch rail</td>
<td>0.086</td>
<td>0.111</td>
<td>0.272</td>
<td>0.421</td>
<td>0.622</td>
<td>1.217</td>
<td>1.98</td>
<td>3.54</td>
</tr>
<tr>
<td></td>
<td>Without switch rail</td>
<td>0.069</td>
<td>0.08</td>
<td>0.225</td>
<td>0.351</td>
<td>0.542</td>
<td>1.097</td>
<td>1.82</td>
<td>3.25</td>
</tr>
<tr>
<td>Additional weight per 50 mm of stroke</td>
<td>With switch rail</td>
<td>0.016</td>
<td>0.034</td>
<td>0.040</td>
<td>0.051</td>
<td>0.056</td>
<td>0.076</td>
<td>0.093</td>
<td>0.159</td>
</tr>
<tr>
<td></td>
<td>Without switch rail</td>
<td>0.004</td>
<td>0.014</td>
<td>0.015</td>
<td>0.020</td>
<td>0.023</td>
<td>0.033</td>
<td>0.040</td>
<td>0.077</td>
</tr>
</tbody>
</table>

Calculation method/Example: CY3R25-500 (with switch rail) Basic weight = 0.622 (kg), Additional weight = 0.056 (kg/st), Cylinder stroke = 500 (st)

### Magnetic Holding Force

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>6</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>63</th>
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</thead>
<tbody>
<tr>
<td>Holding force (N)</td>
<td>19.6</td>
<td>53.9</td>
<td>137</td>
<td>231</td>
<td>363</td>
<td>568</td>
<td>922</td>
<td>1471</td>
<td>2256</td>
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</tbody>
</table>

### Standard Stroke

- Made to Order
  (Refer to page 24 for details.)

- Symbol Specifications
  - X116 Hydro specifications
  - X160 High speed specifications
  - X168 Interchangeable specification with CY1
  - XC57 With floating joint

**Mounting orientation** Direct mount type

**Mounting orientation** Horizontal, Inclined, Vertical (Note 2)

Note 1) When an auto switch is installed at an intermediate position of a type with auto switch, keep the maximum piston speed at 300 mm/s or below to ensure operation of relays or other devices.

Note 2) When vertically mounting, it is impossible to perform an intermediate stop by means of a pneumatic circuit.

### Notes

- **Note 1)** When an auto switch is installed at an intermediate position of a type with auto switch, keep the maximum piston speed at 300 mm/s or below to ensure operation of relays or other devices.
- **Note 2)** When vertically mounting, it is impossible to perform an intermediate stop by means of a pneumatic circuit.

- Units: kg

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*Approvals and notes are not relevant to the content of the document.*
Series CY3R

Construction
Both sides piping type

CY3R6

CY3R10

CY3R15 to 63

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Aluminum alloy</td>
<td>Hard anodized</td>
</tr>
<tr>
<td>2a</td>
<td>End cover A</td>
<td>Aluminum alloy</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>2b</td>
<td>End cover B</td>
<td>Aluminum alloy</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>3a</td>
<td>End cover C</td>
<td>Aluminum alloy</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>3b</td>
<td>End cover D</td>
<td>Aluminum alloy</td>
<td>Electroless nickel plated</td>
</tr>
<tr>
<td>4</td>
<td>Cylinder tube</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Piston</td>
<td>Carbon steel</td>
<td>Zinc chromated</td>
</tr>
<tr>
<td>6</td>
<td>Shaft</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Piston side yoke</td>
<td>Rolled steel plate</td>
<td>Zinc chromated</td>
</tr>
<tr>
<td>8</td>
<td>External slider side yoke</td>
<td>Rolled steel plate</td>
<td>Zinc chromated</td>
</tr>
<tr>
<td>9</td>
<td>Magnet A</td>
<td>Rare earth magnet</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Magnet B</td>
<td>Rare earth magnet</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Spacer</td>
<td>Aluminum alloy</td>
<td>Black anodized (ø6: not available)</td>
</tr>
<tr>
<td>12</td>
<td>Bumper</td>
<td>Urethane rubber</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Piston nut</td>
<td>Carbon steel</td>
<td>Zinc chromate (ø6 to ø15: not available)</td>
</tr>
<tr>
<td>14</td>
<td>C type snap ring for hole</td>
<td>Carbon tool steel</td>
<td>Nickel plated</td>
</tr>
<tr>
<td>15</td>
<td>Attachment ring</td>
<td>Aluminum alloy</td>
<td>Chromate</td>
</tr>
<tr>
<td>16</td>
<td>C type snap ring for shaft</td>
<td>Hard steel wire</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Magnetic shielding plate</td>
<td>Rolled steel plate</td>
<td>Chromated (ø6, ø10: not available)</td>
</tr>
<tr>
<td>18</td>
<td>Switch rail</td>
<td>Aluminum alloy</td>
<td>White anodized</td>
</tr>
<tr>
<td>19</td>
<td>Magnet</td>
<td>Rare earth magnet</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Hexagon socket head plug</td>
<td>Chromium steel</td>
<td>Nickel plated</td>
</tr>
</tbody>
</table>

Material

- Chromium steel
- Stainless steel
- Rolled steel plate
- Rare earth magnet
- Urethane rubber
- Carbon tool steel
- Carbon steel
- Hard steel wire
- Aluminum alloy
- Chromium
- Nickel plated
- Nickel plated
- Zinc chromated
- White anodized
- Black anodized
- Electroless nickel plated
- Aluminum alloy
- Hard anodized
- Chromium steel
- Special resin
- NBR
- Chromate
- Electroless nickel plated
- Zinc chromate
- Nickel plated

Replacement Parts: Seal Kit

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Kit no.</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>CY3R6-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>10</td>
<td>CY3R10-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>15</td>
<td>CY3R15-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>20</td>
<td>CY3R20-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>25</td>
<td>CY3R25-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>32</td>
<td>CY3R32-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>40</td>
<td>CY3R40-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
<tr>
<td>50</td>
<td>CY3R50-P</td>
<td>Numbers 21, 22, 23, 24 above</td>
</tr>
</tbody>
</table>

Note:
- Seal kits are sets consisting of numbers 24 through 30. Order using the kit number corresponding to each bore size.
- Seal kits are the same for both the both sides piping type and the centralized piping type.
Construction

Centralized piping type

**CY3RG10**

**CY3RG15 to 63**

Switch Rail Accessory

**CYR 15 E**

Stroke

Bore size

**Switch Rail Accessory Kit**

<table>
<thead>
<tr>
<th>Bore size (mm)</th>
<th>Kit no.</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>CYR6E-□</td>
<td>Numbers [19, 19, 20, 27] on the left</td>
</tr>
<tr>
<td>10</td>
<td>CYR10E- □</td>
<td>Numbers [19, 19, 20, 27] on the left</td>
</tr>
<tr>
<td>15</td>
<td>CYR15E- □</td>
<td>Numbers [19, 19, 20, 27] on the left</td>
</tr>
<tr>
<td>20</td>
<td>CYR20E- □</td>
<td>Numbers [19, 19, 20, 27] on the left</td>
</tr>
<tr>
<td>25</td>
<td>CYR25E- □</td>
<td>Numbers [19, 19, 20, 27] on the left</td>
</tr>
<tr>
<td>32</td>
<td>CYR32E- □</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>CYR40E- □</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>CYR50E- □</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>CYR63E- □</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) □ indicates the stroke.
Note 2) A magnet is already built in for ø15.

Approved

Approved
Series CY3R

Dimensions

Both sides piping type: ø6 to ø63

Note) This figure shows types with switch rail (Nil).

### CY3R

| Model        | A   | B   | C   | CB  | CR  | D   | F   | G   | GP  | GW  | H   | HA  | HC  | HB  | HP  | HR  | HS  | HT  | J   | E   | K   |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| CY3R6        | 7   | —   | —   | 2   | 0.5 | 7.6 | 5.6 | 3   | 20  | 18.5| 19  | 17  | 10.5| 18  | 10.5| 17  | 6   | 10.5| M4  | ø7  | 6   |
| CY3R10       | 9   | 6.5 | 3.2 | 2   | 0.5 | 12  | 6.5 | 4   | 27  | 25.5| 26  | 24  | 14  | 25  | 14  | 5   | 14  | M4  | ø7  | 6   |
| CY3R16       | 10.5| 8   | 4.2 | 2   | 0.5 | 16.6| 8   | 5   | 33  | 31.5| 32  | 30  | 17  | 31  | 17  | 30  | 8.5 | 17  | M5  | ø8  | 7   |
| CY3R20       | 9   | 9.5 | 5.2 | 3   | 1   | 21.6| 9   | 6   | 38  | 37.5| 39  | 36  | 31  | 38  | 36  | 35  | 7.5 | 24  | M6  | ø1  | 8   |
| CY3R25       | 8.5 | 9.5 | 5.2 | 3   | 1   | 26.4| 8.5 | 6   | 44  | 42.5| 44  | 41  | 23.5| 43  | 23.5| 41  | 6.5 | 23.5| M6  | ø1  | 8   |
| CY3R32       | 10.5| 11  | 6.5 | 3   | 1.5 | 33.6| 10.5| 7   | 55  | 53.5| 55  | 52  | 29  | 54  | 29  | 51  | 11  | 7   | M8  | ø1.25| 10  |
| CY3R40       | 10  | 14  | 8.5 | 5   | 2   | 41.5| 13  | 7   | 65  | 63.5| 67  | 62  | 38  | 66  | 36  | 60  | 8   | M8  | ø1.25| 10  |
| CY3R50       | 14  | 14  | 8.2 | 5   | 2   | 52.4| 17  | 8.5 | 83  | 81.5| 85  | 80  | 48  | 84  | 45  | 82  | 9   | 45  | M10 | ø1.5| 15  |
| CY3R63       | 16  | 18  | 8.2 | 5   | 3   | 65.4| 18  | 8.5 | 95  | 93.5| 97  | 92  | 51  | 96  | 51  | 90  | 9.5 | 51  | M10 | ø1.5| 15  |

### CY3R5

<table>
<thead>
<tr>
<th>Model</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>CB</th>
<th>CR</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>GP</th>
<th>GW</th>
<th>H</th>
<th>HA</th>
<th>HC</th>
<th>HB</th>
<th>HP</th>
<th>HR</th>
<th>HS</th>
<th>HT</th>
<th>J</th>
<th>E</th>
<th>K</th>
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</thead>
<tbody>
<tr>
<td>CY3R6</td>
<td>34</td>
<td>3.5</td>
<td>3.5</td>
<td>3.5</td>
<td>M3</td>
<td>0.5</td>
<td>3.5</td>
<td>19</td>
<td>60</td>
<td>10</td>
<td>14.5</td>
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<td>9.5</td>
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<td>10</td>
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<td>66</td>
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<td>3.5</td>
<td>4</td>
<td>M3</td>
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<td>13</td>
<td>8</td>
<td>15</td>
<td>39.5</td>
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<tr>
<td>CY3R16</td>
<td>53</td>
<td>4.5</td>
<td>5</td>
<td>M4</td>
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<td>6</td>
<td>32</td>
<td>84</td>
<td>18</td>
<td>19</td>
<td>17</td>
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<td>16</td>
<td>7</td>
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<td>94</td>
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<td>8.6</td>
<td>10</td>
<td>M8</td>
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</table>

### Note

1) ø50, ø63: L 15

2) The asterisk denotes the dimensions which are different from the CY1R series.

Approved

Approved
Magnetically Coupled Rodless Cylinder
Direct Mount Type Series CY3R

Dimensions

Centralized piping type: ø10 to ø63

Note 2) The asterisk denotes the dimensions which are different from the CY1RG series.