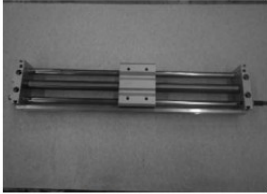
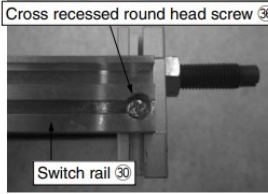
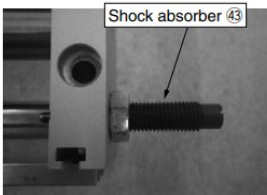
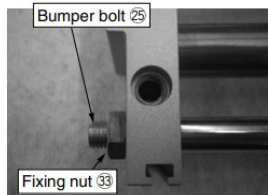
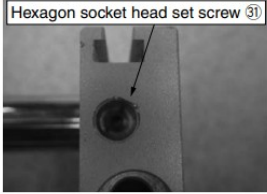
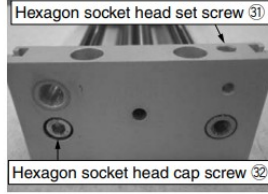

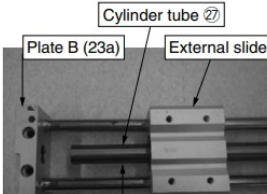
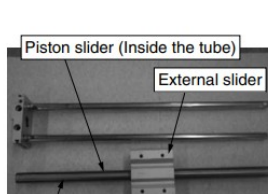



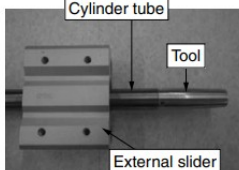
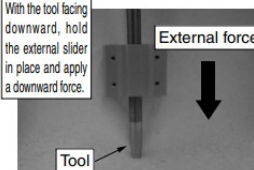
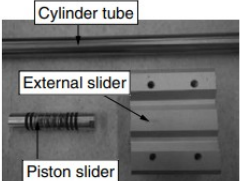
# CY1S-Z Series Replacement Procedure for Seals 1

## 1. Disassembly

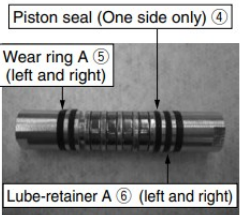
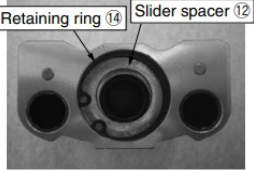
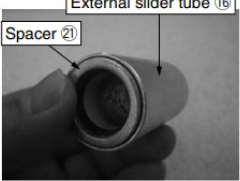
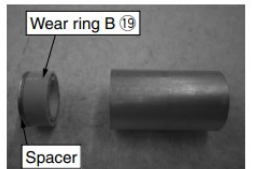
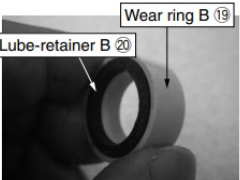
No.	Process	Steps	Note
1	Accessory removal	<p>1) Remove the switch rail (30). (Picture 2) Use a Phillips head screwdriver to remove the cross-recessed round head screws (36) from both ends of the switch rail.</p>  <p>Picture 1: Cylinder appearance</p>  <p>Picture 2: Switch rail</p> <p>2) Remove the shock absorber (43), bumper bolt (25), and adjustment bolt (41). (Pictures 3 and 4) Remove fixing nuts (33) and (34) with a monkey wrench.</p>  <p>Picture 3: Shock absorber</p>  <p>Picture 4: Bumper bolt</p>	<p>Cross recessed round head screw ø6 to ø40: M3</p> <p>Shock absorber and bumper bolt nut size ø6: M6 ø10/ø15: M8 ø20: M10 ø25: M14 ø32/ø40: M20</p> <p>Adjustment bolt nut size ø6/ø10/ø15: M4 ø20/ø25: M6 ø32/ø40: M8</p>
2	<p>Plate A removal (For the bilateral piping type)</p> <p>Plate C removal (For the centralized piping type)</p>	<p>1) Remove the hexagon socket head set screws (31) from the counterbore surfaces of plate A (22) and plate C (23a). (Picture 5) Use a hexagon wrench to remove them.</p>  <p>Picture 5: Hexagon socket head set screw</p>  <p>Picture 6: Hexagon socket head cap screw</p> <p>2) Remove the hexagon socket head cap screws (32) from the outside end surfaces of plate A and plate C. (Picture 6) Use a hexagon wrench to remove them.</p> <p>3) Remove plate A and plate C from the guide shaft. (Picture 7)</p>  <p>Picture 7: Plate A and plate C removal</p>	<p>Hexagon socket head set screw ø6: M3 ø10/ø15: M4 ø20/ø25: M5 ø32: M6, ø40: M8</p> <p>Hexagon socket head cap screw ø6: M4 ø10/ø15: M5 ø20/ø25: M6 ø32: M8 ø40: M10</p> <p>* Plate A will be difficult to remove if it is tilted to the side, so be sure to hold it straight during removal.</p> <p>* If plate A is difficult to remove, it can be removed while tapping it lightly with a plastic hammer, etc. However, be sure to do so in a manner that does not damage it.</p>
3	<p>Cylinder body removal (External slider)</p> <p>(Piston slider)</p> <p>(Cylinder tube)</p>	<p>1) Remove the cylinder tube (27) from plate B (23a) with the external slider and piston slider in a magnetically coupled state. (Pictures 8 and 9)</p>  <p>Picture 8: Cylinder body removal 1</p>  <p>Picture 9: Cylinder body removal 2</p>	<p>* Be aware that at this time, if the external slider is pulled out from the cylinder tube as is, the piston slider will come out with it. Be sure to pull it out while holding the cylinder tube.</p>

\* The numbers after the part names indicate the part numbers as shown in the "Construction" section of the catalog.

# CY1S-Z Series Replacement Procedure for Seals 2

No.	Process	Steps	Note
4	External slider and piston slider removal	<p>1) When removing the external slider and piston slider from the cylinder tube, use the slider insertion tool (Picture 10) (Manufacturing required. Refer to Fig. 2 on page 418-3 for details.) and remove them separately after disengaging the magnetic coupling.</p> <p>2) Mount the tool to the cylinder tube. (Picture 11)</p> <p>3) With the tool facing downward, apply a downward force on the external slider to disengage the magnetic coupling. (Picture 12) Then, remove the external slider and the piston slider separately. (Picture 13)</p>     <p>Picture 10: Slider insertion tool</p> <p>Picture 11: Slider insertion tool mounting</p> <p>Picture 12: External slider removal procedure</p> <p>Picture 13: Removal of internal slider and external slider complete</p>	<ul style="list-style-type: none"> <li>If the external slider and piston slider are removed while still magnetically coupled, the sliders will not be able to be removed from each other.</li> </ul> <p><b>⚠ Warning</b></p> <ul style="list-style-type: none"> <li>Be careful when handling as the magnets used in the sliders are extremely strong.</li> <li>Try to refrain from using air pressure to forcibly shift the positional relationship of the external slider and the piston slider whenever possible. This method sometimes results in damage to the parts when the metal end of the piston slider hits the metal plate surface directly. (For the type without a rubber bumper)</li> </ul>

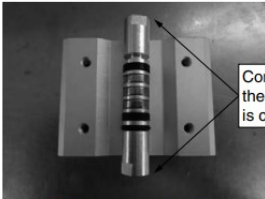
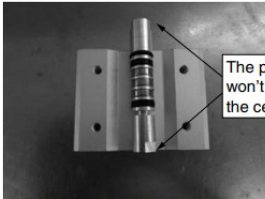
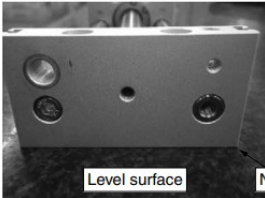
## 2. Replacement procedures

No.	Process	Steps	Note																																												
5	Replacement of seal	<p>[Piston slider seal replacement]</p> <p>Replace the piston seal (④), wear ring A (⑤), and Lube-retainer A (⑥), all of which are included in the seal kit. (Picture 14)</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th colspan="2">Piston seal ④</th> <th colspan="2">Wear ring A ⑤</th> </tr> <tr> <th>Bore size</th> <th>Qty.</th> <th>Bore size</th> <th>Qty.</th> </tr> </thead> <tbody> <tr> <td>ø6</td> <td>2</td> <td>ø6</td> <td>-</td> </tr> <tr> <td>ø10 to ø63</td> <td>1</td> <td>ø10 to ø40</td> <td>2</td> </tr> </tbody> </table> <table border="1" style="display: inline-table;"> <thead> <tr> <th colspan="2">Lube-retainer A ⑥</th> </tr> <tr> <th>Bore size</th> <th>Qty.</th> </tr> </thead> <tbody> <tr> <td>ø6, ø10</td> <td>-</td> </tr> <tr> <td>ø15 to ø40</td> <td>2</td> </tr> </tbody> </table>  <p>Picture 14: Piston slider (ø15)</p> <p>[External slider inner seal replacement]</p> <p>2) Remove the external slider retaining ring (⑭) on one side. (Picture 15)</p> <p>3) Remove the slider spacer (⑫) (including the slider gasket (⑬)). (Picture 15)</p> <p>4) Remove the external slider tube assembly (external slider tube (⑯), spacer (⑰), wear ring B (⑱), Lube-retainer B (⑳), magnet B (㉑), and external slider side yoke (㉒)). (Picture 16)</p> <p>5) Replace the seals. (Pictures 17 and 18)</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th colspan="2">Slider gasket ⑬</th> </tr> <tr> <th>Bore size</th> <th>Qty.</th> </tr> </thead> <tbody> <tr> <td>ø6 to ø40</td> <td>2</td> </tr> </tbody> </table>  <p>Picture 15: External slider</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th colspan="2">Wear ring B ⑱</th> </tr> <tr> <th>Bore size</th> <th>Qty.</th> </tr> </thead> <tbody> <tr> <td>ø6 to ø40</td> <td>2</td> </tr> </tbody> </table>  <p>Picture 16: External slider tube assembly</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th colspan="2">Lube-retainer B ⑳</th> </tr> <tr> <th>Bore size</th> <th>Qty.</th> </tr> </thead> <tbody> <tr> <td>ø6</td> <td>-</td> </tr> <tr> <td>ø10 to ø40</td> <td>2</td> </tr> </tbody> </table>  <p>Picture 17: Wear ring B removal</p>  <p>Picture 18: Wear ring B, Lube-retainer B</p>	Piston seal ④		Wear ring A ⑤		Bore size	Qty.	Bore size	Qty.	ø6	2	ø6	-	ø10 to ø63	1	ø10 to ø40	2	Lube-retainer A ⑥		Bore size	Qty.	ø6, ø10	-	ø15 to ø40	2	Slider gasket ⑬		Bore size	Qty.	ø6 to ø40	2	Wear ring B ⑱		Bore size	Qty.	ø6 to ø40	2	Lube-retainer B ⑳		Bore size	Qty.	ø6	-	ø10 to ø40	2	<ul style="list-style-type: none"> <li>When installing piston seal, apply grease from the grease pack included in the seal kit, or from the specified grease pack, to the seal groove.</li> <li>For ø6 piston seals, there is a designated mounting direction. Install the piston seals on both sides with the lips facing outward.</li> <li>For piston seals other than ø6, install 1 in any one of the installation grooves. There is no designated mounting direction.</li> <li>For wear ring A, only ø10 cannot be replaced.</li> <li>Allow the Lube-retainer to soak in the grease for approx. 2 hours before installing it.</li> <li>Lube-retainer A is made of a material that does not stretch easily, so if it is pulled forcibly, it will not return to its original state.</li> <li>When removing the external slider tube assembly, be careful not to bump it as this may result in the internal magnets, etc., popping out.</li> <li>When replacing wear ring B and Lube-retainer B, perform removal on each side of the external slider tube, one side at a time.</li> <li>When replacing the seals, do not disassemble down to the magnet and yoke. Mounting the magnet in the wrong direction (polarity) during reassembly may result in reduced magnetic holding force.</li> </ul>
Piston seal ④		Wear ring A ⑤																																													
Bore size	Qty.	Bore size	Qty.																																												
ø6	2	ø6	-																																												
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ø6	-																																														
ø10 to ø40	2																																														

\* Replace the seals other than those described in this manual according to usage conditions.

# CY1S-Z Series Replacement Procedure for Seals 3

## 3. How to insert the external slider and piston slider into the cylinder tube (Caution required)

No.	Process	Steps	Note
6	Reassembling	<p>1) After completing the seal replacement, follow the disassembly procedure in the reverse order to reassemble.</p> <p><b>Procedures</b></p> <p>① : Apply grease to the inner surface of the cylinder tube.</p> <p>② : Place the piston slider on top of the external slider (for bore sizes <math>\phi 6</math> and <math>\phi 10</math>). For bore sizes other than <math>\phi 6</math> and <math>\phi 10</math>, the sliders have no insertion direction, so ignore this step.</p> <p>③ : If the piston slider will not couple at the center of the external slider (Picture 20), rotate the piston slider 180° so it is positioned as in Picture 19. If incorrectly positioned sliders are inserted into the cylinder tube as is, they will not magnetically couple as required. In addition, the stroke will not operate normally.</p> <p>④ : Insert the slider insertion tool into the cylinder tube.</p> <p>⑤ : Reconfirm that the sliders are in the same state as in Picture 19.</p> <p>⑥ : Apply extra grease to wear ring B and the Lube-retainer of the external slider.</p> <p>⑦ : Insert the greased external slider into the cylinder tube.</p> <p>⑧ : Remove the slider insertion tool from the cylinder tube.</p> <p>⑨ : Apply extra grease to the piston seal, wear ring A, and the Lube-retainer of the piston slider.</p> <p>⑩ : Insert the greased piston slider into the cylinder tube.</p> <p>⑪ : Manually move the external slider back and forth multiple times to spread the grease within the cylinder tube.</p> <p>⑫ : Move the external slider to the stroke end, and lightly wipe off the excess grease adhering to the end surface of the piston slider.</p> <p>⑬ : Insert the assembly from step ⑫ into the guide shaft and plate B, and follow the disassembly procedure in the reverse order to reassemble. (Be sure to do so on a flat surface.)</p> <p>⑭ : Fit the external slider and piston slider into place inside the cylinder tube. (Refer to Fig. 4-1 and Fig. 4-2 on page 418-3.)</p> <p>⑮ : Confirm that the positional relationship of the external slider and piston slider is correct. (Refer to Fig. 3 on page 418-3.)</p> <p>⑯ : After completing step ⑮, place the cylinder on a flat surface again and confirm that there is no backlash due to twisting between the plates.</p> <p>If there is backlash present, loosen the bolts, etc., and re-tighten them. (Picture 21)</p>	<p>· If the external slider is inserted directly into the cylinder tube without the use of the slider insertion tool, the Lube-retainer attached to the external slider may get caught on the cylinder tube entrance, resulting in damage. Be sure to use the tool. (Refer to Fig. 2 on page 418-3.)</p> <p>· When reassembling, remove any hardened adhesive, oil, etc., from the threads of the bolts and screws, and reapply adhesive to prevent loosening. [Loctite No. 263 (High strength)]</p>
		 <p>Confirm that the piston slider is centered.</p> <p>Picture 19: Correct positioning (the centers of the sliders are aligned) (<math>\phi 10</math>)</p>  <p>The piston slider won't couple at the center.</p> <p>Picture 20: Incorrect positioning (the centers of the sliders are not aligned) (<math>\phi 10</math>)</p>  <p>Level surface No backlash</p> <p>Picture 21: Check for backlash.</p>	

\* Specified grease (Grease pack): GR-S-010 (Same for all sizes)

Actuators

Rotary Actuators  
Air Grippers

Modular F.R.L.  
Pressure Control Equipment

Air Preparation  
Equipment

Industrial Filters

Replacement  
Procedure

Actuators

Rotary Actuators  
Air Grippers

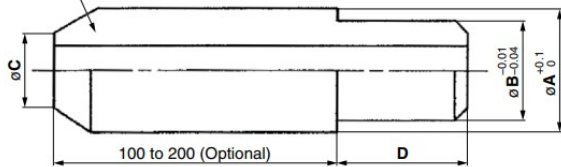
Modular F.R.L.  
Pressure Control Equipment

Air Preparation Equipment  
Industrial Filters

# CY1S-Z Series Replacement Procedure for Seals 4

[Slider insertion tool ]

\* Hole diameter: Optional



\* For the release of air when inserting tubing

	ø6	ø10	ø15	ø20	ø25	ø32	ø40
<b>A</b>	7.6	12	16.6	21.6	26.4	33.6	41.6
<b>B</b>	6	10	15	20	25	32	40
<b>C</b>	4	8	13	18	23	30	36
<b>D</b>	20	20	30	30	40	50	60

Fig. 2 Slider insertion tool dimensions

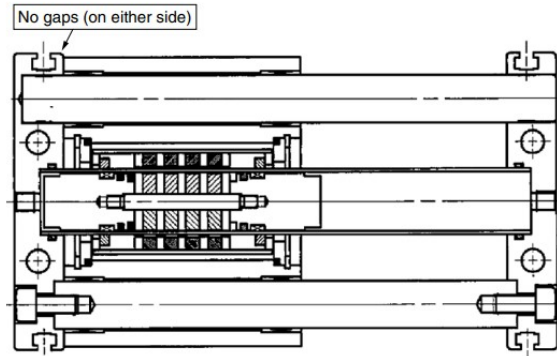
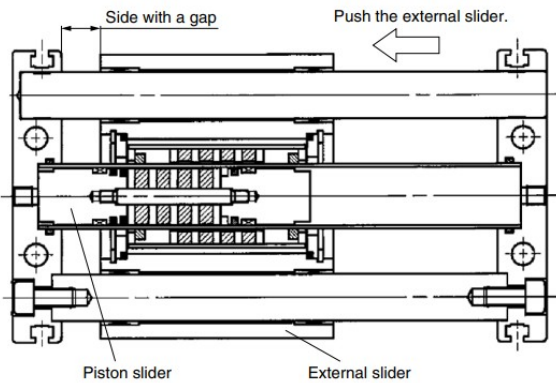


Fig. 3 External slider and plate gap dimensions (Under normal conditions)

[Slider fitting procedure]

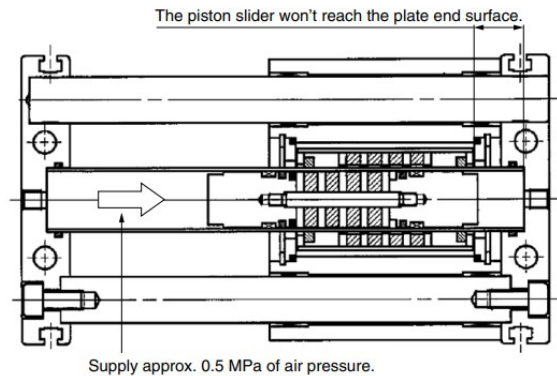
⊙ How to push the external slider with external force (by hand, etc.)



\* The piston slider hits the plate, and the external slider cannot reach the stroke end.

Fig. 4-1 Slider fitting procedure (How to push in the external slider)

⊙ How to push the piston slider with air pressure (approx. 0.5 MPa) (Opposite side of the fig. 4-1)



\* The external slider hits the cover, and the piston slider cannot reach the stroke end.

Fig. 4-2 Slider fitting procedure (How to push in the piston slider)