PremAire® System
and
Combination Breathing Apparatus

CYLINDER VALVE

For More Information: Call (1-800-MSA-2222) or Visit Our Website at (www.MSAnet.com)
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Escape Cylinder Kit

120 - 140 in. lbs.

45 - 50 ft. lbs.
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<td>Gauge Guard</td>
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Cylinder and Valve Assembly

488894 Cylinder Valve Assembly for 2216 PSIG Cylinder
488899 Cylinder Valve Assembly for 4500 PSIG Cylinder

807587 45 CU. FT. Carbon (4500 psig)
Model 7-947-1 (Rated 30 Minutes)

10035644 66 CU. FT. Carbon (4500 psig)
Model 7-1348-1 (Rated 30 Minutes)

807588 88 CU. FT. Carbon (4500 psig)
Model 7-1537-1 (Rated 60 Minutes)

809872 45 CU. FT. Aluminum (2216 psig)
Model 5-978-1 (Rated 30 Minutes)

807586 45 CU. FT. Carbon (2216 psig)
Model 5-447-1 (Rated 30 Minutes)

★ 604070 LUBRICANT
★ USE LOCTITE 290 WHEN ASSEMBLING
(MSA SEALANT P/N 600469)
◆ USE LOCTITE 222 WHEN ASSEMBLING
(MSA SEALANT P/N 28787)
MSA ESCAPE CYLINDER VALVE REPAIR (P/N 474934)

The MSA cylinder valve assembly consists of the following parts:

- Locknut
- Spring
- Handwheel
- Stem
- Gasket
- Valve Insert &
- Nylon seat assy.
- Packing gland
- Safety nut assy.
- Valve body
- Gauge
- Valve tube

Refer to the appropriate Parts List for part numbers.

### Warning

Before any repairs, depressurize cylinder. Open the cylinder valve handwheel 1/2 turn and leave it open until all air has been exhausted. Wear hearing protection if this is done in an enclosed area to avoid possible hearing damage. Do not attempt to repair the valve if pressure is shown on the cylinder pressure gauge. If pressure cannot be relieved by opening the cylinder valve handwheel, loosen the safety plug (no more than 1/4 turn). Failure to follow this warning can result in serious personal injury or death.

### Removing the Handwheel

1. Using the locknut wrench (P/N 466008), remove the locknut from the handwheel.

2. Also remove the spring and lift the handwheel off the valve stem.

3. Place a 3/4" wrench on the packing gland flats and unscrew it (counter-clockwise) to remove it from the valve body.

4. Pull the packing gasket out of the valve body.

5. Replace the handwheel on the valve stem. Turn the stem until the slot drops onto the insert. Turn the handwheel counter-clockwise until the insert can be removed.

**Note:** If the insert shows signs of wear or damage it must be replaced.

### Installing the Insert

1. Use the valve stem to install the insert in the valve body. Thread the stem clockwise until it is finger-tight.
2. Place a new gasket on the stem and seat it on the lip in the valve body.
3. Place the packing gland over the stem. Thread the packing gland into the cylinder valve until it is finger-tight.
4. Turn the valve stem counter-clockwise until the stem stops. Be sure the gland does not turn.
5. Using the inch-pound torque wrench with a 3/4" socket (deep-well), tighten the packing gland to 120 - 140 inch-pounds.
6. Place the handwheel on the stem and check the valve for proper motion. The handwheel should move freely.
7. Replace the spring in the top of the handwheel. Be sure that the valve is fully open to allow the locknut to be installed more easily.
8. Put 1 drop of Loctite #222 on the stem threads.
9. Using the locknut wrench, thread the locknut on the stem. To secure the handwheel use spanner wrench (P/N 487000) and torque to 15 - 20 inch/pounds.
10. Open and close the valve completely several times to seat the stem, insert, and the packing gasket.
11. Leak-Test the valve.

REMOVING THE SAFETY RELIEF NUT

1. Place a 13/16" socket on the safety plug hex flats and turn the plug counter-clockwise to the remove safety nut.
2. Discard the safety nut.

INSTALLING A NEW SAFETY NUT

1. Thread a new safety nut into the cylinder valve body. The burst disc is part of the Safety Nut. Use a torque wrench and 11/16" socket to tighten the nut to 45 -50 ft. pounds.
2. Leak Test the assembly. This completes the burst disc repair procedure.

REPLACING THE CYLINDER VALVE BODY

1. To remove the cylinder valve body from the cylinder, secure the cylinder in a suitable fixture.
2. Remove the rubber pressure gauge guard.
3. Place a 1-1/8" crow’s foot wrench on the flats on the top of the cylinder valve. Turn the valve counter-clockwise until it is completely out of the cylinder.
4. Use a high intensity light to inspect the inside of the cylinder for contamination. Be sure the cylinder interior is completely dry.

CAUTION

Do not use the cylinder if it has an odor, is contaminated internally, or has any visible signs of damage. If the cylinder is damaged, return it to an MSA Service Center. Call 1-800-MSA-2222 for instructions on return procedures.
Note: Check the hydrostatic test date, which may be stamped on the cylinder. Steel cylinders must be tested every five years.

5. Wrap 1 to 1-1/2 turns of tape on the valve inlet threads in a clockwise direction, starting at the second thread. Do not put tape on the first thread. Pieces of tape can break off and block air flow to the gauge, affecting the gauge reading.

6. Place a thin film of Christo-Lube lubricant on the taped threads before installing the gauge.

7. Carefully insert the cylinder valve into the cylinder neck so that the sealing surface of the cylinder is not damaged by the tube or sharp edges of the valve threads.

8. Hand-tighten the valve into the cylinder. Use the wrench with a 1-1/8" crow's foot to tighten the cylinder valve 1 to 1-1/2 turns.

9. Leak-Test the assembly. This completes the cylinder valve replacement procedure.

REPLACING THE CYLINDER VALVE PRESSURE GAUGE

Note: The escape cylinder pressure gauge uses a male thread which is threaded into the cylinder valve body. The cylinder valve does not have to be disassembled to remove the gauge.

1. To remove the pressure gauge, first remove the rubber gauge guard.

2. Place an open-end wrench on the gauge flats. Turn the gauge counter-clockwise and remove it from the cylinder valve body.

3. Clean out the cylinder valve port threads to remove any tape residue.

4. To install a new pressure gauge, place pipe-sealing tape on the gauge threads.
   a. Wrap 1 to 1-1/2 turns of tape in a clockwise direction, starting at the second thread. Do not put tape on the first thread. Pieces of tape can break off and block air flow to the gauge, affecting the gauge reading.
   b. Place a thin film of Christo-Lube lubricant on the taped threads before installing the gauge.

5. Place a wrench on the gauge flats. Turn the gauge clockwise to tighten. Do not over-tighten. Position the gauge so that it is readable in the "as-worn" position.

6. Replace the rubber gauge guard.

7. Leak-test all connections.
SHERWOOD ESCAPE CYLINDER VALVE REPAIR

The P/N 484354 cylinder valve assembly consists of the following parts:

- Valve body
- Bonnet
- Stem o-ring
- Burst disc
- Plug
- Stem nut
- Gasket
- Dip tube
- Stem
- Packing ring
- Lower plug
- Stem and insert gasket
- Handwheel
- Spring
- Cylinder o-ring
- Dip tube

Refer to the appropriate Parts List for part numbers.

REMOVING THE HANDWHEEL

1. Using a modified flathead screwdriver or locknut spanner wrench (P/N 466008), remove the stem nut from the handwheel.
2. Remove the spring and handwheel from the top of valve stem and gasket.
3. Place a 11/16" socket on the bonnet and unthread it from the valve body.
4. Pull the stem, packing ring, o-ring, and second packing ring out of the valve body.
5. Replace the handwheel on valve stem. Place the valve stem back in the valve body. Turn the stem until the slot drops onto the insert. Turn the handwheel counter-clockwise until the insert can be removed.

Note: If the insert shows signs of wear or damage it must be replaced.

INSTALLING THE INSERT

1. Use the valve stem to install the insert in the valve body. Thread the stem clockwise until it is finger-tight.
2. Place a new gasket, a new o-ring, and another new gasket on the stem.
3. Place the bonnet over the stem. Thread the bonnet into the cylinder valve until it is finger-tight.
4. Turn the valve stem counter-clockwise until the stem stops. Be sure the nut does not turn.

5. Using the foot-pound torque wrench with a 11/16" socket, tighten the bonnet to 40 to 50 foot-pounds.
6. Place the handwheel on the stem and check the valve for proper motion. The handwheel should move freely.
7. Replace the spring in the top of the handwheel. Be sure that the valve is fully open to allow the stem nut to be installed more easily.
8. Put 1 drop of Loctite #222 on the stem threads.
9. Using the modified flathead screwdriver or locknut spanner wrench, thread the stem nut on the stem to secure the handwheel.
10. Open and close the valve completely several times to seat the stem, insert, and the packing gasket.
11. Leak-Test the valve.

REPLACING THE SAFETY PLUG

1. Place a 3/8" socket on the plug hex flats and turn the plug counter-clockwise to remove it.
2. Discard the safety plug, disc, and gasket.
3. Use the o-ring removal tool or plastic stick to lift the gasket (P/N 695813) out of the cylinder valve body. Be careful not to scratch the surface of the cylinder valve body.
INSTALLING A NEW SAFETY PLUG

1. Insert a new gasket into the cylinder valve body.
2. Place a new burst disc (P/N 695834) on top of the gasket. Be sure the gasket and disc lay flat.
3. Thread the plug into the cylinder valve body. Use an inch-pound torque wrench and 3/8" socket to tighten the nut 70 to 80 in. pounds.
4. Leak Test the assembly. This completes the safety plug repair procedure.

CAUTION
Do not re-use the burst disc or the gasket. You may change the burst rating.

REPLACING THE CYLINDER VALVE BODY

1. Remove the gauge protector from the pressure gauge.
2. To remove the cylinder valve body from the cylinder, secure the cylinder in a suitable fixture.
3. Place a 1" crow's foot wrench on the cylinder valve flats. Turn the valve counter-clockwise until it is completely out of the cylinder.
4. Roll the o-ring over the threads.
5. Use a high intensity light to inspect the inside of the cylinder for contamination. Be sure the cylinder interior is completely dry.
6. Clean the o-ring sealing surface on the cylinder with a clean, dry, lint-free cloth. Be sure the cylinder sealing surface is undamaged and free from contaminants, such as dirt or tape residue.
7. Inspect the cylinder neck area. Do not use the cylinder if it has scratches, cuts, or grooves which may prevent an air-tight seal.
8. Place a thin film of Christo-Lube lubricant on the new o-ring.

CAUTION
Apply Christo-Lube lubricant to the o-ring and the o-ring groove just before installing the cylinder valve. Do not store these parts after lubricating them. Christo-Lube may collect dirt and/or contaminants.

9. Place two small diameter drops of Christo-Lube lubricant in the o-ring groove at locations 180 degrees apart.
10. Place a plastic thread protector or thin piece of paper or tape over the threads, then roll the o-ring to the bottom (male thread) end of the valve body. Remove the thread protector.
11. Carefully insert the cylinder valve into the cylinder neck so that the sealing surface of the cylinder is not damaged by the tube or sharp edges of the valve threads.
12. Use the foot-pound torque wrench with 1" crow's foot wrench to tighten the cylinder valve to 30 - 35 ft. pounds.
13. Leak-Test the assembly. This completes the cylinder valve replacement procedure.

REPLACING THE CYLINDER VALVE PRESSURE GAUGE

Note: The escape cylinder pressure gauge use a male thread which is threaded into the cylinder valve body. The cylinder valve does not have to be disassembled to remove the gauge.

1. To remove the pressure gauge, first remove the rubber gauge guard.
2. Place a 7/16" open-end wrench on the gauge flats. Turn the gauge counter-clockwise and remove it from the cylinder valve body.
3. Clean out the cylinder valve port threads to remove any tape residue.
4. To install a new pressure gauge, place pipe-sealing tape on the gauge threads.
   a. Wrap 1 to 1-1/2 turns of tape in a clockwise direction, starting at the second thread. Do not put tape on the first thread. Pieces of tape can break off and block air flow to the gauge, affecting the gauge reading.
   b. Place a thin film of Christo-Lube lubricant on the taped threads before installing the gauge.
5. Place a wrench on the gauge flats. Turn the gauge clockwise to tighten. Do not over-tighten. Position the gauge so that it is readable in the "as-worn" position.
6. Replace the rubber gauge guard.
7. Leak-test all connections.
SUPERIOR ESCAPE CYLINDER VALVE REPAIR

| P/N 492554 | 3000 psig Composite cylinder |
| P/N 492555 | 3000 psig Composite cylinder |
| P/N 492556 | 2216 psig Steel cylinder |

The Superior cylinder valve assembly consists of the following parts:

- Valve body
- Safety nut
- Pressure gauge
- Gauge guard
- Valve stem
- Valve stem insert
- Packing gasket
- Nut
- Gasket
- Handwheel
- Spring
- Ferrule spring
- Screw
- Label

Refer to the appropriate Parts List for part numbers.

REMOVING THE HANDWHEEL

1. Using a flatblade screwdriver, remove the label from the handwheel.

2. Using a #2 Phillips screwdriver, remove the screw, ferrule spring, spring, and handwheel. Remove the handwheel from the top of valve stem and gasket.

3. Place a 1-1/8" socket (deep-well) on the nut and unscrew it from the valve body. Pull the packing gasket and stem out of the valve body.

4. Replace the handwheel on valve stem. Place the valve stem back in the valve body. Turn the stem until the slot drops onto the insert. Turn the handwheel counter-clockwise until the insert can be removed.

Note: If the insert shows signs of wear or damage it must be replaced.

INSTALLING THE INSERT

1. Use the valve stem to install the insert in the valve body. Thread the stem clockwise until it is finger-tight.

2. Place a new gasket on the stem.
3. Place the nut over the stem. Thread the nut into the cylinder valve until it is finger-tight.
4. Turn the valve stem counter-clockwise until the stem stops. Be sure the nut does not turn.
5. Using the foot-pound torque wrench with a 1-1/8" socket (deep-well), tighten the nut to 50 foot-pounds.
6. Place the gasket on top of the nut.
7. Place the handwheel on the stem and check the valve for proper motion. The handwheel should move freely.
8. Replace the spring and ferrule spring in the top of the handwheel. Be sure that the valve is fully open to allow the screw to be installed more easily.

9. Put 1 drop of Loctite #222 on the screw threads.

10. Using the Phillips screwdriver, thread the screw into the stem to secure the handwheel.
11. Open and close the valve completely several times to seat the stem, insert, and the packing gasket.
12. Leak-Test the valve.
13. Install the label over the screw on top of the handwheel.
SUPERIOR ESCAPE CYLINDER VALVE REPAIR

REPLACING THE SAFETY NUT

1. Place a 13/16" socket on the safety plug hex flats and turn the plug counter-clockwise to remove safety nut.

2. Discard the safety nut. The burst disc is part of the safety nut.

INSTALLING A NEW SAFETY NUT

1. Thread the safety nut into the cylinder valve body. Use a foot-pound torque wrench and 11/16" socket to tighten the nut to 35 - 40 ft. pounds.

2. Leak Test the assembly. This completes the burst disc repair procedure.

REPLACING THE CYLINDER VALVE BODY

Note: Replacing the cylinder valve body P/N 492556, follow procedures in number 6.

1. To remove the cylinder valve body from the cylinder, secure the cylinder in a suitable fixture.

2. Remove the rubber pressure gauge guard.

3. Place a 1-1/8" crow’s foot wrench on the flats on the top of the cylinder valve. Turn the valve counter-clockwise until it is completely out of the cylinder.

4. Roll the o-ring over the threads.

5. Use a high intensity light to inspect the inside of the cylinder for contamination. Be sure the cylinder interior is completely dry.

6. Clean the o-ring sealing surface on the cylinder with a clean, dry, lint-free cloth. Be sure the cylinder sealing surface is undamaged and free from contaminants, such as dirt or tape residue.

7. Inspect the cylinder neck area. Do not use the cylinder if it has scratches, cuts, or grooves which may prevent an air-tight seal.

8. Place a thin film of Christo-Lube** lubricant on the new o-ring.

9. Place two small diameter drops of Christo-Lube in the o-ring groove at locations 180 degrees apart.

10. Place a plastic thread protector or thin piece of paper or tape over the threads, then roll the o-ring to the bottom (male thread) end of the valve body. Remove the thread protector.

11. Carefully insert the cylinder valve into the cylinder neck so that the sealing surface of the cylinder is not damaged by the tube or sharp edges of the valve threads.

12. Use the foot-pound torque wrench with a 1-1/8" crow’s foot wrench to tighten the cylinder valve to 30 - 35 ft. pounds.

Note: A new safety nut must be installed each time the cylinder valve body is removed from the cylinder.

13. Leak-Test the assembly. This completes the cylinder valve replacement procedure.
REPLACING THE CYLINDER VALVE BODY (P/N 492556)

1. To remove the cylinder valve body from the cylinder, secure the cylinder in a suitable fixture.
2. Remove the rubber pressure gauge guard.
3. Place a 1-1/8" crow’s foot wrench on the flats on the top of the cylinder valve. Turn the valve counter-clockwise until it is completely out of the cylinder.
4. Use a high intensity light to inspect the inside of the cylinder for contamination. Be sure the cylinder interior is completely dry.

Note: Check the hydrostatic test date, which may be stamped on the cylinder. Steel cylinders must be tested every five years.

5. Wrap 1 to 1-1/2 turns of tape on the valve inlet threads in a clockwise direction, starting at the second thread. Do not put tape on the first thread. Pieces of tape can break off and block air flow to the gauge, affecting the reading.
6. Place a thin film of Christo-Lube lubricant on the taped threads before installing the gauge.
7. Carefully insert the cylinder valve into the cylinder neck so that the sealing surface of the cylinder is not damaged by the tube or sharp edges of the valve threads.
8. Hand-tighten the valve into the cylinder. Use the wrench with a 1-1/8" crow’s foot to tighten the cylinder valve 1 to 1-1/2 turns.
9. Leak-Test the assembly. This completes the cylinder valve replacement procedure.

REPLACING THE CYLINDER VALVE PRESSURE GAUGE

Note: The escape cylinder pressure gauge use a male thread which is threaded into the cylinder valve body. The cylinder valve does not have to be disassembled to remove the gauge.

1. To remove the pressure gauge, first remove the rubber gauge guard.
2. Place a 7/16" open-end wrench on the gauge flats. Turn the gauge counter-clockwise and remove it from the cylinder valve body.
3. Clean out the cylinder valve port threads to remove any tape residue.
4. To install a new pressure gauge, place pipe-sealing tape on the gauge threads.
   a. Wrap 1 to 1-1/2 turns of tape in a clockwise direction, starting at the second thread. Do not put tape on the first thread. Pieces of tape can break off and block air flow to the gauge, affecting the gauge reading.
   b. Place a thin film of Christo-Lube lubricant on the taped threads before installing the gauge.
5. Place a wrench on the gauge flats. Turn the gauge clockwise to tighten. Do not over-tighten. Position the gauge so that it is readable in the “as-worn” position.
6. Replace the rubber gauge guard.
7. Leak-test all connections.
## TROUBLESHOOTING

### Escape Cylinder Troubleshooting Only:

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<th>Issue</th>
<th>Likely Cause</th>
<th>Resolution</th>
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<td>Cylinder valve not fully open</td>
<td>Fully open cylinder valve handwheel</td>
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<td>Cylinder does not contain at least 1500 psig.</td>
<td>Be sure to use a cylinder charged to at least 1500 psig</td>
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<td>Second stage regulator may require adjustment</td>
<td>Adjust static pressure</td>
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<tr>
<td></td>
<td>First stage regulator may require adjustment</td>
<td>Return to a Certified MSA Air Mask Service Center for repair.</td>
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