

Cylinder and Valve

MAINTENANCE AND REPAIR

For More Information, call 1-800-MSA-2222 or Visit Our Website at www.MSAafety.com



MINE SAFETY APPLIANCES COMPANY
CRANBERRY TWP., PENNSYLVANIA, U.S.A. 16066

CYLINDER AND VALVE

Cylinder and Valve Replacement Kits

P/N		Description
With air	Less air	
809872	10033357	3AL Aluminum, 45 cu ft.*
469619	10033209	Hoop-wound, 45 cu ft.
807586	10033352	L-30 Stealth Carbon-wrapped.
816115	10033358	L-30+ Stealth Carbon-wrapped, 60 cu ft.
807587	10037095	H-30 Stealth Carbon-wrapped, 45 cu ft.
807570	10033355	H-45 Stealth Carbon-wrapped, 66 cu ft.
10035644	10040591	H-45 Low-Profile, Stealth Carbon-wrapped, 66 cu ft.
807588	10033356	H-60 Stealth Carbon-wrapped, 88 cu ft.

Cylinder Replacement Kits

P/N	Description
814806	3AL Aluminum, 45 cu ft.*
811199	Hoop-wound, 45 cu ft.
816970	L-30 Stealth Carbon-wrapped.
816974	L-30+ Stealth Carbon-wrapped, 60 cu ft.
816972	H-30 Stealth Carbon-wrapped, 45 cu ft.
816973	H-45 Stealth Carbon-wrapped, 66 cu ft.
10044832	H-45 Low-Profile, Stealth Carbon-wrapped, 66 cu ft.
816971	H-60 Stealth Carbon-wrapped, 88 cu ft.

*Contact MSA Customer Service (1-800-MSA-2222) for approval information before ordering.

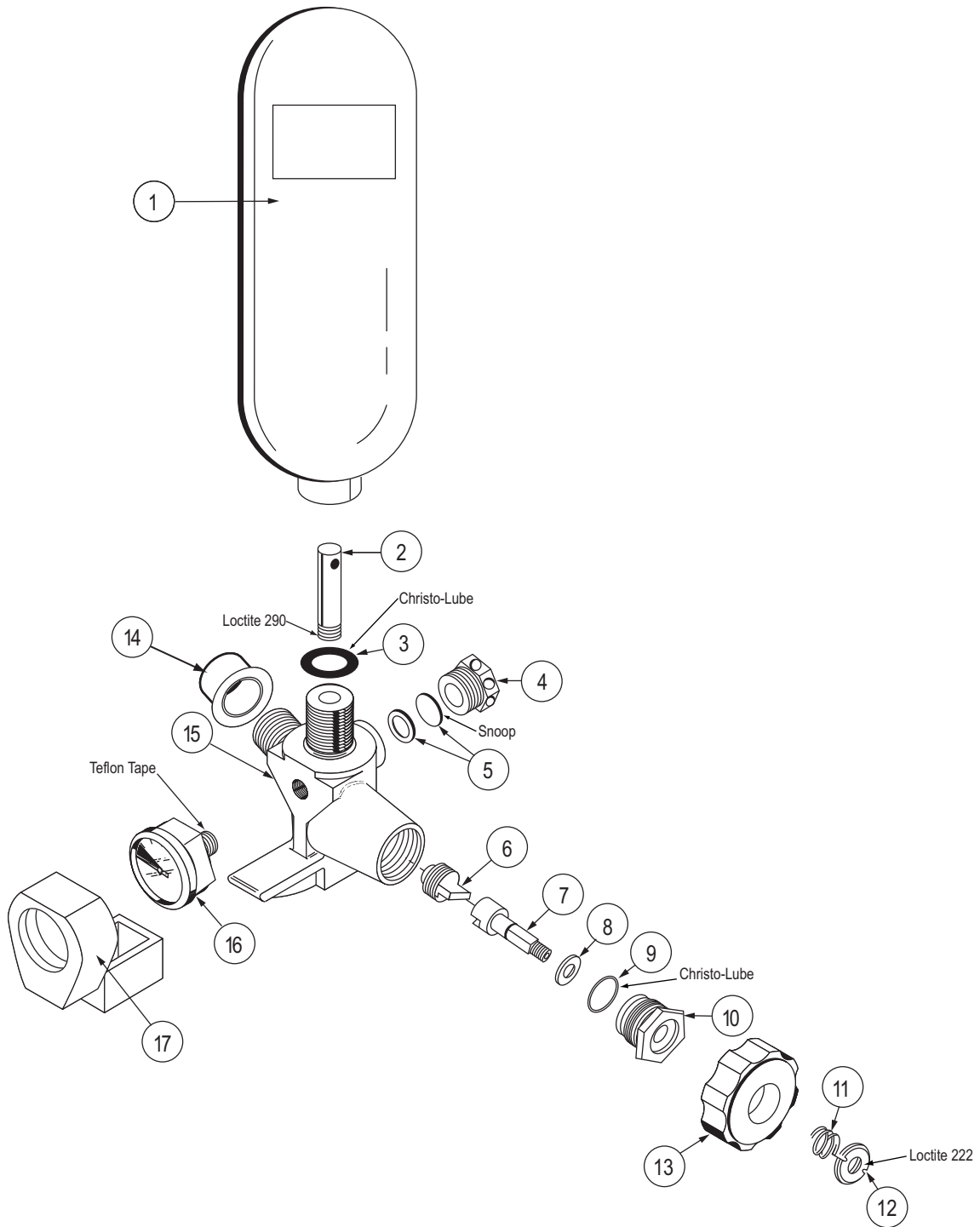
Cylinder Valve Replacement Kits

P/N	Description
488894	Cylinder Valve Assembly (2216 PSI)
494884	Cylinder Valve Assembly (3000 PSI)
488899	Cylinder Valve Assembly (4500 PSI)

Parts list

Item	P/N	Description
1	-	Cylinder
2	80416	Cylinder Valve Inlet Tube
3	68542	O-Ring, 2216 psi
3a	633550	O-Ring, 3000 psi
3b	630926	O-Ring, 4500 psi
4	68550	Safety Plug, 2216 psi
4a	495636	Safety Plug, 3000 psi
4b	473254	Safety Plug, 4500 psi
5	482225	Disc and Gasket, 2216 psi
5a	494928	Disc and Gasket, 3000 psi
5b	482226	Disc and Gasket Kit, 4500 psi
6	488858	Valve Insert Assembly
7	488859	Valve Stem
8	488860	Valve Stem Washer
9	628976	O-Ring
10	488862	Packing Gland
11	83831	Spring
12	83731	Locknut
13	91728	Handwheel
14	94906	Protector Cap
15	488772	Valve Body, 2216 psi
15a	495743	Valve Body, 3000 psi
15b	488771	Valve Body, 4500 psi
16	95278	Air Pressure Gauge 2216/3000 psi
16	473250	Air Pressure Gauge, 4500 psi
17	801131	Gauge Guard
	604070	Lubricant
	600469	Loctite 290
	29787	Loctite 222
	600920	Snoop Leak Detector
	28907	Teflon Tape

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⚠ WARNING

Relieve all pressure from the system. Close the cylinder valve. Be sure that nothing blocks the regulator outlet. Open the bypass valve to release trapped air. Failure to follow this warning can result in serious personal injury or death.

⚠ WARNING

Before removing or repairing the cylinder valve, bleed all air from the cylinder. Do not attempt to remove or repair the valve if the cylinder pressure gauge shows pressure. If you cannot relieve pressure by opening the cylinder valve, loosen the safety plug no more than 1/4 turn. Wear hearing protection. Open the cylinder valve 1/2 turn and leave it open until all air is exhausted. Failure to follow this precaution may result in severe personal injury or death.

Removing the Cylinder Valve Pressure Gauge



1. Use a 7/16" wrench to remove the gauge from the cylinder valve body.

2. Clean the threads in the cylinder valve body to be sure no tape residue remains.

Removing the Burst Disc and Gasket

To remove the burst disc:

1. Unscrew the safety plug. (See **Safety Plug Torque Specifications**.)



2. Punch a hole in the burst disc and remove it.



3. Discard the disc.
4. Use a small blade screwdriver to remove the burst disc gasket.
5. Discard the gasket.

Note: Be careful not to scratch the cylinder valve body.

Removing the Handwheel and Insert

1. Use the spanner to remove the locknut and spring.



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2. Remove the handwheel.



3. Use a **7/8"** wrench to unscrew the packing gland.



- a. Remove the packing gland.



4. Use the handwheel to unscrew the valve stem.

- a. Remove the valve stem.



5. Remove the o-ring.



6. Remove valve stem washer from the packing gland.



7. Use the valve stem as a tool to remove the insert.



8. Replace the handwheel on the valve stem.



- a. Turn the stem until it engages the insert.

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- b. Unscrew and remove the insert.



- c. Replace worn inserts.

Removing the Cylinder Valve Body

1. Secure the cylinder in a suitable fixture.
2. Remove the rubber pressure gauge guard.
3. Use a **13/16" crowfoot or wrench** to unscrew the cylinder valve.
4. Remove and discard the o-ring.

Removing the Inlet Tube

1. Unscrew and remove the inlet tube.



Inspecting Inside of Cylinder

1. 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 appears damaged, return it to a Certified MSA Air Mask Service Center for repair.

REASSEMBLY

Installing the Inlet Tube (P/N 80416)

Note: If the cylinder valve inlet tube is damaged, replace the inlet tube.

1. Apply one drop of Loctite 290 (P/N 600469) sealant to the inlet thread.



2. Screw the tube into the cylinder valve.



Note: Do not over-tighten.

3. Set the valve aside and allow the sealant to dry for four (4) hours.

Installing the Cylinder Valve Body

1. Clean the cylinder o-ring sealing surface with a clean, dry, lint-free cloth.

Note: Be sure the cylinder-sealing surface is undamaged and free from contaminants such as dirt or tape residue.

2. Inspect the cylinder neck for cuts, scratches, weakened areas, or any other condition that could prevent an airtight seal.
3. Install a new o-ring.
 - a. To avoid contamination and dirt collection, apply Christo-Lube lubricant to the o-ring and the o-ring groove immediately before installing the cylinder valve.
 - b. Place two (2) small drops of Christo-Lube lubricant into the o-ring groove 180° apart.
 - c. Protect the threads with thread protector or thin piece of paper.

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- d. Roll the o-ring onto the male thread end of the valve body.



- e. Rotate the o-ring 1/2 to 3/4 of a turn to spread the Christo-Lube lubricant evenly around the groove.
f. Remove the thread protector.

- g. Carefully insert the cylinder valve into the cylinder neck.



Note: Take care not to damage the cylinder-sealing surface.

4. Use the foot-pound torque wrench with a **13/16" crowfoot** to tighten the cylinder valve to **70-75 ft lbs.**



5. Reinstall the gauge guard.
6. Leak test the assembly. (See **Leak Testing, P/N 10051131.**)

Installing the Handwheel and Insert

1. Use the valve stem to install the insert.



2. Screw the insert finger-tight.
3. Install a new o-ring on the packing gland.

- a. Apply a small amount of Christo-Lube lubricant to the o-ring.



4. Install a new washer into the packing gland.

- a. Use the valve stem to seat the washer.



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5. Reinsert the valve stem into the valve body.



6. Screw the packing gland into the cylinder valve.



7. Turn the valve stem counterclockwise until it stops.
 - a. Be sure the gland does not turn.



8. Use a **7/8" crow foot or deep well socket** to tighten the packing gland to 85-105 in lbs.

9. Replace the handwheel on the valve stem.



- a. Turn the stem until it engages the insert.

10. Use the handwheel to check the valve for proper action. The handwheel should turn with light resistance.

11. Replace the spring.

Note: Open the valve fully to ease locknut installation.

12. Put a drop of Loctite #222 (P/N 29787) on the stem threads.

13. Use the locknut spanner wrench to tighten the locknut.



14. Tighten the locknut until it is flush with the stem.

15. Open and close the valve completely several times to seat the stem, insert, and the valve stem gasket.

16. Leak test the valve. (See **Leak Testing, P/N 10051131**)

Installing the Cylinder Valve Gauge

2216/3000 psi: P/N 95278

4500 psi: P/N 473250

Note: Inspect Pressure Relief Label. If the Pressure Relief Label is perforated or missing replace the Cylinder Valve Gauge.



1. Apply pipe-sealing tape to gauge threads.
2. Screw the gauge into the gauge port.
3. Tighten with a **7/16" wrench**.
 - a. Ensure that the MSA logo is parallel to the base of the valve body.

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b. Ensure that the needle points to the cylinder valve outlet.



4. Replace the rubber gauge protector.



5. Perform a Leak Test to check connection. (See **Leak Testing, P/N 10051131**)

Installing the Burst Disc and Gasket

Safety Plug Torque Specifications

System Pressure	Socket	Torque Specification
2216 psi	11/16"	50-53 ft lbs.
3000 psi	3/4"	26-30 ft lbs.
4500 psi	9/16"	21-25 ft lbs.

WARNING

Install the gasket, then burst disc as instructed. Ensure threads of burst disc area and safety plug threads are free of Christo-Lube lubricant. Do not reuse the burst disc or gasket. Failure to install properly may cause burst disc malfunction resulting in serious personal injury or death.

1. Install a new burst disc gasket.



2. Place a thin film of Snoop on both sides the new burst disc.

3. Install a new burst disc. Be sure the disc lays flat.



4. Screw the safety plug into the cylinder valve body.

5. Use a torque wrench and socket or crow foot (See **Safety Plug Torque Specifications**) to tighten the plug to the proper torque specification.



TROUBLESHOOTING

Crooked handwheel - replace bent Valve Stem P/N 488859 and inspect packing gland P/N 488862. If damaged, replace packing gland and O-ring P/N 628976.

Leakage when valve is closed - replace Valve Insert Assembly P/N 488858

Leakage when valve is open - replace O-ring P/N 628976

Handwheel spins and won't open or close valve - replace Valve Stem Washer P/N 488860. If handwheel P/N 91728 is rounded in the center and will not engage stem, replace handwheel.

*always vent all pressurized air from cylinder prior to repair