Escape Cylinder and Valve

MAINTENANCE AND REPAIR

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

MSA
The Safety Company

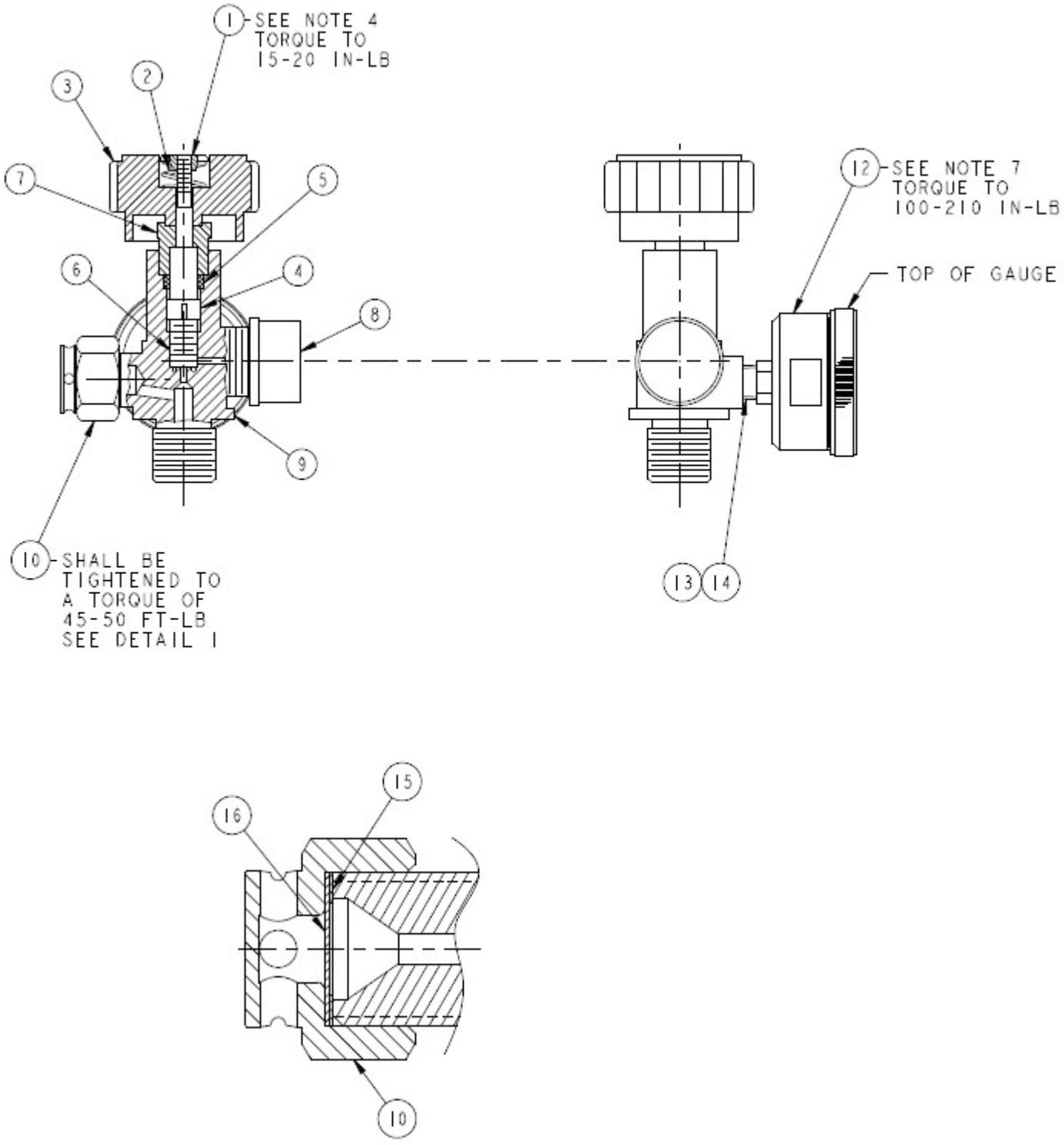
1000 Cranberry Woods Drive
Cranberry Twp. Pennsylvania, U.S.A. 16066

TAL 1601 (L) Rev. 2

Prnt. Spec. 10000005389 (I) Mat. 10064389
Doc. 10064389

CYLINDER COMPONENTS		
Item	**Part No.**	**Description**
	818159	5 Minute, Aluminum Cylinder & Valve (Not Shown)
	802191	10 Minute, Aluminum Cylinder & Valve (Not Shown)
	10042420	5 Minute, Carbon Cylinder & Valve (Not Shown)
	10042423	10 Minute, Carbon Cylinder & Valve (Not Shown)
1	**83731**	Lock Nut
2	**83831**	Valve Wheel Coil Spring
3	**91728**	Handwheel
4	**14438**	Valve Stem
5	**76660**	Gasket (Valve Stem)
6	**15339**	Valve Insert
7	**14437**	Packing Gland
9	**818108**	Valve Body, (5 & 10 Minute Carbon 3000 psi Cylinder)
	818109	Valve Body, (10 Minute Aluminum 3000 psi Cylinder)
	818110	Valve Body, (5 Minute Aluminum 2216 psi Cylinder)
10	**10071044**	Safety Nut, 2216 psi
	10071045	Safety Nut, 3000 psi
12	**95278**	Gauge
15	**10071067**	Gasket
16	**10071068**	Pressure Disc, 3000 psi
	10071069	Pressure Disc, 2216 psi
	29787	Sealant
	28907	Tape
	809028	Lubricant, Christo-Lube

CYLINDER VALVE



CYLINDER VALVE

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MSA ESCAPE CYLINDER VALVE REPAIR

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.

Note: If the insert being installed is new then apply a thin film of christo-lube lubricant to the threads of the insert before assembling.

2. Place a new gasket on the stem and seat it on the lip in the valve body.

Note: If the stem being installed is new then apply a thin film of christo-lube lubricant to the shaft of the stem which the inner diameter of the gasket comes in contact with.

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. Now turn the handwheel clockwise to close the valve. Once closed remove the handwheel and tighten the packing gland to 85 - 110 in-lbs. Once completed place the handwheel back onto the stem and open the valve fully.
7. Replace the spring in the top of the handwheel.

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. Allow Sealant to cure 3 hours before leak testing or leak check valve assembly prior to applying sealant to locknut.

REMOVING THE SAFETY NUT, GASKET, AND PRESSURE DISC

To remove the pressure disc:

1. Use a 20mm socket to remove the safety nut.

2. Discard the safety nut, gasket, and pressure disc.

INSTALLING THE PRESSURE DISC, GASKET, AND SAFETY NUT

⚠ WARNING

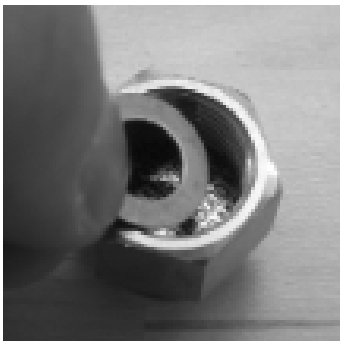
Install the pressure disc, then the gasket as instructed. Ensure threads of pressure disc area and safety nut threads are free of Christo–Lube lubricant. Do not reuse the safety nut, pressure disc or gasket. Failure to install properly may cause pressure disc malfunction resulting in serious personal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

1. Place a thin film of Snoop on both sides of the new pressure disc.

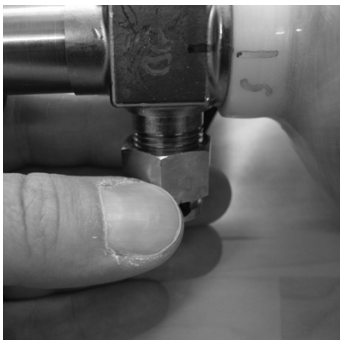
2. Now place the pressure disc into a new safety nut.

CYLINDER VALVE

3. Next place the gasket into the safety nut.



4. With the cylinder valve inverted thread the safety nut down until it is hand tight.



5. Use a torque wrench and 20mm socket to tighten the safety nut to 45 – 50 ft lbs.

6. 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.

TROUBLESHOOTING

Escape Cylinder Troubleshooting Only:		
Regulator has low flow performance	Cylinder valve not fully open	Fully open cylinder valve handwheel
	Cylinder does not contain at least 1500 psig.	Be sure to use a cylinder charged to at least 1500 psig
	Second stage regulator may require adjustment	Adjust static pressure
	First stage regulator may require adjustment	Return to a Certified MSA Air Mask Service Center for repair.

TROUBLESHOOTING

Crooked handwheel - replace bent Valve Stem and inspect packing gland. If damaged, replace packing gland.
Leakage when valve is closed - replace Valve Insert Assembly P/N 15339
Leakage when valve is open - replace 76660 Valve Stem Gasket
Handwheel spins and won't open or close valve - replace Valve Stem Gasket P/N 76660. 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

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