FireHawk® M7XT Air Mask PR14™ First Stage Regulator

MAINTENANCE AND REPAIR

For More Information, call 1-877-672-3473 (MSA-FIRE) or Visit Our Website at www.MSAsafety.com

MSA The Safety Company

MINE SAFETY APPLIANCES COMPANY
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Prnt. Spec. 10000005389(I) Mat. 10147453
Doc. 10147453

FIREHAWK M7XT PR14 FIRST STAGE REGULATOR

Replacement Kits

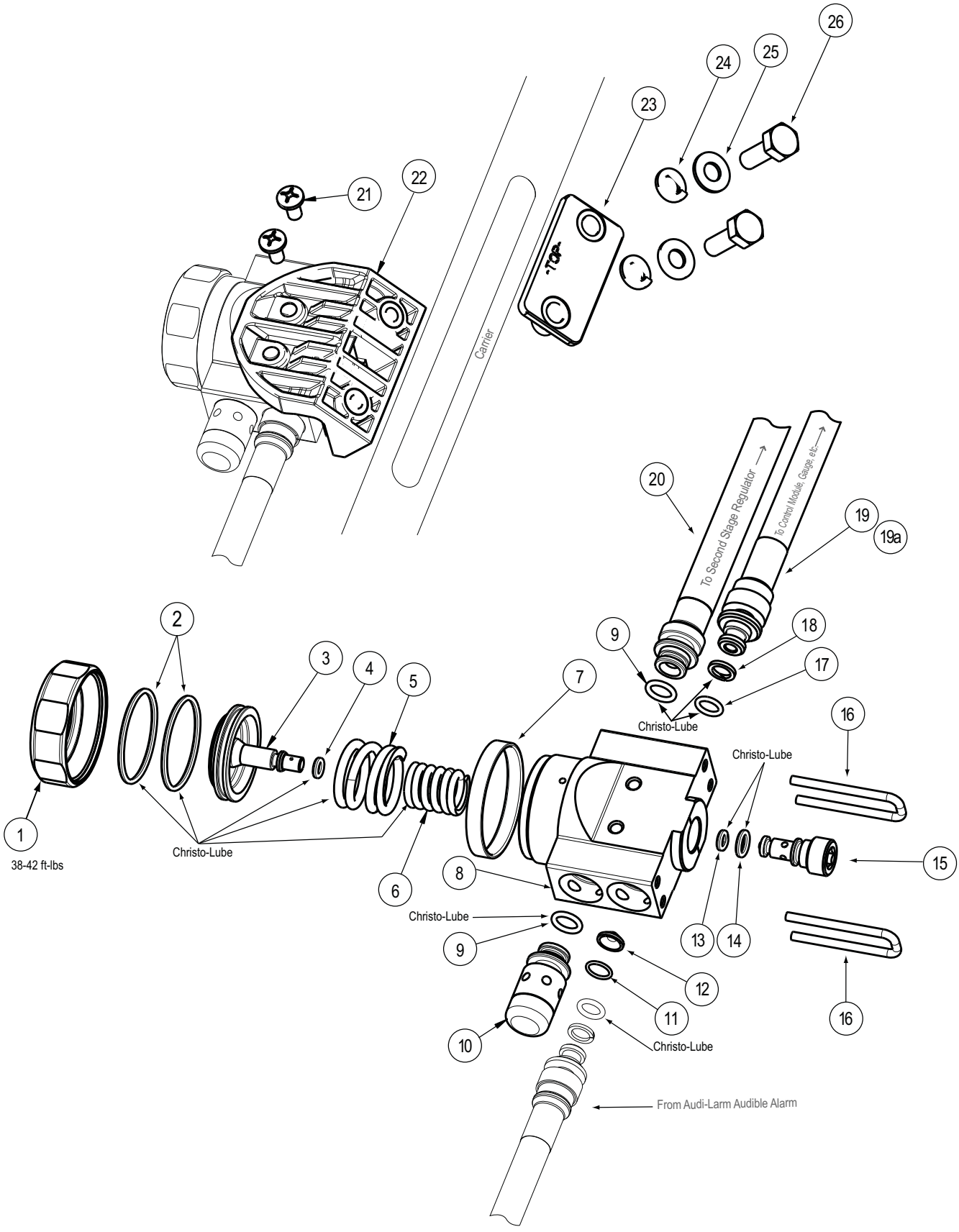
PR14 First Stage Regulator Replacement Kit		
10053736	PR14 First Stage Regulator (Complete)	
PR14 First Stage Regulator Kit		
10065408	10050616	Seat
	633553	O-ring (bottom)
	10058236	O-ring (top)
	10050617	Piston
	10052365	O-ring (2 req'd)
	10052364	O-ring
	10051663	Inlet Filter
	10052367	Inlet Filter O-ring
	10053273	O-ring (2 req'd)
	63198	O-ring (2 req'd)
	635278	Back-up Ring
	10052622	Screw (2 in kit)
	10052621	Seal Ring
10055349	10047898	Slider
	10055563	Screw (2 req'd)
	10014878	Flat Washer (2 req'd)
	631356	Lock Washer (2 req'd)

Parts List

Item	P/N	Description
1	10050623	Regulator Cap
2	10052365	O-ring (2 req'd)
3	10050617	Piston
4	10052364	O-ring
5	10050620	Outer Spring
6	10050621	Inner Spring
7	10052621	Seal Ring
8	10050615	Regulator Body
9	10053273	O-ring
10	10053426	Pressure Relief Valve*
11	10052367	Inlet Filter O-ring
12	10051663	Inlet Filter
13	10058236	O-ring (top)
14	633553	O-ring (bottom)
15	10050616	Seat
16	10050622	U-clip (2 req'd)
17	63198	O-ring (2 req'd)
18	635278	Back-up Ring (2 req'd)
19	10082852	High Pressure Hose*
19a	10083121	High Pressure Hose for Quick Fill*
20	10051882	Intermediate Pressure Hose, Threaded*
	10051883	Intermediate Pressure Hose, Quick-Connect*
21	10052622	Screw (2 req'd)
22	10051664	Mounting Bracket
23	10047898	Slider
24	631356	Lock Washer (2 req'd)
25	10014878	Washer (2 req'd)
26	10055563	Bolt (2 req'd)
	29787	Loctite 222
	604070	Christo-Lube
	600920	Leak Detector
	10069386	PR14 Test Bracket

*Includes back-up and/or O-rings as needed.

FIREHAWK M7XT PR14 FIRST STAGE REGULATOR



FIREHAWK M7XT PR14 FIRST STAGE REGULATOR

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NOTE: Depressurize the FireHawk M7XT Air Mask before maintenance or repair.
- Close the cylinder valve.
- Squeeze the shut-off buttons.
- Open the bypass.
- Disconnect the FireHawk M7XT Audi-Larm Audible Alarm.

⚠ WARNING

DO NOT attempt to maintain or repair the FireHawk M7XT Air Mask while pressurized. Attempting to disassemble a pressurized Air Mask can cause parts to become airborne or swing at very high rates of speed. Failure to follow this warning can result in serious personal injury or death.

DISASSEMBLY

Removing the PR14 First Stage Regulator

To remove the PR14 First Stage Regulator from the carrier:

1. Use a Phillips screwdriver to remove the screws.

2. Remove the regulator from the mounting bracket.
3. Remove residual thread-locking material from the screws.
4. Remove residual thread-locking material from the regulator body threads.

NOTE: If necessary, use compressed air to remove thread-locking material and other fragments.

Removing the Mounting Bracket

NOTE: If the bracket is not damaged, skip to "Removing the Intermediate Pressure Hose and High Pressure Control Module Hose."

Remove the regulator from the mounting bracket. (See **Removing the PR14 First Stage Regulator** for instructions.)

1. Use a **7/16" wrench** to remove the mounting bracket bolts.

2. Remove the mounting bracket.

3. Remove the plastic slider.

4. Remove residual thread-locking material from the bolts and mounting bracket threads.

Removing the Intermediate Pressure Hose and High Pressure Control Module Hose

1. Remove the u-clip.

2. Pull the hose firmly to remove it from the regulator body.

3. Use the o-ring removal tool to remove the o-ring.

NOTE: Be careful not to damage the o-ring sealing surfaces.

4. Discard the o-ring.

5. Pull the hose firmly to remove it from the regulator body.

6. Use the o-ring removal tool to remove the o-ring and back-up ring from the hose fitting.

NOTE: Be careful not to damage the o-ring sealing surfaces.

7. Discard the o-ring and back-up ring.

Removing the High Pressure Audi-Larm™ Audible Alarm Hose and Pressure Relief Valve

1. Remove the u-clip.

2. Pull the hose firmly to remove it from the regulator body.
3. Use the o-ring removal tool to remove the o-ring and back-up ring from the hose fitting.

NOTE: Be careful not to damage the o-ring sealing surfaces.

4. Discard the o-ring and back-up ring.

5. Use the o-ring removal tool to remove the filter o-ring.

6. Discard the o-ring.
7. Allow the filter to drop out.
8. Discard the filter.

9. Pull the relief valve firmly to remove it from the regulator body.

10. Use the o-ring removal tool to remove the o-ring.
11. Discard the o-ring.

NOTE: Be careful not to damage the o-ring sealing surfaces.

Removing the Regulator Cap and Seal Ring

1. Mount the PR14 Regulator body in a vise.

NOTE: Use electrical tape or rubber sleeves on the jaws of the vise.

2. Use a **1 5/8" 6-point socket and breaker bar** to remove the cap.

3. Use the o-ring removal tool to remove the cap o-ring.

NOTE: Be careful not to damage the o-ring sealing surfaces.

4. Discard the o-ring.

5. Remove the seal ring and discard..

NOTE: Be careful not to damage the seal ring sealing surfaces.

Removing the Piston, Piston O-Rings, and Springs

1. Screw the mounting screw (10-32 thread) partially into the piston head.

NOTE: Use of 10-32 fine or course threads acceptable.

2. Pull gently on the mounting screw to extract the piston from the regulator body.

NOTE: Be careful not to damage the regulator body sealing surfaces.

3. Discard the piston.
4. Remove the inner spring and outer spring.

Removing the Seat and Seat O-Rings

1. Use a **1/4" hex wrench** to remove the seat from the regulator body.

2. Discard the seat.

NOTE: Be careful not to damage the o-ring sealing surfaces.

REASSEMBLY

Installing the Seat and Seat O-Rings

Seat:	P/N 10050616
Top O-Ring:	P/N 10058236
Bottom O-Ring:	P/N 633553

1. Install the new seat (P/N 10050616).
   a. Apply Christo-Lube (P/N 604070) to the new o-ring (P/N 633553).

   b. Install the bottom o-ring. Use o-ring tool (P/N 10120425).

NOTE: Be careful not to damage the seat.

   c. Apply Christo-Lube (P/N 604070) to the new top seat o-ring (P/N 10058236).

   d. Install the new o-ring. Use o-ring tool (P/N 10120424).

NOTE: Be careful not to damage the seat.

2. Use a **1/4" hex wrench** to screw the seat into the regulator body until it stops.
3. Back the seat out one and a half turns.

4. Continue to unscrew the seat as necessary to align a seat hex point with the regulator body scribe line.

NOTE: After replacing or reinstalling the seat the regulator MUST be tested and adjusted. Reassemble the regulator, and test and adjust. (See **Testing and Adjusting the First Stage Static Pressure** for instructions.)

Installing the Piston, Piston O-Rings, and Springs

Piston:	P/N 10050617
O-Rings:	P/N 10052364
	P/N 10052365
Outer Spring:	P/N 10050620
Inner Spring:	P/N 10050621

1. Apply Christo-Lube (P/N 604070) to the piston bore.

2. Apply Christo-Lube (P/N 604070) to both ends of the outer spring (P/N 10050620).

3. Install the spring into the regulator body.

4. Apply Christo-Lube (P/N 604070) to both ends of the inner spring (P/N 10050621).

5. Install the spring into the regulator body.

6. Apply Christo-Lube (P/N 604070) to the new piston head o-ring (P/N 10052365) and install new o-ring.

7. Apply Christo-Lube (P/N 604070) to the new piston shaft o-ring (P/N 10052364).
   a. Cover the piston sensing holes with tape.

   b. Install the new o-ring.

NOTE: If o-ring tool (P/N 10120426) is used disregard sub-steps a and b.

⚠ CAUTION

Be careful not to damage the piston seat.

8. Remove the tape or protective paper.

9. Install the piston into the regulator body.

Installing the Regulator Cap and Seal Ring

Regulator Cap	P/N10050623
O-Ring	P/N 10052365
Seal Ring:	P/N10052621

1. Install the seal ring onto the regulator body.

NOTE: Ensure that the flat surface faces out.

2. Apply a small amount of Christo-Lube (P/N 604070) to the new cap o-ring (P/N 10052365).

3. Install the o-ring.

NOTE: Ensure that the o-ring is completely seated.

4. Screw the cap onto the regulator body.
5. Secure the regulator body in a vise.

NOTE: Use electrical tape or rubber sleeves on the jaws of the vise.

6. Use a **foot-pound torque wrench and 1-5/8" six-point socket** to tighten the cap to **38-42 ft lbs.**

Installing the Pressure Relief Valve

Pressure Relief Valve	P/N 10053426
O-Ring	P/N 10053273

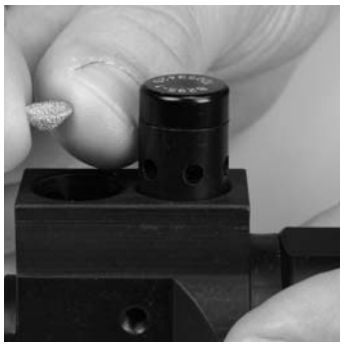
1. Apply Christo-Lube (P/N 604070) to the pressure relief valve o-ring (P/N 10053273).
2. Install the new o-ring.

3. Install the pressure relief valve (P/N 10053426) into the intermediate pressure port.

Installing the Inlet Filter and O-Ring

Inlet Filter	P/N 10051663
Inlet Filter O-Ring	P/N 10052367

1. Install the filter into the high pressure supply port with the cone pointing in (point facing down).



2. Install the filter o-ring into port and seat it against the filter.

NOTE: Do not lubricate the filter o-ring.

Installing the High Pressure Audi-Larm Hose

Back-Up Ring	P/N 635278
O-Ring	P/N 63198

1. Install the new back-up ring (P/N 635278).
2. Apply Christo-Lube (P/N 604070) to the high pressure hose o-ring.
3. Install the new o-ring (P/N 63198).

4. Install the high pressure Audi-Larm hose into the high pressure supply port.

NOTE: The high pressure supply port is labeled "HP IN."

5. Install the u-clip to secure the hose and valve.

Installing the High Pressure Control Module Hose

High Pressure Gauge Hose	P/N 10082852
O-Ring	P/N 63198
Back-Up Ring	P/N 635278
High Pressure Gauge Hose for Quick-Fill	P/N 10083121

1. Install the new back-up ring.

2. Apply Christo-Lube (P/N 604070) to the high pressure hose o-ring

3. Install the new o-ring.

4. Install the high pressure gauge hose into the high pressure gauge port.

NOTE: The high pressure gauge port is not labeled.

Installing the Intermediate Pressure Hose

Intermediate Pressure Hose	
Threaded	P/N 10051882
Quick-Connect:	P/N 10051883
O-Ring	P/N 10053273

1. Apply Christo-Lube (P/N 604070) to the intermediate pressure hose o-ring (P/N 10053273).

2. Install the new o-ring.

3. Install the intermediate pressure hose into the intermediate pressure port.

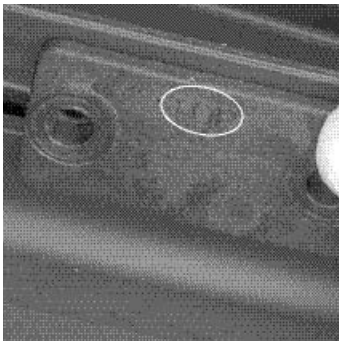
4. Install the U-clip to secure the high pressure and intermediate pressure hoses.

5. Leak test the regulator.

NOTE: The regulator cannot be leak tested while installed because the seat is inaccessible. (Refer to the **FireHawk M7XT Air Mask Leak Testing** P/N 10147445 for instructions.)

Installing the Mounting Bracket

Bracket	P/N 10051664
Slider	P/N 10047898
Screws (2)	P/N 10055563
Washer (2)	P/N 10014878
Lock Washer (2)	P/N 631356
Loctite 222	P/N 29787



1. Install the plastic slider onto the carrier rail.

NOTE: Ensure that the word "TOP" is visible.

2. Position the mounting bracket against the carrier rail.

NOTE: New bolts have a pre-applied thread-locker and do not require Loctite 222 application.

3. Apply Loctite 222 (P/N 29787) to each bolt.

4. Insert the bolts through the lock washers (P/N 631356), flat washers (P/N 10014878), and slider (P/N 10047898) into the mounting bracket (P/N 10051664).

5. Use a torque wrench and **7/16" socket** to tighten the bolts to **35 ±5 in lbs.**

6. Ensure the mounting bracket slides freely.

Installing the PR14 First Stage Regulator

PR14 First Stage Regulator Replacement Kit	P/N 10053736

1. Position the regulator on the mounting bracket.

a. Align the regulator mounting holes with the mounting bracket holes.

2. Apply Loctite 222 (P/N 29787) to each screw.

NOTE: New screws have a pre-applied thread-locker and do not require Loctite 222 application.

3. Install the screws through the mounting bracket into regulator.

4. Tighten the screws to **35-45 in lbs.**

Testing and Adjusting the First Stage Static Pressure

NOTE: All static pressure adjustments must be made with the PR14 first stage regulator removed from the mounting bracket.

⚠ WARNING

DO NOT pressurize the system until all hoses and fittings are properly secured with u-clips. Pressurizing the system with unsecured hoses can cause the hoses to release explosively. Properly install and secure with u-clips all hoses and fittings before pressurizing the system. Failure to follow this warning can result in serious personal injury or death.

Connecting the Test Manifold Assembly, Threaded Hose

1. Use **3/4" wrenches** to disconnect first stage intermediate pressure hose from the second stage hose.

2. Screw the test manifold assembly onto first stage intermediate pressure hose until tight.

3. Screw the second stage hose onto test manifold assembly until tight.

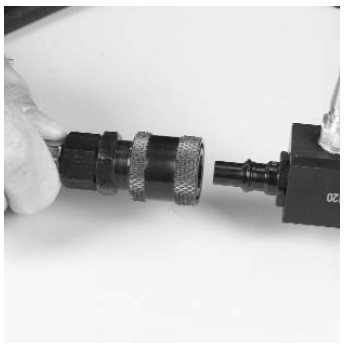
4. Connect the test manifold assembly to PosiChek[3] intermediate pressure hose.

Connecting the Test Manifold Assembly, Quick-Connect Hoses

1. Disconnect the 2nd stage hose from first stage intermediate pressure hose.

2. Connect test manifold assembly to first stage intermediate pressure hose.

3. Connect the second stage hose to test manifold assembly.



4. Connect the test manifold assembly to PosiChek^3 intermediate pressure hose.

TROUBLESHOOTING

Adjusting the First Stage Static Pressure

NOTE: Depressurize the system before making static pressure adjustments.

NOTE: When adjusting the regulator seat, always align a seat hex point with the line scribed on the regulator body to ensure that the mounting bracket satisfactorily engages and retains the regulator seat.

1. To DECREASE first stage static pressure, rotate the regulator seat CLOCKWISE.

2. To INCREASE first stage static pressure, rotate the regulator seat COUNTER -CLOCKWISE.

NOTE: One hex point equals approximately 3 psi.

For Static Medium Pressure
2216psi range 77-91psi
4500psi range 85-100psi
and dynamic breathing tests (lower graph)

If creeping, replace piston P/N 10050617 including piston o-rings P/N 10052365 and P/N 10052364. If still creeping, replace seat P/N 10050616 and o-rings P/N 10058236 and P/N 633553. If it still does not meet specification due to creeping, overhaul the PR14 First Stage Regulator.

Disconnecting the Test Manifold Assembly

Threaded Hose

1. Verify that the system is depressurized.

2. Unscrew the second stage hose from the test manifold assembly.

3. Replace the second stage hose o-ring (P/N 63198). Apply Christo-Lube to the new o-ring.

4. Unscrew the test manifold assembly from the first stage inter-mediate pressure hose.

5. Screw the second stage hose onto the first stage intermediate pressure hose. Use the inch pound torque wrench and **3/4" crowfoot** to tighten the threaded connection to **125 ± 5 in lbs.**

6. Install the first stage regulator to the mounting bracket. (Refer to **Installing the PR14 First Stage Regulator** section for instructions.)
7. Test the system for leaks. (Refer to **Air Mask M7XT Air Mask Leak Testing** P/N: 10093091 for instructions.)

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Quick-Connect Hoses

1. Ensure that the system is depressurized.

2. Disconnect the 2nd stage hose from the test manifold assembly.

3. Disconnect the test manifold assembly from the first stage intermediate pressure hose.

4. Connect the second stage hose to the first stage intermediate pressure hose.
5. Install the first stage regulator onto the mounting bracket.
6. Test the system for leaks. (Refer to Refer to **Air Mask M7XT Air Mask Leak Testing** P/N: 10093091 for instructions.)