

FireHawk[®] M7 and M7 Responder[®] Air Mask Maintenance and Repair

INTRODUCTION

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



MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

INTRODUCTION

Table of Contents

INTRODUCTION

FireHawk M7 Air Mask Operation and Instructions . . .	2
FireHawk M7 Air Mask Maintenance and Repair . . .	2
SPECIAL NOTE FOR FIREHAWK M7 AIR MASK	
MAINTENANCE AND REPAIR DOCUMENTS	3
GENERAL NOTES	3
Tools	3
Standard Tools	4
Special Tools, Adhesives, Lubricants, and Sealants . .	4
Depressurize	4
Eye and Face Protection	4
Christo-Lube Lubricant	4

O-Rings, Back-Up Rings, and Gaskets	4
Teflon Tape	4
Torque	4
FLOW TEST AND OVERHAUL REQUIREMENTS	
Required Overhaul and Flow Test Frequency	5
Retiring an Air Mask	5
Quick-Fill® System and URC Coupling Function	
Test	6
Testing Two 2216 psig couplings or two 4500 psig couplings	6
Testing 3000 psig couplings	7

INTRODUCTION

FireHawk M7 Air Mask Operation and Instructions

A thorough understanding of the FireHawk M7 Air Mask is essential before attempting to repair or maintain the FireHawk M7 Air Mask.

See **FireHawk M7 Air Mask Operation and Instructions** (available at www.MSAFire.com)

P/N 10082858: FireHawk M7 Air Mask, NFPA 1981: 2007 Edition, NFPA 1982: 2007 Edition CBRN Agent Approved Air Mask

P/N 10086002: FireHawk M7 Responder APR

P/N 10096003: FireHawk M7 Responder PAPR, PAPR/CBRN (Chemical, Biological, Radiological, and Nuclear) Application

P/N 10086011: FireHawk M7 Responder Air Mask, NFPA 1982:2007 Edition, NFPA 1981:2007 Edition, CBRN Agent Approved Air Mask

for NIOSH Approval information, user instructions for donning and doffing, negative pressure user seal checks, cleaning and disinfecting, etc.

Thoroughly read the FireHawk M7 Air Mask Operation and Instructions. Follow procedures and maintenance schedules in the Operation and Instructions and/or as specified herein. If an apparatus does not pass all tests and/or checks, remove it from service until it has been repaired and passes all tests.

FireHawk M7 Air Mask Maintenance and Repair

FireHawk M7 Air Mask Maintenance and Repair documents contain all maintenance procedures for the FireHawk M7 Air Mask. This document is for C.A.R.E. certified air mask repair personnel only.

Only MSA C.A.R.E certified personnel are permitted to maintain and repair the FireHawk M7 Air Mask and only according to FireHawk M7 Air Mask Maintenance and Repair instructions.

⚠ WARNING

DO NOT ATTEMPT TO REPAIR THE FIREHAWK® M7 AIR MASK OR FIREHAWK M7 RESPONDER AIR MASK UNLESS C.A.R.E CERTIFIED BY MSA. Only MSA C.A.R.E certified personnel are permitted to maintain and repair the FireHawk M7 Air Mask and only according to FireHawk M7 Air Mask Maintenance and Repair instructions. Do not attempt to maintain and/or repair the FireHawk M7 Air Mask without C.A.R.E. Certification from MSA. Failure to follow this warning can result in serious personal injury or death.

Use only MSA-approved parts.

The FireHawk M7 Air Mask is certified by the National Institute of Occupational Safety and Health (NIOSH). Do not alter, modify, or substitute parts without the approval of MSA. Doing so voids NIOSH approval.

Do not deviate from the maintenance and repair procedures contained herein unless approved in writing by MSA.

⚠ WARNING

DO NOT ATTEMPT TO MAKE REPAIRS BEYOND THOSE SPECIFIED IN THIS MANUAL. USE ONLY MSA APPROVED PARTS. The FireHawk M7 Air Mask will perform as designed only if used, maintained and repaired according to FireHawk M7 Air Mask Maintenance and Repair instructions. If not used, maintained and repaired according to these instructions, the air mask could fail to perform as designed and persons who rely on the air mask for respiratory protection could sustain serious personal injury or death.

The warranties made by MSA with respect to the product are void if the product is not used, maintained, and repaired according to FireHawk M7 Air Mask Maintenance and Repair documents.

INTRODUCTION

For additional information, or for answers to maintenance and repair questions, write to MSA at the address below, or call 1-800-MSA-2222 during regular working hours.

SPECIAL NOTE FOR FIREHAWK M7 AIR MASK MAINTENANCE AND REPAIR DOCUMENTS

Earlier C.A.R.E. documents identify “critical repair” items with a heavy black outline. Critical repair items require

C.A.R.E. certification for maintenance and repair and must be flow tested on MSA approved flow test equipment.

FireHawk M7 Air Mask Maintenance and Repair documents do not differentiate between user serviceable and critical repair items. However, the requirements for C.A.R.E. certification and the use of MSA-approved flow testing equipment remain.

Tools

Most repairs can be accomplished with standard tools. Some special tools are required.

Standard Tools

Tool	Spec.	Drive	Type	
Wrench (open end)	7/16"			
	5/8"			
	11/16"			
	13/16"			
	7/8"			
Breaker bar		3/8"		
Socket adapters (Female to Male)		3/8" to 1/2"		
		1/2" to 3/4"		
	1/4"*			
Socket	7/16"	3/8"	Deep well	6 point
	9/16" (4500 psi only)			
	11/16" (2216 psi only)			
	3/4"			
	7/8"		Deep well	
	1"	Deep well		
	1-5/8"	1/2" or 3/4"		6 point
Screwdriver Bit	No. 2	3/8"	Phillips	
Torque wrench	0-250 in lbs.	3/8"		
	10-100 ft lbs.			
Crowfoot	3/4"	3/8"		
	5/8"			
	11/16"			
	13/16"			
	7/8"			
Hex Wrench/Bit	1/8"			
	1/4"			
	3/16"	3/8"	Bit	
Screwdriver (Slot head)	1/8"			
	1/4"			
Pliers	Channel lock			
	Retaining ring		Convertible	
Nut driver	3/16" (3000 psi only)			

*For use with P/N 10086032, Pneumatic Nut Special Tool only on FireHawk M7 Responder Ultra Elite Facepiece only.

INTRODUCTION

Special Tools, Adhesives, Lubricants, and Sealants, etc.

P/N	Description
10009971	Confidence Plus™ Germicidal Cleaner
636060	O-Ring Removal Tool
633411	Plastic Stick
28907	Teflon Tape
604070	Christo-Lube
600920	Snoop Leak Detector
29787	Loctite 222
26875	Loctite 271
466008	Locknut Wrench
494992	Silicone Lubricant
600469	Loctite 290
482426	Extraction Tool
10064117	PR14 First Stage Regulator Test Manifold, Threaded
10064120	PR14 First Stage Regulator Test Manifold, Quick Connect
10069386	PR14 Test Bracket
10090548	Lever height gauge for P/N 10090457
10050211	Lever height gauge for P/N 10030664 (discontinued)
10086032	Pneumatic Nut Special Tool (FireHawk M7 Responder Ultra Elite Facepiece only)

GENERAL NOTES

Depressurize

- Depressurize the FireHawk M7 Air Mask before maintenance or repair.
 - Close the cylinder valve.
 - Squeeze the shut off buttons.
 - Open the bypass.
 - Disconnect the FireHawk M7 Audi-Larm™ Audible Alarm.

Eye and Face Protection

WARNING

Wear eye or face protection to avoid injury. Failure to follow this warning can result in serious personal injury.

Christo-Lube Lubricant

- When instructed to apply Christo-Lube lubricant, use it sparingly. A “small amount” is almost invisible. If you can see white, you’ve used too much.
- Lubricate and install the part immediately. Lubricant can collect dirt and contaminants.

O-Rings, Back-Up Rings, and Gaskets

- Do not reuse o-rings, back-up rings or gaskets.
- If a part with o-ring(s), back-up rings, or gasket(s) is removed, discard and replace the o-rings, back-up rings and/or gaskets.
- Use tape, a thin piece of paper, or other protector when installing o-rings.
- Lubricate as instructed.

Teflon Tape

- Use Teflon tape on fittings with tapered thread.
- Start at the second thread. Do not put tape on the first thread.
- Wrap 1 to 1-1/2 turns of tape clockwise.
- Pieces of tape can break off and reduce air flow. Apply a small amount of Christo-Lube lubricant before inserting taped threaded fittings.

Note: Do not over-tighten threaded parts.

Torque

- Unless specified otherwise, torques are calculated for dry thread.
- DO NOT APPLY LUBRICANT UNLESS SPECIFICALLY INSTRUCTED.** Lubricant can cause thread failure and component separation.
- Calibrate torque wrenches, gauges, and other test instruments as recommended by manufacturer.

Adhesives and Sealants

- Use only as instructed.
- Use MSA-approved adhesives, sealants, leak detectors, and lubricants.
- Use adhesives, sealants, and lubricants sparingly.
- Although adhesives and sealants hold parts in place, never swap them.

Tools

Most repairs can be accomplished with standard tools. Some special tools are required.

INTRODUCTION

Required Overhaul and Flow Test Frequency

Average Air Mask Use*	CBRN Second Stage Regulator Overhaul Frequency**	PR14 Regulator and Audi-Larm Assembly Overhaul Frequency	Flow Test Frequency
One (1) or more 30 minute cylinders per day	Every 1 year	Every 3 years	Every year
One (1) 30 minute cylinder every other day	Every 3 years	Every 8 years	
Up to one (1) 30 minute cylinder per week	Every 10 years	Every 15 years	

*The unit of air mask use is defined as the consumption of one thirty (30) minute cylinder. For example, if three cylinders are consumed consider the air mask used three times. If air mask use cannot be determined, overhaul every three years.

**Replace the Spring Cap (P/N 10047528) and Tetraplex™ CBRN Shield (P/N 10044026) as based on CBRN Second Stage Regulator Overhaul Frequency, which are included in the overhaul kits.

FLOW TEST AND OVERHAUL REQUIREMENTS

The FireHawk M7 Air Mask PR14 regulator, Audi-Larm Audible Alarm, and Firehawk® Second Stage regulator must be flow tested and overhauled at the intervals determined by use. FireHawk M7 Air Masks must be flow tested annually using an MSA-approved flow test device.

Overhaul frequency is determined by individual apparatus use.

See **FireHawk M7 Audi-Larm Audible Alarm Maintenance and Repair (P/N 10093084)**, **FireHawk M7 PR14 First Stage Regulator Maintenance and Repair (P/N 10093086)**, and **Firehawk M7 Second Stage Regulator, Maintenance and Repair (P/N 10093086)** or **Firehawk Responder Second Stage Regulator, Maintenance and Repair (P/N 10096394)** for instructions.

Retiring an Air Mask

Base the decision to retire an air mask on performance data. Retire air masks that do not meet specified performance levels.

Quick-Fill/URC Tightness Inspection

Check the tightness of the Quick-Fill/URC coupling halves and the tightness of the coupling to the Air Mask.

1. Close the air mask cylinder valve and relieve the pressure from the regulator.

2. Use a fine-tip ink marker and a ruler or straight edge to draw a line on the male coupling. The line should extend across the joint (indicated by the arrow) and also across the hex flats of the coupling and onto the adjacent Air Mask housing.



3. Attach the dust cover to the coupling.
4. Grasp the dust cover by hand and using maximum effort attempt to loosen the coupling at the joint by turning the dust cover counterclockwise. Do not use tools.

5. If the coupling loosens or if the line does not line up across the joint (indicated by the arrow)...



INTRODUCTION

...or at the joint where the coupling attaches to the air mask, remove the air mask from service until a replacement coupling is installed.



If the line drawn on the coupling lines up, the coupling is sufficiently tight and the air mask may be returned to service.

6. Normal wear and exposure can obliterate the line. Redraw the line as needed.

Quick-Fill® System and URC Coupling Function Test

Perform the following test on all Quick-Fill System and URC couplings as part of the air mask annual flow test. **Replace couplings that do not pass this function test.**

TESTING TWO 2216 PSIG COUPLINGS OR TWO 4500 PSIG COUPLINGS

Transfill Hose PN 488917

⚠ WARNING

Do not lose control of the transfill hose coupling while performing this test. Work in an open area away from walls or other structures that could cause injury if struck. High pressure air can cause couplings to release unexpectedly, striking you or propelling your limbs into nearby structures or objects. Failure to follow this warning can result in serious personal injury or death.

Testing the First Coupling

1. This procedure alternates between two air masks. After testing the Quick-Fill or URC couplings on one air mask, use it as a pressure source to test another air mask.
2. Ensure cylinders on both air masks are closed.
3. Ensure that regulators on both air masks are closed.
4. Remove dust covers from Quick-Fill/URC couplings.
5. Fully open the cylinder valves on both air masks.

6. Connect one end of transfill hose to the **source** Quick-Fill or URC coupling.



7. Connect the other end to the **test** fitting.

Transfilling begins immediately.



8. Tug on the hose to verify a secure connection to the test coupling.
9. Immediately after verifying a secure connection, disconnect the transfill hose from the **source**.

10. To disconnect the transfill hose, pull back the gray sleeve.



Note: The coupling may hiss or pop as it separates and high pressure airflow stops.

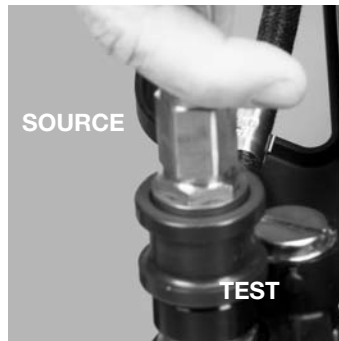
11. Replace the **test** Quick-Fill/URC coupling if:
 - Unable to make a secure connection because of air pressure resistance.
 - Extreme or continuous air loss occurs.
12. Keep a record of, or mark, air masks that pass the test before returning them to service.

Testing the Next Air Mask

The last **test** coupling becomes the **source** coupling. The next fitting is the **test** coupling.

INTRODUCTION

1. Connect the transfill hose to verify a secure connection to the **test** fitting.



2. Tug on the hose to verify a secure connection to the **test** fitting.
3. Immediately after verifying a secure connection, disconnect the transfill hose from the **test** fitting.
4. Continue alternating **test** and **source** air masks until all couplings on all air masks have been tested.

TESTING 3000 PSIG COUPLINGS

⚠ WARNING

Do not lose control of the transfill hose coupling while performing this test. Work in an open area away from walls or other structures that could cause injury if struck. High pressure air can cause couplings to release unexpectedly, striking you or propelling your limbs into nearby structures or objects. Failure to follow this warning can result in serious personal injury or death.

Note: This procedure uses a spare cylinder as a pressure source. To prevent the relief valve from venting, limit source pressure to 2400 psig.

1. Ensure the air mask cylinder is full and that the spare cylinder pressure is between 2200 and 2400 psig.
2. Ensure that regulators are closed.
3. Remove dust covers from Quick-Fill/URC couplings.



4. Connect a Quick-Fill Adapter hose to a spare 2400 psig source cylinder.

5. Fully open both cylinder valves.

6. Slowly connect the Quick-Fill Adapter hose to the **test** coupling.



7. Tug on the hose to verify a secure connection to the **test** coupling.



8. Immediately after verifying a secure connection, disconnect the transfill hose from the **source**.

9. To disconnect the transfill hose, pull back the gray sleeve.



Note: The coupling may hiss or pop as it separates and high pressure airflow stops.

10. Replace the **test** Quick-Fill/URC coupling if:
 - Unable to make a secure connection because of air pressure resistance.
 - Extreme or continuous air loss occurs.
11. Keep a record of, or mark, air masks that pass the test before returning them to service.
12. Continue testing air masks until all couplings on all air masks have been tested.