



3M™ SCOTT™ AIR-PAK™ X3 PRO

Self-Contained Breathing Apparatus (SCBA)

NFPA-1981 (2018 Edition) Compliant



CGA & SNAP-CHANGE
Pressures 2.2, 4.5, 5.5

READ ALL INSTRUCTIONS BEFORE USE



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OPERATING & MAINTENANCE INSTRUCTIONS

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Cautionary Notice

While the manufacturer has attempted to detail in this manual all areas of possible danger to personnel in connection with the use and servicing of this equipment, personnel should use caution when installing, inspecting, operating, and servicing this equipment, especially when handling pressurized air cylinders. When maintaining or operating all electronic equipment, care should be taken to avoid electrical shock in all circuits where substantial currents or voltages may be present through design or component failure. Caution should be observed in lifting and hoisting heavy equipment.

The manufacturer is specifically not liable for any damage or injury arising out of a user's failure to follow the instructions contained in this manual or failure to exercise due care and caution in the installation, operation, inspection, and service of this equipment.

Import and Export

The international transport of this equipment and any related documentation is regulated under United States export laws and regulations and may be regulated by the import or export laws and regulations of other countries.

If you have any questions or concerns regarding these regulations, contact 3M at 1-800-247-7257 (704-291-8300 outside the continental United States).

Questions or Concerns

If you have any questions or concerns regarding use of this equipment, contact your authorized 3M distributor, or contact 3M at 1-800-247-7257 (704-291-8300 outside the continental United States) or ScottTechSupport@mmm.com.

For all National Fire Protection Association (NFPA)-compliant versions of this respirator, report any operational malfunctions to the certification agency Safety Equipment Institute (SEI), 1307 Dolley Madison Blvd, Suite 3A, McLean, VA 22101, (703) 442-5732, Fax (703) 442-5756.

For all National Institute for Occupational Safety and Health (NIOSH)-compliant versions of this respirator, report any complaints of damage, malfunction or failure of the breathing apparatus that may represent a hazard to the user to the certification agency NIOSH/NPPTL/Respirator Branch, P.O. Box 18070, Pittsburgh, PA 15236, (412) 386-4000.



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ABOUT THIS MANUAL

This manual provides operating and maintenance instructions for the 3M Scott Air-Pak X3 Pro Self-Contained Breathing Apparatus (SCBA).

Intended Readers

3M provides manuals for individuals with different levels of training. This manual is written for **Trained Operators**.

- A **Trained Operator** is an individual who has had minimum-level training in the use of 3M Scott Fire & Safety equipment in an immediately dangerous to life or health (IDLH) environment. This individual is often a firefighter or the wearer of an SCBA. He or she is familiar with the instructions provided in this manual and is capable of performing basic maintenance tasks as outlined.
- A **Certified Technician** is an individual who has successfully completed the Air Supplied Certified Technician class offered by 3M. Certified technicians are able to use specialized equipment, including the Posi 3 USB™¹ SCBA testing equipment, and are able to make repairs to the SCBA that involve the air flow path.

How to Read This Manual

Warnings, Cautions, and Notes

Throughout this manual, special references are made when deemed important. The following classifications distinguish these references by their level of importance:



WARNING

Indicates a hazardous situation which, if not avoided, could result in serious injury or death



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and/or property damage



NOTE

Indicates a situation which, if not avoided, could result in property damage



TIP

Indicates helpful information

1. Posi3 USB is a trademark of Honeywell Analytics, Inc., Lincolnshire, IL.

Appendices

The appendices are located in the back of this manual and contain important material such as warranty details, certifications, and license agreements.

Before You Begin

Before beginning any procedures, review the manual in its entirety. Thoroughly read all warnings, cautions, and notes. Ensure that the proper tools, kits, parts, and materials are at hand and ready for use; any required tools and other supporting materials are listed at the beginning of the procedure. When performing any maintenance checks or services on any 3M Scott Fire & Safety product or device, proceed only as far as necessary and as instructed by this manual.

Maintenance and Repairs

Comply with all instructions and warnings contained in all applicable manuals.

It is your responsibility to obtain and use the most current instructions that apply to the operations being performed. The instructional material must include the most current materials: manuals or manual modules, Operation and Maintenance Instructions, Inspection and Cleaning Instructions, Installation and Use Instructions, and any additional 3M-approved support material required to maintain the equipment.

Current service literature is available from 3M. The Certified Technician I Training Manual contains additional maintenance information that goes beyond the routine cleaning and regular operational inspection of the respirator but is less advanced than Certified Technician II-level maintenance available at a 3M Authorized Service Center. A person with good mechanical ability using standard hand tools is capable of performing Technician I-level tasks. Contact 3M or your 3M distributor for details.

Because this equipment may be used to support human life in a hazardous atmosphere, do not attempt maintenance beyond that described in this instruction or in the Certified Technician I Training Manual. If disassembly or adjustment other than described in this manual or the Certified Technician I Training Manual is required, the equipment must be serviced by a 3M Authorized Service Center in accordance with the appropriate 3M Technician Service Manuals. You can arrange service by an Authorized Service Center through your authorized 3M distributor or by contacting 3M.

If you note a discrepancy while performing operation or maintenance checks and services, tag the equipment as "Out of Service" and refer it to a 3M Certified Technician II.

While an attempt has been made to address all foreseeable operation/service conditions, exercise careful judgment in removing from service any equipment that does not appear to function correctly, even if all operator-level maintenance checks and services have been completed. If there is any doubt regarding the safe operation of the equipment, remove it from service and tag it for repair.

Retirement Criteria and Considerations

Retirement criteria and considerations to be determined by technicians with Certified Technician II qualifications in accordance with NFPA 1852.

Related Manuals

For information about other user manuals related to this product, see ["Appendix I: Related Manuals" on page 65](#).

SAFETY INFORMATION

Read all of the safety information before beginning any of the procedures in this manual. The safety information in this section is organized as follows:

- “All 3M Scott Fire & Safety Products” on page ix
- “3M Scott Air-Pak SCBAs” on page x

All 3M Scott Fire & Safety Products

The following safety directives apply to all 3M Scott Fire & Safety products.

- Many 3M Scott Fire & Safety products are intended to support human life in hazardous atmospheres. Failure to carefully read, understand, and follow the instructions and warnings in this manual may result in serious injury or death.
- Improper use of this equipment may result in serious injury or death. Improper use includes, but is not limited to, use without adequate training, disregard of the warnings and instructions contained herein, use of the equipment for purposes not included in these instructions, and failure to inspect and maintain the equipment.
- Apply only the instructions offered within this manual. Maintenance procedures beyond the scope of this manual must not be performed. Additional disassembly may cause operation errors and/or component failure and result in serious injury or death. If a discrepancy or malfunction cannot be corrected using the procedures contained within this manual, the product must be tagged to indicate that it is unserviceable and referred to a 3M certified technician for evaluation and repair.
- Exercise caution when using chemicals. Prior to using any chemical substance, thoroughly review and understand the product label, Safety Data Sheet (SDS), and manufacturer’s use instructions. Chemical substances may present serious hazards such as flammability and human-specific health hazards, which can affect the nervous and reproductive systems. Failure to adhere to the manufacturer’s product instructions and warnings may result in serious injury or death.
- Comply with all instructions and warnings contained in this and all applicable manuals and modules. While an attempt has been made to address all foreseeable operating conditions, you must exercise careful judgment when operating any equipment. If there is any doubt regarding the safe operation of equipment, remove the equipment from service and tag it for repair.
- Failure to use 3M-approved lubricants and replacement parts will invalidate all certifications and warranties issued to the 3M Scott Fire & Safety product.
- You are responsible for any damage, improper function, or injury as a result of user-applied markings, etchings, labeling, material additions, or modifications to the equipment.

3M Scott Air-Pak SCBAs

The following safety directives, warnings, and cautions apply to 3M Scott Air-Pak respirators.

- Improper use of this equipment may result in serious injury or death. Improper use includes, but is not limited to, use without adequate training, disregard of the warnings and instructions contained herein, and failure to inspect and maintain this equipment. Read and understand all instructions before attempting to operate or service this equipment.
- The information in this instruction is meant to supplement — not replace — the instructions, training, supervision, maintenance, and other elements of your organized respiratory protection program.
- Use this equipment only in conjunction with an organized respiratory protection program that complies with the requirements of the following:
 - American National Standard Practices for Respiratory Protection, Z88.2, current edition, available from American National Standards Institute, Inc., 1430 Broadway, New York, NY, 10018
 - OSHA Safety and Health Standard 29 CFR 1910, Paragraph 134, available from the US Department of Labor, Occupational Safety and Health Administration
 - Other pertinent nationally recognized standards, such as those of the US Coast Guard or the Department of Defense
- This equipment is designed and intended to function properly in reasonable/ordinary firefighting conditions. It has been certified to the NFPA 1981, 2018 Edition standard. The functionality of this equipment may be compromised by extreme fire conditions.
- Training is required before use of this equipment. Use this equipment only if you have been trained in its use and only in conjunction with an organized respiratory protection program. Do not use this equipment for purposes other than those authorized by your respiratory protection program. Do not use this equipment underwater.

**WARNING**

The following table lists hazardous situations which, if not avoided, could result in serious injury or death.

Read all of the warning statements before beginning any of the procedures in this manual.

Follow the instructions below...	... to reduce the risk associated with...											
	Dermal exposure to contaminants	Entanglement	Explosion	Exposure to contaminants	Exposure to CBRN* environments	Exposure to extreme heat	Fire	Impact	Impact from falling or tripping	Loss of air supply	Oxygen-deficient atmospheres	Reduced service life
Always wear the appropriate personal protective equipment in accordance with your Environmental Health and Safety (EHS) program. This respirator protects only your respiratory system and part of your face.	X						X					
Any contaminants must be identified and effectively removed. Contaminated components must be removed and disposed of in accordance with applicable regulations.				X								
Stay alert when operating this equipment. Do not operate this equipment while fatigued or under the influence of drugs, alcohol, or medication that may affect vision, dexterity, or judgment.			X	X			X				X	
Do not perform maintenance beyond the scope of these instructions without proper training, equipment, and authorization from 3M.			X	X			X				X	
Use only 3M-approved replacement parts for maintenance and repair of this equipment.			X	X			X			X	X	
Use only those respirator components, accessories, or devices listed on the NIOSH label located on the respirator. Use only approved air cylinders and valve assemblies specified by the NIOSH label located on the respirator.			X	X	X		X				X	X
Do not apply labels or markings to the respirator or its accessories. Labels or markings could interfere with the operation of the respirator.				X						X	X	
Do not apply labels or markings to the existing labels on this equipment or its accessories. Labels or markings could interfere with the proper identification of the assemblies that may result in errors in maintenance.				X						X	X	
Do not drop the respirator. Dropping the respirator may result in damage to the respirator that may affect its performance or release high-pressure breathing air.				X						X	X	
Follow the regular operational inspection procedures exactly as written. If the respirator does not operate as described or if any other operational malfunction is noted, do not use the respirator. Remove it from service and tag it for repair by authorized personnel.				X			X			X	X	X
Inspect the respirator for worn parts. If the coating is worn through and bare metal is showing on the male quick-disconnect locking ridge, remove the regulator assembly from service and tag it for replacement.				X						X	X	
Regularly inspect the electronic components, as described in the instructions, for loose or worn electrical conductors.			X				X					
Conduct regular operational inspections of all battery-operated devices on this equipment. Confirm that the batteries are properly installed and that the devices function.			X				X			X	X	
Use only batteries from the list provided in these instructions for this equipment.			X				X			X	X	
Replace batteries in an area free of flammable gases, vapors, and dust.			X				X			X	X	
Do not mix old and new batteries.			X				X			X	X	
Do not mix batteries from different manufacturers.			X				X			X	X	

Follow the instructions below...	... to reduce the risk associated with...											
	Dermal exposure to contaminants	Entanglement	Explosion	Exposure to contaminants	Exposure to CBRN* environments	Exposure to extreme heat	Fire	Impact	Impact from falling or tripping	Loss of air supply	Oxygen-deficient atmospheres	Reduced service life
Do not use the respirator if the PASS device fails to function as described. Remove the respirator from service and tag it for repair by authorized personnel.				X			X			X	X	X
Replace the batteries in the PASS device when the low battery alarm sounds.			X				X			X	X	
The PASS device may malfunction due to radio frequency interference (RFI). See the user instructions provided for the PASS device for information about and instructions to identify RFI sources and associated symptoms due to RFI.			X	X			X				X	
Regularly inspect cylinders for damage and empty the air from damaged cylinders.			X									
The breathing air cylinder must be inspected and refilled only by trained and authorized personnel.			X							X		
Never use a cylinder with a damaged cylinder valve assembly or damaged cylinder valve assembly threads.				X				X		X	X	X
Do not fill the cylinder if the respirator or the cylinder to be charged is known or suspected to have been dropped, exposed to direct flame impingement, or damaged in any way.			X									
Never charge a cylinder to more than the rated pressure marked on the cylinder.			X	X						X	X	X
Verify that the cylinder connector is clean and free of dirt and debris. Dirt in the connector can contaminate the breathing air path and may cause the respirator to malfunction.				X							X	X
Use the tri-slide buckle on the retention strap to secure the cylinder tight against the backframe.				X					X			
Start with a full cylinder. Use a partially filled cylinder only in emergency conditions if a full cylinder is not available. If you resume use of the respirator after the air has been partially consumed, you must be certain that the cylinder contains sufficient air to allow time for completion of the tasks involved and your return to a safe atmosphere with an adequate margin for safety.				X						X	X	
Open the cylinder valve fully before operating the respirator. A partially opened cylinder valve may cause a reduction of air supplied and/or a sudden and complete loss of air supply.			X	X			X			X	X	
The cylinder valve should always be fully open when the respirator is in use, except in situations in which the air supply flows freely into the facepiece. For more information, see “Emergency Operation” on page 31.				X						X	X	
Understand the hazards of heat exposure including, but not limited to, temperature, duration, and repeat exposure when using facepieces that incorporate heat-resistant materials.						X		X				
Your facepiece must be properly fitted using a respirator quantitative fit test before use, and you must be properly trained in the use of the respirator.				X								
Verify that the facepiece is properly donned according to the donning procedures provided in these instructions and that the protective hood does not interfere with the face-to-facepiece seal.				X							X	
If any donning problems are found as described in these instructions, remove the facepiece and follow the applicable donning procedure for your facepiece.				X			X			X	X	X
Do not use the respirator when you do not have a good seal between the face and facepiece. To maintain a good seal, the respirator facepiece must be clear of obstructions, including, but not limited to, beards, facial hair, and sideburns. Nothing should interfere with the smooth and close fit of the head harness to the head.				X							X	X
If you detect an air leak into the facepiece while checking the face-to-facepiece seal, do not use the respirator.				X						X	X	X
Install the nose cup on the facepiece. Failure to use the nose cup may cause obscured vision.				X					X			
Confirm that the regulator latch is engaged with the facepiece. If the regulator latch is not engaged, the regulator could rotate and fall out.				X						X	X	X
Confirm that all hose couplings are engaged. If they are not engaged, the hoses may separate.				X						X	X	X

SAFETY INFORMATION

Follow the instructions below...	... to reduce the risk associated with...											
	Dermal exposure to contaminants	Entanglement	Explosion	Exposure to contaminants	Exposure to CBRN* environments	Exposure to extreme heat	Fire	Impact	Impact from falling or tripping	Loss of air supply	Oxygen-deficient atmospheres	Reduced service life
Do not use the respirator if the heads-up display (HUD) lights do not operate as described. Remove the respirator from service and tag it for repair by authorized personnel.				X			X			X	X	
Ensure that you can access the controls on this equipment at all times. Verify that other personal protective equipment does not interfere with the protection provided by the equipment and does not interfere with the access to the controls.				X							X	
Do not attach anything to, or carry anything on, the respirator shoulder strap buckles, as this could cause them to loosen during use of the respirator.		X		X			X				X	
Ensure the respirator straps and waist belt are properly adjusted and the loose ends of the straps and belt are secured so that the respirator does not shift on your body and the face-to-facepiece seal is not disturbed.			X	X			X				X	
Do not use the drag rescue loop as a handle for lifting a user off the ground or for lowering a user from a height.									X			
Leave the area if the Vibralert actuates before the air supply is depleted to approximately 33%. This may indicate a failure of the respirator.				X							X	
Leave the contaminated area immediately when any end-of-service indicator alarm (Vibralert or HUD) actuates. This occurs at 33% of the full pressure of the cylinder.			X	X							X	
Follow the low temperature operation instructions when using the respirator in temperatures at or below freezing (32° F / 0° C).				X							X	
The RIC/UAC system is for emergency use only. Do not use the RIC/UAC system to charge an air cylinder while the respirator is being worn unless there is a compelling reason to assume the risk of injury.			X	X							X	
If a leak is detected while performing an emergency filling process using RIC/UAC system in a IDLH** atmosphere, discontinue the filling process and leave the IDLH atmosphere immediately.			X	X							X	
When performing an emergency replenishment of a breathing air supply cylinder using the RIC/UAC, do not exceed 1500 psig/minute while the filling pressure is held constant at the cylinder's rated pressure.			X									
When performing an emergency replenishment of a breathing air supply cylinder using the RIC/UAC where the temperature is below freezing, see "Using the RIC/UAC in Low Temperatures" on page 34.				X							X	
Verify that all moisture has been removed from the regulator after cleaning.				X						X	X	
Do not store the respirator with worn or damaged components.			X	X			X				X	
Do not use an RFID tag reader that has an output power greater than 6 Watts while in a flammable atmosphere.			X				X					

**CAUTION**

The following table lists hazardous situations which, if not avoided, could result in minor or moderate injury and/or property damage
Read all of the caution statements before beginning any of the procedures in this manual.

Follow the instructions below...	... to reduce the risk associated with...											
	Dermal exposure to contaminants	Entanglement	Explosion	Exposure to contaminants	Exposure to CBRN* environments	Exposure to extreme heat	Fire	Impact	Impact from falling or tripping	Loss of air supply	Oxygen-deficient atmospheres	Reduced service life
Inspect the coupling seal and replace if missing or damaged. A missing or damaged seal will result in an air leak, reduce the duration of use, or may prevent the end-of-service alarm from actuating.				X							X	X
Inspect the high-pressure seal and replace if missing or damaged when replacing the cylinder. A missing or damaged seal will result in an air leak and reduce the duration of use.				X							X	X

* CBRN: chemical, biological, radiological, and nuclear

** IDLH: immediately dangerous to life or health

INTRODUCTION

This chapter describes the 3M Scott Air-Pak X3 Pro respirator and its major components.

Before You Begin

Carefully read “[Safety Information](#)” on page ix before beginning any of the procedures in this manual.

Overview

The Air-Pak X3 Pro self-contained breathing apparatus (SCBA) is a respirator that provides respiratory protection to an individual when entering, working in, or exiting an objectionable, oxygen-deficient, or unbreathable (toxic) atmosphere. This equipment is designed to withstand exposure to certain environmental conditions as defined by the applicable approvals.

For information about the available configurations of the Air-Pak X3 Pro SCBA, see “[Appendix A: Air-Pak X3 Pro Models](#)” on page 47.



TIP

Batteries are required for the proper operation of this equipment. Refer to “[Chapter 5: Replacing Batteries](#)” on page 43 for more information.

Major Components of the Respirator

The basic Air-Pak X3 Pro consists of the following components (see [Figure 1-1](#)):

- [Backframe and Harness Assembly](#) (includes the backframe, shoulder harness, and waist pad)
- [Cylinder and Valve Assembly](#)
- [Dual-Redundant Pressure Reducer](#)
- [Full Facepiece with Head Harness](#)
- [Mask-Mounted Regulator](#)

All Air-Pak X3 Pro respirators described in this instruction are equipped with at least two independent end-of-service time indicators, a remote pressure gauge mounted on the shoulder harness, an air-saver mechanism located on the breathing regulator, and a Rapid Intervention Crew/Company Universal Air Connection (RIC/UAC).

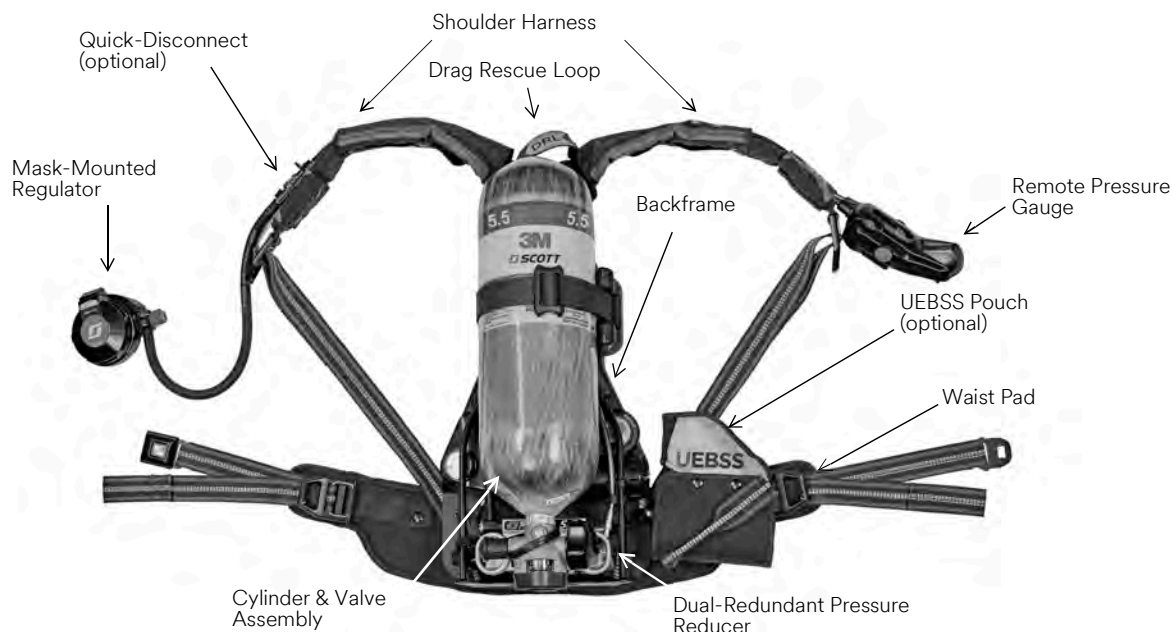


Figure 1-1 3M Scott Air-Pak X3 Pro SCBA respirator

Backframe and Harness Assembly

All model respirators described by these instructions feature an aluminum backframe equipped with a shoulder harness and a waist pad made of Kevlar® fiber ¹ and 3M™ Scotchlite™ Reflective Material ². The drag rescue loop is a strap integrated into the shoulder harness of the SCBA to assist with rescuing a downed user. The optional Universal Emergency Breathing Support System (UEBSS) connects to the waist pad and provides an accessory hose to supply air to or receive air from another respirator user or to connect to an extended duration air supply hose line.³

Cylinder and Valve Assembly

The cylinder mounts on the Air-Pak X3 Pro CGA with a CGA-threaded hose coupling and on the Air-Pak X3 Pro Snap-Change with a Snap-Change connector. Both types of cylinders are available as 2.2 (2216 psig), 4.5 (4500 psig), or 5.5 (5500 psig) pressures.

Dual-Redundant Pressure Reducer

The dual-redundant pressure reducer provides two pressure reducers in one, interconnected through an automatic transfer valve. A reduction in primary pressure triggers an automatic transfer to the secondary circuit to provide an uninterrupted supply of air. When the transfer occurs, the Vibralert end-of-service indicator alarm on the regulator actuates (see “[Vibralert](#)” on page 3).

Full Facepiece with Head Harness

The full facepiece is available in specific models and sizes. Before use, the facepiece must be properly fitted as outlined in “[Appendix G: Facepiece Fitting](#)” on page 59.

1. DuPont™ and Kevlar® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company.
2. 3M and Scotchlite are registered trademarks of 3M Company and its affiliates.
3. The Universal EBSS fittings are not compatible with older 3M Scott Air-Pak SCBAs. For SCBAs manufactured prior to the NFPA 1981, 2018 edition standard, please contact 3M for upgrade options.

Fit testing per OSHA Standard 29 CFR Part 1910.134 Appendix A, or ANSI/AIHA/ASSE Z88.10, current edition, requires testing in the negative pressure mode using Quantitative Fit Test (QNFT) protocols deemed acceptable by those standards. For quantitative fit testing, 3M Scott Fire & Safety facepieces require use of a Fit Test Adapter or equivalent and appropriate negative pressure testing equipment. A Mask Seal Kit may also be required to attain a proper fit. See "[Appendix G: Facepiece Fitting](#)" on page 59.

Mask-Mounted Regulator

The removable pressure-demand breathing regulator mounts directly to the facepiece and is equipped with an air-saver mechanism and a red purge knob.



TIP

The auto air-saver switch on the E-Z Flo C5 regulator (compatible with the 3M Scott Vision C5 facepiece) is located on the latch for mounting the regulator to and removing it from the facepiece. When properly engaged, the latch locks the regulator in place on the facepiece and prevents it from rotating.

Vibralert

All models of the Air-Pak X3 Pro respirator are equipped with the Vibralert end-of-service indicator alarm in the mask-mounted regulator. The Vibralert serves as an end-of-service time indicator and alerts you of a malfunction in the dual-path pressure reducer. In normal operation, the Vibralert vibrates the breathing regulator and facepiece to warn you by both sound and feel that approximately 33% of full cylinder pressure remains. In addition, if the primary air path of the pressure reducer becomes blocked or should fail closed, the secondary air path will automatically begin supplying air to the breathing regulator, and the Vibralert will warn you of the malfunction.

Heads-Up Display

The Heads-Up Display (HUD) is an independent end-of-service time indicator alarm attached to the mask-mounted regulator and is standard on respirators required to have two independent redundant alarms. The HUD provides a visual indication of the air supply with four lights that appear just below the field of vision within the facepiece. A separate low battery light warns you when the batteries must be replaced. The HUD detects cylinder pressure directly and is totally independent of the Vibralert end-of-service indicator alarm.



TIP

The HUD of the 3M™ Scott™ E-Z Flo C5 regulator (compatible with the 3M Scott Vision C5 facepiece) includes three additional lights to indicate the following:

- Initiation of a PAR request
- Initiation of an evacuation command or a system integrity alarm
- Actuation of a Personal Alert Safety System (PASS) full alarm (distress alarm)

There is also an externally facing light that indicates the air supply in the cylinder.

For more information about HUD lights, see "[Testing the Heads-Up Display](#)" on page 13.

INSPECTING THE RESPIRATOR

This chapter describes how to perform a regular operational inspection of a 3M Scott Air-Pak X3 Pro respirator. Follow the procedures in this chapter when you first receive the respirator and during daily or periodic inspection of the respirator:

- “[Before You Begin](#)” on page 5
- “[Inspecting the Respirator Components](#)” on page 6
 - “[Inspecting the Breathing Air Cylinder](#)” on page 6
 - “[Inspecting the RIC/UAC Connection](#)” on page 7
 - “[Inspecting the Facepiece](#)” on page 8
 - “[Inspecting the Regulator](#)” on page 10
- “[Performing Operational Testing](#)” on page 12
 - “[General Testing](#)” on page 12
 - “[Testing the Regulator](#)” on page 12
 - “[Testing the Heads-Up Display](#)” on page 13
 - “[Testing the Sensor Module Lights](#)” on page 15
 - “[Testing the Batteries](#)” on page 16

Before You Begin

Carefully read “[Safety Information](#)” on page ix before beginning any of the procedures in this chapter.

Below is a summary of the requirements and recommendations for operational inspections of respirators:

- Inspect the respirator before each use and after each cleaning. (Clean the respirator after each use. See “[Chapter 4: Cleaning & Storing the Respirator](#)” on page 37.)
- Inspect respirators for emergency use as frequently as required to ensure the respirator will function properly. The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor requires at least monthly inspection of respirators for emergency use (29 CFR 1910.134).
- The National Institute for Occupational Safety and Health (NIOSH) recommends an inspection for cylinder pressure at least weekly.

Storage conditions at your location or the regulations that apply to your respiratory protection program may require more frequent periodic inspections.

Inspecting the Respirator Components

Inspect the respirator before each use and after each cleaning.

Performing a General Inspection

To inspect the respirator

- 1 Inspect the complete respirator for worn or damaged components.
 - a Inspect hoses and rubber parts for cracking, splitting, or brittleness.
 - b Inspect the harness webbing and all elastomeric components for cuts, tears, abrasion, fraying, or indication of heat or chemical damage.
 - c Check all buckles and fasteners for proper operation.
 - d Check the cylinder retention system for damage and for proper operation.
 - e Verify that the respirator has been properly cleaned.
- 2 Verify that the shoulder harness assembly and waist pad are firmly attached to the backframe.
 - a Check that all harness sleeves are firmly fastened.
 - b Verify that the regulator hose and console cable are properly threaded through the harness sleeves.
- 3 Inspect the pressure reducer for damage. Verify that the pressure reducer is securely mounted to the quarter-turn mount on the backframe.
- 4 Inspect the breathing regulator for damaged or missing components.
 - a Remove the breathing regulator from the facepiece by pulling back on the regulator latch and rotating the regulator one-quarter turn.
 - b Verify that the regulator gasket is in place around the outlet port of the regulator. Inspect the gasket for rips or damage that may break the seal.
 - c Verify that the purge valve (red knob) is not damaged and turns smoothly one-half turn from stop to stop.
- 5 If you have an approved voice amplifier or other communications device, refer to the user instructions provided with that device for details about maintenance and operational testing. **Always confirm that the device has fresh batteries before use.**

Inspecting the Breathing Air Cylinder

Inspecting the cylinder includes looking for physical damage, noting the hydrostatic test date, and inspecting the cylinder valve, including the hand wheel, outlet, connector, and relief valve.

To inspect the breathing air cylinder

- 1 Visually inspect the breathing air cylinder and valve assembly for physical damage such as dents or gouges in the metal or the composite wrapping.

Physical damage to breathing air cylinders from high heat, flame, or chemical exposure includes the following:

- Discoloration or paint that has turned brown or black
- Charred or missing decals
- Melted pressure gauge lens
- Distorted elastomeric bumper
- Cracks in the cylinder or the composite wrapping

- Peeling of the outer layers of the composite wrapping
- Bulging of the cylinder wall

If a cylinder shows any of the physical defects listed, remove it from service and empty it of compressed air.

2 Check the latest cylinder hydrostatic test date to ensure it is current.

The date of manufacture marked on the cylinder is also the date of the first hydrostatic test. All breathing air cylinders used with 3M Scott Fire & Safety SCBAs must be visually inspected regularly and hydrostatically tested at the required intervals by a licensed cylinder re-tester. For more information about hydrostatic testing, see ["Appendix F: Respirator Testing" on page 57](#).



TIP

Publications on compressed gas cylinder inspection procedures are available from Compressed Gas Association Inc.

3 Inspect the cylinder valve (see [Figure 2-1](#)).

- Check for damage of the cylinder valve hand wheel.
- Inspect the cylinder valve outlet for damage.
- Verify that the CGA threads or Snap-Change connector on the cylinder valve outlet is undamaged and free of dirt and debris.
- Check the relief valve (burst disc) for damage or dirt.

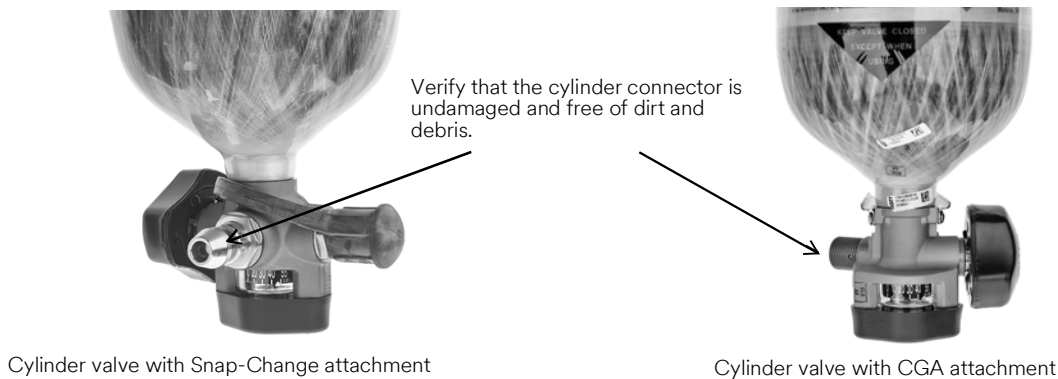


Figure 2-1 Inspecting the breathing air cylinder



NOTE

Do not use tools to close the cylinder valve. Over-tightening the cylinder valve may cause damage that could result in air leaking from the cylinder.

4 Check the cylinder pressure gauge. If the cylinder is less than full, replace it with a fully charged cylinder.

For information about charging cylinders, see the current revision of *Safety Precautions for Air-Pak Cylinders* (P/N 89080-01).

Inspecting the RIC/UAC Connection

Air-Pak X3 Pro respirators are fitted with a Rapid Intervention Crew/Company Universal Air Connection (RIC/UAC) system to provide emergency replenishment of an approved SCBA breathing air supply cylinder from an approved air supply source.

To inspect the RIC/UAC connection

- 1 Remove the dust cap from the RIC/UAC coupling on the respirator.
- 2 Visually inspect the coupling for dirt or damage. Remove any dirt or contamination from the coupling. See [Figure 2-2](#).
 - a If the RIC/UAC coupling on the respirator appears damaged, remove the respirator from service and tag it for repair by authorized personnel.
 - b If you find no damage, replace the dust cap.



Figure 2-2 Inspecting the RIC/UAC connection

Inspecting the Facepiece

Remove and keep the protective static cling label attached to the lens of a new facepiece; the label may be re-used during storage of the facepiece.

The facepiece must be complete and in serviceable condition with no worn, loose, or damaged components. See the main components of the facepiece in [Figure 2-3](#).

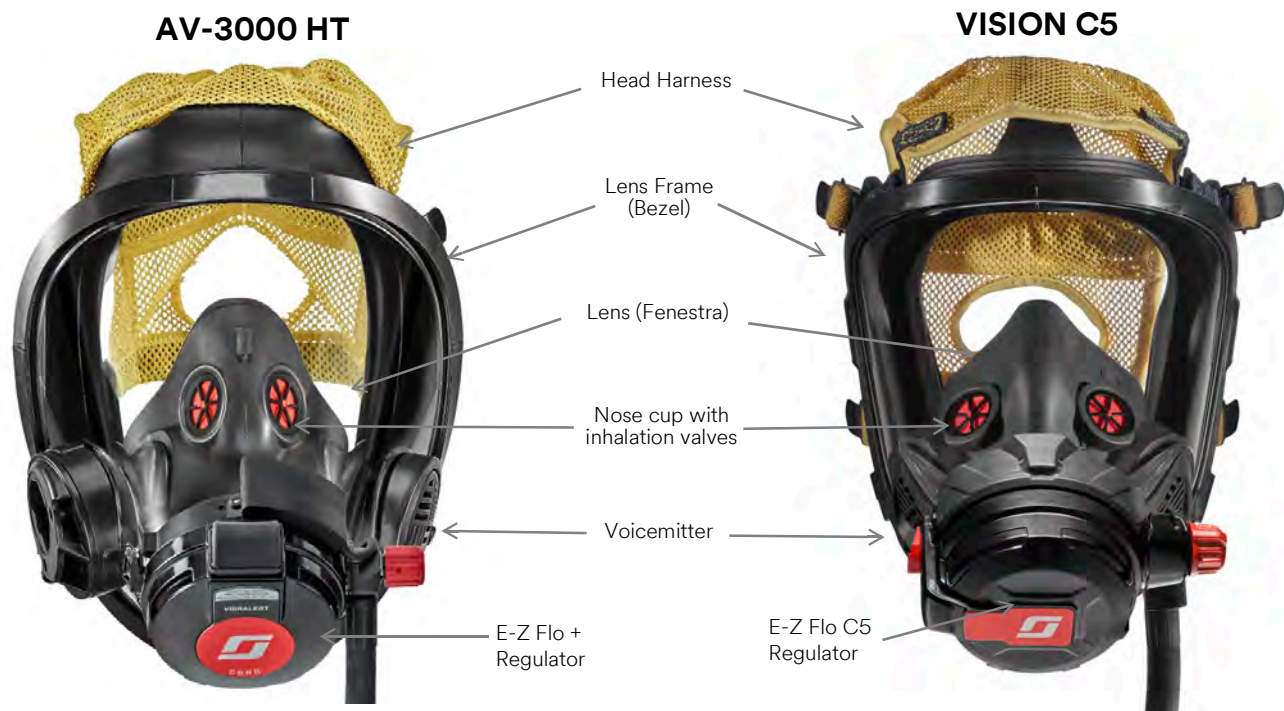


Figure 2-3 Facepiece components

To inspect the facepiece

- 1 Inspect the facepiece seal and other rubber components for deformation, wear, cracks, or other damage.
- 2 Inspect the lens and lens frame.
 - a Inspect the lens for scratches, gouges, cracks, crazing, distortion, melting, or any other damage or condition that could impair the user's vision or the operation of the facepiece.
 - b Inspect the lens frame for damage such as cracks or distortion.
 - c Verify that the lens frame screws are present and installed correctly.
- 3 Inspect the head harness.
 - a Check that all harness anchors are present and operating properly.
 - b Inspect the head harness for correct installation with all straps oriented correctly.
 - c Inspect the head harness for damage or worn components.
- 4 Inspect the voicemitter ducts.
 - a Verify that the voicemitter ducts are properly installed.
 - b Inspect the voicemitters for damage and verify that the voicemitters are properly installed and secure in the voicemitter ducts.
- 5 Inspect the nose cup.
 - a Inspect the nose cup for cuts or damage. Look for any signs of damage to the facepiece port side of the nose cup where the regulator attaches.
 - b Verify that both inhalation valves in the nose cup are present and properly installed.
 - c Verify that the nose cup is properly installed. Check that the nose cup is properly seated between the flanges of the voicemitter ducts and over the chin cup. See [Figure 2-4](#).
- 6 Verify that the facepiece is clean. See "[Cleaning the Facepiece](#)" on page 38.
- 7 Adjust the head straps to the full outward position.



Figure 2-4 Checking the nose cup installation

Inspecting the Regulator

Inspection of the regulator includes checking the regulator gasket, purge valve, Heads-Up Display (HUD), regulator hose, and quick-disconnect.

To inspect the regulator

- 1 Verify that the purge valve (red knob) is not damaged and turns smoothly one-half turn from stop to stop. See [Figure 2-5](#)
- 2 Verify that the regulator gasket is not damaged and is in place around the outlet port of the regulator. See [Figure 2-5](#).

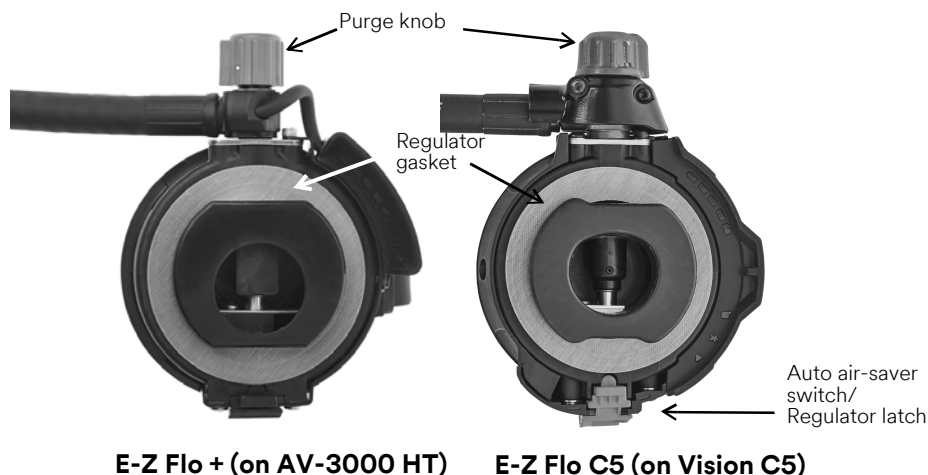


Figure 2-5 Inspecting the regulator



NOTE

Do not use tools to open or close the purge valve. Using tools to open or close the purge valve may result in damage to the valve. Instead, open or close the valve using finger pressure only. Rotation of the purge valve is limited to one-half turn.

- 3 Inspect the HUD for damage. Verify that the rubber guard is in place and is not torn or damaged.
- 4 If the hose to the breathing regulator is equipped with a quick-disconnect, inspect both the male and female quick-disconnects. Pay special attention to the following:
 - a Inspect the operation of the locking sleeve on the female quick-disconnect. If any damage is noted, remove it from service and tag it for repair.
 - b Inspect the condition of the male quick-disconnect. Look for signs of wear on the locking ridge as shown in [Figure 2-6](#).



Figure 2-6 Inspecting the male quick-disconnect

- 5 Verify that the quick-disconnect operates properly. Breathing regulators equipped with a quick disconnect use a pull-back sleeve coupling.
 - a While pushing the plug D into the socket, pull the locking sleeve E back toward the guard. The plug D will separate. See [Figure 2-7](#).

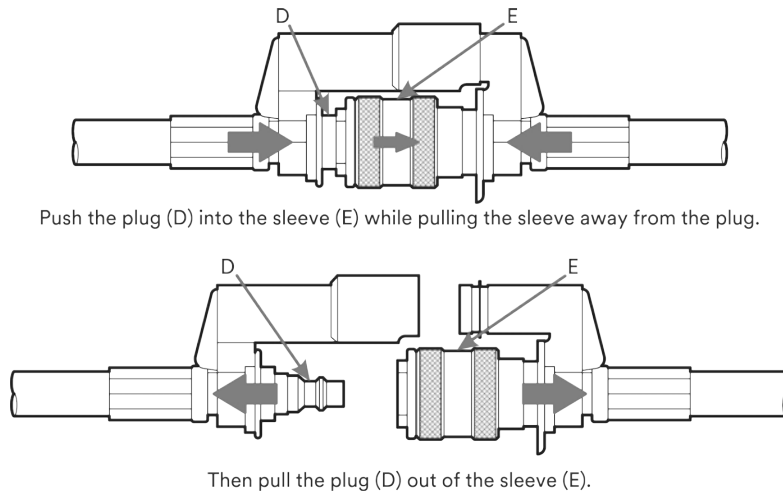


Figure 2-7 Testing the quick-disconnect

- b To reconnect, align the HUD plug with the mating connector. A collar on the female coupling prevents misalignment of the connectors. Verify that the HUD plug is properly aligned and fitted into the mating socket.
 - Push plug D into the socket until the locking sleeve E pops forward.
 - Test for proper engagement by tugging on the coupling.
- 6 If the regulator is not attached to the facepiece, proceed as follows:
 - a Align the regulator outlet port with the facepiece port. (The red purge valve on the regulator will be in the 12 o'clock position). Insert the regulator into the facepiece port.
 - b Rotate the regulator counterclockwise (as viewed from inside of facepiece) until the red purge valve knob is on the left side of the facepiece. The lock tab of the E-Z Flo+ regulator or the latch on the E-Z Flo C5 regulator will lock into the facepiece retainer with a click. When the lock tab or latch is properly engaged, the regulator will not rotate.
- 7 Verify that a full cylinder is properly installed in the backframe and that the reducer hose coupling is hand-tightened to the cylinder valve outlet.



NOTE

Do not use tools to tighten the hose coupling. Over-tightening the hose coupling may damage the gasket seal.

If you do not find any damage to the respirator, proceed to [“Performing Operational Testing”](#) on page 12.

Performing Operational Testing

Testing includes checking the basic operation of the respirator, followed by more thorough checks of the regulator, HUD, sensor module lights, and batteries.

General Testing

- 1 Check that the breathing regulator purge valve (red knob on regulator) is closed (the pointer on the knob points up).
- 2 Fully depress the center of the air saver/donning switch on the top of the E-Z Flo+ regulator or firmly pull the auto air-saver switch on the E-Z Flo C5 regulator latch and release.
- 3 Slowly open the cylinder valve by fully rotating the knob counterclockwise (approximately two-and-one-half turns). Confirm that the following occur:
 - The Vibralert end-of-service indicator alarm sounds and then stops.
 - The HUD initializes.
 - All lights turn on for 20 seconds before displaying the cylinder's air supply level.
 - If the low battery light remains lit or begins to flash, replace the batteries before proceeding. See [“Chapter 5: Replacing Batteries”](#) on page 43.
 - If the respirator is equipped with a Personal Alert Safety System (PASS) device, also known as a distress alarm, you will hear three quick chirps when the cylinder valve is opened.
- 4 Check that the remote pressure gauge is operating properly and that its reading is within 10% of the value on the cylinder pressure gauge.
- 5 Don the facepiece or hold the facepiece to your face to create a good seal.
 - a Inhale sharply to automatically start the flow of air. Breathe normally from the facepiece to ensure proper operation.
 - b Remove the facepiece from your face. Confirm that air flows freely from the facepiece.
- 6 Fully depress the center of the air saver/donning switch on the top of the E-Z Flo+ regulator or firmly pull the auto air-saver switch on the E-Z Flo C5 regulator latch and release. The flow of air from the facepiece will stop.
- 7 Examine the complete respirator for air leaks. No air should leak from any part of the respirator.

Testing the Regulator

The regulator is equipped with a red purge valve (knob), which allows air to flow into the facepiece in an emergency without breathing on the respirator. The purge control is also used to release residual air from the respirator after the cylinder valve is turned off.

To check the purge valve

- 1 Rotate the purge valve one-half turn counterclockwise (turn the valve so that the pointer on the knob points down). Air flows freely from the regulator.
- 2 Rotate the purge valve one-half turn clockwise to its fully closed position (the pointer on the knob points up). Air flow from regulator stops.
- 3 Push in and rotate the cylinder valve knob clockwise to close the valve.
- 4 When the cylinder valve is fully closed, open the purge valve slightly to vent residual air pressure from system. As the residual air pressure vents from the system, the remote pressure gauge needle will swing from full toward empty.

- 5 Observe the air supply indicator lights of the HUD and verify that they light properly in descending order.
- 6 When the gauge needle crosses the one-third mark but before it reaches the beginning of the red empty band, close the purge valve. See [Figure 2-8](#).

Confirm that the following occur:

- The Vibralert end-of-service indicator alarm sounds (rapid clicking).
- The red light at the far left of the HUD flashes at 10 times per second.
- On units equipped with a PASS device, the gauge light on the remote pressure gauge is solid red.

To test the HUD, control the needle between 1/3 and empty.



Figure 2-8 Remote pressure gauge

- 7 After verifying that all alarms are functioning, open the purge valve slightly to vent the remaining residual air pressure from the system. All alarms (except the accessory electronic end-of-service time indicator) stop when the system pressure drops to zero.
- 8 When the air flow stops completely, close the purge valve (the pointer on the knob points up).
- 9 Stop the electronic end-of-service time indicator by pressing the manual reset (yellow) button on the control console twice and then twice again after the flashing green light sequence.

Testing the Heads-Up Display

The Heads-Up Display (HUD) provides a visual monitor of the air supply in the cylinder and valve assembly. The display is fitted to the mask-mounted regulator and appears across the bottom of the user's field of view through the facepiece.

The HUD consists of four rectangular lights to represent the cylinder pressure at full and three-quarters, one-half, and one-third full. A fifth red light (in the shape of a battery) indicates low battery.

The HUD operates as follows:

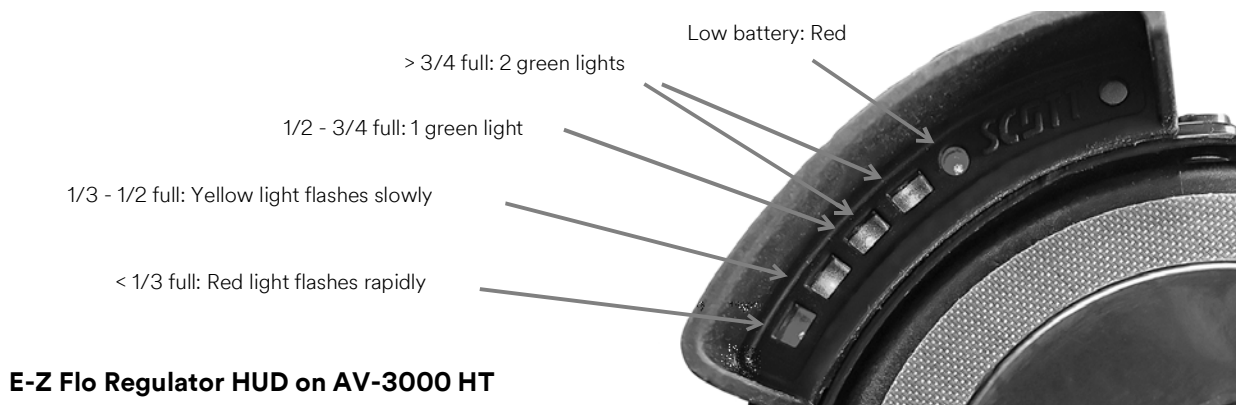
- When respirator use begins, the HUD will initialize and illuminate all lights for 20 seconds. Verify the operation of all lights every time respirator use starts and with every regular operational inspection.
- After initialization, the rectangular indicator lights show the level of the air supply in the cylinder (see [Figure 2-9](#)):
 - When the cylinder is more than three-quarters full, two green lights near the center of the display illuminate.
 - When the cylinder is between one-half and three-quarters full, a single green light illuminates.
 - When the cylinder is between one-third and one-half full, a yellow light flashes once per second.
 - When the cylinder is less than one-third full, a red light at the far left of the display (the end-of-service time indicator) flashes 10 times per second.

**TIP**

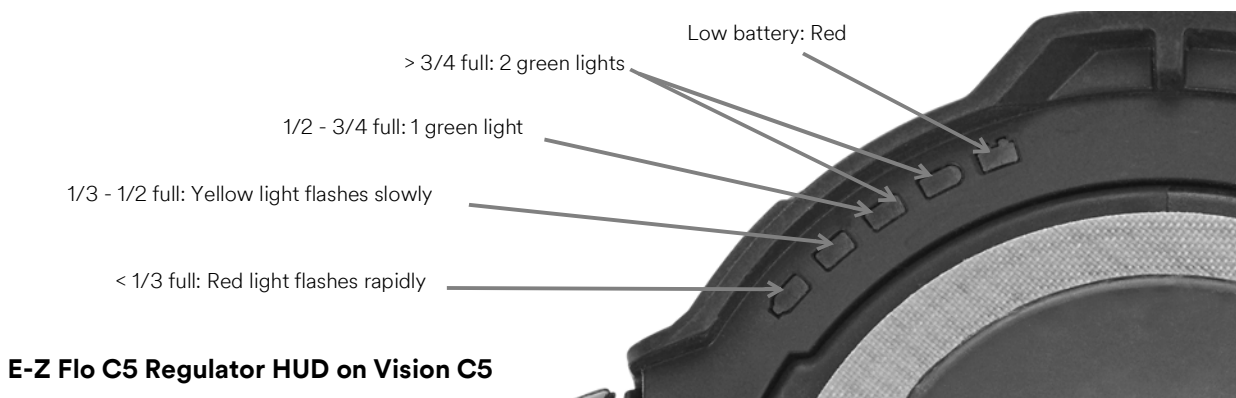
The HUD of the E-Z Flo C5 regulator (compatible with the Vision C5 facepiece) includes three additional lights to indicate the following:

- Initiation of a PAR request
- Initiation of an evacuation command or a system integrity alarm
- Actuation of a Personal Alert Safety System (PASS) full alarm (distress alarm)

There is also an externally facing light that indicates the air supply in the cylinder. This light flickers before displaying the cylinder's air supply level.



E-Z Flo Regulator HUD on AV-3000 HT



E-Z Flo C5 Regulator HUD on Vision C5

Figure 2-9 HUD Operation

- If the SCBA is equipped with a PASS device, the lights in the HUD will flash in an alternating pattern when the distress alarm goes into pre-alarm mode. In addition, the color of the light illuminating the gauge dial will be the same as the current cylinder level light showing in the HUD.
- The HUD has an automatic brightness control that dims the display in low-light situations and returns the display to full brightness in bright-light situations.
- When the batteries require changing, the low-battery indicator at the right of the display lights for 20 seconds and then begin to flash once per second.

When the low battery indicator is actuated, the batteries still have sufficient life to operate the HUD for a period longer than the longest duration cylinder installed on the respirator. However, you must change the batteries immediately upon termination of use of the respirator or before reentry into a hazardous atmosphere. See [“Chapter 5: Replacing Batteries”](#) on page 43.

Table 2-1 summarizes the operation of the HUD lights:

BEHAVIOR OF LIGHTS	MEANING	USER ACTION
2 glowing green lights	Full Cylinder	Continue using respirator
1 glowing green light	3/4 full Cylinder	Continue using respirator
1 slowly flashing yellow light	1/2 full Cylinder	Continue using respirator
1 rapidly flashing red light	1/3 full Cylinder	Leave hazardous area immediately

Table 2-1 Heads-Up Display Indicator Lights

Testing the Sensor Module Lights

When performing operational testing on respirator units equipped with a PASS device (distress alarm), verify that the sensor module lights are operating properly. [Figure 2-10](#) shows the sensor modules on the respirator, and [Table 2-2 on page 15](#) describes how the lights behave for particular actions or situations.

For more information about the sensor module lights, see the manual for the Scott Electronic Management System (SEMS) II. (See "[Appendix I: Related Manuals](#)" on [page 65](#).)



Figure 2-10 Sensor modules

ACTION OR SITUATION	BEHAVIOR OF LIGHTS
Start Air-Pak (i.e., open cylinder valve)	Bright light, then flashing green light
Normal operation	Flashing green light
Air cylinder between 1/2 and 1/3 full	Flashing yellow light (2 quick flashes) every second
Air cylinder less than 1/3 full (low air)	Flashing yellow light (alternately)
Low battery while unit is on	Flashing yellow light once every 2 seconds
Shut down	Off
Press reset button on control console with unit off (battery test)	Good battery: Bright light, then flashing green light Low battery: Bright light, then flashing red light
Press manual alarm button on control console with unit off	Flashing red light (simultaneously)
Press reset button on control console during full alarm	Flashing green light
PASS pre-alarm	Flashing red light (alternately)
PASS full alarm	Flashing red light (simultaneously)

Table 2-2 Operation of Sensor Module Lights



TIP

The yellow light is a combination of the red, green, and white lights that appears yellow-orange or amber from a distance. At close range, the individual lights may be visible.

Testing the Batteries

On respirators equipped with a distress alarm, the battery condition can be tested manually as follows:

- 1 Make sure the distress alarm is off (i.e., the cylinder valve is closed, and no sensor module lights are flashing).
-



NOTE

Do not use tools to close the cylinder valve. Over-tightening the cylinder valve may cause damage that could result in air leaking from the cylinder.

- 2 Press and hold the manual reset (yellow) button on the console. Observe the final light color (green or red) in the sequence to determine the battery status.
 - Green lights on the control console and sensor module indicate that sufficient battery power remains.
 - Red lights on the control console and sensor module indicate that the batteries are low and must be replaced before the respirator is used again. 3M recommends replacing all batteries before the respirator is used again. See “[Chapter 5: Replacing Batteries](#)” on page 43.
-



TIP

For information about changing batteries in 3M Scott Fire & Safety components or accessories, see the user instructions provided with the components or accessories.

OPERATING THE RESPIRATOR

This chapter provides the basic instructions for operating the 3M Scott Air-Pak X3 Pro SCBA. Training and practice with the equipment are required before operation to ensure that you are completely familiar with the operation of the respirator.

Instructions for operating the respirator are divided into the following sections:

- “[Before You Begin](#)” on page 17
- “[Donning the Respirator](#)” on page 18
- “[Donning the Facepiece](#)” on page 19
- “[Starting the Respirator](#)” on page 23
- “[Using the Respirator](#)” on page 25
- “[Shutting Off the Respirator](#)” on page 25
- “[Replacing Air Cylinders](#)” on page 27
- “[Special Use Situations](#)” on page 30
 - “[Resuming Use of the Respirator](#)” on page 30
 - “[Using the Respirator in Standby](#)” on page 31
 - “[Emergency Operation](#)” on page 31
 - “[Using the RIC/UAC Connection](#)” on page 32
 - “[Using Alternate Cylinders](#)” on page 33
 - “[Low Battery](#)” on page 34
 - “[Low Temperature Operation](#)” on page 34

Before You Begin

Before performing any of the procedures in this chapter:

- Carefully read “[Safety Information](#)” on page ix.
- Inspect and test your respirator as described in “[Chapter 2: Inspecting the Respirator](#)” on page 5.

You must wear the Air-Pak X3 Pro SCBA over protective garments such as fire fighting turnout gear, but you may wear it under encapsulating protective garments such as hazardous material (HAZ-MAT) suits. Determine what other protective gear you will use and don the SCBA and the facepiece accordingly.

If respirator use is expected at temperatures near or below freezing, or if the respirator is to be used after storage at temperatures near or below freezing, refer to “[Low Temperature Operation](#)” on page 34 for additional information and supplemental procedures.

Donning the Respirator

Before you don the respirator

- Check the cylinder gauge. If the cylinder is not full, replace the cylinder before use. A gauge indication of other than full may indicate an air leak in the cylinder and valve assembly or a malfunction of the gauge assembly.
- Verify that the cylinder is held securely by the cylinder retention assembly.
- If a wall storage bracket is used, follow the instructions of the bracket manufacturer for placing your arms through the shoulder pads and freeing the respirator from the bracket.
- If the respirator is stored in a hard or soft storage case, place the case on the ground or level surface and open the case. Secure the regulator in the regulator holder.

To don the respirator

- 1 Adjust the shoulder pads to their full outward (fully loose) position. Spread the shoulder pads and fold open the waist pad. Stand the respirator on the cylinder valve with cylinder toward you and the shoulder pads away from you. See picture A in [Figure 3-1](#).
- 2 Pick up the respirator and swing it around behind you as if you were donning a coat. Check to ensure that the shoulder pads and waist pad are not twisted and lay flat. See picture B in [Figure 3-1](#).
- 3 While leaning slightly forward, put on the second shoulder strap. Ensure that both shoulder pads fall into place on your shoulders. See picture C in [Figure 3-1](#).



Figure 3-1 A) Adjusting the shoulder pads outward. B) Swinging the respirator behind you. C) Putting on second shoulder strap.

- 4 Pull the shoulder straps down to settle the unit in position on your back. See picture A in [Figure 3-2](#).

- 5 While still leaning slightly forward, connect the waist pad buckle and adjust the belt by pulling forward on the 2 side-mounted belt ends. Pull on the belt ends to adjust waist belt for firm fit on your hips. Tuck the belt ends into the waist pad. See picture B in [Figure 3-2](#).
- 6 Stand up straight and readjust the shoulder pads as needed to ensure the weight of the backframe is carried on your hips. You should be able to fit two fingers comfortably under each shoulder pad. Tuck in the ends of the shoulder pads. See picture C in [Figure 3-2](#).



Figure 3-2 A) Pulling the shoulder straps down. B) Connecting the waist pad buckle. C) Adjusting the shoulder pads.



TIP

If you are using the chest strap accessory, refer to the installation and use instructions provided with the chest strap before use. See [Appendix I: Related Manuals](#) on page 65.

Donning the Facepiece

Before donning the facepiece, examine it to verify that it is complete and in serviceable condition.

- Verify that the inhalation valves in the nose cup are properly installed.
- Verify that the nose cup is properly seated between the flanges of the voicemitter ducts (see [Figure 2-4](#) on page 9) and properly positioned in the facepiece.

For more information, see “[Inspecting the Facepiece](#)” on page 8.

Periodically repeating the fit testing is required to identify any physical changes of the user (such as those listed above) which could affect the fit of the facepiece. Refer to the appropriate steps in [Appendix G: Facepiece Fitting](#) on page 59.

To don the facepiece

You must be familiar with and practice the prescribed donning and termination of use procedures for the facepiece and respirator prior to using the respirator.

OPERATING THE RESPIRATOR

- 1 Adjust the head straps to the full outward position. See [Figure 3-3](#).



Figure 3-3 Adjusting the head straps to the full outward position

- 2 Hold the facepiece in one hand. Fold the head harness over the lens (see [Figure 3-4](#)), or hold the head harness up and out of the way with the other hand.



Figure 3-4 Folding the head harness over the lens

- 3 Place the facepiece centered on the face with the chin properly positioned in the chin cup. See [Figure 3-5](#).



Figure 3-5 Positioning the chin

- 4 Using the hand hold at the bottom of the netting, pull the head harness over the crown of the head and down the back of the head. Pull forcefully enough that the facepiece moves up to position your chin snugly within the chin cup and forms a close fit to your face. See [Figure 3-6](#).



Figure 3-6 Placing the facepiece on the face

- 5 Verify that no hair or clothing interferes with the face-to-facepiece seal. Verify that the head harness forms a close fit to your head.

**TIP**

Ensure that the chin is properly located in the chin pocket of the facepiece throughout the donning process.

- 6 Smooth the head harness over the head and ensure that straps are lying smooth and flat against the head and neck with no twists. See [Figure 3-7](#).
- 7 Verify the head harness is centered and properly located at the back and base of the head. Maintain the head harness in this position.



Figure 3-7 Smoothing the head harness

**TIP**

Verify that the top center portion of the head harness is positioned over the crown of the head.

- 8 While holding the facepiece in place with one hand, tighten the neck straps evenly one at a time by pulling each neck strap end toward the rear of the head. Alternate hands to maintain the facepiece position on the face. See [Figure 3-8](#).



Figure 3-8 Tightening the neck straps

- 9 Verify the proper location of the face in the facepiece and the chin in the chin cup. While still holding the facepiece in place with one hand, tighten the temple straps evenly one at a time by pulling each temple strap end toward the rear of the head. Alternate hands to maintain the facepiece position on the face. See [Figure 3-9](#).



Figure 3-9 Tightening the temple straps

- 10 Smooth the head harness down the back of the head and make sure the net is flat against the head. If necessary, adjust the bottom of the head harness to sit below the crown of the head. See [Figure 3-10](#).
- 11 Verify that the head harness is centered on the crown of the head and lying flat against the back of the head.
- 12 Again, use the hand hold at the bottom of the netting to pull the head harness down the back of the head. Pull forcefully enough that the facepiece moves up to position your chin snugly within the chin cup and forms a close fit to your face.
- 13 Once again, verify the proper location of the face in the facepiece and the chin in the chin cup.
- 14 Re-tighten the straps. All straps must be snug and the facepiece should feel secure. See [Figure 3-11](#).



Figure 3-10 Adjusting the head harness



Figure 3-11 Verifying facepiece positioning

- 15 Perform a personal check of the facepiece and head harness and address any donning problems. Possible facepiece donning problems include the following (see [Figure 3-12](#)):
 - Head harness strap is twisted.
 - Head harness is off-center or not flat against the head.
 - Head harness is too high on the head.
 - Hair or clothing is in the face seal.
 - Face seal is rolled over inside the facepiece rather than flat against the face.
 - Facepiece sits too low on the face as evidenced by pressure on the forehead or the facepiece contacting the throat area, permitting a break in the seal.

The photographs in [Figure 3-12](#) depict the Vision C5 facepiece, but similar conditions can occur with other facepieces as well. Verify that the facepiece is donned correctly regardless of the head harness style. If any donning problems are found, remove the facepiece and re-don the facepiece correctly.



Figure 3-12 Donning problems (Vision C5 facepiece shown)

**TIP**

OSHA standard 29 CFR 1910.134 requires teams of at least two people when entering into and operating in an IDLH atmosphere. If necessary, ask your partner to verify that you have donned the facepiece properly.

16 Proceed to “[Starting the Respirator](#)” on page 23 and perform a **negative pressure leak test** as instructed.

Starting the Respirator

To start the respirator

- 1 Fully depress the center of the air saver/donning switch on the top of the E-Z Flo+ regulator or firmly pull the auto air-saver switch on the E-Z Flo C5 regulator latch and release.
The air-saver mechanism prevents the rapid loss of air supply when the cylinder valve is open and the facepiece is removed from the face or the regulator is removed from the facepiece.
- 2 If the regulator is not attached to the facepiece, proceed as follows:
 - a Verify that the regulator gasket is not damaged and is in place around the outlet port of the regulator.
 - b Align the regulator outlet port with the facepiece port. (The red purge valve on the regulator will be in the 12 o'clock position.) Insert the regulator into the facepiece port. See [Figure 3-13](#).
 - c Rotate the regulator counterclockwise (as viewed from the inside of the facepiece) until the red purge valve knob is on the left side of the facepiece. The lock tab of the E-Z Flo+ regulator or the latch on E-Z Flo C5 regulator will lock into the facepiece retainer with a click. When the lock tab or latch is properly engaged, the regulator will not rotate. See [Figure 3-13](#).

- 3 Slowly open the cylinder valve fully by turning the valve knob counterclockwise until it stops (approximately 2 1/2 full turns of the knob).



Figure 3-13 Attaching the regulator (Vision C5 facepiece shown)

- 4 Observe the operation of the alarms:
 - The Vibralert end-of-service indicator alarm starts and then stops. If you do not fully depress the air saver/donning switch on the E-Z Flo+ regulator or the auto air-saver switch on the E-Z Flo C5 regulator latch prior to opening the cylinder valve, the Vibralert will not actuate due to air flowing freely on the facepiece.
 - d The HUD initializes for twenty (20) seconds and then displays the cylinder air level.
 - e The PASS device (distress alarm) actuates when the cylinder valve is opened and sounds three quick chirps; a green flashes on the remote pressure gauge console.
- 5 With facepiece sealed to face, inhale sharply to actuate the respirator. Air will then be supplied during inhalation.



TIP

If air is not supplied on first inhalation, check the following:

- The cylinder valve is fully open.
- The remote pressure gauge indicates pressure in the cylinder.
- The facepiece is sealed to the face.

- 6 Always check the facepiece seal, the system seal, and the operation of the end-of-service alarms:
 - a Completely close the cylinder valve by pushing in on the cylinder valve and rotating it clockwise.
 - b Breathe using the respirator. As the air pressure falls in the respirator, one or more of the end-of-service indicator alarms will actuate.
 - c As soon as any end-of-service indicator alarm starts, hold your breath momentarily and make certain that the Vibralert and HUD both actuate. (The Vibralert clicks rapidly, and the HUD red light flashes rapidly.)
 - d Resume breathing on the respirator until all air stops flowing from the breathing regulator.
 - e Perform a **negative pressure leak test**: Inhale slowly and hold your breath momentarily. Make sure that you do not detect any air flowing into the facepiece and that the facepiece forms a tighter seal with your face.
 - f Open the cylinder valve and breathe normally. The electronic end-of-service time indicator sounds briefly and then stops.
 - g If the environment is suitably quiet, you can detect air leaking from the facepiece by listening for a flow of air while holding your breath. Inhale and hold your breath momentarily. Do not engage the air-saver mechanism. Make sure that you do not hear air flowing into the facepiece from the regulator and that you do not detect air flowing outward from the facepiece.
- 7 Put on any other required protective head gear or protective clothing. Be sure that any head gear, helmet, or protective clothing does not interfere with the use of the respirator. You must be able to move your head freely without dislodging the facepiece or disturbing the face-to-facepiece seal.

**TIP**

For additional information, see ANSI/ASSP Z88.2, current edition, *American National Standard Practices for Respiratory Protection*. If you use the respirator for firefighting, see also NFPA Standard 1500, *Standard on Fire Department Occupational Safety, Health, and Wellness Program*.

Using the Respirator

Use the respirator in accordance with your respiratory protection program.

- Plan every entry into a contaminated or unknown atmosphere to ensure that there is sufficient air supply to enter, perform the required tasks, and return to a safe breathing area.
- Check the remote pressure gauge on the shoulder harness periodically to monitor the rate of air consumption and the remaining air supply.
- Always allow sufficient air for egress from the contaminated area.
- If you attempt re-entry after the air has been partially consumed (i.e., the cylinder is less than full), be certain that the remaining air will be sufficient to perform the required tasks and return to safety.
- If any end-of-service indicator alarm actuates (the Vibralert end-of-service indicator alarm, the HUD rapidly flashing red light) either individually or together, leave the area requiring respiratory protection immediately.
- After you leave the area, do the following:
 - When you are in a safe area where you are certain that respiratory protection is not required, terminate the use of the respirator. See [“Shutting Off the Respirator”](#) on page 25.
 - Determine the cause of the alarm.
 - If the end-of-service time alarm is actuated by a depleted air supply cylinder, replace the cylinder in accordance with [“Replacing Air Cylinders”](#) on page 27. You can resume use of the respirator with a fully charged breathing air cylinder installed.
 - If the end-of-service indicator alarm has actuated for an unknown reason, **do not resume use of the respirator**. Remove the respirator from service and tag it for repair by authorized personnel.

Shutting Off the Respirator

To remove (doff) the facepiece and terminate respiratory protection

- 1 Leave contaminated area or be certain that respiratory protection is no longer required.
- 2 Loosen the temple straps slightly by lifting the upper facepiece buckles away from the head. The facepiece buckles have U-shaped release lever extensions.
- 3 Loosen the neck straps by lifting the lower facepiece buckles away from your head while lifting the facepiece away from your face.

**NOTE**

Failure to release the tension on the neck straps before removing the facepiece may cause premature wear or damage to the straps and/or facepiece assembly.

- 4 Remove the facepiece by pulling it up and over your head.
- 5 To stop the flow of air from the facepiece, fully engage the air-saver mechanism on the regulator and release.



TIP

The neck carrying strap for the facepiece allows you to hang the facepiece around your neck after doffing (see [“Using the Respirator in Standby”](#) on page 31). For more information, contact 3M or your authorized 3M distributor.



TIP

The air-saver mechanism is intended to prevent a free flow of air and the depletion of the air supply when the facepiece is removed and the cylinder valve is still open. The purge valve and Vibralert will function normally with the air-saver mechanism engaged. If the purge valve is open or if the Vibralert is in operation, the air will continue to be depleted from the respirator until the cylinder valve is closed.

If the air flow from the regulator cannot be stopped by engaging the air-saver mechanism, immediately close the cylinder valve to prevent depletion of the air remaining in the cylinder. Remove the respirator from service and tag it for repair by authorized personnel.

- 6 Close the cylinder valve if you are not going to resume use of the respirator.



NOTE

Do not use tools to close the cylinder valve. Over-tightening the cylinder valve may cause damage that could result in leakage of air from the cylinder.



TIP

A strike or impact to the regulator while the cylinder valve is open and the air-saver mechanism is engaged may cause air to flow from the regulator and deplete the air remaining in the cylinder. Leaving the air-saver mechanism engaged and the cylinder valve open for an extended period of time may result in intermittent activation of the Vibralert even when more than 33% of the air supply remains.

- 7 Slightly loosen the shoulder pads by lifting up the ends of the shoulder pad slide buckles, release the waist pad by pressing the release button in center of waist pad buckle, and remove the unit from your back.



NOTE

Failure to release the tension on the shoulder pads before removing the respirator may cause premature wear or damage to the pads and/or respirator assembly.

- 8 Proceed in accordance with the requirements of your respiratory protection program for service of the respirator, including the following:
 - Replace the cylinder with a fully charged cylinder of the correct size and configuration. See [“Replacing Air Cylinders”](#) on page 27.
 - Inspect the respirator according to [“Chapter 2: Inspecting the Respirator”](#) on page 5.
 - Clean the respirator according to [“Chapter 4: Cleaning & Storing the Respirator”](#) on page 37.



TIP

If the respirator is equipped with a PASS device (distress alarm), see the instructions provided with the PASS device for details of how to turn off the unit. [Appendix I: Related Manuals](#) on page 65 provides a list of related user manuals.

Replacing Air Cylinders

Replace depleted or partially depleted SCBA cylinders with full cylinders as soon as possible. To change the cylinder, remove the respirator assembly and place it on a solid support.

The Air-Pak X3 Pro comes with either a CGA threaded hose coupling or a Snap-Change cylinder coupling (see [Figure 3-14](#)).



Cylinder valve with Snap-Change attachment



Cylinder valve with CGA attachment

Figure 3-14 Snap-Change and CGA coupling.

Use only cylinders with the correct rated pressure for the respirator.

- SCBAs rated for 2216 psig service (pressure 2.2) must use only cylinder and valve assemblies marked for 2216 psig service (30-minute rated only)
- SCBAs rated for 4500 psig service (pressure 4.5) must use only cylinder and valve assemblies marked for 4500 psig service (30-minute, 45-minute, or 60-minute rated)
- SCBAs rated for 5500 psig service (pressure 5.5) must use only cylinder and valve assemblies marked for 5500 psig service (30-minute, 45-minute, 60-minute, or 75-minute rated)

Always inspect the cylinder valve assembly before connecting the pressure reducer hose coupling.

To prepare for cylinder replacement

- 1 Leave the area requiring respiratory protection and be certain that respiratory protection is no longer required. Doff the facepiece. (See [“Shutting Off the Respirator”](#) on page 25.)
- 2 Push in and rotate the cylinder valve knob clockwise and completely close the cylinder valve. Release residual air pressure in the respirator system by opening the purge valve slightly. When the flow of air from the facepiece stops, close the purge valve fully.



NOTE

Always close the cylinder valve on empty cylinders. An open valve may allow moisture or other contaminants to enter the cylinder.

Do not use tools to close the cylinder valve. Over-tightening the cylinder valve may cause damage that could result in leakage of air from the cylinder.

- 3 Release the waist pad, loosen the backframe harness, and remove the respirator. Place the respirator on a solid support with the cylinder facing up.

4 Follow the appropriate instructions to replace your air cylinder:

- “Replacing a CGA Cylinder” on page 28
- “Replacing a Snap-Change Cylinder” on page 29

Replacing a CGA Cylinder

To replace a CGA cylinder

- 1 Unthread the pressure reducer hose coupling from the cylinder valve by rotating counterclockwise.
- 2 Disengage the cylinder retention strap by gripping the latch plate as shown in picture A in Figure 3-15 and lifting on the end of the latch.
- 3 Grasp the cylinder below the retention strap, push the locking tab below the valve, then lift the cylinder free from the bottom hook and remove. See picture B in Figure 3-15.

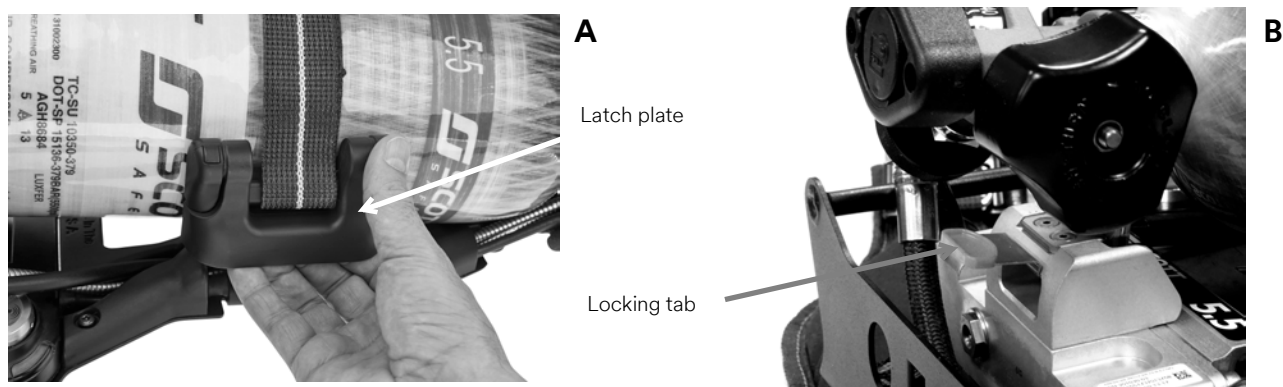


Figure 3-15 A) Gripping the latch plate on the cylinder retention strap. B) Pushing the locking tab.

- 4 Replace with a fully charged cylinder and valve assembly of the same pressure rating. Slide the top of the cylinder upward under the retention strap.
- 5 Engage the cylinder hanger in the hook at the bottom of the backframe.
- 6 Secure the cylinder in place by pushing the latch toward the backframe to lock the cylinder latch.
- 7 Inspect the high pressure coupling and verify that the gasket seal is present and undamaged. See Figure 3-16. If the gasket is present and undamaged, align the high pressure coupling with the outlet of the cylinder valve and tighten the hose coupling to the cylinder valve by hand.

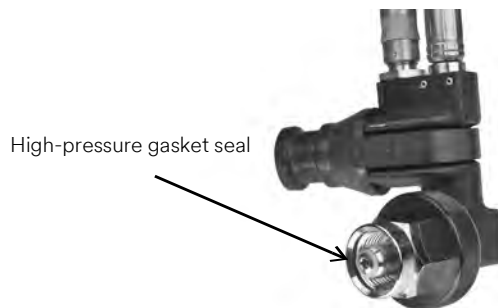


Figure 3-16 High-pressure gasket seal



NOTE

Do not use tools to tighten the hose coupling. Over-tightening the hose coupling may damage the gasket seal.

8 Continue use of the respirator.

If you terminate use of the respirator, clean and inspect it as described in “Chapter 4: Cleaning & Storing the Respirator” on page 37 and “Chapter 2: Inspecting the Respirator” on page 5.

Replacing a Snap-Change Cylinder

To replace a Snap-Change cylinder

- 1 Disengage the cylinder retention strap by gripping the latch plate as shown in picture A in [Figure 3-17](#) and lifting on the end of the latch.
- 2 Pull both Snap-Change locks horizontally away from the pressure reducer to release the cylinder connector. See picture B in [Figure 3-17](#).
- 3 Grasp the cylinder below the retention strap and lift the cylinder free from the backframe and remove. See picture C in [Figure 3-17](#).



Figure 3-17 A) Disengaging the cylinder retention latch plate. B) Pulling the Snap-Change locks horizontally away from the pressure reducer. C) Lifting the cylinder free from the backframe.



TIP

You can replace a Snap-Change cylinder with the help of an assistant. Have your assistant stand behind you and follow steps 1-3 above. When the assistant pulls the Snap-Change locks to release the cylinder connector, he or she must support the cylinder to prevent it from falling.

You or your assistant can then complete the cylinder replacement process as described in the following steps.



- 4 Inspect the high-pressure seal in the high-pressure inlet (see [Figure 3-18](#)). If the seal is damaged or missing, remove the respirator from service and tag it for repair by authorized personnel.



High-pressure seal

Figure 3-18 High-pressure seal

- 5 Replace with a fully charged cylinder and valve assembly of the appropriate pressure rating. Verify that the replacement cylinder has a protective cap installed on the valve's CGA fill-fitting and that the cylinder connector is clean and free of dirt and debris. See picture A in [Figure 3-19](#).
- 6 Slide the top of the cylinder up under the cylinder retention strap. Orient the Snap-Change connector over the high-pressure inlet of the pressure reducer.
- 7 Push the cylinder connector into the pressure reducer firmly until both latch assemblies click and lock. Push directly on the cylinder valve to engage. See picture B in [Figure 3-19](#).

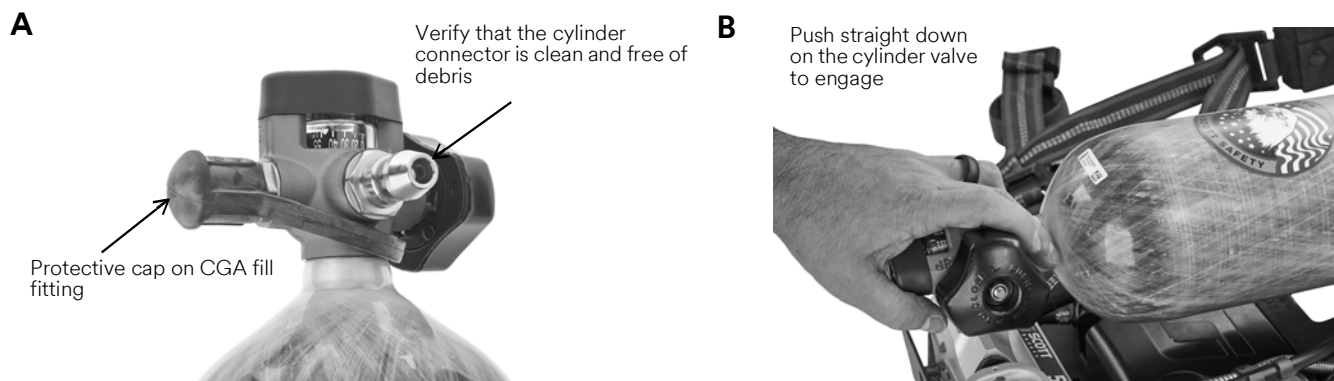


Figure 3-19 A) Verifying that the cylinder connector is clean. B) Pushing the cylinder into place on the backframe.

- 8 Secure the cylinder in place by pushing the latch toward the backframe to lock the cylinder latch.
- 9 Continue use of the respirator.

If you terminate use of the respirator, clean and inspect it as described in “[Chapter 4: Cleaning & Storing the Respirator](#)” on page 37 and “[Chapter 2: Inspecting the Respirator](#)” on page 5.

Special Use Situations

Resuming Use of the Respirator

If you must resume use of the respirator, proceed as follows:

- **Never** resume use of a respirator where an end-of-service indicator alarm was activated without first determining and correcting the reason for the end-of-service indicator alarm.
- Make sure that the remaining air supply in the cylinder is sufficient to accomplish the purpose for resuming respirator use. As a general rule, replace partially depleted cylinders with full cylinders before resuming respirator use.
- To resume use of the respirator, repeat the respirator and facepiece donning procedures as defined in “[Donning the Respirator](#)” on page 18 and “[Donning the Facepiece](#)” on page 19.
- When you have finished using the respirator, leave contaminated area or be certain that respiratory protection is no longer required and proceed with the steps described in “[Shutting Off the Respirator](#)” on page 25.

Using the Respirator in Standby

When the respirator is in standby, it is in place on your body with the shoulder straps properly adjusted and the waist belt buckled. However, the facepiece is not donned and the respirator is not being used.

- 1 Leave the cylinder valve fully open and verify that the air-saver mechanism is engaged. Remove the facepiece but leave the regulator attached to the facepiece.
- 2 Keep the facepiece ready for use in one of the following ways:
 - Hang the facepiece from the snap clip on the left shoulder pad (if installed).
 - Hang the facepiece from the optional neck carrying strap.



NOTE

To prevent damage to the facepiece, do not let the facepiece hang loose without securing it.

- 3 Detach the regulator from the facepiece until needed.
 - a Place your right hand over the regulator cover with your thumb on the regulator lock tab or latch.
 - b Engage the lock tab or latch and rotate the regulator 1/4 turn clockwise (viewed from inside of facepiece).
 - c When the red purge valve is in the 12 o'clock position, remove the regulator from the facepiece.

You can store the regulator on the optional regulator holder on the waist belt.

Emergency Operation

The respirator functions automatically, requiring only the opening of the cylinder valve and the proper donning of the facepiece to begin use and the closing of the cylinder valve to end use. If there is an actual or suspected malfunction, use one of the emergency procedures listed below.

These emergency operation procedures are for emergency use only and are meant to supplement — not replace — the emergency procedures prescribed by your respiratory protection program. If you must perform an emergency operation, leave the hazardous area at once. Following these emergency procedures will increase the rate of consumption of the air supply and may cause the end-of-service indicator alarms to diminish in intensity or stop completely. Failure to leave the hazardous area immediately may result in serious injury or death.

- If any end-of-service time indicator alarm (Vibralert or HUD) actuates during use, even if the air supply has not been depleted to approximately 33% of full rated capacity, **leave the contaminated area at once.**
- If the air supply is partially or completely cut off during use, fully open the red purge valve on the regulator by turning it counterclockwise (the pointer on the knob points downward) and ensure that the cylinder valve is fully opened (turned fully counterclockwise). **Leave the contaminated area at once after opening the purge valve.**
- If the air supply begins to flow freely into the facepiece during use, fully open the red purge valve knob on the regulator by turning it counterclockwise (the pointer on the knob points downward). Partially close the cylinder valve by pushing in and rotating clockwise to regulate the flow of air to satisfy your air requirements. Do not close the cylinder valve completely. **Leave the contaminated area at once after partially closing the cylinder valve.**
- If there is a blockage of air flow or sudden and complete loss of the system air supply and respiratory protection, **leave the contaminated area at once. Use all necessary precautions and follow emergency procedures prescribed by your established respiratory protection program.**

If you employ any of the above procedures, remove the respirator from service and tag it for repair by authorized personnel.

Using the RIC/UAC Connection

The Air-Pak X3 Pro respirator is fitted with a Rapid Intervention Crew/Company Universal Air Connection (RIC/UAC) System in compliance with NFPA 1981 (2013 edition). The RIC/UAC connection permits emergency replenishment of an approved SCBA breathing air supply cylinder from an approved air supply source while in use.

The RIC/UAC System is not a quick-charge attachment; do not use it for routine recharging of the cylinder, for “buddy breathing,” for transferring air from another SCBA cylinder, or any unapproved use. The RIC/UAC is for emergency use only when a respirator user is incapacitated within a hazardous atmosphere.

The RIC/UAC manifold is equipped with a relief valve that opens when the supply pressure of the emergency air supply exceeds the maximum pressure rating of the complete respirator. See [Figure 3-20](#). However, the supply pressure of the emergency air supply to be connected to the RIC/UAC must not exceed 5500 psig.



Figure 3-20 RIC/UAC relief valve



NOTE

The RIC/UAC assembly is designed with integral protection devices. Do not disassemble or modify any part of this assembly.

Before using the RIC/UAC system

- A member of the Rapid Intervention Crew/Company must visually inspect the cylinder and cylinder valve for dents or gouges in the metal or fiber wrapping. If the cylinder and valve assembly shows damage or evidence of exposure to high heat or flame (such as paint that has turned brown or black, decals that are charred or missing, a gauge lens that has melted, or elastomeric bumper that is distorted), you must decide whether the cylinder is suitable for recharging by this method. If you suspect that the cylinder is not safe, find another method of supplying air to the respirator user.
- Be certain that the cylinder you are charging is compatible with the complete respirator on which it is installed. For example, there must be a 2216 psig cylinder installed on a 2.2 respirator; there must be a 4500 psig cylinder installed on a 4.5 respirator. Verify by inspecting the cylinder and reducer labels to ensure that they are rated at the same pressure.

To use the RIC/UAC system

- 1 Verify that the cylinder valve on the user's respirator is fully open by turning the cylinder valve knob fully counterclockwise (approximately 2 1/2 full turns).
- 2 Remove the dust cap from the RIC/UAC coupling on the respirator and from the matching coupling on the RIC/UAC charging hose assembly. Visually inspect both couplings for dirt or damage. Remove any dirt or contamination from the couplings.
 - If the RIC/UAC **charging hose assembly coupling** appears damaged, do not attempt to connect the RIC/UAC charging hose assembly to the respirator. Find an alternate RIC/UAC charging hose assembly.
 - If the RIC/UAC **coupling on the respirator** appears damaged, do not attempt to connect the RIC/UAC charging hose assembly to the respirator. Find an alternate method of supplying air to the respirator user.

- 3 Connect the RIC/UAC charging hose assembly by pushing the quick-disconnect coupling on the RIC/UAC charging hose assembly on to the coupling on the respirator until the quick-disconnect sleeve clicks into place. See [Figure 3-21](#).
- 4 Slowly open the RIC/UAC charging hose assembly valve to pressurize the supply line and begin air flow to the cylinder.

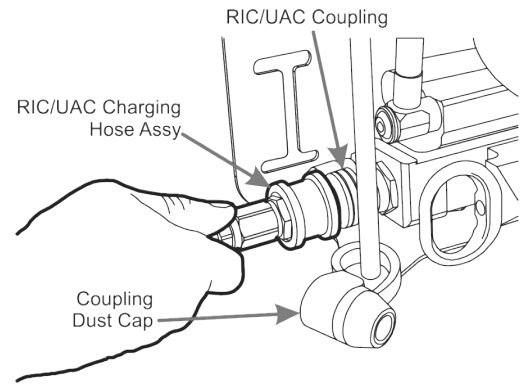


Figure 3-21 Connecting the high-pressure charging wand

- 5 Continually monitor the pressure gauge on the cylinder during filling. When the pressure gauge on the cylinder reads full, immediately terminate filling and disconnect the air supply source. A check valve in the RIC/UAC coupling on the respirator prevents air from flowing out of the cylinder.
 - If the cylinder is being filled from a portable air supply cylinder (such as a 3M Scott Fire & Safety RIT-Pak portable air supply), the air from the supply cylinder will stop flowing when the pressure in the cylinder equals the remaining pressure in the portable air supply (i.e., pressures will balance). Disconnect the RIC/UAC charging hose assembly.
 - If the cylinder is being filled from a supply hose connected to a high-pressure air supply source, take extra care to prevent over-filling the cylinder. If the supply pressure exceeds the pressure rating for the complete respirator, the RIC/UAC relief valve will open when the cylinder is full and will reset after the high-pressure air supply is disconnected. The cylinder pressure gauge should indicate “full” at this time. Disconnect the RIC/UAC charging hose assembly.

**TIP**

The RIC/UAC manifold is fitted with a relief valve to vent air if the rated pressure of the respirator is exceeded. If this occurs, shut off the air from the RIC/UAC charging hose assembly and disconnect the air supply. The relief valve will reset after excess pressure is released.

- 6 When charging is complete, disconnect the RIC/UAC charging hose assembly from the RIC/UAC coupling on the respirator.
 - a Pull the coupling sleeve away from the respirator until the coupling disengages.
 - b Install the dust caps on the RIC/UAC coupling and on the RIC/UAC charging hose assembly coupling.
- 7 After charging is complete, monitor the cylinder pressure on the respirator and repeat the above procedure as needed until the respirator user can be removed from the hazardous atmosphere.

Charging the cylinder will increase the temperature of the air within the cylinder. When charging is complete and the cylinder cools to ambient temperature, the pressure within the cylinder will fall slightly. If practical in the situation, top off the cylinder to ensure optimum service time. If you are charging a cylinder in cold ambient conditions where the temperatures are below freezing, see [“Low Temperature Operation”](#) on page 34.

Using Alternate Cylinders

If 3M Scott Fire & Safety cylinder and valve assemblies of different pressures are used in emergency situations, the following conditions will be observed:

- A fully charged 2216 psig rated cylinder or 3000 psig rated cylinder installed on an Air-Pak model 4.5 SCBA will cause the remote pressure gauge to indicate less than full and the end-of-service indicator alarms will activate well before approximately two-thirds of the air has been consumed.

- A fully charged 3000 psig rated cylinder installed in an Air-Pak model 2.2 SCBA will cause the remote gauge to indicate more than full and the end-of-service indicator alarms will not activate until **more** than approximately two-thirds of the air supply has been consumed.
- A 4500 or 5500 psig rated cylinder cannot be installed on an Air-Pak model 2.2 or 3.0 SCBA. The high-pressure coupling between the respirator and the cylinder will not seal when the coupling is threaded to the cylinder, and a large, high-volume air leak will occur at the cylinder connection when the cylinder is opened. This is intended to prevent the lower pressure respirator components from being pressurized to 4500 or 5500 psig accidentally.
- A fully-charged 5500 psig rated cylinder installed in an Air-Pak model 4.5 SCBA will cause the RIC/UAC relief valve to open and vent the excess pressure. When the pressure in the cylinder has been reduced to the operating pressure of the 4.5 SCBA, the valve will close. The remote gauge and the end-of-service indicator alarms will operate normally.

Low Battery

You should always test your batteries before using your respirator as described in [“Testing the Batteries”](#) on page 16 in [Chapter 2](#).

As the batteries begin to approach the end of their useful life, the low battery condition will be indicated by the following:

- The low battery indicator at the far right of the HUD will light for twenty (20) seconds and then begin to flash ten (10) times per second.
- If the respirator is equipped with a PASS device (distress alarm), the green lights on the control module and backframe will go out.

While in low-battery condition, the HUD and the PASS device will continue to operate for a period of time greater than the longest duration cylinder available for the respirator. However, you must replace the batteries before you use the respirator again. See [“Chapter 5: Replacing Batteries”](#) on page 43.

Low Temperature Operation

Store respirators intended for routine or emergency use in areas where the temperature is maintained above freezing (32° F / 0° C).

If a respirator’s storage location can reach temperatures below freezing, you must ensure that all components of the respirator are thoroughly dried after cleaning and before storage.

If a respirator has been unavoidably kept at a temperature below freezing, and it is not possible to bring it to room temperature before use, **do not** exhale into the facepiece until the facepiece is completely donned and the nose cup is properly in place against the face. This will prevent fogging of the cold facepiece.

The respirator cylinder must be refilled with compressed air that meets the requirements for Grade D or higher compressed air as specified in the Compressed Gas Association publication CGA G-7.1 and has a dew point of -65° F (-54° C) or lower.

If, after using the respirator, you doff the facepiece in a safe breathing area at temperatures near or below freezing, place the facepiece and connected regulator under your outerwear to keep it warm next to your body in case respirator reuse is required. At a minimum, remove the regulator and keep it warm.

Whenever the respirator is in place but not in use (standby condition) in areas at or below freezing, protect the facepiece and regulator from exposure to water.

Using the RIC/UAC in Low Temperatures

Use the protective cap to keep the high pressure air inlet of the RIC/UAC coupling covered and dry at all times. Water on the inlet may freeze, preventing connection to the RIC/UAC charging hose assembly or preventing removal of the RIC/UAC charging hose assembly once connected.

**NOTE**

If you use the RIC/UAC charging hose assembly to fill a respirator cylinder in temperatures less than 32° F / 0° C and then move the full respirator indoors to warmer temperatures, check for excess pressure in the cylinder within two hours after the respirator is moved indoors. If the pressure gauge on the cylinder reads above “full,” you must remove the excess pressure from the cylinders by releasing air from the respirator until the gauge reads “full.”

Using Scott Sight in Low Temperatures (AV-3000 HT Facepieces)

The 3M™ Scott Sight Imaging System assembly may not function properly if the batteries have been exposed to temperatures near or below freezing. Replace with batteries at temperatures that fall within manufacturer's specified operating range.

CLEANING & STORING THE RESPIRATOR

This chapter provides instructions for cleaning and storing the 3M Scott Air-Pak X3 Pro SCBA. Detailed instructions for cleaning the facepiece and mask-mounted regulator are also provided.

- “[Before You Begin](#)” on page 37
- “[Cleaning the Respirator](#)” on page 37
 - “[Cleaning the Facepiece](#)” on page 38
 - “[Cleaning the Mask-Mounted Regulator](#)” on page 39
 - “[Cleaning the Shoulder Harness and Waist Pad](#)” on page 41
- “[Storing the Respirator](#)” on page 41

Before You Begin

Carefully read “[Safety Information](#)” on page ix before beginning any of the procedures in this chapter.

After using the respirator, clean it according to these instructions and perform a regular operational inspection as outlined in “[Chapter 2: Inspecting the Respirator](#)” on page 5. If you find any damage, remove the respirator from service and tag it for repair by authorized personnel.

Prior to handling or using any of the cleaning agents mentioned in this instruction, please consult the manufacturer’s Material Safety Data Sheet (MSDS) for precautions and important instructions.

Cleaning the Respirator

To clean the respirator

- 1 Using a damp sponge, wipe any accumulated dirt from the exterior of the respirator.



TIP

The light sensor for the HUD brightness control is located on the front of the remote gauge housing. Be sure to clean the front of the remote gauge housing to enable proper functioning of the sensor.

-
- 2 Clean the facepiece and mask-mounted regulator as described in “[Cleaning the Facepiece](#)” on page 38 and “[Cleaning the Mask-Mounted Regulator](#)” on page 39.

You can remove the shoulder harness and waist pad assemblies for decontamination or laundering as described in the *3M Scott Air-Pak X3 Pro Inspection and Cleaning Instructions* (P/N 595360-01).

Cleaning the Facepiece

You will need the following supplies:

- 3M-approved sanitizing or disinfecting cleaner



NOTE

When using cleaning products, follow all of the manufacturer's instructions. Improper use or handling of these products may result in damage to the facepiece.

If an approved disinfectant is not available, you can disinfect the facepiece using one of the following solutions:

- **Hypochlorite solution** (50 ppm of chlorine) made by adding approximately one milliliter (1 mL) of laundry bleach to one liter (1 L) of water at 110° F / 43° C

-OR-

- **Aqueous solution of iodine** (50 ppm iodine) made by adding approximately 0.8 mL of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to 1 L of water at 110° F / 43° C

- Spray bottle (for the sanitizing or disinfecting cleaner)
 - Drinking (potable) water, either from a faucet or in a spray bottle
 - Clean, lint-free cloth
 - (Optional) Lubricant-free, dry breathing air, maximum 30 psig, for drying the facepiece
-



NOTE

When cleaning the facepiece, do **not** use the following cleaning products:

- Abrasive cleaners
- Bleach stronger than a 3% solution in water
- Solvents such as acetone, paint and lacquer thinner, benzene, or dry-cleaning fluid.

In addition, do **not** do the following:

- "Dunk and slosh"
 - Polish with paper towels as most paper contains abrasives
 - Autoclave or wash in an unapproved automatic washer
 - Use a vapor degreaser/polisher
-

To clean the facepiece

- 1 Remove the mask-mounted regulator from the facepiece.
- 2 If the facepiece is heavily soiled, you may have to first wash the facepiece with a solution of mild soap or detergent in warm water (110° F / 43° C maximum).

**TIP**

A nose cup is designed to be an integral part of the facepiece and does not need to be disassembled for cleaning unless the facepiece is heavily soiled.

- Using a spray bottle, apply a solution of mild soap or detergent in warm water (110° F / 43° C maximum) to the soiled surfaces. Rinse the facepiece with drinking water either from a faucet or in a spray bottle.

-OR-

- Clean the facepiece using 3M™ 504 Respirator Cleaning Wipes.

- 3 To sanitize or disinfect the facepiece, use a spray bottle to apply the recommended sanitizing or disinfecting cleaner to all surfaces of facepiece. Be sure to cover all surfaces completely with the cleaning solution.

**NOTE**

The Kevlar head harnesses are made of porous material. The recommended cleaner may not be effective on porous material.

- 4 Set the facepiece aside for the required contact time prior to rinsing. **Fresh-Gear Disinfectant requires a 10-minute contact time. The hypochlorite solution and the aqueous solution of iodine require a 2-minute contact time.**
- 5 Rinse the facepiece with drinking water either from a faucet or in a spray bottle.
- 6 Shake excess water off the facepiece and dry it with a clean, lint-free cloth or gently blow dry with clean, dry breathing air of 30 psig or less pressure. Do not use shop air or any other air containing lubricants or moisture.

Cleaning the Mask-Mounted Regulator

You will need the following supplies:

- Sanitizing or disinfecting cleaner. 3M recommends a properly diluted hypochlorite solution or aqueous solution of iodine:
 - **Hypochlorite solution** (50 ppm of chlorine) made by adding approximately one milliliter (1 mL) of laundry bleach to one liter (1 L) of water at 110° F / 43° C
- OR-
- **Aqueous solution of iodine** (50 ppm iodine) made by adding approximately 0.8 mL of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to 1 L of water at 110° F / 43° C
- Spray bottle (for the sanitizing or disinfecting cleaner)
- Sponge or soft cloth
- Drinking (potable) water, either from a faucet or in a spray bottle
- (Optional) Lubricant-free, dry breathing air, maximum 30 psig, for drying the regulator

**NOTE**

When using cleaning products, follow all of the manufacturer's instructions. Improper use or handling of these products may result in damage to the regulator.

**NOTE**

When cleaning the regulator, do **not** use the following cleaning products:

- Bleach stronger than a 3% solution in water
- Solvents such as acetone, paint and lacquer thinner, benzene, or dry-cleaning fluid.

In addition, do **not** do the following:

- “Dunk and slosh”
- Autoclave or wash in an unapproved automatic washer
- Use a vapor degreaser/polisher

To clean the mask-mounted regulator

- 1 Remove the breathing regulator from the facepiece by engaging the lock tab of the E-Z Flo+ regulator or the latch on E-Z Flo C5 regulator and rotating the regulator one-quarter turn clockwise.
- 2 Using a sponge or soft cloth and the recommended sanitizing or disinfecting cleaner, wipe the external surfaces of the regulator.
- 3 Inspect the inside of the regulator assembly through the regulator opening (see Figure 4-1). If excessive dirt or soil is present, forward the regulator assembly to 3M-trained authorized personnel for thorough cleaning.
- 4 Engage the lock tab or latch. Close the purge knob by turning it fully clockwise.
- 5 Using a spray bottle, apply the sanitizing or disinfecting cleaner to the surfaces of the regulator opening and the immediate area around the opening (see Figure 4-1). Be sure to cover the internal components completely with the cleaning solution.

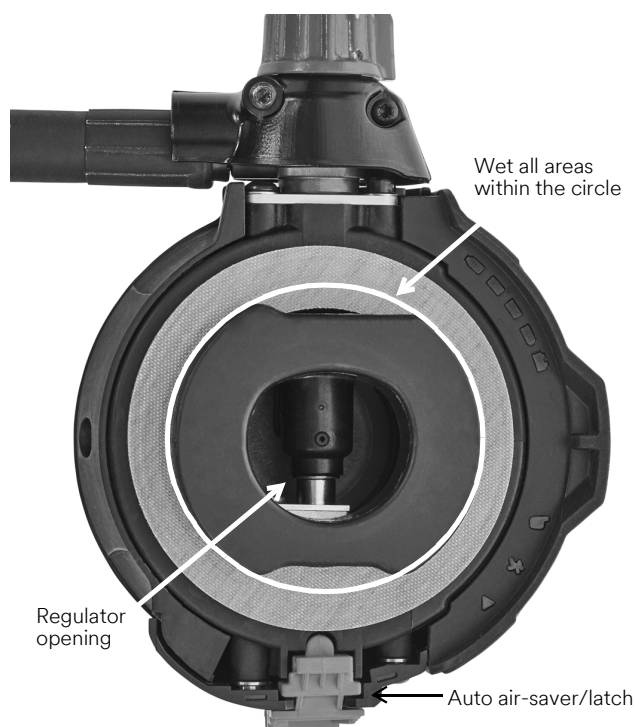


Figure 4-1 Cleaning the mask-mounted regulator

Follow the user instructions for the cleaner. A specific contact time may be required for sanitizing or disinfecting before rinsing.

- 6 Set the regulator aside for the required contact time prior to rinsing. **The hypochlorite solution and the aqueous solution of iodine require a 2-minute contact time.**
- 7 Using gently running tap water or a spray bottle with drinking water, rinse the regulator inside and out.
- 8 Shake excess water out of regulator. **Completely air dry the regulator before use.**

**TIP**

To speed drying of the regulator, gently blow dry with clean, dry breathing air of 30 psig maximum. Do not use shop air or any other air containing lubricants or moisture.

- 9 If the regulator was disconnected from the air supply for cleaning, reconnect and open the purge valve to remove any moisture from regulator spray bar. Close the purge valve.
- 10 Perform a regulator check after each cleaning by following the steps listed in “[To perform a regulator check](#)”.

To perform a regulator check

This regulator check is **not** intended to be a complete functional check of the respirator. **Before your next use of the respirator, perform a regular operational inspection as described in “Chapter 2: Inspecting the Respirator” on page 5.**

- 1 Make sure the respirator cylinder is at least 1/2 full to prevent the Vibralert from initiating and obscuring the sound of air flowing from the regulator.
- 2 Verify that the air saver/donning switch is depressed on the E-Z Flo+ regulator or the auto air-saver switch is engaged on the E-Z Flo C5 regulator latch.
- 3 Close the purge knob.
- 4 Reattach the regulator to the respirator (if removed for cleaning).
- 5 Slowly open the cylinder valve at least 1 full turn.
- 6 If you hear air flowing from the regulator, close the cylinder valve and repeat steps b through d. If you still hear air flow, close the cylinder valve fully, tag the unit for repair, and remove it from service.
- 7 Open the purge valve and observe the air flow from the regulator spray bar. Droplets of water indicate the regulator is not dry. Dry the regulator according to step 8 of “[To clean the mask-mounted regulator](#)” and repeat the regulator check.

Cleaning the Shoulder Harness and Waist Pad

You can launder the shoulder harness and waist pad on the Air-Pak X3 Pro in an industrial washing machine. *3M Scott Air-Pak X3 Pro Inspection and Cleaning Instructions* (P/N 595360-01) provides instructions for detaching the shoulder harness and waist pad from the backframe in preparation for laundering and reattaching them to the backframe. 3M’s recommended laundering practices are also provided. For more information, see [Appendix I: Related Manuals](#) on page 65.

Storing the Respirator

Respirators intended for routine use and respirators not routinely used but kept for emergency use must be stored in areas where the temperature is maintained above freezing (32° F / 0° C). If it is necessary to store the respirator at a temperature at or below freezing before its next use, you must take special care to verify that all components of the respirator are thoroughly dried.

To prepare the respirator for storage

- 1 If you notice any damage or deterioration, remove the respirator from service and tag it for repair.
- 2 Verify that the respirator is thoroughly dry before storing.
- 3 Attach the regulator to the regulator holder on the waist belt of the respirator.

To detach or reattach a breathing regulator equipped with a quick-disconnect from the respirator, see “[Inspecting the Regulator](#)” on page 10.



NOTE

Do not store the respirator with the regulator attached to the facepiece. Storing the respirator in this way may damage the facepiece, which could lead to serious injury or death. Attach the regulator to the facepiece only when you are ready to begin using the respirator.

- 4 Place the clean and dry facepiece in a breathable storage bag to protect it until its next use. Store it in a manner that will not distort the face seals.
- 5 Place the respirator in the carrying case, protective container, or in a suitable storage location.

To store the respirator on a wall

If a wall storage bracket is used to store the SCBA, follow the instructions of the bracket manufacturer for mounting as well as for placing arms through the shoulder straps and freeing the respirator from the bracket.

To store the respirator in a vehicle

The method of storage of a respirator in a vehicle must minimize the possibility of injury to persons in or near the vehicle while it is in motion, especially during rapid deceleration or acceleration, sharp turns, or a collision.

When storing or transporting an SCBA, its spare components, or related equipment within a vehicle, use one of the following methods to secure the items:

- a positive mechanical means designed to hold the item in its stowed position
- in a compartment with a positive latching door, or
- in a closed container suitable to transport and contain the SCBA and/or its spare components and associated equipment

If a vehicle mounting bracket is used to store the SCBA in a vehicle, follow the instructions of the bracket manufacturer for mounting as well as for placing arms through the shoulder straps and freeing the respirator from the bracket.

REPLACING BATTERIES

This chapter provides instructions for changing the batteries in an 3M Scott Air-Pak X3 Pro respirator with a Personal Alert Safety System (PASS) device, also known as a distress alarm.

Before You Begin

Carefully read “[Safety Information](#)” on page ix before beginning any of the procedures in this chapter.

Because certain accessories and features require batteries for operation, always verify that this equipment and its accessories have fresh batteries before use.



TIP

For information about changing batteries in 3M Scott Fire & Safety components or accessories, see the user instructions provided with the components or accessories.

Replacing Batteries in Respirators with PASS

3M Scott Fire & Safety respirators equipped with a PASS device require 6 AA batteries for operation. The 6 batteries power both the Heads-Up Display (HUD) and the PASS device; separate batteries in the gauge console are not required. Only a trained operator should replace batteries in a clean, nonflammable area.

To replace the batteries

- 1 Close the respirator cylinder valve and open the regulator purge valve to let out all the trapped air.



NOTE

Do not use tools to close the cylinder valve. Over-tightening the cylinder valve may cause damage that could result in air leaking from the cylinder.

- 2 Close the regulator purge valve.
- 3 Press the manual reset (yellow) button on the remote pressure gauge console twice.

A 15-second beep sequence occurs as the residual air bleeds off. The unit will sound a 2-tone chirp and the green light will go out.



NOTE

Always ensure that the cylinder value is off and PASS device is completely inactive before changing batteries. Never remove or replace batteries within a pressurized system, as damage to the electronic components may occur.

- 4 Remove the cylinder.

REPLACING BATTERIES

- 5 Using a Phillips screwdriver, remove the screws of the battery housing cover as shown in [Figure 5-1](#). Carefully remove the cover and set it aside.
- 6 Remove the used batteries by sliding them out of the battery compartment.
- 7 Install 6 new AA batteries of the same type. The battery holder is marked with the required style and orientation of the batteries.

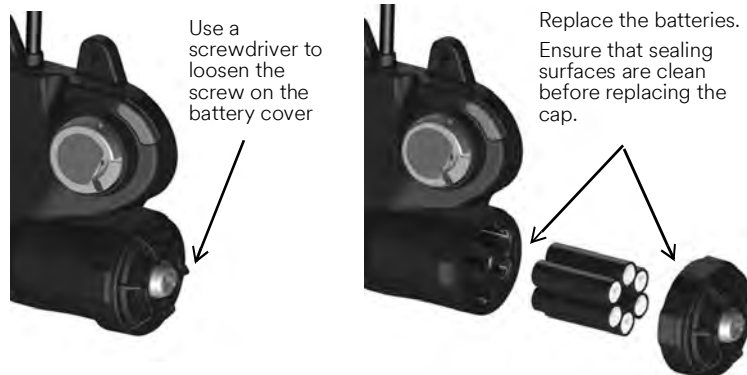


Figure 5-1 Replacing batteries in a respirator with PASS

To maintain intrinsic safety, use 6 of **one** of the following types of 1.5 volt AA batteries:

- Duracell Alkaline MN1500
 - Duracell Alkaline MX1500
 - Duracell Alkaline PC1500
 - Duracell Quantum QU1500
 - Energizer Alkaline EN91
 - Energizer Alkaline E91
- 8 Verify the correct orientation of batteries as shown on label inside the battery holder.
 - 9 To ensure that the battery cover is water-tight after replacement, clean the sealing rib around the battery compartment and sealing face of the cover by wiping with a clean damp to remove any dirt or foreign matter that might prevent a proper seal.
 - 10 Check the cover gasket for tears or cuts. If you find damage, remove respirator from service and tag it for repair by authorized personnel.
 - 11 To install the battery cover, align the three grooves on the cover with the three tabs on the battery compartment. Using a Phillips screwdriver, tighten the cover screw to 13-15 in-lbs torque.
- When the batteries are properly installed and the battery covers are placed in position, all lights in the HUD will light for approximately 20 seconds to verify operation.
- 12 Before returning the respirator to service, perform a regular operational check. See [“Chapter 2: Inspecting the Respirator”](#) on page 5.

NIOSH CAUTIONS & LIMITATIONS

Cautions and Limitations

- D – AIRLINE RESPIRATORS CAN BE USED ONLY WHEN THE RESPIRATORS ARE SUPPLIED WITH RESPIRABLE AIR MEETING THE REQUIREMENTS OF CGA G-7.1 GRADE D OR HIGHER QUALITY.
- E – USE ONLY THE PRESSURE RANGES AND HOSE LENGTHS SPECIFIED IN THE USER'S INSTRUCTIONS.
- I – CONTAINS ELECTRICAL PARTS WHICH HAVE NOT BEEN EVALUATED AS AN IGNITION SOURCE IN FLAMMABLE OR EXPLOSIVE ATMOSPHERES BY MSHA/NIOSH.
- J – FAILURE TO PROPERLY USE AND MAINTAIN THIS PRODUCT COULD RESULT IN INJURY OR DEATH.
- M – ALL APPROVED RESPIRATORS SHALL BE SELECTED FITTED, USED AND MAINTAINED IN ACCORDANCE WITH MSHA, OSHA AND OTHER APPLICABLE REGULATIONS.
- N – NEVER SUBSTITUTE, MODIFY, ADD OR OMIT PARTS. USE ONLY EXACT REPLACEMENT PARTS IN THE CONFIGURATION AS SPECIFIED BY THE MANUFACTURER.
- O – REFER TO USER'S INSTRUCTIONS AND/OR MAINTENANCE MANUALS FOR INFORMATION ON USE AND MAINTENANCE OF THESE RESPIRATORS.
- S – SPECIAL OR CRITICAL USER'S INSTRUCTIONS AND/OR SPECIFIC USE LIMITATIONS APPLY. REFER TO INSTRUCTION MANUAL BEFORE DONNING.

Cautions and Limitations of Use for CBRN SCBA

- Q – USE IN CONJUNCTION WITH PERSONAL PROTECTIVE ENSEMBLES THAT PROVIDE APPROPRIATE LEVELS OF PROTECTION AGAINST DERMAL HAZARDS.
 - R – SOME CBRN AGENTS MAY NOT PRESENT IMMEDIATE EFFECTS FROM EXPOSURE, BUT CAN RESULT IN DELAYED IMPAIRMENT, ILLNESS, OR DEATH.
 - T – DIRECT CONTACT WITH CBRN AGENTS REQUIRES PROPER HANDLING OF THE SCBA AFTER EACH USE AND BETWEEN MULTIPLE ENTRIES DURING THE SAME USE. DECONTAMINATION AND DISPOSAL PROCEDURES MUST BE FOLLOWED. IF CONTAMINATED WITH LIQUID CHEMICAL WARFARE AGENTS, DISPOSE OF THE SCBA AFTER DECONTAMINATION.
 - U – THE RESPIRATOR SHOULD NOT BE USED BEYOND 6 HOURS AFTER INITIAL EXPOSURE TO CHEMICAL WARFARE AGENTS TO AVOID POSSIBILITY OF AGENT PERMEATION.
- EBSS - EBSS ACTIVATION OR ENGAGEMENT OF EBSS IN EITHER THE DONOR OR RECEIVER MODE CHANGES THE SCBA USE TO ESCAPE-ONLY, APPROVED SERVICE TIME FOR EITHER THE DONOR, OR THE RECEIVER IS NO LONGER APPLICABLE. ADDITIONAL CRITICAL CAUTIONS AND LIMITATIONS APPLY.

S—Special or Critical User's Instructions

ALL MODELS ARE APPROVED ONLY WHEN COMPRESSED AIR CYLINDER IS FULLY CHARGED WITH AIR MEETING THE REQUIREMENTS OF THE COMPRESSED GAS ASSOCIATION SPECIFICATION G-7.1, GRADE D AIR OR EQUIVALENT SPECIFICATIONS, OR MEETING CE EUROPEAN STANDARD EN 132. THE CONTAINER SHALL MEET APPLICABLE DOT SPECIFICATIONS.

NIOSH CAUTIONS & LIMITATIONS

AIRLINE RESPIRATORS CAN BE USED ONLY WHEN THE RESPIRATORS ARE SUPPLIED WITH RESPIRABLE AIR MEETING THE REQUIREMENTS OF CGA G-7.1, GRADE D OR HIGHER QUALITY, OR MEETING CE EUROPEAN STANDARD EN 132.

EXCEPT AS NOTED HEREIN, ALL MODELS OF THE 3M SCOTT AIR-PAK X3 PRO 2.2, 4.5, OR 5.5 ARE APPROVED FOR RESPIRATORY PROTECTION DURING ENTRY INTO OR ESCAPE FROM OXYGEN DEFICIENT ATMOSPHERES, GASES AND VAPORS, AT TEMPERATURES ABOVE -25° F / -32° C.

MASK SEAL KIT P/N 805655-01 IS REQUIRED IF A USER SEAL CHECK IS UNSATISFACTORY EITHER PER THE USER INSTRUCTIONS OR THE OSHA FIT TESTING PROCESS. THE MASK SEAL KIT IS PROVIDED WITH THE FULL FACEPIECE. THIS IS A NIOSH APPROVED COMPONENT TO ENHANCE THE FIT OF THE FACEPIECE.

EBSS, RIC/UAC, AIRLINE CONNECTION OR ANY OTHER QUICK DISCONNECT CONNECTIONS ARE NOT TO BE MADE OR BROKEN IN CBRN ENVIRONMENTS.

EBSS—Special or Critical User's Instructions

EBSS MAY NOT BE ENGAGED OR ACTIVATED IN DONOR MODE AFTER THE DONOR END-OF-SERVICE TIME INDICATOR (EOSTI) HAS ACTIVATED.

USERS MUST BE FULLY TRAINED IN THE OPERATION OF EBSS IN ACCORDANCE WITH A TRAINING PROGRAM CONFORMING TO THE REQUIREMENTS OF NFPA STANDARDS 1404, FIRE SERVICE RESPIRATORY PROTECTION TRAINING AND 1500, FIRE DEPARTMENT OCCUPATIONAL SAFETY AND HEALTH PROGRAM.

SIMULTANEOUS CONNECTION OF MORE THAN TWO USERS, ONE DONOR, AND ONE RECEIVER, IS NOT PERMITTED.

IMMEDIATELY AFTER THE EBSS CONNECTION HAS BEEN COMPLETED, THE CYLINDER VALVE OF THE RECEIVING SCBA SHALL BE CLOSED.

AIR-PAK X3 PRO MODELS

The 3M Scott Air-Pak X3 Pro SCBA (CGA & Snap-Change) are available in the following pressures:

- 2.2 SCBA (2216 psig operating pressure)
- 4.5 SCBA (4500 psig operating pressure)
- 5.5 SCBA (5500 psig operating pressure)

The pressure rating is identified by a large label with black printing on the pressure reducer; the word *SCOTT* is printed vertically, and the pressure number (2.2, 4.5, or 5.5) is printed at the bottom. In addition, the remote pressure gauge mounted on the shoulder harness is imprinted with the operating pressure on the face of the gauge.

The basic Air-Pak X3 Pro CGA & Snap-Change SCBA models are equipped with an aluminum backframe.

All Air-Pak X3 Pro CGA & Snap-Change respirator models are certified by the National Institute of Occupational Safety and Health (NIOSH) as pressure-demand SCBAs. For more information, see "[Appendix A: Air-Pak X3 Pro Models](#)" on page 47. See the NIOSH Approval Label supplied with these instructions for cylinder and valve assemblies approved for use with specific 3M Scott Fire & Safety models.

2.2 SCBA

- Use only with cylinder and valve assemblies with a full rated service pressure of 2216 psig
- Certified by NIOSH as a 30-minute rated respirator.

4.5 SCBA

- Use only with cylinder and valve assemblies with a full rated service pressure of 4500 psig
- Certified by NIOSH (depending on the cylinder and valve assembly installed) as a
 - 30-minute rated SCBA
 - 45-minute rated SCBA
 - 60-minute rated SCBA

5.5 SCBA

- Use only with cylinder and valve assemblies with a full rated service pressure of 5500 psig
- Certified by NIOSH (depending on the cylinder and valve assembly installed) as a
 - 30-minute rated SCBA
 - 45-minute rated SCBA
 - 60-minute rated SCBA
 - 75-minute rated SCBA

The time duration ratings are approval agency classifications and are not intended to indicate the actual duration a user may achieve. For more information, see "[Appendix E: Service Life](#)" on page 55.

NIOSH approval and NFPA compliance are granted to respiratory protection equipment made up of specific combinations of parts or assemblies that have been successfully tested to the performance standards established by the approval agencies.

To maintain NIOSH approval and NFPA compliance, the following facepieces must include a lower mask module cover and a head harness:

- Vision C5 Full Facepiece - Small (P/N 201550-01)
- Vision C5 Full Facepiece - Medium (P/N 201550-02)
- Vision C5 Full Facepiece - Large (P/N 201550-03)

APPROVALS & CERTIFICATIONS

NIOSH Certification

All models of the 3M Scott Air-Pak X3 Pro SCBA described in these instructions conform to the requirements of Title 42 Part 84 of the Code of Federal Regulations and are certified by the National Institute of Occupational Safety and Health (NIOSH). Each respirator configuration is approved under the appropriate approval number for the air pressure and time duration.

The Air-Pak X3 Pro respirator is a modular design composed of replaceable sub-assemblies and may include certain 3M Scott Fire & Safety accessories. Each major subassembly and accessory is labeled with its part number. To maintain the NIOSH approved status of the respirator, use only those sub-assemblies and/or accessories listed as applicable to a particular NIOSH approval number.

All models of the Air-Pak X3 Pro SCBA are certified by NIOSH for use in ambient temperatures down to -25° F (-32° C). See [“Low Temperature Operation”](#) on page 34.

To maintain NIOSH certification, Air-Pak X3 Pro cylinders must be refilled with compressed air that meets the requirements for Grade D or higher compressed air as specified in the Compressed Gas Association publication CGA G-7.1, *Commodity Specification for Air*, available from the Compressed Gas Association, Inc. In addition to meeting these requirements, the air must be dry to a dew point of -65° F (-54° C) or less. To maintain NFPA certification, Air-Pak X3 Pro cylinders must be refilled with compressed air that meets the requirements of NFPA 1989.

For additional information, contact 3M at 1-800-247-7257 (704-291-8300 outside the continental United States) or ScottTechSupport@mmm.com about the Certified Technician I Maintenance Modules.

NFPA Compliance

The Air-Pak X3 Pro SCBA also meets the requirements of the National Fire Protection Association (NFPA) 1981 (2013 edition) *Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service* when configured in accordance with the NFPA approval. To maintain NFPA compliance, the SCBA must be used only in accordance with NFPA standard 1500, *Standard on Fire Department Occupational Safety and Health Program*.

This also includes Chemical, Biological, Radiological, and Nuclear (CBRN) approval status under the NIOSH standard. Before using a respirator for a CBRN application, verify that the respirator comprises only CBRN approved components. You can identify an approved mask-mounted breathing regulator by its orange background label and an approved backframe assembly by its NIOSH/CBRN label. You can identify other components by individual part number.

The Air-Pak X3 Pro SCBA protects **only** the face and the respiratory tract from airborne contaminants. When used in a potentially CBRN environment, the organization's respiratory protection program must provide the appropriate protective clothing and head wear for use with this respirator and must insure that protective clothing and head wear does not interfere with use of the respirator.

It is the responsibility of your respiratory protection program to properly identify and maintain respirator equipment for CBRN applications.

The attachment of components, accessories, or devices to the SCBA that are not listed on the NIOSH/CBRN approval label may void the NIOSH/CBRN approval, void the NFPA certification, or degrade the performance of the

respirator with respect to the NFPA certification requirements.

For more information, see the NIOSH/CBRN Approval Label included with these instructions. See also “[Chapter 6: NIOSH Cautions & Limitations](#)” on page 45 for the cautions and limitations that apply to NIOSH-certified respirators of this type.

INTRINSIC SAFETY

The 3M Scott Air-Pak X3 Pro SCBA respirator equipped with a Heads-Up Display P/N 200280-SERIES and/or a PASS device (distress alarm) P/N 201160-SERIES is listed by SGS U.S. TESTING COMPANY INC. as intrinsically safe per ANSI/UL Std. UL-913 for use in Class I, II, Division 1, Groups C, D, E, F, and G Hazardous Locations.

To maintain the Intrinsic Safety Listing, the respirator must be inspected regularly as outlined in “[Chapter 2: Inspecting the Respirator](#)” on page 5. Do not tamper with or substitute components in any manner. Use only batteries of the type indicated in “[Chapter 5: Replacing Batteries](#)” on page 43. Open the battery compartments **only** in an area known to be free of flammable or explosive hazards.

SAFETY LISTINGS

The following safety listings apply to 3M Scott Air-Pak X3 Pro respirators equipped with a Personal Alert Safety System (PASS) device, also known as a distress alarm.

**NOTE**

Do not use a fiberglass-wrapped, one-hour cylinder on a 4.5 SCBA equipped with a PASS device (distress alarm), as the weight will exceed the 35-lb approval limit for SCBAs established by NIOSH.

FCC Compliance

FCC Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1 This device may not cause harmful interference, and
- 2 This device must accept any interference received, including interference that may cause undesired operation.

FCC Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This portable transmitter with its antenna complies with FCC's RF exposure limits for general population/uncontrolled exposure.

Class B Digital Device

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada Compliance

Industry Canada Statement

The term “IC” before the certification/registration number only signifies that the Industry Canada technical specifications were met.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population. Consult Safety Code 6, obtainable from Health Canada’s web site: <https://www.canada.ca/en/health-canada.html>.

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

- 1 This device may not cause interference, and
- 2 This device must accept any interference, including interference that may cause undesired operation of the device.

La Declaration de Canada d’Industrie

L' “IC” de terme avant que la certification/le nombre d'enregistrement signifie seulement que le Canada d'Industrie spécifications techniques ont été rencontrées.

Le programme d'installation de cet équipement de radio doit garantir que l'antenne est localisée ou tel est indiqué qu'il n'émet pas le champ de RF dépassant les limites de Canada de Santé pour la population générale. Consulter le Code de Sécurité 6, procurable du site Web de Canada de Santé : <https://www.canada.ca/en/health-canada.html>.

Cet appareil est conforme aux normes Industry Canada exemptes de licence RSS standard(s). L'opération est assujetti au suivre deux conditions:

- 1 Cet appareil ne peut pas causer l'intervention, et
- 2 Cet appareil doit accepter de l'intervention, y compris l'intervention qui peut causer l'opération non désirée de l'appareil.

SERVICE LIFE

Each configuration of self-contained breathing apparatus (SCBA) certified by NIOSH is assigned a *service life* classification for a duration time of each size of air supply cylinder (30-minute, 45-minute, etc.). The service life duration time is determined by NIOSH using a breathing machine designed to simulate an average adult user performing work at a *moderate work rate*.

Do not expect to obtain the NIOSH rated service life duration time from this respirator on each use. The work being performed may be more or less strenuous than that used in the NIOSH test. Where work is more strenuous, the duration may be less than one half the NIOSH rated service life and the time remaining after either end-of-service indicator alarm actuates may be similarly reduced. The end-of-service indicator alarms actuate when approximately 33% of full cylinder pressure remains in the cylinder and valve assembly. Although all end-of-service indicator alarms are set to actuate at the set point of approximately 33% of full rated service pressure, they are completely independent of each other and therefore may not actuate at precisely the same moment. The alarms will continue to operate until the cylinder is nearly depleted.

The duration time of the respirator will depend on such factors as the following:

- Degree of physical activity of the user
- Physical condition of the user
- Degree to which the user's breathing is affected by emotional factors
- Degree of training or experience which the user has with this or similar equipment
- Whether or not the cylinder is fully charged at the start of the work period
- Possible presence in the compressed air of carbon dioxide concentrations greater than 0.04% normally found in atmospheric air
- Atmospheric pressure. For example, if used in a pressurized tunnel or caisson at 2 atmospheres (15 psi gauge or approximately 30 psi absolute), the duration will be one-half as long as when used at 1 atmosphere; at 3 atmospheres, the duration will be one-third as long
- Loose or improperly fitting facepiece
- Condition of the respirator

RESPIRATOR TESTING

3M recommends that this respirator be inspected and tested by a 3M Authorized Service Center using 3M Authorized Test Equipment at least once a year. Heavy use and/or severe service conditions may require more frequent inspection and testing. This recommendation is in addition to all other cleaning and maintenance procedures.

DOT Specifications

In addition, all air cylinders used with 3M Scott Fire & Safety respirators must be periodically visually inspected and hydrostatically tested by a licensed cylinder retester. The cylinder inspection and test must be done in accordance with the appropriate U.S. Department of Transportation (DOT) specification or the applicable DOT exemption.

- Composite fiber overwrapped cylinders must be tested up to their maximum life which, at the time of the publication of this manual, is 15 years from the date of manufacture. It is the responsibility of your organized respiratory protection program to arrange for visual inspection and hydrostatic testing of cylinders by a licensed retester.
- Intervals for hydrostatic testing are established in the appropriate U.S. Department of Transportation (DOT) specification or applicable DOT exemption, or in the appropriate Transport Canada (TC) Permit of Equivalent Level of Safety. Refer to the current revision of *Safety Precautions for Air-Pak Cylinders*, P/N 89080-01, available upon request from 3M.

FACEPIECE FITTING

A respirator quantitative fit test must be performed to ensure the correct respirator facepiece size has been selected and assigned to the user. The respiratory protection's program manager or safety coordinator is responsible for assisting the user in selecting the correct respirator size relative to the user's facial features and dimensions. Any approved 3M Scott Fire & Safety accessories that will be used with the respirator, such as a communications device installed on the facepiece, must be in place during fit testing. If changing from a standard facepiece to a facepiece with an installed accessory, such as a communications device, it is recommended that a new fit test be performed.

About Fit Testing

Before occupational use of this respirator, a written respiratory protection program must be implemented meeting all local, state, and federal government requirements. In the United States, employers must comply with OSHA 29 CFR 1910.134, which includes medical evaluation, training, and fit testing.

Respirator fit tests are explained fully in the following:

- American National Standard Respiratory Fit Testing Methods, ANSI/AIHA/ASSE Z88.10, current edition, which is published by the American National Standards Institute (ANSI), 11 West 42nd Street, New York, New York, 10036
- Occupational Safety and Health Standards, OSHA 29 CFR 1910.134 Appendix A, which is published by the Occupational Safety and Health Administration (OSHA), 200 Constitution Avenue, NW, Washington DC, 20210.

Quantitative fit testing per OSHA Standard 29 CFR Part 1910.134 Appendix A, or ANSI/AIHA/ASSE Z88.10, current edition, requires testing in the negative pressure mode using Quantitative Fit Test (QNFT) protocols deemed acceptable by those standards. For quantitative fit testing, 3M Scott Fire & Safety facepieces require use of the appropriate negative pressure QNFT test protocol, such as the ambient aerosol condensation nuclei counter (for example, the PortaCount¹ or the Quantifit²) and controlled negative pressure (CNP) fit test device along with the following 3M Scott Fire & Safety products as required to support the selected protocol:

- 40mm facepiece adapter
 - P/N 200423-01 (approved for use with P100 filter ONLY on AV-3000 HT or for fit testing)
 - P/N 200423-02 (approved for use with 045135 CAP-1 canister or fit testing)
 - P/N 805059-01
 - P/N 201520-01 (Vision C5 Facepiece only)
- A new CBRN CAP-1 Canister (P/N 045135) or P100 Cartridge (P/N 052683)³
- Probed Fit Test Adapter, P/N 805628-01 for AV-3000 HT or P/N 201520-01 for Vision C5, or equivalent probed facepieces and the full range of sizes and styles
- Mask Seal Kit (P/N 805655-01)
- Appropriate accessory, such as a communications device, properly installed on the facepiece

1. PortaCount is a registered trademark of TSI, Incorporated, St. Paul, MN

2. Quantifit is a registered trademark of OHD, LLLP, Birmingham, AL

3. Depending on whether the user is fit testing for CBRN SCBA Open Circuit mode of operation (minimum Fit Factor equal to or greater than 500) or CBRN APR (minimum Fit Factor equal to or greater than 2000)

When using a PortaCount Respirator Fit Tester for quantitative fit testing, TSI recommends that the level of particles in the ambient air must be between 5000 and 30000 particles/cm³. If you have difficulty achieving the minimum level of ambient particle count required, refer to the PortaCount Respirator Fit Tester user instructions for details including available Particle Generators to use with the PortaCount Respirator Fit Tester. When using the controlled negative pressure protocol, model specific adapters must be used. These are provided by the manufacturer of the controlled negative pressure fit test device.

CBRN SCBA or APR

If you are fit testing for CBRN SCBA Open Circuit mode of operation (minimum fit factor equal to or greater than 500 minimum) or CBRN APR (minimum fit factor equal to or greater than 2000 minimum), appropriate negative pressure testing equipment must be used. For example:

- If you are fit testing for CBRN SCBA Open Circuit or CBRN APR, use a P100 Filter (P/N 052683) and Fit Test Adapter (P/N 201520-01).
- If you are using a facepiece that has been specially modified for a fit testing program such as that described in NIOSH Procedure No. RB-CET-STP-CBRN-0352, *Determination of Laboratory Respirator Protection Level (LRPL) Quantitative, Medium Flow, Deep Probe, Corn Oil, Fit Factor Performance Test For Chemical, Biological, Radiological and Nuclear (CBRN) Full Facepiece Respiratory Protection Devices (RPD) Standard Testing Procedure*, install the appropriate filtration element directly into the 40 mm facepiece adapter.

Fit Testing Procedure

Negative Pressure Leak Test

The size and style facepiece must be selected based on the user's measured face size. For the initial fitting of the facepiece, conduct a negative pressure leak test as described in "[Starting the Respirator](#)" on page 23. Follow the procedure carefully. If the selected facepiece does not pass the negative pressure leak test or does not fit securely without movement in the chin or chin cup area, or if the user experiences discomfort in the chin or throat, try the next nearest size, larger or smaller. After passing the negative pressure leak test, the facepiece size selected must be verified by successfully passing a respirator quantitative fit test.

A leak that is detected from a location other than the face-to-facepiece seal may indicate damaged or defective equipment. Remove the defective equipment from service and tag it for repair by authorized personnel. Repeat the testing with equipment known to be operating properly.

Quantitative Fit Testing

Test subjects must be in good health at the time of the fit testing. Smoking or eating less than 30 minutes prior to the test is prohibited. Any and all conditions that might interfere with a good face-to-facepiece seal must be addressed and corrected before performing the fit testing.

To verify the fit factor of the respirator, testing must incorporate an exercise regimen of normal daily activities. 3M requires the following set of fit test exercises, which are based on OSHA Standard 29 CFR Part 1910.134 Appendix A, and ANSI/AIHA/ASSE Z88.10, current edition, with modifications.

Each exercise is to be performed for 60 seconds (except as noted) in a standing position during the test:

- Normal breathing
- Deep breathing
- Turning head side to side
- Moving head up and down (look up/look down)
- Talking (read "The Rainbow Passage")

- Grimace (15 seconds)
- Bending over (touch toes) / Reach up (hands toward the ceiling)
- Normal breathing

Fit test exercises must be performed as if the respirator is being used in a hazardous atmosphere. Users must not bump the facepiece, filter, or adapter into the body through exaggerated motions. Users must not talk except when directed to by the test administrator.

3M requires that users of 3M Scott Fire & Safety respirators and facepieces must achieve a fit factor of at least 500 for CBRN SCBA (Open Circuit) use or at least 2000 for CBRN APR use with their assigned facepiece style and size using the fit test procedures and exercise regimen stated above. If a fit factor of at least 500 for CBRN SCBA (Open Circuit) use or at least 2000 for CBRN APR use cannot be achieved with any facepiece size or style, the user must **not** use this respirator.

If the respirator user passes a negative pressure leak test but does not pass a respirator quantitative fit test, try the next nearest size, larger or smaller and repeat the negative pressure leak test and the quantitative fit test. If an air leak is still detected, either per these user instructions or the OSHA fit testing process, the use of Mask Seal Kit P/N 805655-01 may be required to attain a proper fit. Refer to the Mask Seal Kit Installation and Use Instructions (P/N 89462-01) included with the Mask Seal Kit. After installing the Mask Seal Kit, repeat the fit testing process to confirm a proper fit. If an air leak is still detected, do not use the respirator.

Routine Testing

Once the proper size is selected and assigned to the user following successful Portacount Respirator Fit Tester testing to achieve minimum fit factors required, the respirator user must perform and pass a negative pressure leak test **every time** the facepiece is donned to ensure proper fit before using the respirator in a hazardous atmosphere.

A respirator Quantitative Fit Test must be routinely carried out as outlined above for each user of this respirator to determine or confirm the amount of protection that the respirator provides. Periodically repeating the fit testing is required to identify any physical changes of the user that could affect the fit of the facepiece.

Facepiece Sizes

3M Scott Fire & Safety facepieces are available in small, medium, and large sizes. Depending on the facepiece model, the size is identified by the sizing studs located inside the face seal and/or on the outside tab (see [Figure G-1](#)).

- Small - green stud
- Medium - black stud
- Large - red stud

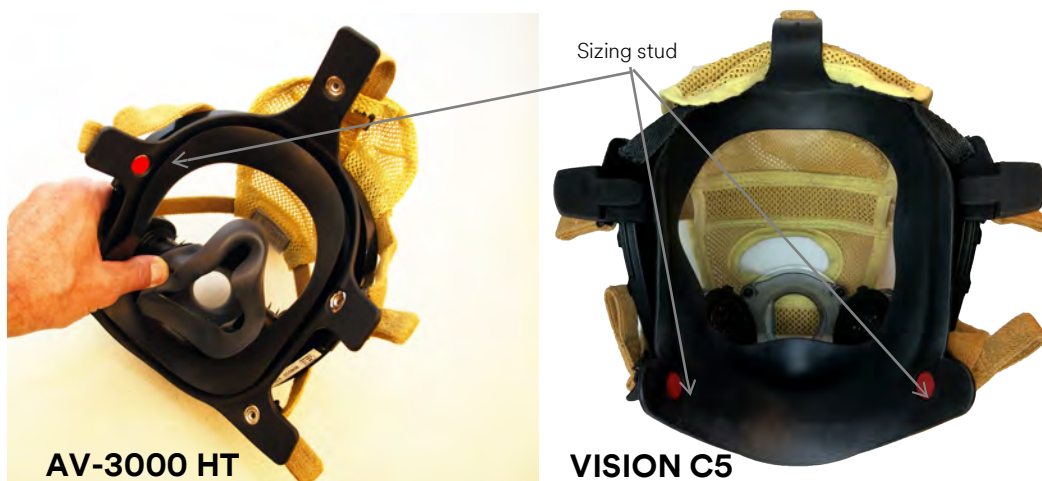


Figure G-1 Identifying the size of a facepiece

OPTIONS & ACCESSORIES

The 3M Scott Air-Pak X3 Pro may be equipped with one or more accessories or options. The respirator user must determine which accessories or optional components are installed on the respirator. In addition, the respirator user must receive training in the operation of the respirator including the operation of all options and/or accessories incorporated in the respirator.

Become thoroughly familiar with the operation and maintenance of the accessories and options as explained in this manual and in all other instructions provided with this respirator or the option or accessory. These and other options may be added to a respirator after purchase. Refer to the instructions provided with the accessories or optional components for details of the operation and the required changes to the regular operational inspection.

Available options and accessories include the following:

- Spectacle corrective lens kit
- Quick-disconnect on the mask-mounted regulator
- Emergency Breathing Support System (EBSS) accessory hose to supply air to or receive air from another respirator user or to connect to an extended duration air supply hose line



NOTE

The Universal EBSS fittings are not compatible with older 3M Scott Air-Pak SCBAs. For SCBAs manufactured prior to the NFPA 1981, 2018 edition standard, please contact 3M for upgrade options.

-
- Alternate escape waist belt (EZ-Scape Pro). Refer to the inspection and use instructions provided with the waist belt before use. Additional training is required before use of an escape waist belt.
 - Various electronic telemetry and communications devices
 - Distress alarm (Personal Alert Safety System), which monitors the motion of a respirator user and emits an audible signal when the user has not moved for a specified period of time. When installed, the PASS device also powers the Heads-Up Display end-of-service time indicator.
 - Chest strap accessory
 - Waist belt extension
 - Neck carrying strap for the facepiece

For information about available options and accessories for the Air-Pak X3 Pro, contact 3M or your authorized 3M distributor.

RELATED MANUALS

The following manuals contain additional information related to the 3M Scott Air-Pak X3 Pro:

PART NUMBER	USER INSTRUCTION
595277-01	<i>3M Scott Pak-Alert Distress Alarm, Including the Optional Pak-Tracker Locator System</i>
595278-01	<i>3M Scott Pak-Tracker Locator System</i>
595282-01	<i>3M Scott AV-3000 HT Full Facepiece with Optional Scott Sight Imaging System: Installation and Operation Instructions</i>
595289-01	<i>SEMS II: Scott Electronic Management System Operation & Maintenance Instructions</i>
595303-01	<i>3M Scott Emergency Breathing Support System (EBSS) Accessory Hose Assemblies Use Instructions</i>
595303-02	<i>3M Scott Universal Emergency Breathing Support System (UEBSS) Accessory Hose Assembly Use Instructions</i>
595305-01	<i>3M Scott EZ-Scape Pro Firefighter Self-Rescue Accessory Operating and Maintenance Instructions</i>
595360-01	<i>3M Scott Air-Pak X3 Pro Inspection and Cleaning Instructions</i>
595366-01	<i>3M Scott Air-Pak X3 Pro Chest Strap Accessory Installation and Use Instructions</i>

3M SCOTT FIRE & SAFETY

LIMITED WARRANTY ON NFPA 1981/1982, 2018 COMPLIANT AIR-PAK SCBA

3M Scott Fire & Safety (3M SCOTT) warrants NFPA 1981/1982, 2018 compliant Air-Pak SCBA, including facepiece and cylinder (THE PRODUCTS) to be free from defects in workmanship and materials for as long as THE PRODUCTS are owned by the original end-user purchaser. This warranty applies to all components of THE PRODUCTS including all accessories and optional equipment purchased and supplied at the time of original sale of THE PRODUCTS, except voice communication devices and accessories, in-mask thermal imaging devices, integrated self-rescue belts, consumable supplies, and carrying cases. 3M SCOTT warrants all voice communication devices and in-mask thermal imaging devices to be free from defects in workmanship and materials for a period of five (5) years from the date of original manufacture by 3M SCOTT. 3M SCOTT further warrants all integrated self-rescue belts, paddle PTT accessories, ring PTT accessories, throat mic accessories, command communication headset accessories, programmer modules, consumable supplies, and carrying cases to be free from defects in workmanship and materials for a period of one (1) year from the date of original manufacture by 3M SCOTT. 3M SCOTT's obligation under this warranty is limited to replacing or repairing (at 3M SCOTT's option) THE PRODUCTS or components shown to be defective in either workmanship or materials.

Only personnel of 3M SCOTT or, when directed by 3M SCOTT, authorized 3M SCOTT service providers are authorized to perform warranty obligations. This warranty does not apply to defects or damage caused by any repairs of or alterations to THE PRODUCTS made by owner or any third party unless expressly permitted by 3M SCOTT product manuals or by written authorization from 3M SCOTT. To obtain performance under this warranty, and as a condition precedent to any duty of 3M SCOTT, the purchaser must return such products to 3M SCOTT, a 3M SCOTT authorized distributor or a 3M SCOTT authorized service center. Any product returned to 3M SCOTT shall be sent to "3M SCOTT FIRE & SAFETY" (Attn: Warranty Claim Dept.), 4320 Goldmine Road, Monroe, NC 28110.

This warranty does not apply to any malfunction of or damage to THE PRODUCTS resulting from accident, misuse or abuse.

THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN ADDITION, 3M SCOTT EXPRESSLY DISCLAIMS ANY LIABILITY FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES IN ANY WAY CONNECTED WITH THE SALE OR USE OF 3M SCOTT PRODUCTS, AND NO OTHER FIRM OR PERSON IS AUTHORIZED TO ASSUME ANY SUCH LIABILITY. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL END-USER PURCHASER AND IS NON-TRANSFERABLE.



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