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## Cleaning the Respirator

Because the cleaning procedures involve the use of liquids, respirators stored or used at cold temperatures must be warmed before cleaning. Respirators being used at cold temperatures after cleaning must be completely dry.

### To clean the respirator

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



#### NOTE

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 42 and [“Cleaning the Mask-Mounted Regulator”](#) on page 44.

You can remove the shoulder harness and waist pad assemblies for decontamination or laundering. See [“Chapter 2: Soft Goods Assembly & Disassembly”](#) on page 25 and [“Cleaning the Shoulder Harness and Waist Pad”](#) on page 47.

## Cleaning the Facepiece



#### CAUTION

Remove any 3M Scott Sight In-Mask Display (IMD) components prior to cleaning the facepiece. IMD components are factory-sealed to protect the optics and electronics from dirt and moisture. Clean these components when necessary using a cloth dampened with a solution of mild detergent and water. If the IMD and/or the mask-mounted thermal imaging camera (TIC) assembly has been exposed to potentially hazardous materials, decontaminate in accordance with established procedures.

### You will need the following supplies:

- Sanitizing or disinfecting cleaner. 3M recommends Georgia Steel & Chemical Co., Inc., Fresh-Gear Disinfectant (FG350-GC).



#### NOTE

3M does not guarantee the efficacy of the recommended disinfectant for specific infectious pathogens.



#### CAUTION

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

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If a recommended 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



### CAUTION

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

- Abrasive cleaners
- Bleach stronger than a 3% solution in water
- Cleaners containing quaternary ammonium compounds other than those recommended by 3M
- 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 automatic washer
- Use a vapor degreaser/polisher

### To clean the facepiece

- 1 Remove the mask-mounted regulator from the facepiece.



### NOTE

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.

- 2 If the facepiece is heavily soiled, you may have to first wash the facepiece.
    - 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

3M does not guarantee the efficacy of the recommended disinfectant for specific infectious pathogens.

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### CAUTION

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

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### CAUTION

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

- Bleach stronger than a 3% solution in water
- Cleaners containing quaternary ammonium compounds other than those recommended by 3M
- 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 automatic washer
  - Use a vapor degreaser/polisher
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**To clean the mask-mounted regulator**

- 1 Remove the mask-mounted regulator from the facepiece by pulling back on the retaining latch 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 3-1](#)). If excessive dirt or soil is present, forward the regulator assembly to 3M-trained authorized personnel for thorough cleaning.
- 4 Depress the air-saver/donning switch. Close the purge knob by turning it fully clockwise.
- 5 Using a spray bottle, apply the recommended sanitizing or disinfecting cleaner to the surfaces of the regulator opening and the immediate area around the opening (see [Figure 3-1](#)). Be sure to cover the internal components completely with the cleaning solution.

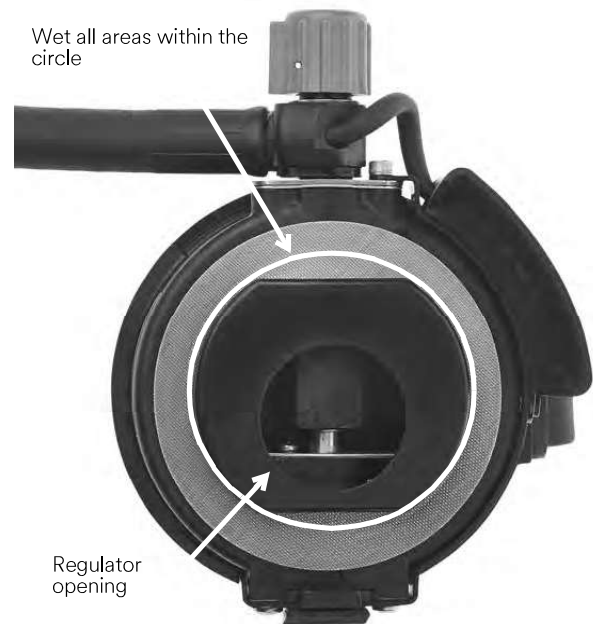


Figure 3-1 Cleaning the mask-mounted regulator

**NOTE**

Follow the user instructions for the recommended 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.**

**NOTE**

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 steps listed in [“To perform a regulator check”](#).

#### To perform a regulator check



##### NOTE

The 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 1: Inspecting the Respirator”](#) on page 11.

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- 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.



##### NOTE

If the cylinder is 1/3 full or less, the Vibralert will initiate. If the Vibralert does not initiate, tag the unit for repair and remove it from service.

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- 2 Verify that the air-saver/donning switch is fully depressed.
  - 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 2 through 5. 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”](#) on page 45 and repeat the regulator check.

## Cleaning the Shoulder Harness and Waist Pad

You may clean the 3M Scott Air-Pak X3 Pro soft goods — shoulder harness, waist pad, UEBSS or dual EBSS pouch (if installed), and straps — using a sponge and/or scrub brush (for spot cleaning) or in an extractor or commercial washing machine (for machine washing).



### CAUTION

NFPA 1851, *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, recommends that you evaluate any equipment known or suspected to be contaminated with hazardous materials or body fluids on the scene to assess the extent of contamination and determine whether the equipment is to be isolated, tagged, or immediately retired from use. If the equipment is suitable for reuse, flush it with water at the scene to remove contaminants and prevent their spread beyond the scene. Wash the equipment separately from other equipment in a dedicated commercial washing machine; avoid using home or public machines to prevent spread of the contaminants.

In accordance with NFPA 1851 (*Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*), 3M recommends the following for cleaning the shoulder harness and waist pad:

- Use a mild, **liquid** laundry detergent with a **pH ranging from 6.0 to 10.5** for spot treating or machine washing. Consult the detergent's Material Safety Data Sheet (MSDS) for pH information. You may also use 3M™ 504 Respirator Cleaning Wipes or commercially available baby wipes to remove debris prior to cleaning.
- Use warm water with a temperature of **40 degrees C (105 degrees F) or less** for rinsing or washing.



### WARNING

Do not use chlorine bleach, chlorinated solvents, high-pressure water jets, or power washers to clean the shoulder harness and waist pad. Do not dry clean. Any of these practices may damage the material, putting you at risk for serious injury or death.



### CAUTION

Use only the recommended cleaning wipes (3M™ 504 Respirator Cleaning Wipes) or commercially available baby wipes to clean the shoulder harness and waist pad. Other cleaning wipes may contain solvents, which may distort the colors of the soft goods.

## Spot Cleaning the Shoulder Harness and Waist Pad

Spot clean light spots or stains on the shoulder harness, waist pad, or straps. If you need to remove the soft goods from the backframe before spot cleaning, see [“Chapter 2: Soft Goods Assembly & Disassembly”](#) on page 25.

### To spot clean the shoulder harness and waist pad

- 1 Brush and/or rinse off any debris.
- 2 Apply the cleaning solution to the soiled areas according to the manufacturer's instructions. Scrub the soiled areas using a sponge or a soft-bristled brush such as a toothbrush or nail brush.
- 3 Rinse the area thoroughly with water.
- 4 Repeat steps 3 and 4 as needed for heavily soiled areas.
- 5 Set the soft goods aside to air dry. See [“Drying the Shoulder Harness and Waist Pad”](#) on page 49.

## Machine Washing the Shoulder Harness and Waist Pad

Machine wash the shoulder harness, waist pad, and straps to remove dirt and stains.



### CAUTION

If your equipment was exposed to contaminants but is suitable for reuse according to your organization's assessment procedure:

- Wash the equipment separately from other equipment in a dedicated commercial washing machine.
- Avoid using home or public machines to prevent spread of the contaminants.

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- Clean your 3M Scott Air-Pak X3 Pro soft goods at least **once every year**.
  - Place all soft goods in a mesh bag (P/N 31004024) before machine washing.
  - Use a **front-loading** extractor or commercial washing machine with tumbling action to reduce potential mechanical damage to the soft goods. If the machine has an adjustable drum RPM, set it so the **g-force does not exceed 100g**. Refer to the manufacturer's instructions for details.
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### CAUTION

Avoid using a top-loading washing machine as the agitators in such machines can damage the material and seams of soft goods.

## To machine wash the shoulder harness and waist pad

- 1 Detach the shoulder harness, waist pad, straps, and UEBSS or dual EBSS pouch (if installed) from the backframe as outlined in "[Chapter 2: Soft Goods Assembly & Disassembly](#)" on page 25.
- 2 Perform a visual inspection for soiling, contamination, physical damage, or thermal damage. See "[Performing a General Inspection](#)" on page 12 in [Chapter 1: Inspecting the Respirator](#).
- 3 If necessary, spot treat any heavily soiled areas. See "[Spot Cleaning the Shoulder Harness and Waist Pad](#)" on page 47.
- 4 Close **all** fasteners (snaps and buckles) on the shoulder harness and waist pad assemblies, paying special attention the following:
  - Remove the regulator holder from the waist belt.
    - Carefully pull the waist belt (on the side with the female buckle component) through the openings of the regulator holder.
    - Set the regulator holder aside.
  - Buckle the male and female ends of the waist belt.
  - Attach the waist pad retaining strap to the waist pad. Be sure to thread both ends through the sewn loops on the waist pad and snap them in place on the waist pad.
  - If you have a UEBSS or dual EBSS pouch, be sure to remove the UEBSS or dual EBSS hose and close all fasteners on the pouch.
- 5 Place the soft goods in the mesh bag. Tighten the bag's drawstrings and load the bag into the washing machine. **Do not overload the machine.**
- 6 Follow the washing machine manufacturer's instructions for adding laundry detergent, setting the water level and temperature, adjusting the drum RPM, and starting a normal wash cycle.

**CAUTION**

In accordance with NFPA 1851, if the washing machine is also used to clean items other than protective garments or fire-fighting equipment, rinse the machine before and after use by completing a full wash cycle without laundry but with detergent and the maximum amount of water. Select a water temperature between 49 and 52 degrees C (120 to 125 degrees F).

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- 7 Inspect the soft goods and rewash them if necessary.

**Drying the Shoulder Harness and Waist Pad**

3M recommends air-drying the shoulder harness, waist pad, and straps. Machine drying — even using the dryer’s “air dry” or “no heat” setting — is **not** recommended.

**CAUTION**

Do **not** machine dry the shoulder harness, waist pad, and straps — even using the dryer’s “air dry” or “no heat” setting. Excessive heat during drying can damage the material and cause shrinkage.

**To dry the shoulder harness and waist pad**

- 1 **Air dry** the shoulder harness and waist pad by hanging them in a well ventilated area out of direct sunlight.

**CAUTION**

Prolonged exposure to direct sunlight can degrade the material of your shoulder harness and waist pad.

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- 2 Be sure to dry the soft goods thoroughly before storing.

**CAUTION**

Storage of wet or moist soft goods promotes the growth of mildew and bacteria, which can degrade the integrity of your equipment and also cause health issues.

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## 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.



#### WARNING

Respirators must be thoroughly dry before storing. Residual moisture may freeze in cold temperatures or may cause corrosion or other damage, which could cause a malfunction of the respirator. Such a malfunction may result in serious injury or death.

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To detach or reattach a mask-mounted regulator equipped with a quick-disconnect from the respirator, see “[Inspecting the Regulator](#)” on page 16.



#### CAUTION

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.

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- 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 SCBA with a Personal Alert Safety System (PASS) device, also known as a distress alarm.

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### Before You Begin

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



#### WARNING

Batteries are required for proper operation of this equipment. Failure to install batteries and to perform a regular operational inspection may cause malfunction of the equipment, which could result in serious injury or death.

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### Replacing Batteries in Respirators with PASS

3M Scott Air-Pak SCBAs 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.



#### WARNING

Change batteries only in areas known to be non-flammable and non-explosive. Changing batteries in a flammable or explosive atmosphere may cause an ignition, which could result in serious injury or death.

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#### To replace the batteries

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



#### CAUTION

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.

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- 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 may occur as the residual air bleeds off. The unit will sound a 2-tone chirp as the electronics are deactivated, and the green light will go out.



**CAUTION**

Always ensure that the cylinder value is off and the 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.
- 5 Using a Phillips screwdriver, remove the screws of the battery housing cover as shown in [Figure 4-1](#). 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.

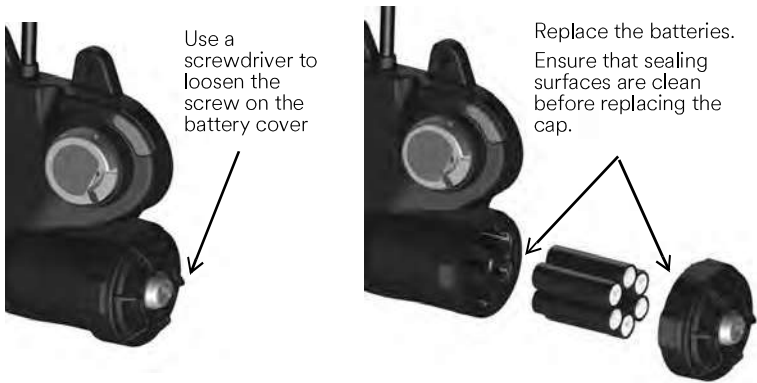


Figure 4-1 Replacing batteries in a respirator with PASS

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

Duracell Alkaline MN1500	Duracell Quantum QU1500
Duracell Alkaline MX1500	Energizer Alkaline EN91
Duracell Alkaline PC1500	Energizer Alkaline E91



**WARNING**

To reduce the risk of explosion, use batteries only from the list provided. Do not mix old batteries with unused batteries. Always replace all batteries at the same time. Do not mix batteries from different manufacturers. Unauthorized substitution of components may impair intrinsic safety and cause an explosion, which could lead to serious injury or death.

- 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 the 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.



**CAUTION**

Improper installation of the battery cover can cause overheating of batteries and damage to the product. Always ensure that the alignment grooves on the battery cover are aligned with the tabs on the battery compartment when installing the cover.

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 1: Inspecting the Respirator”](#) on page 11.

## NOTES

## NOTES





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