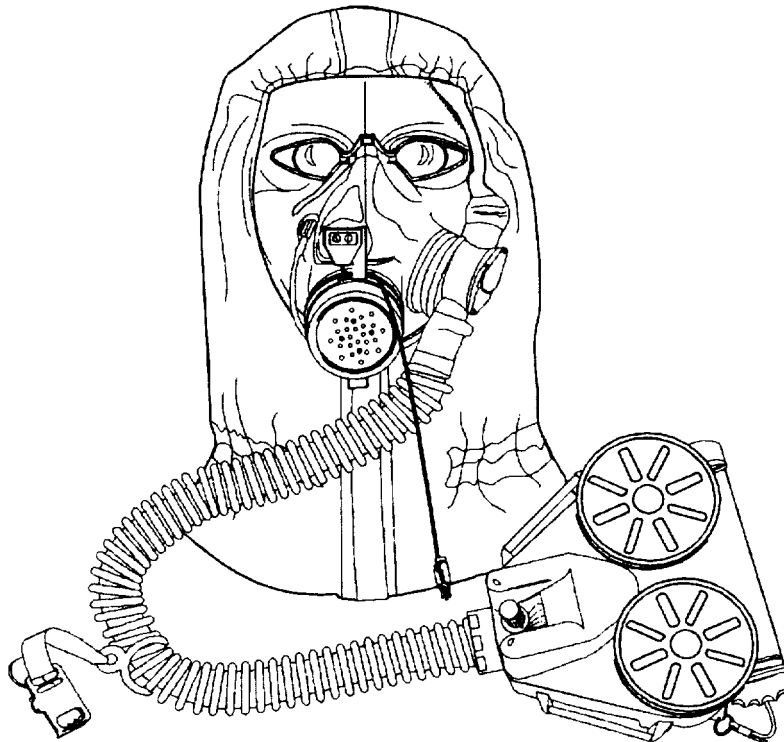


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**OPERATOR'S MANUAL****MASK, CHEMICAL-BIOLOGICAL, AIRCRAFT:**

**GENERAL AVIATOR, M49**  
**(4240-01-413-4099) SMALL**  
**(4240-01-413-4096) MEDIUM**  
**(4240-01-413-4095) LARGE**  
**(4240-01-413-4097) EXTRA LARGE**

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**WARNING**

The M49 mask will not protect the wearer against ammonia or carbon monoxide gases. It is not effective when the oxygen content of inlet air is too low.

The M49 mask will not protect the wearer's eyes when non-safe military lasers are used.

Keep face clean-shaven. An unshaven face could degrade the protection afforded by the facepiece assembly.

Do not use facepiece assembly if outlet valve disk is missing or damaged. The facepiece assembly will leak.

Inspect blower assembly and swivel threads for dirt or other material that could prevent an airtight seal.

Canisters may be changed only in a nontoxic atmosphere.

Wear a protective mask and clothing in accordance with local SOP when replacing canisters exposed to toxic agents.

Do not inhale while the canisters are under water; you will not be able to breathe.

If the cooling duct control allows excessive air to strike the head or face, frostbite may result. For temperatures below 32°F (0°C) adjust cooling duct to minimum (counterclockwise) before turning blower assembly on.

Subfreezing air may cause ice to form inside facepiece assembly and under hood.

If you become overheated in extremely cold weather, do not remove your facepiece assembly outdoors until your face and head have cooled and any sweat has dried. Frostbite may result if the facepiece assembly is removed while your face is still wet. This is not necessary if you are in a warm shelter.

Use M8 detector paper to check for contamination before using the drinking system. If contamination is detected, decontaminate using M295 decontamination kit. Do not connect the quick-disconnect coupling to your canteen until all mating surfaces have been checked. Chemical agents could enter your mouth, resulting in sickness or death.

If resistance is not felt when checking drinking system, do not drink. Your drinking system leaks. Notify Unit Maintenance as soon as possible.

When entering a known contaminated area, adjust blower assembly speed for maximum airflow to ensure a positive pressure inside the mask.

Lithium-sulfur dioxide (Li-SO<sub>2</sub>) batteries which are used in this equipment contain pressurized sulfur dioxide (SO<sub>2</sub>) gas. The gas is toxic, and the battery **MUST NOT** be abused in any way which may cause the battery to rupture.

**DO NOT** use equipment if battery compartment becomes hot. **IMMEDIATELY** turn off the equipment if battery compartment becomes hot to the touch. Allow the battery to cool (i.e., at least 60 minutes) before removing it.

**DO NOT** use any battery which shows signs of damage, such as bulging, swelling, disfigurement, a swollen plastic wrap, liquid in the plastic wrap, etc.

Frontserts are the only means of vision correction for this mask.

As a safety precaution, pilots needing prescription lenses shall go for a checkout ride in the helicopter when they receive their new masks or a prescription is changed. This is to assure that their vision is adequate to fly.

Any occurrences of redness, puffiness, or itchiness that persist for an extended period of time after removing the facepiece assembly should be referred to the flight surgeon for evaluation.

**WARNING****HEALTH/ENVIRONMENTAL HAZARD.**

There are two Mask Filter Canisters, the C2 and the C2A1.

The C2 canister contains Chromium VI and damaged or unusable canisters are considered Hazardous Waste. (Chromium VI is a known carcinogen if inhaled or swallowed.)

The C2A1 canister is chromium-free but must continue to be disposed of in accordance with State and Local Environmental Laws.

DO NOT throw away damaged or unusable canisters as ordinary trash.

DO turn in damaged or unusable canisters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO)

Filter canisters use ASC Whetlerite Carbon which contains Chromium VI. Chromium VI is a known carcinogen if inhaled or swallowed. Damaged or unusable canisters are classified as hazardous waste: DO NOT throw away damaged or unusable canisters as ordinary trash.

DO turn in damaged or unusable canisters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

LITHIUM-SULFUR DIOXIDE BATTERIES. Do not attempt to decontaminate batteries according to TB 43-1030 and local SOP. Do not attempt to recharge lithium-sulfur dioxide batteries. They may burn or explode.

**FIRST AID**

For First Aid Information, refer to FM 21-11.

OPERATOR'S MANUAL  
FOR  
MASK, CHEMICAL-BIOLOGICAL, AIRCRAFT:  
GENERAL AVIATOR, M49

(4240-01-413-4099) SMALL  
(4240-01-413-4096) MEDIUM  
(4240-01-413-4095) LARGE  
(4240-01-413-4097) EXTRA LARGE

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual. If you find any mistakes or know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to Technical Director, U.S. Army Edgewood Research, Development and Engineering Center, SCBRD-ENL-V, Aberdeen Proving Ground, MD 21010-5423. A reply will be furnished to you.

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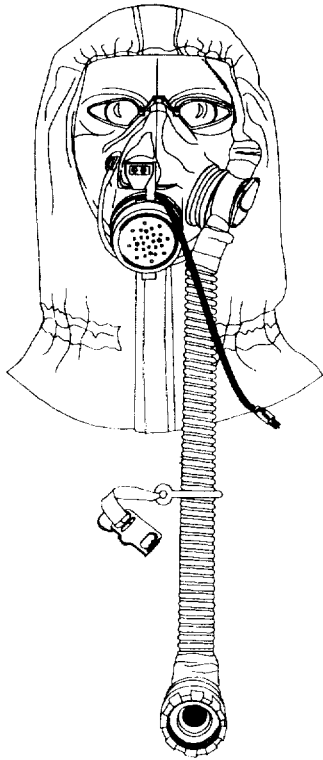
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## HOW TO USE THIS MANUAL

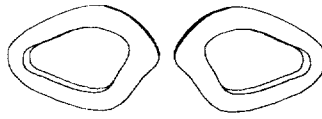
The M49 Operator's Manual contains information needed by operators and crew members to operate and perform maintenance authorized to them.

Instructions for operator maintenance procedures are contained in Chapter 3. In using these procedures, you must familiarize yourself with the entire maintenance procedure before beginning a specific maintenance task. A more detailed listing is presented in the table of contents. A comprehensive cross-referenced index appears at the end of the manual. This will help you to locate detailed information.

Read all the Warnings before you begin operating your equipment. Read each procedure completely before beginning a task.



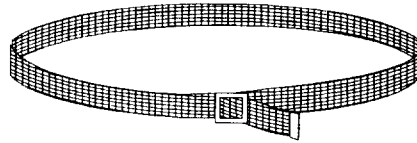
**M49 FACEPIECE**



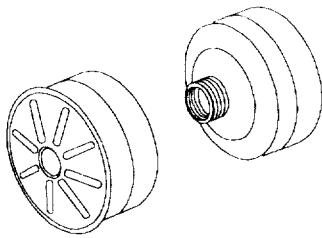
**EYE LENS CUSHION**



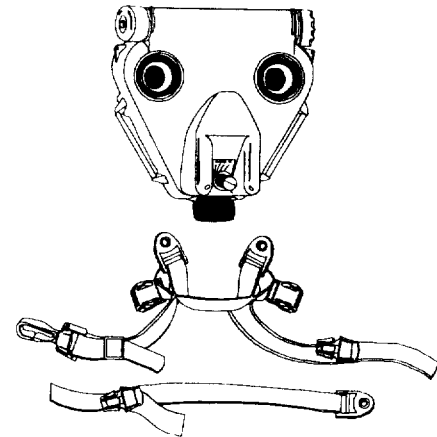
**FACEFORM**



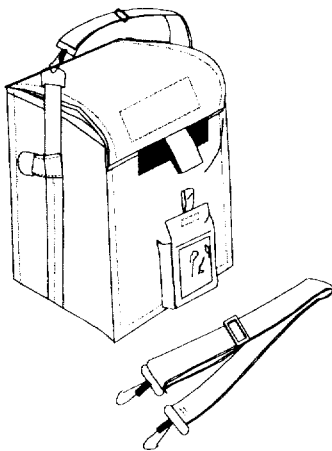
**WEB BELT**



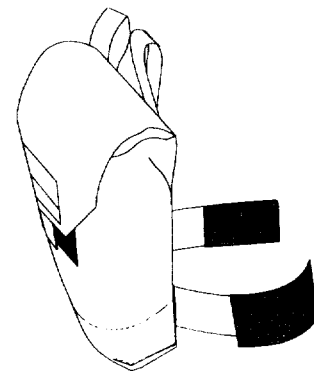
**CANISTERS**



**BLOWER**



**MASK CARRIER**



**FACEPIECE CARRIER**

## CHAPTER 1 INTRODUCTION

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### Section I. GENERAL INFORMATION.

#### 1-1. SCOPE.

- a. **Type of Manual.** Operator's manual.
- b. **Model Numbers and Equipment Name.** Mask, Chemical-Biological, General Aviator, M49.
- c. **Purpose of Equipment.** To protect face, eyes, and respiratory system from field concentrations of Chemical-Biological (CB) agents and Riot Control (RC) agents.
- d. **Special Limitations on Equipment.** Does not protect against ammonia or carbon monoxide gases. Does not protect the user when in an oxygen deficient environment.

#### 1-2. MAINTENANCE FORMS AND PROCEDURES.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS) as contained in Maintenance Management Update.

#### 1-3. CORROSION PREVENTION AND CONTROL (CPC).

- a. CPC of Army Materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.
- b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials such as rubber and plastic. Unusual cracking, softening, swelling, or breaking of these materials may be a corrosion problem. Use of key words such as corrosion, rust, deterioration, or cracking ensures the information is identified as a CPC problem.
- c. Such problems should be reported using SF 368 (Quality Deficiency Report). Send the form to:  
Director  
U.S. Army Armament and Chemical Acquisition and Logistics Activity  
ATTN: AMSTA-AR-QAW-A/Customer Feedback Center  
Rock Island, IL 61299-6000

#### 1-4. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Refer to TM 43-0002-31, Destruction of Chemical Weapons and Defense Equipment to Prevent Enemy Use, for methods of destruction.

#### 1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your mask needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Armament and Chemical Acquisition and Logistics Activity, ATTN: AMSTA-AR-QAW-A, Rock Island, IL 61299-6000. We'll send you a reply.



**1-6. NOMENCLATURE CROSS-REFERENCE LIST.**

<u>Common Name</u>	<u>Official Nomenclature</u>
Voicemitter Gasket	Packing, Preformed
Hose, Restraint Clip	Lanyard Retainer Assembly
Waist Strap	Carrier, Webbing Strap
Snap Hook	Hook Assembly
Canisters	CB Mask Canister
Blower Assembly	Lightweight Motor Blower
Retaining Clip	Ring, retaining

**1-7. LIST OF ABBREVIATIONS.**

CB	Chemical and Biological
IPD	Interpupillary Distance
RC	Riot Control
SARVIP	Survival Armor Recovery Vest Insert and Pocket
VDC	Voltage Direct Current

**Section II. EQUIPMENT DESCRIPTION**

**1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.**

**a. Characteristics.**

- (1) The facepiece assembly protects the face, eyes, and respiratory system from Chemical and Biological (CB) agents. An easy to use drinking system permits intake of liquids while maintaining agent proof integrity.
- (2) The blower assembly moves air through the canisters, maintaining a positive pressure in the facepiece assembly. The blower assembly is powered by a self-contained, non-rechargeable lithium battery.

**b. Capabilities.**

- (1) The facepiece assembly, when used with blower assembly and proper canisters, protects the face, eyes, and respiratory system from field concentrations of CB agents and RC agents.
- (2) The blower assembly will operate a minimum of 5 hours on a high speed setting from a new battery.

**WARNING**

**The M49 mask will not protect the wearer against ammonia or carbon monoxide gases. It is not effective when the oxygen content of the air is too low.**

**The M49 mask will not protect the wearer's eyes when non-safe military lasers are used.**

**c. Features.**

- (1) An M171/AIC microphone, which interfaces with the helicopter's communication system, is mounted in the facepiece assembly.
- (2) The bromobutyl natural rubber facepiece assembly is also equipped with front mounted voicemitter and hose assembly.
- (3) The facepiece assembly interfaces with the flight helmet when properly fitted.
- (4) The blower assembly provides filtered air to the facepiece. The amount of airflow can be adjusted at users discretion.

**1-9. EQUIPMENT DATA.**

**a. Weight**

M49 facepiece assembly .....	2.2 lbs (1 kg)
M49 blower assembly with battery and canisters .....	3.1 lbs (1.4 kg)
M49 carrier with facepiece carrier, facepiece assembly, web belt, faceform, canisters, blower assembly with battery, spare battery, goggles, and technical manual .....	9.22 lbs (4.19 kg)

**b. Dimensions.**

Shipping container	25.56 in x 17.28 in x 14.76 in (56.23 cm) x (38.01 cm) x (32.47 cm)
--------------------	--

**Section III. PRINCIPLES OF OPERATION**

**1-10. M49 DESCRIPTION.**

The M49 mask protects the face, eyes, and respiratory system of the user from chemically, biologically, and radiologically toxic environments. Positive air pressure is supplied to the facepiece by the blower assembly.

The incoming air is pulled through two filter canisters, which remove contaminants from the air. The airflow is split three ways by controls on the facepiece assembly; the majority of the incoming air is directed into the facepiece assembly for breathing; another path feeds the lens defog system, which keeps the lenses free from condensation; the third path feeds the cooling duct, which directs air under the hood for user comfort.

Primary protection from toxic environments is provided by the facepiece assembly, which consists of the faceblank and the suspension harness. The faceblank contains the inlet valve assembly, outlet valve assembly, microphone assembly, voicemitter, drinking tube, lenses, and the butyl hood with a secondary skirt. The facepiece assembly is held securely on the head by the adjustable suspension harness.

CHAPTER 2  
OPERATING INSTRUCTIONS

Section I. DESCRIPTION AND USE OF OPERATOR'S  
CONTROLS AND INDICATORS

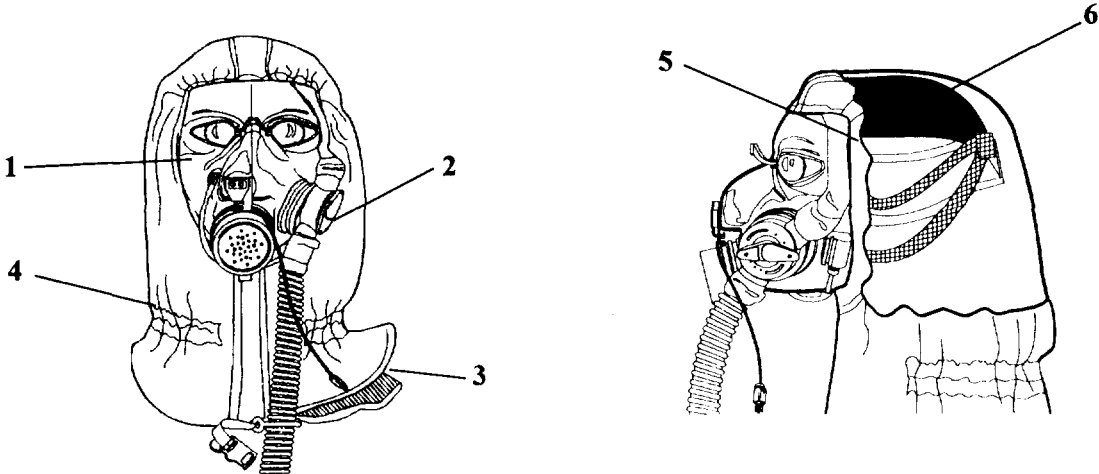
2-1. GENERAL.

Before attempting to use the mask and additional authorized items, make certain you are familiar with the location and operation of all parts.

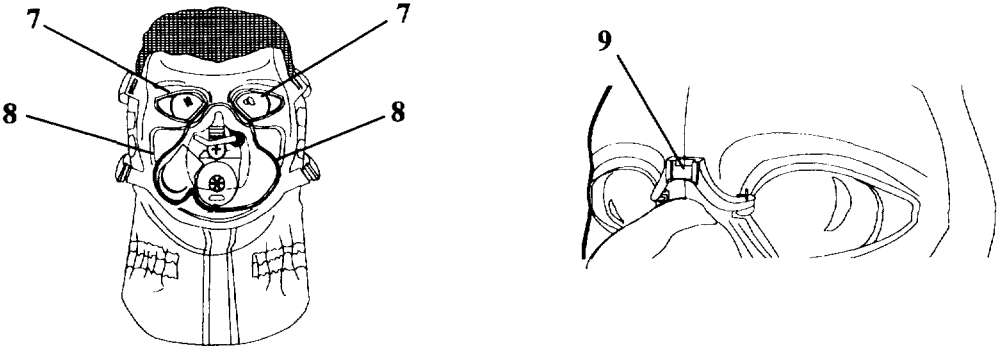
2-2. DESCRIPTION OF MASK.

a. Facepiece Assembly.

- (1) Faceblank. The faceblank (1), which supports facepiece components, and the integral butyl hood (2) protect the user's head from chemical and biological agents. A butyl inner skirt (3) is attached to the inside of hood at the neck closure (4) and is tucked inside collar of suit. An external cooling duct (5) directs air at ambient temperature under the hood assembly for user comfort.
- (2) Suspension Harness. The suspension harness (6) holds the faceblank securely to the face. Adjustments to the suspension harness are facilitated by three simple-to-adjust

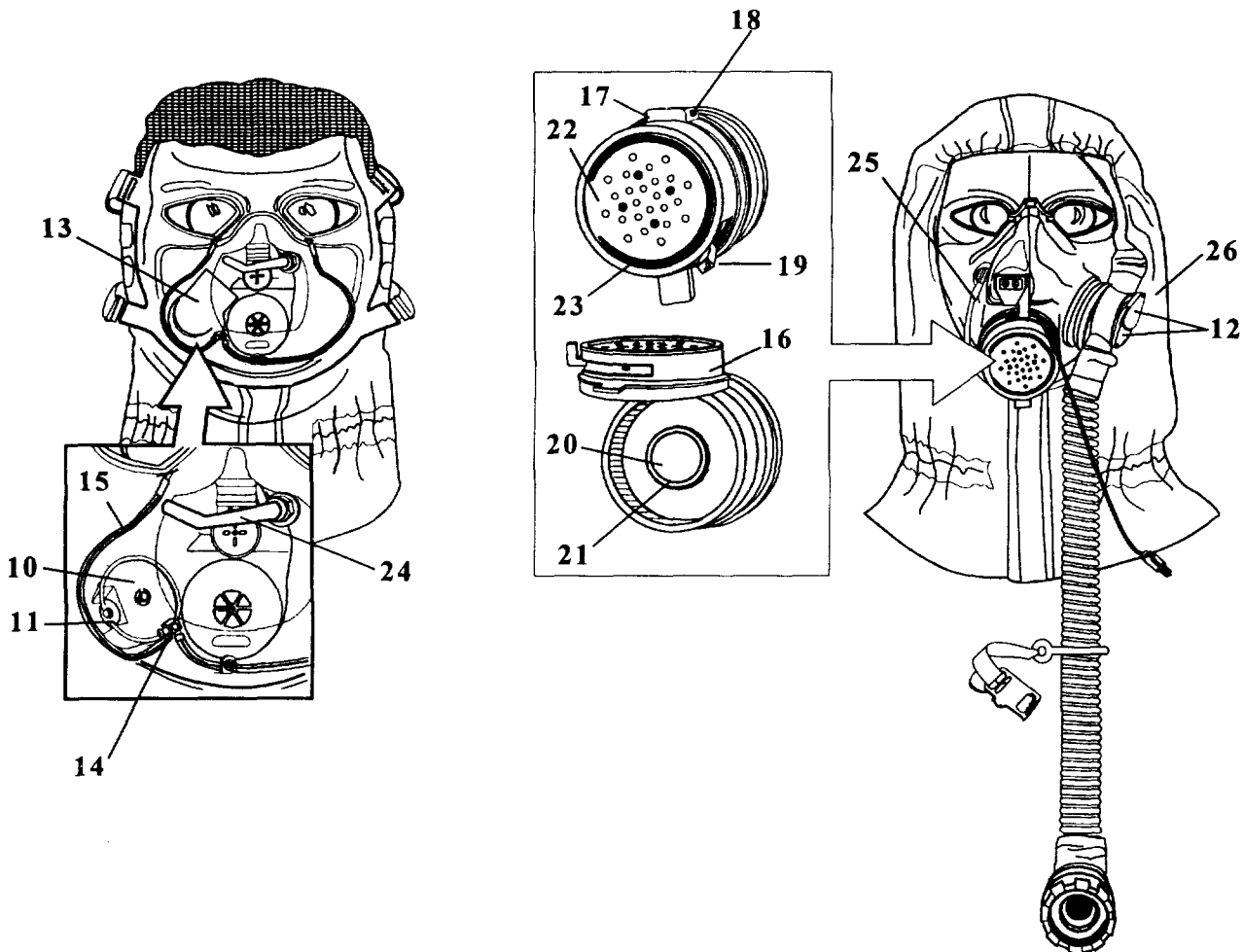


- (3) Lenses. The lenses (7) conform closely to the shape of the eye, providing maximum peripheral vision. The lens defog system (8) consists of tubes that direct blown air over the inside surface of the lenses for defogging. The Interpupillary Distance (IPD) staple (9) is sized, and adjusts the lenses for proper optical centering.

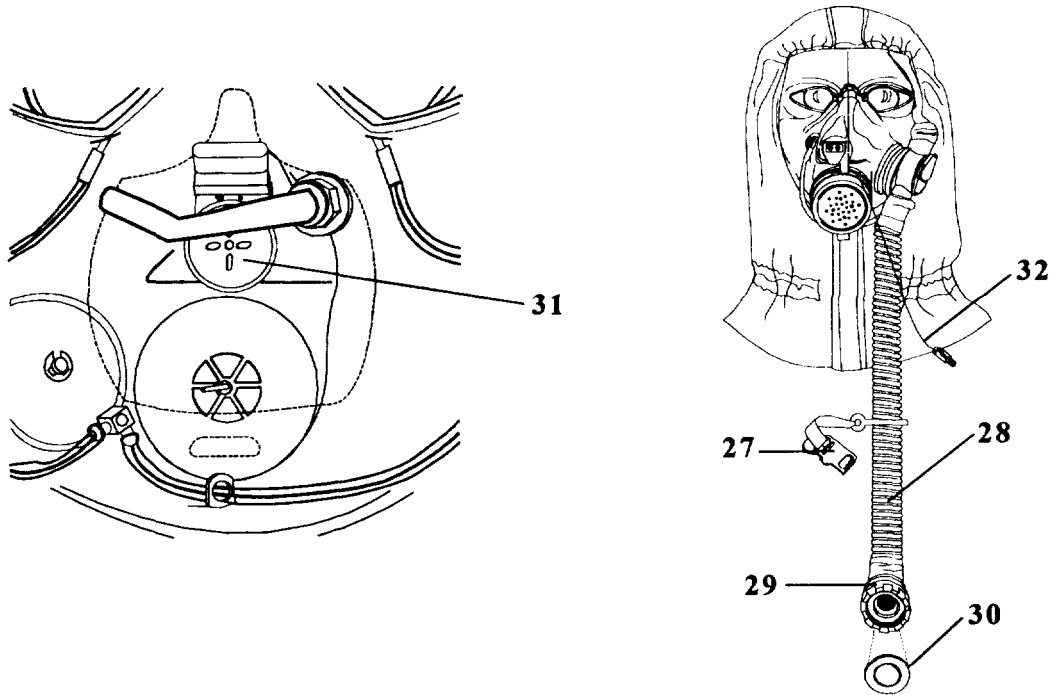


2-2. DESCRIPTION OF MASK (CONT).

- (4) Inlet Valve Assembly. The inlet valve assembly (10) splits the airflow three ways; one path feeds the cooling duct, one path feeds the lens defog system, and the balance is for breathing. The inlet valve disk (11) prevents exhaled air from leaving mask through the inlet valve assembly. Two controls (12), mounted on the outside of the mask, regulate the airflow to the cooling duct and the lens defogging system.
- (5) Air Deflector. The air deflector (13) directs incoming air away from the user's cheek. The deflector is notched to clear the 90° ell branch (14) connecting the defogging tubes (15) and snaps into a groove around the inlet valve assembly (10).
- (6) Outlet Valve Assembly. The outlet valve assembly consists of an outlet valve cover (16), hinge pin (17) and retaining ring (18), outlet flow control (19), outlet valve disk (20), and outlet valve seat (21) located under the disk.
- (7) Outlet Valve Cover. The outlet valve cover (16) is held in place by, and pivots on, a hinge pin (17). The valve cover also houses the outlet flow control (19), which controls the flow of air out of the facepiece assembly. The voicemitter (22) is held into the outlet valve cover by a retaining ring (23).
- (8) Drink Tube System. Drinking system consists of internal drink tube (24), external drink tube (25), and quick-disconnect coupling half(26).
- (9) Quick-Disconnect Coupling Half. Quick-disconnect coupling half(26) connects the M1 canteen cap to the external drink tube and allows you to drink water safe.

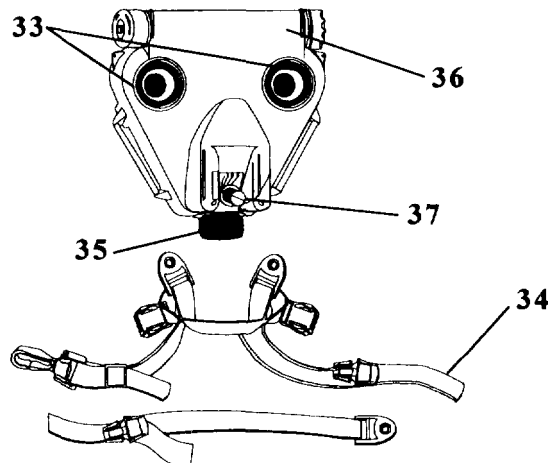


- (10) Hose Restraint Clip. Hose restraint clip (27) secures hose (28) to user's clothing to prevent excessive movement.
- (11) Swivel Assembly. The swivel assembly (29) contains 1 gasket (30) and connects the hose (28) to the blower. Assembly swivels to allow positioning of the hose close to chest.
- (12) Microphone. The microphone (31) M 171/AIC is used for communication in the aircraft. The microphone cable (32) plugs into the communication jack mounted on the helmet.



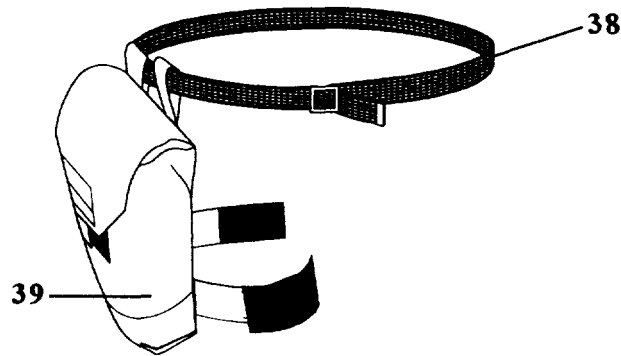
**b. Blower Assembly.**

- (1) Canister ports. The canister ports (33) allow the canisters to be attached to the Blower.
- (2) Mounting straps. The mounting straps (34) attach to the snap locks of the SARVIP to secure the blower to the user.
- (3) Blower outlet port threads. The blower outlet port threads (35) interface the blower assembly to the facepiece assembly.
- (4) Battery compartment. The battery compartment (36) houses the battery.
- (5) Speed Control. The speed control (37) adjusts airflow and turns the blower on and off.



2-2. DESCRIPTION OF MASK (CONT).

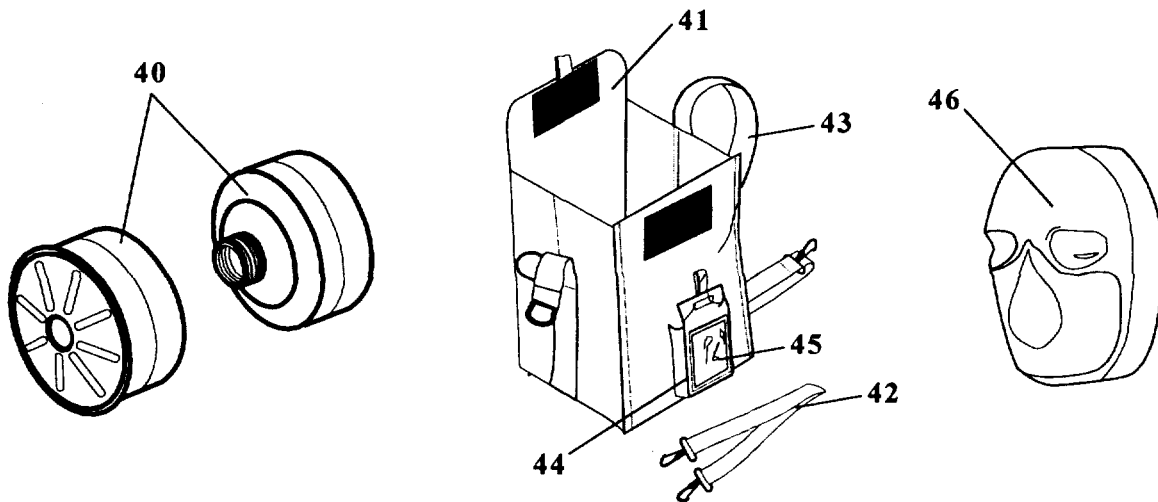
c. **Web Belt.** The adjustable web belt (38) secures the blower assembly to the user's waist and attaches to the facepiece carrier (39) through the loops of the carrier.



d. **Canisters.** The canisters (40) filter contaminants from ambient air. Canisters connect to the blower.

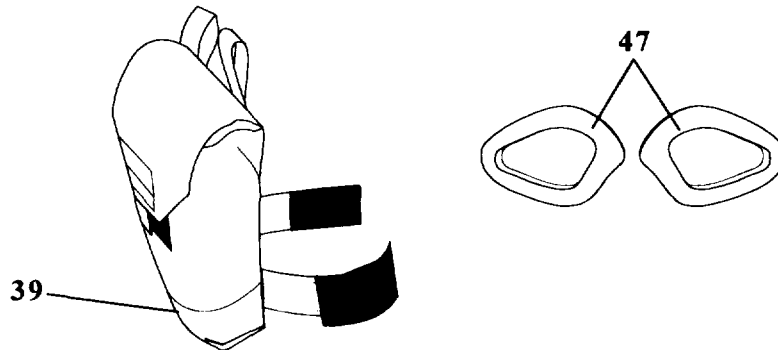
e. **Mask Carrier.** The mask carrier is used for storing and carrying facepiece assembly, faceform, facepiece carrier, eye lens cushions, blower assembly, spare battery, web belt, technical manual and additional authorized items. The carrier consists of quick opening flap (41), waist strap (42), shoulder strap (43), waist strap pocket (44), and nameplate pocket (45).

f. **Faceform.** The faceform (46) holds the facepiece in proper shape when stored longer than 30 days.



**g. Facepiece Carrier.** The facepiece carrier (39) provides storage for the facepiece assembly when not in use or during ground carry mission. The facepiece carrier has two clips that attach to the web belt and a leg strap with hook and pile tabs to secure to the user's leg.

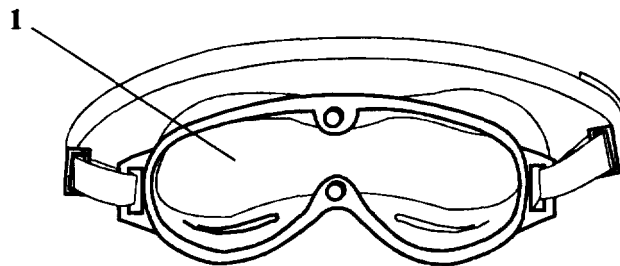
**h. Eye Lens Cushions.** Two eye lens cushions (47) with adhesive backing may be installed on the inside of the facepiece around the lenses to provide user comfort, if required.



**2-3. DESCRIPTION OF ADDITIONALLY AUTHORIZED ITEMS (APP C).**

**a. Goggles.** The goggles (1) provide a thermal barrier to the facepiece lenses thereby reducing fogging in cold weather.

**b. M8 Chemical Agent Detector Paper.** The M8 Chemical Agent Detector paper is a chemically treated, dye-impregnated paper. A color comparison bar chart is printed inside the front cover. Chemicals in the paper cause specific color changes when the paper comes in contact with liquid nerve or blister agents. Instructions on how to use the M8 paper are found on the cover of book containing the detector paper. The M8 paper is stored in inside pocket of carrier.

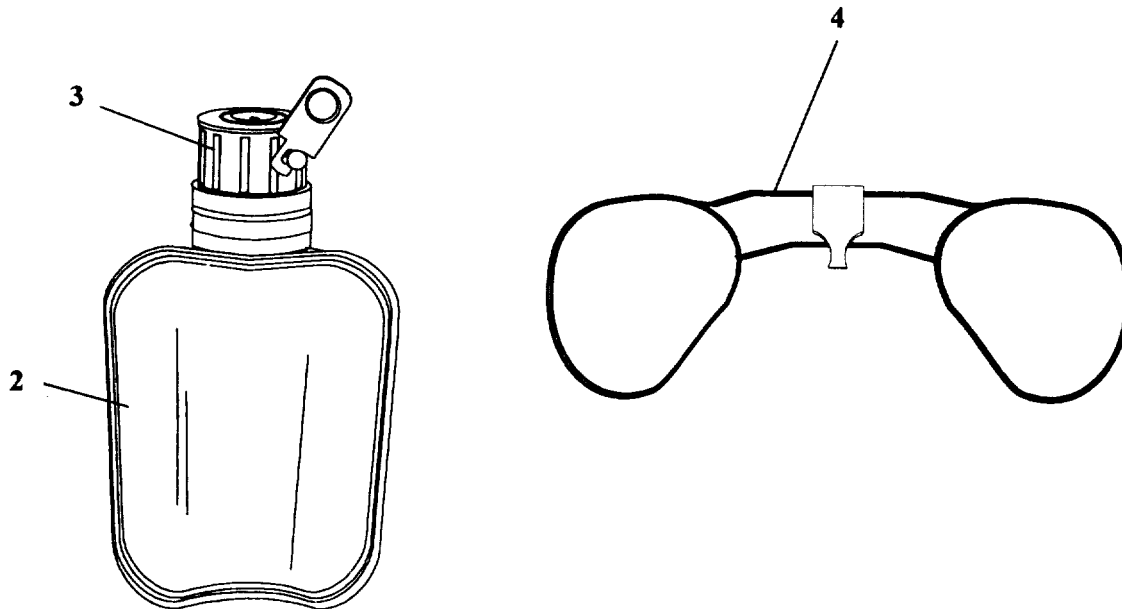


**2-3. DESCRIPTION OF ADDITIONALLY AUTHORIZED ITEMS (APP C) (CONT).**

**c. Decontaminating Kit.** The kit is used to decontaminate individual equipment. Instructions for use are printed on the container and packets.

**d. Canteen with M1 Canteen Cap.** The canteen (2) with M1 canteen cap (3) permits use of drinking system. The M1 canteen cap prevents contamination of canteen contents.

**e. Frontsets.** The frontsets (4) attach to IPD staple on the facepiece and provide vision correction to user.





## SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

### 2-4. INTRODUCTION TO PMCS

**a. General.** Table 2-1 (PMCS Table) provides a logical sequence of PMCS steps and procedures which will keep your equipment in good operating condition. If mask has not been used for 30 days or more, perform all PMCS before using your mask.

**b. Warnings and Cautions.** Always observe the warnings and cautions appearing in your PMCS table. Warnings and cautions appear before the applicable procedures. You must observe all warnings and cautions to prevent serious injury to yourself or others and to prevent damage to your equipment.

### 2-5. INTRODUCTION TO PMCS PROCEDURES

**a. Table Entries.** The following paragraphs describe the information presented in each column of the PMCS Table.

- (1) Item Number Column. Numbers in this column are for reference. When completing DA Form 2404 (Equipment Inspection and Maintenance Worksheet), include the item number for the check/service indicating a fault. Item numbers also appear in the order that you must do checks and services for the intervals listed.
- (2) Interval Column. This column tells you when you must do the procedure in the procedure column.
- (3) Item to Check/Service Column. This column identifies the item to be checked or serviced.
- (4) Procedure Column. This column gives the procedure you must do to check or service the item listed in the "Item to Check/Service" column to know if the equipment is ready or available for its intended mission or for operation. You must do the procedure at the time stated in the "Interval" column.
- (5) Not Fully Mission Capable If Column. Information in this column tells you what faults will keep your equipment from being capable of performing its primary mission. If you make check and service procedures that show faults listed in this column, do not operate the equipment. Follow standard operating procedures for maintaining the equipment or reporting equipment failure.

**b. Other Table Entries.** Be sure to observe all special information and notes that appear in you table.

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

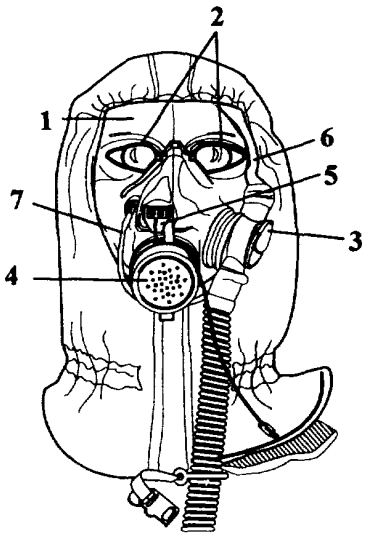
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
1	Before	FACEPIECE ASSEMBLY	<p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;">If mask has not been used for 30 days or more, perform all PMCS before using your mask.</p> <p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Blower must be connected to swivel assembly before performing PMCS. Refer to 2-8b (9). If faceform is present, remove and place in mask carrier.</p> <div style="text-align: center;">  </div> <p>a. Check faceblank (1) for holes, tears, splits, nicks, or dry rot.</p> <p>b. Check rubber next to lenses (2), inlet valve assembly (3), outlet valve assembly (4), microphone outside backing plate (5), hood cooling duct tube pass-through assembly (6), and drink tube pass-through assembly (7) to be sure these components will not pull away from faceblank.</p>	<p>Faceblank has holes, tears, splits, nicks, or dry rot which will allow air to enter facepiece assembly.</p> <p>Lenses, inlet valve assembly, outlet valve assembly, microphone outside backing plate, hood cooling duct, or drink tube pass-through assembly pull away from faceblank.</p>

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
			<p>c. Check hood (8) and inner skirt (9) for chafed or worn areas, cuts, tears, or separation of seams, and check hood for separation from faceblank. (An intentional separation (10) is present to accommodate the cooling duct.)</p> <p>d. Check neck closure (11) for stretched elastic and elastic detached from anchor points (12).</p>	<p>Hood has areas above neck elastic where coating is worn away, or areas below neck elastic larger than a dime that are worn away. Hood and inner skirt has cuts, tears, or separation of seams, or has pulled away from faceblank.</p> <p>Elastic is stretched or detached from anchor points.</p>
2	Before	INLET VALVE ASSEMBLY	<p>a. Check that actuator shaft assemblies (1) are free to move, set screws (2) are present and adjusted properly.</p>	<p>Actuator shaft assemblies blind, stick, or will not stop at indents. Set screws are missing, or loose.</p>

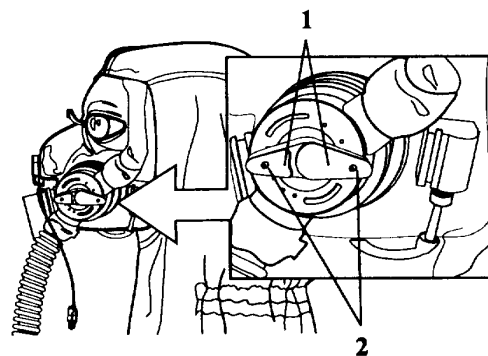
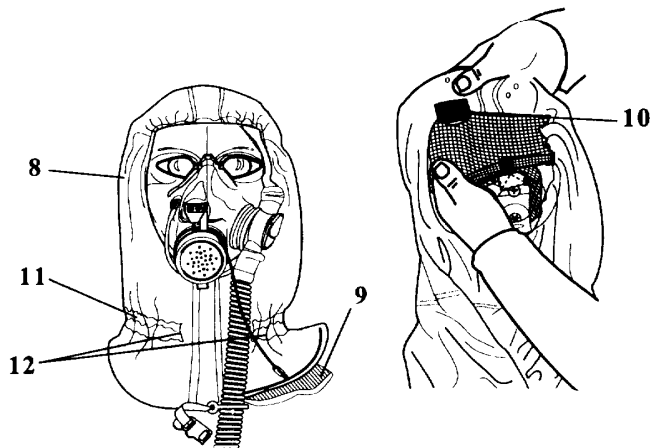


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
2	Before	INLET VALVE ASSEMBLY (CONT)	<ul style="list-style-type: none"> <li>b. Remove air deflector (3) inside faceblank (4) by squeezing edges of air deflector and pulling upward until deflector snaps out of groove.</li> <li>c. Check that inlet valve disk (5) and retaining ring (6) are present.</li> <li>d. Check that 90° ell branch (7) and defogging tubes (8) are not damaged, kinked, or detached.</li> <li>e. Check air deflector for cracks, deformation, or has pieces broken off.</li> <li>f. Aline notch on air deflector with 90° ell branch and snap air deflector into groove around inlet valve assembly on inside of facepiece assembly by squeezing edges of air deflector.</li> </ul>	<p>Inlet valve disk or retaining ring is missing.</p> <p>Fitting is broken, cracked, or detached from inlet valve assembly. Defogging tubes are kinked, cracked or detached from fitting or lens.</p> <p>Air deflector is cracked, deformed, or pieces broken off.</p>

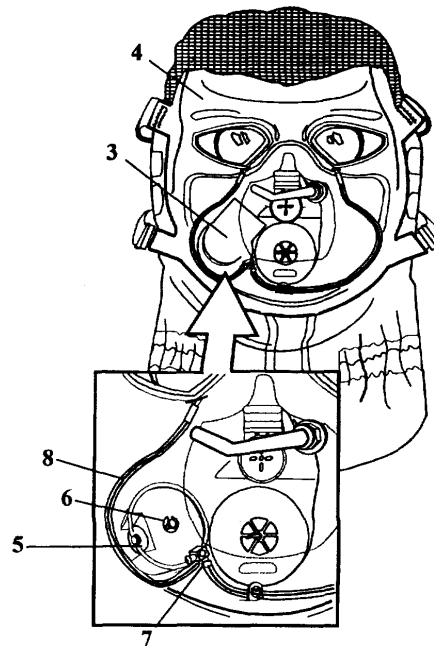


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
3	Before	SUSPENSION HARNESS	<p>a. Check suspension harness (1) and make sure it stretches.</p> <p>b. Check for missing, bent, or broken clip-buckles (2).</p>	<p>Straps do not stretch, or suspension harness will not hold facepiece assembly firmly against face.</p> <p>Clip-buckle assemblies are missing, bent, or broken.</p>
4	Before	OUTLET VALVE ASSEMBLY AND OUTLET VALVE COVER	<p>a. Check outlet valve cover (1) for breaks, cracks, and missing hinge pin (2) or retaining clip (3).</p> <p>b. Check that voicemitter (4) and retaining ring (5) are present.</p> <p>c. Open outlet valve cover by pulling tab on bottom of cover out and up.</p> <p>d. Check outlet valve seat (6) for dirt or nicks.</p>	<p>Cover is broken or cracked. Hinge pin or retaining clip is missing.</p> <p>Voicemitter or retaining ring is missing.</p> <p>Outlet valve seat is dirty or nicked.</p>

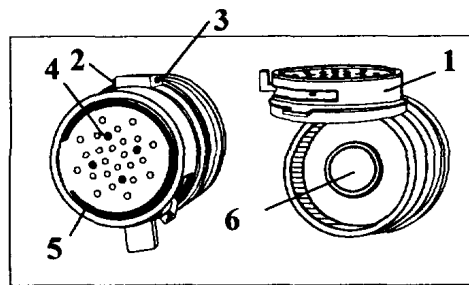
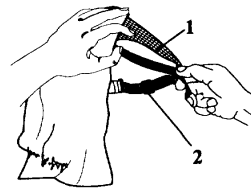


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
4	Before	OUTLET VALVE ASSEMBLY AND OUTLET VALVE COVER (CONT)	<p style="text-align: center;"><b>WARNING</b></p> <p><b>Do not use paper to remove dirt or moisture from valve cover or valve disk. Paper may break up and lodge in outlet valve causing valve to leak.</b></p> <p><b>Do not use facepiece assembly if outlet valve disk is missing or damaged. The facepiece assembly will leak.</b></p> <p>e. Check that outlet valve disk (7) is present, not curled, dirty, torn, or distorted. Wipe off any moisture from valve disk with a cheesecloth (item 3, App D). Smooth disk with your finger so that it lies flat on outlet valve seat.</p> <p>f. Close outlet valve cover (1).</p>	<p>Outlet valve disk is missing, damaged, cannot be cleaned or will not seat properly.</p>
5	Before	LENSES AND FRONTSERTS	<p>a. Check that mounting pins (1) are straight and mounted securely.</p> <p>b. If present, insure IPD staple (2) is not cracked, chipped or broken and ensure staple is secured with retaining clips (3) and clips are not damaged.</p> <p>c. If required, check that frontserts are present, mounted securely, and not bent or broken.</p>	<p>Mounting pins are bent or loose.</p> <p>IPD staple is missing or broken. Retaining clips are missing or damaged.</p> <p>IPD staple is missing or broken. Retaining clips are missing or damaged.</p>

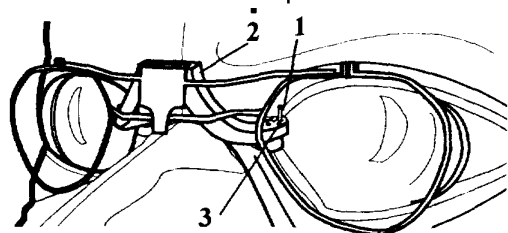
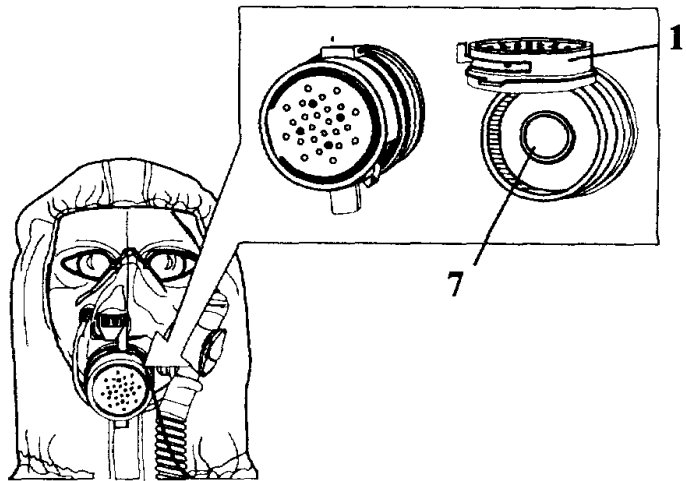


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

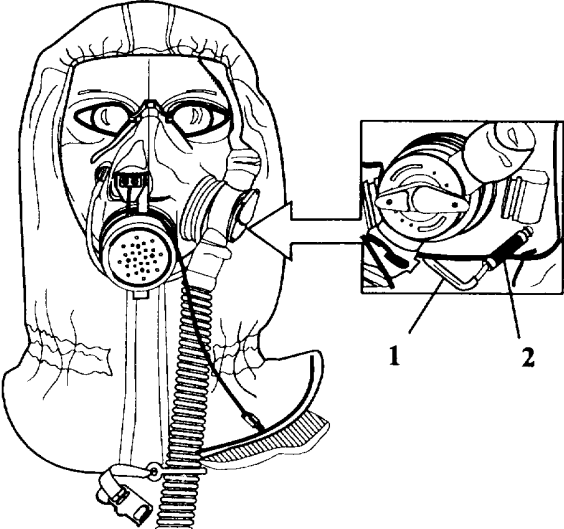
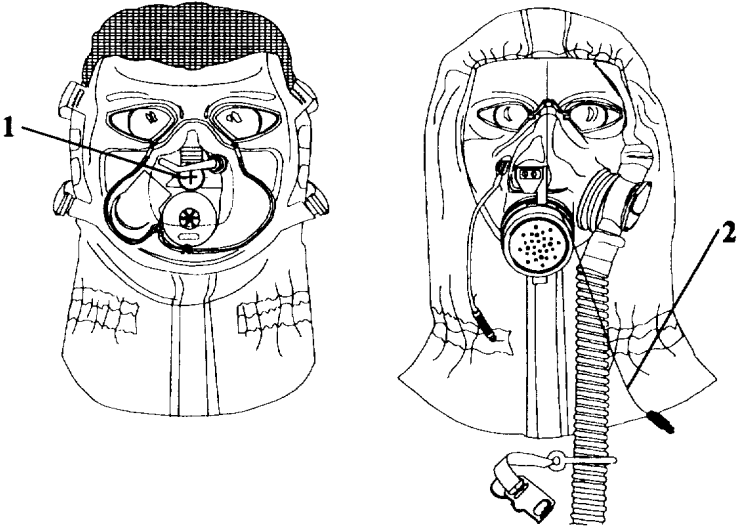
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
6	Before	DRINKING SYSTEM	<p>a. Check that external drink tube (1) is present. Look for cracks or cuts in external drink tube.</p> <p>b. Check if quick disconnect coupling half(2) is blocked or damaged.</p>  <p>The diagram shows a person wearing an M49 mask with a drinking system. Label 1 points to the external drink tube extending from the mask. Label 2 points to the quick disconnect coupling half on the side of the mask.</p>	<p>External drink tube is missing, cracked, or cut.</p> <p>Quick disconnect coupling half is blocked or damaged.</p>
7	Before	MICROPHONE	<p>a. Check microphone (1) for cracked or broken housing.</p> <p>b. Check microphone cable (2) for broken connectors, bare wires, or cut wires.</p>  <p>The diagrams show two views of the M49 mask microphone. The left diagram shows the microphone housing (1) mounted on the mask. The right diagram shows the microphone cable (2) extending from the mask.</p>	<p>Microphone housing is cracked or broken.</p> <p>Connectors are broken, wires are bare, or wires are cut.</p>

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
8	Before	HOSE	<p>a. Check hose (1) for tears, cuts, or holes.</p> <p>b. Check that covered clamp (2) on each end of hose is secure.</p> <p>c. Check that swivel (3) is not loose in hose, bent, cracked, or broken.</p>	<p>Hose has tears, cuts or holes.</p> <p>Clamps are loose or missing.</p> <p>Swivel is loose in hose, bent, loose in hose, bent, cracked, or broken.</p>
9	Before	CANISTERS	<p>a. Check canisters (1) for dented or deformed body, breaks, cracks, dirt in openings, moisture or water stains.</p> <p>b. Shake blower assembly (2) and listen for loose particles in canister.</p>	<p>Either canister is wet, crushed, split, cracked, clogged with dirt, or has water stains.</p> <p>Canister has loose particles that rattle or fall out when shaken.</p>

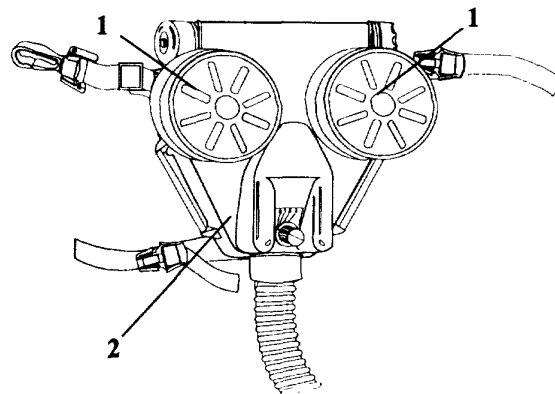
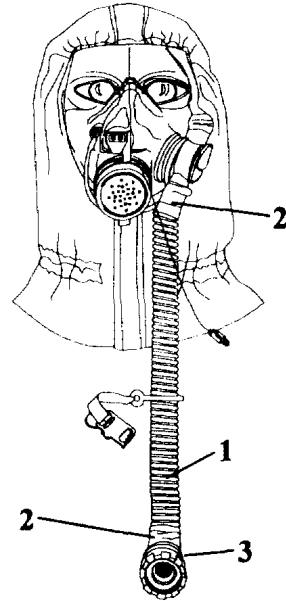




Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
10 Before ASSEMBLY		BLOWER	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Lithium-sulfur dioxide (Li-SO<sub>2</sub>) batteries which are used in this equipment contain pressurized sulfur dioxide (SO<sub>2</sub>) gas. The gas is toxic, and the battery <b>MUST NOT</b> be abused in any way which may cause the battery to rupture. Do not touch battery if you smell vinegar or rotten eggs. Contact Unit Maintenance for battery removal and replacement.</p> <ol style="list-style-type: none"> <li>a. Check that battery is present in battery compartment (1).</li> <li>b. Turn on blower (2) to check for presence of airflow.</li> <li>c. Ensure canisters are hand tight on blower assembly (4).</li> <li>d. Check that straps (3) are present.</li> </ol>	<p>Battery is missing.</p> <p>No airflow detected.</p> <p>Arm band or strap is missing.</p>
11	Before	WEB BELT	<p>Check that web belt (1) is present.</p>	<p>Web belt is missing.</p>

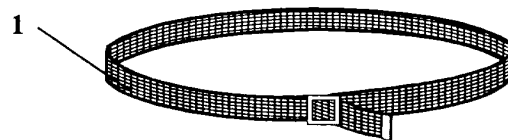
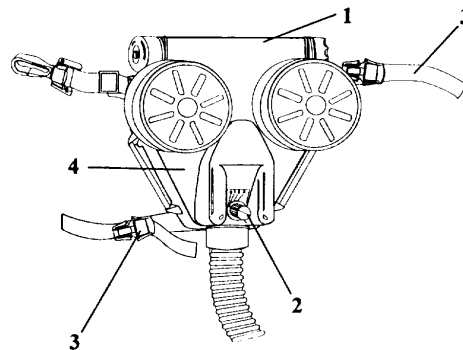


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

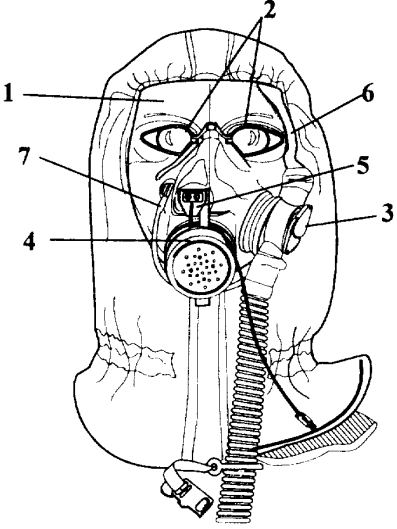
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
12	After	FACEPIECE ASSEMBLY	<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;">Blower must be separated from swivel assembly before performing PMCS. Refer to para 3-6 (1).</p> <div style="text-align: center;">  </div> <ol style="list-style-type: none"> <li>a. Visually inspect inside and outside surfaces for dirt, mud, and greasy or oily substances. Refer to para 3-5 for cleaning.</li> <li>b. Check faceblank (1) for holes, tears, splits, nicks, or dry rot.</li> <li>c. Check rubber next to lenses (2), inlet valve assembly (3), outlet valve assembly (4), microphone outside backing plate (5), hood cooling duct (6), and drink tube pass-through assembly (7) to be sure these components will not pull away from faceblank.</li> </ol>	<p>Dirt, mud, or greasy substances are present.</p> <p>Faceblank has holes, tears, splits, nicks, or dry rot which will allow air to enter facepiece assembly.</p> <p>Lenses, inlet valve assembly, outlet valve assembly, microphone outside backing plate, hood cooling duct, or drink tube pass-through assembly pull away from faceblank.</p>

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
13	After	INLET VALVE ASSEMBLY	<p>d. Check hood assembly (8) and inner skirt (9) for chafed or worn areas, cuts, tears, or separation of seams, and check hood for separation from faceblank (1).</p> <p>e. Check neck closure (10) for chafed or worn areas, cuts, tears, separation of seams, stretched or loose elastic.</p> <div> <p>This diagram shows a top-down view of the M49 mask hood assembly. Callout 1 points to the faceblank, 8 points to the hood assembly, 9 points to the inner skirt, and 10 points to the neck closure.</p> </div> <p>a. Check inlet valve body (1) for cracks, dents, missing parts, or loose faceblank fit.</p> <div> <p>This diagram shows a side view of the M49 mask with the inlet valve body (1) highlighted. An inset shows a close-up of the inlet valve body being rotated to check for proper fit.</p> </div>	<p>Any area of hood assembly above neck elastic where coating is worn away. Worn areas exist below neck elastic that are larger than a dime. Hood assembly or inner skirt has cuts, tears, or separation of seams or has pulled away from faceblank.</p> <p>Neck closure is chafed, torn, cut, separated at seams, or elastic is loose or stretched enough to affect normal operation.</p> <p>Inlet valve body is cracked, dented, or has parts missing. Inlet valve body can be rotated in faceblank.</p>

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
		<p>INLET VALVE ASSEMBLY (CONT)</p>	<p>b. Remove air deflector (2) inside faceblank (3) by squeezing edges of air deflector and pulling upward until deflector snaps out of groove.</p> <p>c. Check that inlet valve disk (4) and retaining ring (5) are present.</p> <p>d. Check that 900 ell branch (6) and defogging tubes (7) are not damaged, kinked, or detached.</p> <p>e. Check air deflector for cracks, deformation, or pieces broken off.</p> <p>f. Aline notch on air deflector with 900 ell branch and snap air deflector into groove around inlet valve assembly on inside of facepiece assembly by squeezing edges of air deflector.</p>	<p>Inlet valve disk or retaining ring is missing.</p> <p>Fitting is broken, cracked, or detached from inlet valve assembly. Defogging tubes are kinked, cracked or detached from fitting or lens.</p> <p>Air deflector is cracked, deformed, or has pieces broken off.</p>

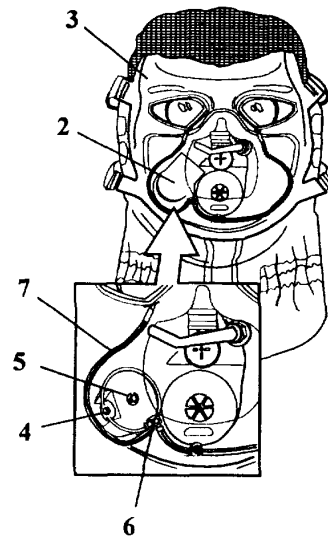


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
14	After	SUSPENSION HARNESS	<p>a. Check suspension harness. Make sure it stretches. Firmly, hold faceblank with one hand. With the other hand, stretch each strap (1) from 1 to 1-1/2 inches away from facepiece.</p> <p>b. Check for missing, bent, or broken clip-buckles (2).</p> <p>c. Check straps for cuts, tears, missing metal clips (3), or deterioration such as mildew-ing or fraying.</p>	<p>Straps do not stretch and recover, or suspension harness will not hold facepiece assembly firmly against face.</p> <p>Clip-buckle assemblies are missing, bent, or broken. Straps are cut, torn, frayed, have missing parts, or have deteriorated.</p>

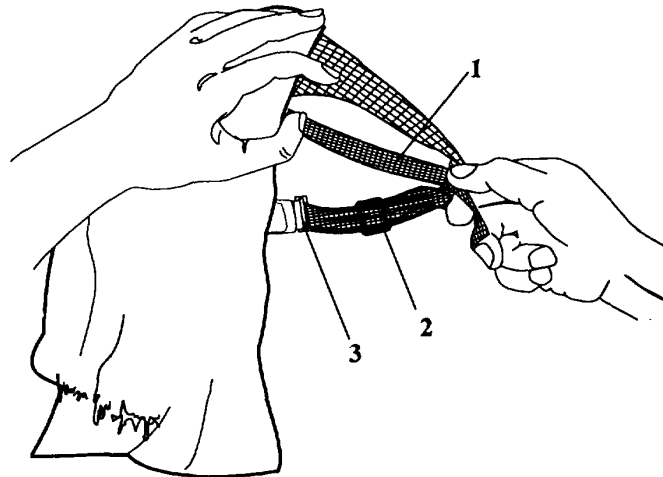


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
15	After	OUTLET VALVE ASSEMBLY AND OUTLET VALVE COVER	<p>a. Open outlet valve cover (1) by pulling tab on bottom of cover out and up.</p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Do not use facepiece assembly if outlet valve disk is missing or damaged. The facepiece assembly will leak.</b></p> <p>b. Check outlet valve seat (2) for dirt or nicks.</p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Do not use paper to remove dirt or moisture from outlet valve cover or outlet valve disk. Paper may break up and lodge in outlet valve assembly causing valve to leak.</b></p> <p>c. Check that outlet valve disk (3) is present not curled, distorted, dirty torn, or nicked. Rotate valve disk to make sure it is not sticking. Wipe off any moisture from valve disk with a soft, cheesecloth (Item 4, App D). Smooth disk with your finger so that it lies flat on outlet valve seat.</p> <p>d. Check outlet valve cover for breaks, cracks, and missing hinge pin (4) or retaining clip (5).</p>	<p>Outlet valve disk or seat is dirty or nicked.</p> <p style="text-align: center;"><b>WARNING</b></p> <p style="text-align: center;"><b>Do not use paper to remove dirt or moisture from outlet valve cover or outlet valve disk. Paper may break up and lodge in outlet valve assembly causing valve to leak.</b></p> <p>Outlet valve disk is missing, damaged, cannot be cleaned, or will not seat properly.</p> <p>Cover is broken or cracked. Hinge pin or retaining clip is missing.</p>

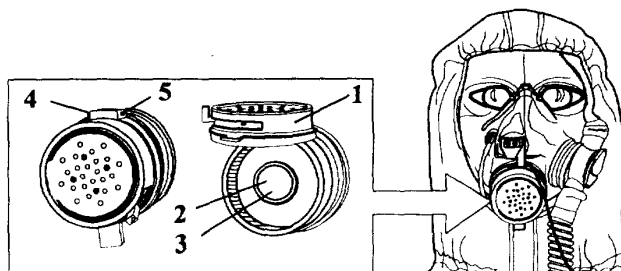


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

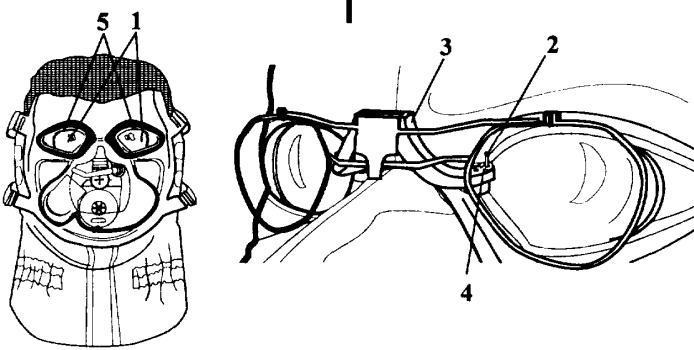
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
16	After	LENSES AND FRONTSERTS	<p>a. Check lenses (1) for cracks, cuts, scratches, or stains that affect vision.</p> <p>b. Check that mounting pins (2) are straight and mounted securely.</p> <p>c. If IPD staple is required, check if IPD staple (3) is missing, is not bent broken or needs to be resized. Ensure retaining clips (4) are present and secure.</p> <div style="text-align: center;">  <p>The diagram shows two views of the M49 mask and its lenses. On the left is a front view of the mask with callouts: 1 pointing to the lens, 2 to the mounting pin, 3 to the IPD staple, 4 to the retaining clip, and 5 to the lens cushion. On the right is a side view of the lens assembly with callouts: 1 to the lens, 2 to the mounting pin, 3 to the IPD staple, and 4 to the retaining clip.</p> </div> <p>d. If required, check that frontserts are present, mounted securely, and are not bent or broken</p> <p>e. If lens cushions (5) were installed, make sure they are securely attached without having edges folded up.</p>	<p>Lenses are cracked, cut, scratched, or have stains that affect vision.</p> <p>Mounting pins are bent or loose.</p> <p>IPD staple is missing, bent, broken or needs to be resized. Retaining clips are missing, or damaged.</p> <p>Frontserts are missing, loose, or damaged.</p>

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
17	After	DRINKING SYSTEM	<p>a. Check that external drink tube (1) is present. Look for cracks or cuts in external drink tube.</p> <p>b. Check that quick-disconnect coupling half (2) is not crushed, dented, corroded, or separated from external drink tube. Return quick-disconnect coupling half to retainer (3).</p> <p>c. Check that internal drink tube (4) is present and not caught behind the microphone. Make sure drink tube opening is in position toward the mouth.</p> <p>d. Check drinking system for leaks para 2-8f.</p>	<p>External drink tube is missing, cracked, or cut.</p> <p>Quick-disconnect coupling half crushed, dented, corroded, or separated from external drink tube.</p> <p>Internal drink tube is missing.</p> <p>Drink system leaks.</p>

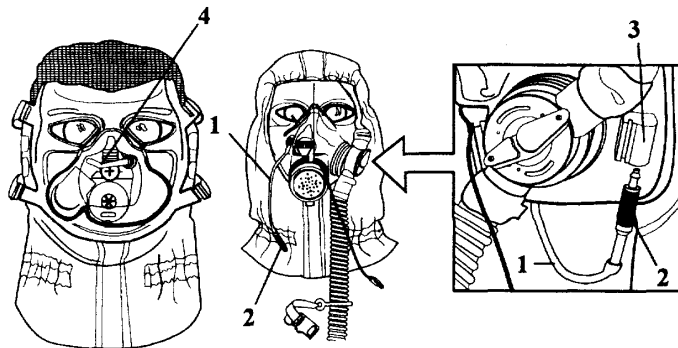




Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
18	After	MICROPHONE	<p>a. Check that microphone (1) is present, not cracked or broken.</p> <p>b. Check that pin protector (2) is present.</p> <p>c. Check microphone cable (3) for broken connectors, bare wires, or cut wires.</p>	<p>Microphone is missing, cracked or broken.</p> <p>Pin protector is missing.</p> <p>Connectors are broken, wires are bare, or wires are cut.</p>
19	After	HOSE	<p>a. Check hose (1) for tears, cuts, or holes and that it is not sticky or soft.</p> <p>b. Check that swivel assembly (2) is not loose in hose, cracked, or broken; and that threads are clean and serviceable.</p> <p>c. Check gasket (3) for tears, cuts, or holes.</p> <p>d. Turn swivel assembly to make certain it rotates with some resistance.</p>	<p>Hose has tears, cuts, holes or it has sticky or soft spots.</p> <p>Swivel assembly is loose in hose, cracked, or broken; or has threads that are unserviceable.</p> <p>Gasket is damaged or missing.</p> <p>Swivel assembly rotates freely or will not rotate.</p>

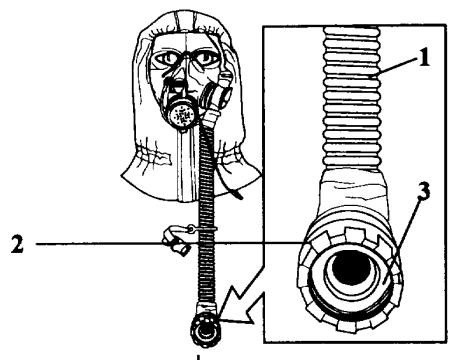
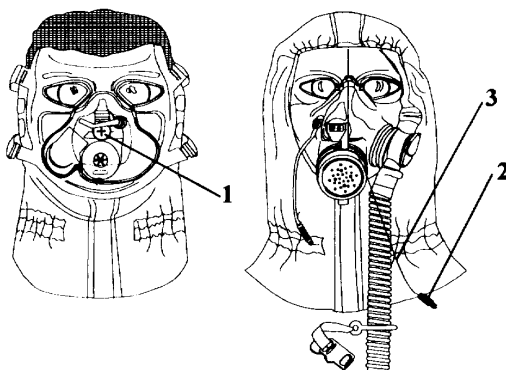


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

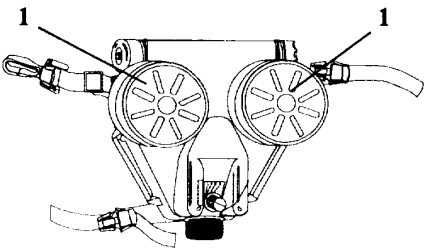
ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
20	After	CANISTERS	<p style="text-align: center;"><b><u>WARNING</u></b></p> <p><b>HEALTH/ENVIRONMENTAL HAZARD</b></p> <p>Filter canisters use ASC Whetlerite Carbon which contains Chromium VI. Chromium VI is a known carcinogen if inhaled or swallowed. Damaged or unusable canisters are classified as hazardous waste:</p> <p><b>DO NOT</b> throw away damaged or unusable canisters as ordinary trash.</p> <p><b>DO</b> turn in damaged or unusable canisters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).</p> <p>Canisters are completely safe to handle and use if they are not damaged in such a way that carbon leaks from them. In unlikely event that carbon should leak, use protection such as a dust respirator to cover nose and mouth and put carbon in container such as self-sealing plastic bag; turn in to hazardous waste management office or DRMO.</p> <p><b>Disposal of hazardous waste is restricted by the Resource Conservation and Recovery Act as amended (42 U.S.C.A. sec 6901 et seq). Violation of these laws is subject to severe criminal penalties.</b></p> <p>a. Check canisters (1) for dented or deformed body, damaged threads, breaks, cracks, dirt in openings, moisture or water stains.</p> <p>b. Shake canisters and listen for loose particles.</p>	<p>Either canister is wet, crushed, split, cracked, clogged with dirt, or has water stains.</p> <p>Canisters have loose particles that rattle or fall out when shaken.</p> <p style="text-align: center;"><b>NOTE</b></p> <p><b>Refer to para 2-6 for canister replacement criteria.</b></p> <div style="text-align: center;">  </div>

Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
21	After	BLOWER ASSEMBLY	<ol style="list-style-type: none"> <li>a. Unscrew canister counter clockwise to remove.</li> <li>b. Inspect canister port threads (1) and gaskets (2).</li> <li>c. Inspect blower outlet port threads (3) for dirt and/or damage.</li> <li>d. Check harness straps (4) for cut or frayed webbing, missing or broken hardware.</li> <li>e. Check blower housing (5) for cracks, missing hardware and/or accessories.</li> <li>f. Check that knob (6) is present, secure and stops at each power position when knob is rotated.</li> </ol>	<p>Threads are damaged. Gaskets damaged or missing. Outlet port threads damaged.</p> <p>Harness straps are cut or frayed, or hardware is broken.</p> <p>Blower housing is cracked, has missing or accessories.</p> <p>Knob is missing, loose or does not stop at each power position.</p>

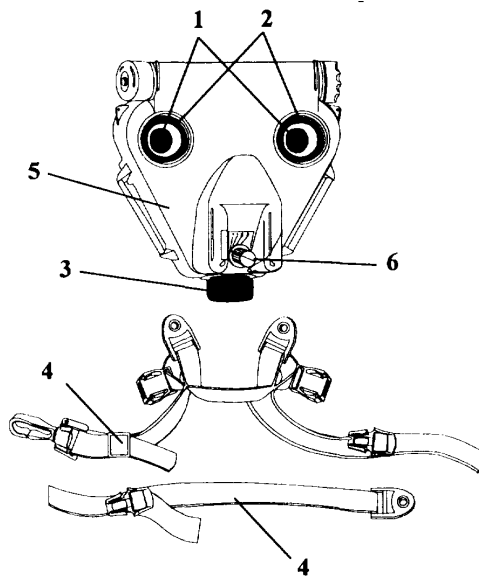
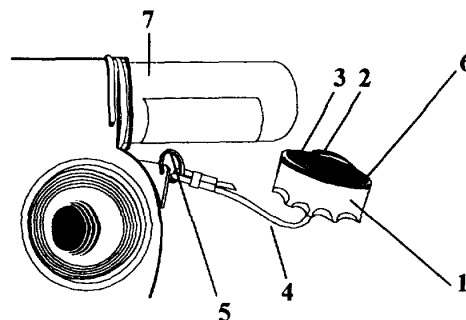
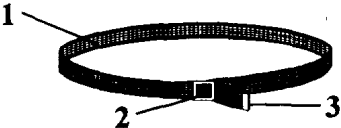
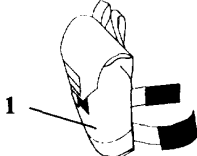
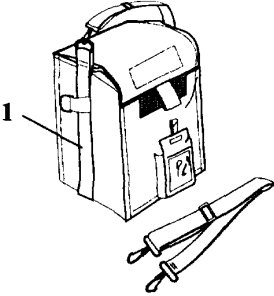


Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK (CONT)

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
22	After	BATTERIES AND BATTERY CAP	<p style="text-align: center;"><b>WARNING</b></p> <p>Lithium-sulfur dioxide (Li-SO<sub>2</sub>) batteries which are used in this equipment contain pressurized sulfur dioxide (SO<sub>2</sub>) gas. The gas is toxic, and the battery <b>MUST NOT</b> be abused in any way which may cause the battery to rupture. Do not touch battery if you smell vinegar or rotten eggs. Contact Unit Maintenance for battery removal and replacement.</p> <p>a. Unscrew battery cap (1). Ensure spring (2) is attached to battery cap and threads (3) are not damaged.</p> <p>b. Check lanyard (4) and split ring (5) are attached and lanyard is not cut or frayed.</p> <p>c. Check that gasket material (6) is not cut or torn.</p> <p>d. Remove battery (7) and install spare battery from carrier into blower assembly. Refer to para 3-4 for installation instructions. Exchange used battery for a new battery from Unit Maintenance.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p>Do not leave battery in blower if it is to be stored 30 days or more.</p>	<p>Battery cap is missing or cracked; spring is missing or detached or threads are damaged.</p> <p>Lanyard is missing, cut, frayed, or split ring is missing.</p> <p>Gasket material is damaged.</p> <p>Blower does not operate.</p>



**Table 2-1. PREVENTIVE MAINTENANCE CHECKS AND SERVICES FOR M49 MASK**

ITEM NO.	INTERVAL	ITEM TO CHECK/SERVICE	PROCEDURE	NOT FULLY MISSION CAPABLE IF:
23	After	WEB BELT	Check web belt (1) for cut or frayed webbing, missing buckle (2) or bent belt tip (3).	<p>Web belt is cut frayed, buckle is missing or belt tip is bent.</p> 
24	After	FACEPIECE CARRIER	<p>a. Empty facepiece carrier (1) and check for dirt, sharp edges, torn straps, or missing hardware.</p> <p>b. Make sure no unauthorized material is inside or on carrier.</p>	<p>Straps are torn or hardware is missing. There are sharp edges inside carrier that could damage mask.</p> <p>Unauthorized equipment is carried inside or attached to outside of</p> 
25	After	MASK CARRIER	<p>a. Empty mask carrier (1) and check for dirt, sharp edges, torn straps, or missing hardware. See para 3-5 for cleaning instructions.</p> <p>b. Make sure all authorized equipment is present, and no unauthorized material is inside carrier.</p> <p style="text-align: center;"><b>NOTE</b> Stow mask and Additional Authorized List (AAL) items in mask carrier as described in para 2-8h.</p> 	<p>Straps are torn or hardware is missing. There are sharp edges inside mask carrier that could damage mask.</p> <p>Authorized equipment per para 2-8h is missing or unauthorized equipment is carried inside carrier.</p>

**2-6. CANISTER REPLACEMENT CRITERIA.****WARNING**

**HEALTH/ENVIRONMENTAL HAZARD.** There are two Mask Filter Canisters, the C2 and the C2A1.

The C2 canister contains Chromium VI and damaged or unusable canisters are considered Hazardous Waste. (Chromium VI is a known carcinogen if inhaled or swallowed.)

The C2A1 canister is chromium-free but must continue to be disposed of in accordance with State and Local environmental Laws.

**DO NOT** throw away damaged or unusable canisters as ordinary trash.

**DO** turn in damaged or unusable canisters to you hazardous waste management office or Defense Reutilization and Marketing Office (DRMO).

See FM 3-4, NBC Protection, for proper canister replacement criteria.

**Section III. OPERATION UNDER USUAL CONDITIONS****2-7. GENERAL.**

This section contains operator's instructions on how to put on and use the mask and additionally authorized items under normal conditions. For operation under unusual conditions see Section IV.

**2-8. OPERATING PROCEDURES.****WARNING**

**Keep face clean shaven.** These conditions could degrade the protection afforded by the mask. **Do not wear hair styles that interfere with wearing of the mask.**

**CAUTION**

**Care must be taken not to scratch the clear plastic lenses when handling the facepiece assembly.**

**NOTE**

It is your responsibility to ensure that your facepiece assembly fits properly, optimizes your vision, and is as comfortable as possible. Unit ACIS and NBC personnel will conduct the initial fitting of your facepiece assembly. Ensure that the helmet, body armor, survival vest, facepiece assembly, and blower assembly have been adjusted to fit you before attempting to use the system in a field environment. If the helmet, body armor, vest are not adjusted properly, see the appropriate instruction manual. If the facepiece has not been adjusted (fitted) see the ACIS technician.

## 2-8. OPERATING PROCEDURES (CONT).

**NOTE**

Ensure that the hood assembly is free from all foreign material, including talcum powder, which may result in excessive helmet slippage. If helmet does slip on the mask while being worn, refer to the appropriate instruction manual to be sure your helmet has been properly fitted.

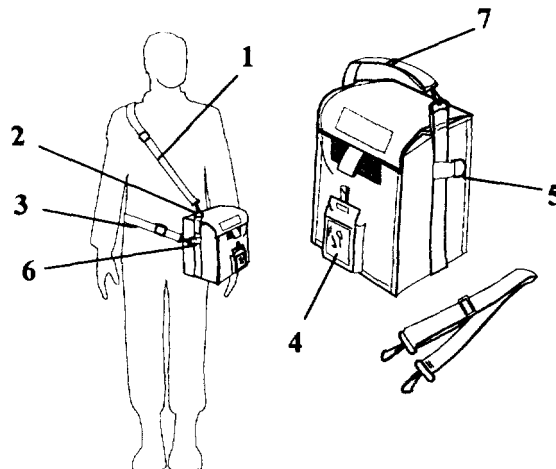
If you require vision correction, see your Flight Surgeon (refer to AR 40-63).

## a. Preparing for Transport Mode of Operation.

**NOTE**

The transport mode is used to carry all the mask components in the mask carrier. The mask is not operationally ready for use in a CB environment.

- (1) Shoulder carry method.
  - (a) Pass shoulder strap (1) across back, over shoulder and across chest.
  - (b) Attach snap hook to shoulder strap D-ring (2) and adjust to fit.
  - (c) Remove waist strap (3) from waist strap pocket (4) on front of mask carrier and attach to back waist strap D-ring (5) on mask carrier.
  - (d) Pass waist strap around back, side, and abdomen.
  - (e) Attach waist strap to front D-ring (6) on mask carrier and adjust to fit.
- (2) Hand carry method.
  - (a) Detach, fold, and stow waist strap in waist strap pocket on front of mask carrier.
  - (b) Pass shoulder strap through shoulder strap D-ring.
  - (c) Fold shoulder strap back on itself and attach back to waist strap D-ring (5).
  - (d) Adjust shoulder strap buckle (7) as necessary to prevent dragging mask carrier on ground.



**b. Preparing for Mission Carry Mode of Operation.**

**NOTE**

The mission carry mode is the most comfortable method of transporting the mask in its ready-to-be used status.

- (1) Remove web belt (1) from your mask carrier.
- (2) Feed web belt through web loops (2) in back of facepiece carrier (3).
- (3) Remove blower (4) from mask carrier and feed web belt through loops on back of blower.
- (4) Place belt around waist and fasten.
- (5) Pass facepiece carrier leg straps (5) around leg and attach hook and pile tabs (6) so leg straps are snug.
- (6) Remove facepiece assembly (7) from facepiece carrier.
- (7) Remove faceform (8) from facepiece assembly. Store faceform in mask carrier for future use.
- (8) Replace facepiece assembly in facepiece carrier.

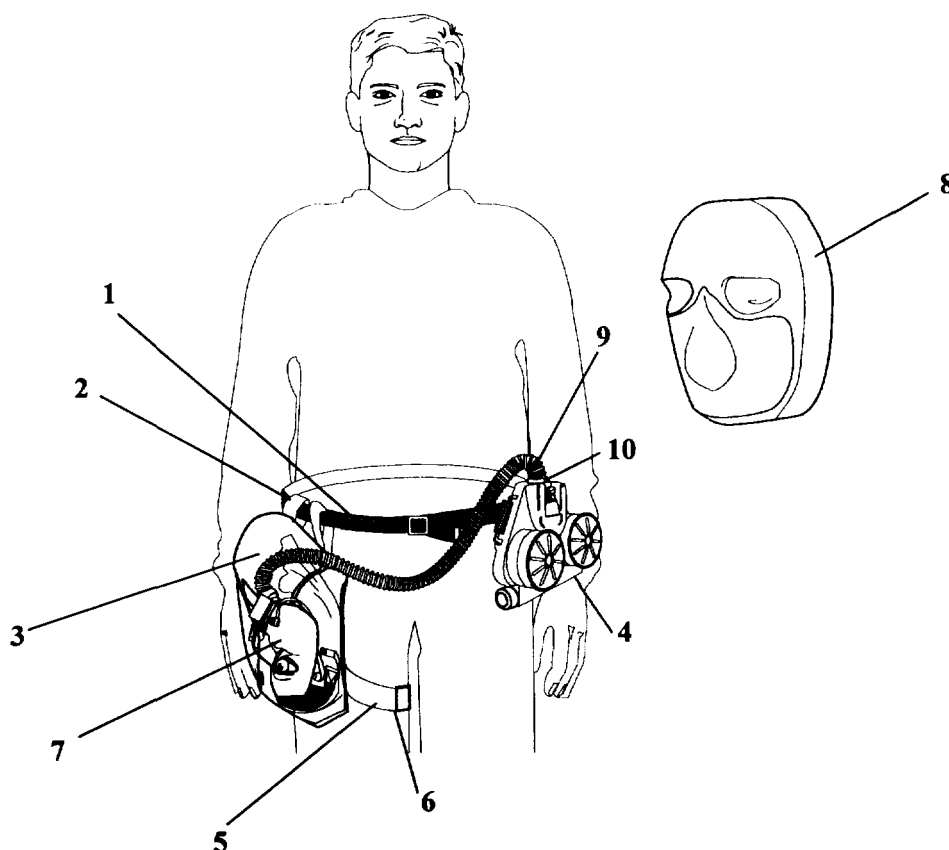
**NOTE**

**If required, remove frontserts from carrier and install on facepiece. (para. 3.5)**

- (9) Attach swivel (9) to blower outlet port (10) by turning clockwise until hand tight.

**NOTE**

**You are now in the mission carry mode.**





**2-8. OPERATING PROCEDURES (CONT).****c. Mission Wear Mode of Operations.****NOTE**

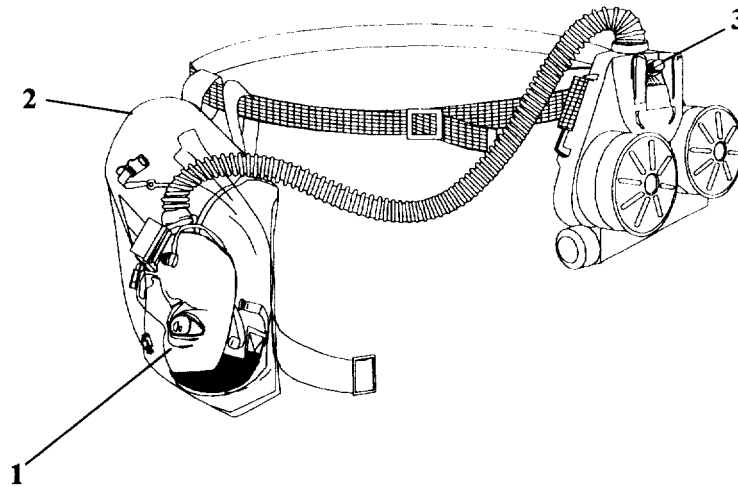
The mission wear mode is the method for wearing the mask away from the aircraft. To attain this mode within the times established, you must have already assumed the mission carry mode.

- (1) Deliberate donning.
  - (a) Remove eyeglasses and headgear, if worn.

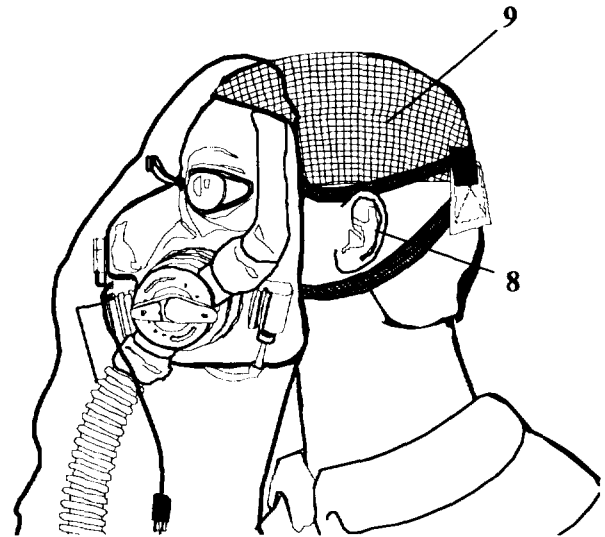
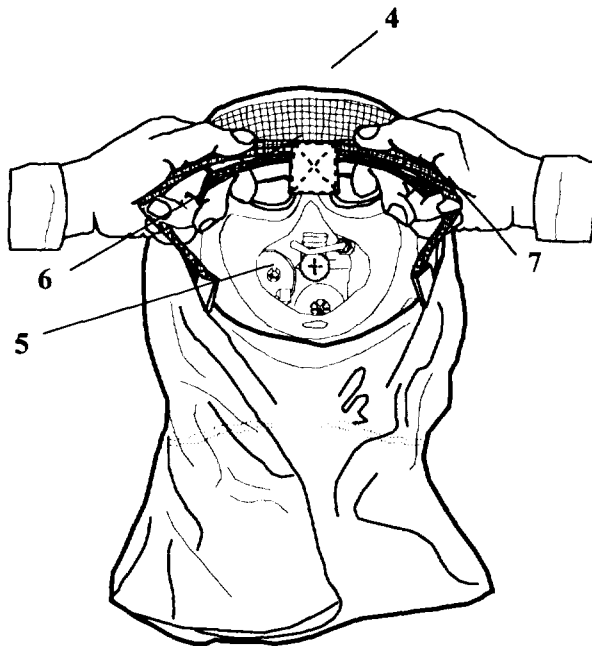
**WARNING**

For temperatures below 32° F (0° C) adjust cooling duct and blower controls to minimize airflow. Subfreezing air may cause ice to form on face or inside hood assembly.

- (b) Remove facepiece assembly (1) from facepiece carrier (2).
- (c) Turn knob (3) on the blower assembly clockwise to turn on blower.



- (d) Hold suspension harness (4) with both hands.
- (e) Slip chin into chin cup (5) and pull suspension harness over head, centering donning tab (6) on back of the head.
- (f) Hold donning tab with the left hand, while adjusting right chin strap (7) with right hand.
- (g) Hold donning tab with right hand, and adjust left chin strap (8) with left hand.
- (h) Make sure straps are not twisted.
- (i) Hold donning tab on back of head with left hand while adjusting the temple strap (9) with right hand.
- (j) Carefully pull the back of hood assembly over the head so hood covers the head, neck, and shoulders.
- (k) Tuck inner skirt inside the collar of the NBC protective suit. This can be done using the buddy system.



## 2-8. OPERATING PROCEDURES (CONT).

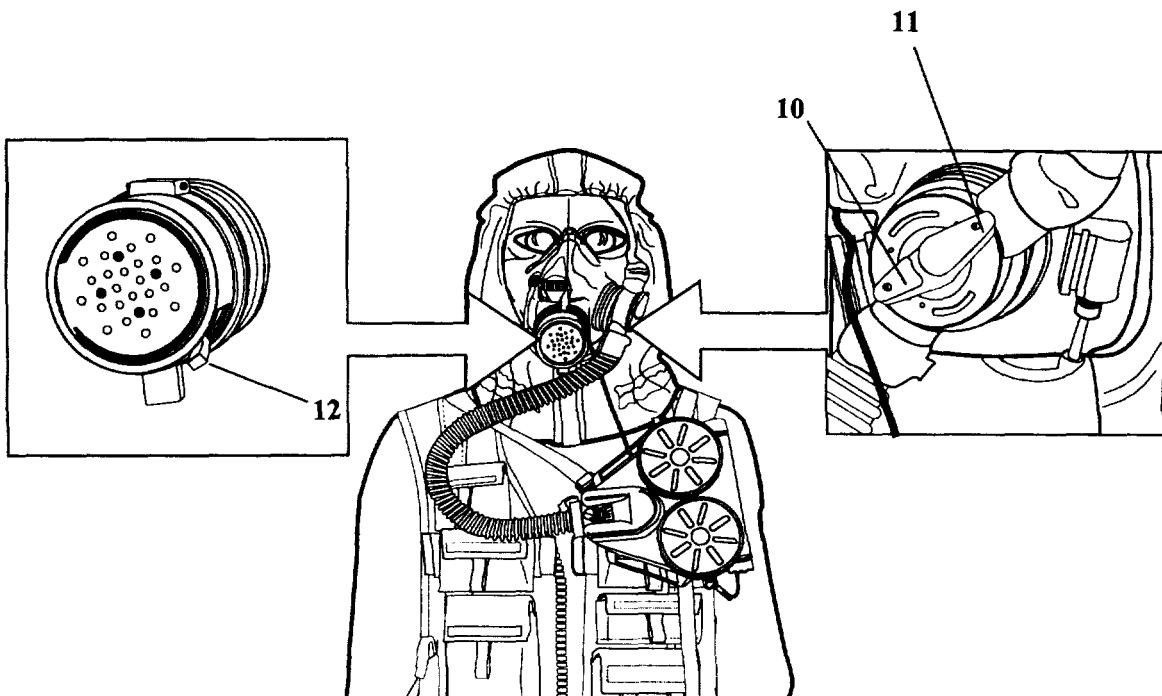
**WARNING**

If battery compartment becomes too hot to touch, **IMMEDIATELY** turn off the equipment. Allow the battery to cool (i.e., at least 60 minutes) before removing it.

**NOTE**

**Blower assembly airflow will decrease as operating altitude increases.**

- (l) Adjust blower airflow for comfortable operation.
- (m) Adjust lens defogging control (10) to defog the lenses without interfering with normal vision (rotate control up for minimum airflow).
- (n) Adjust cooling duct control (11) to ventilate your head without chilling (rotate control down to minimize airflow).
- (o) Adjust the outlet valve flow control (12) to provide a positive pressure without interfering with normal respiration (rotate control to your right for minimum airflow).
- (p) Put on headgear.



- (2) Hasty donning. This method is used in an environment where minimum advance notice of a CB attack and no preparation time is available.

**WARNING**

**Steps a through i should be done while holding your breath.**

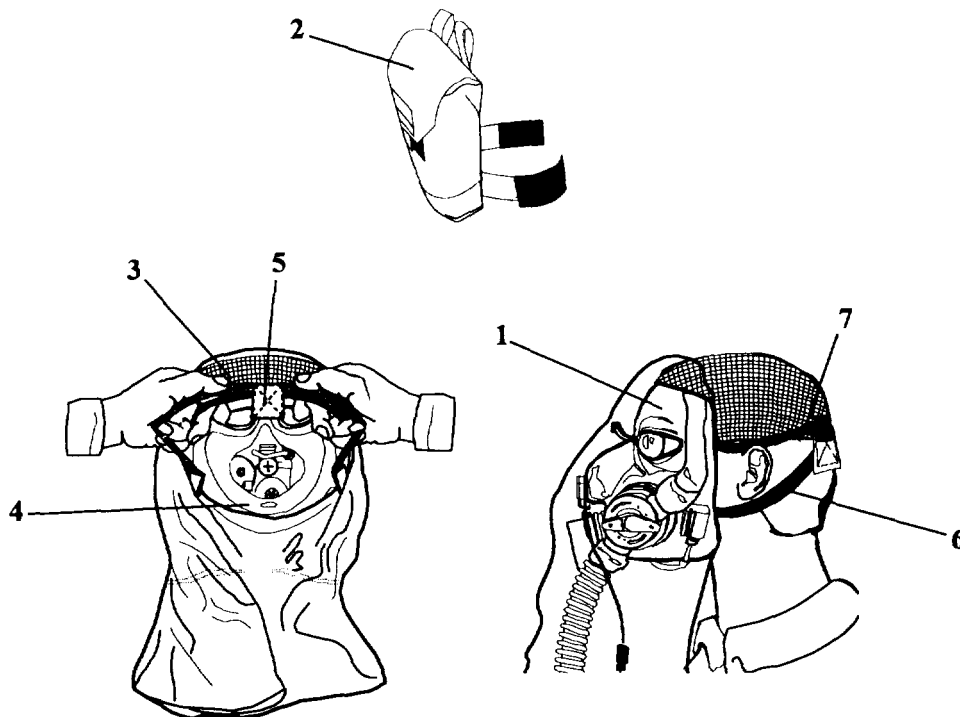
**NOTE**

**Remove eyeglasses if worn.**

- (a) Remove headgear, if worn.
- (b) Remove facepiece assembly (1) from facepiece carrier (2).
- (c) Turn blower assembly on to purge the system of foreign particles that may have accumulated.
- (d) Hold suspension harness (3) with both hands.
- (e) Slip chin into chin cup (4) and pull suspension harness over head, centering donning tab (5) on back of the head.
- (f) Adjust left and right chin straps (6) to a comfortable position, keeping the donning tab centered on the back of the head.
- (g) Adjust the temple strap (7) for a comfortable fit.
- (h) Make sure straps are not twisted.
- (i) Carefully pull the back of the hood over the head so the hood covers the head, neck, and shoulders.

**WARNING**

**For temperatures below 32°F (0°C) adjust cooling duct control to minimum airflow after turning the blower assembly on. Subfreezing air may cause ice to form on face or inside hood.**

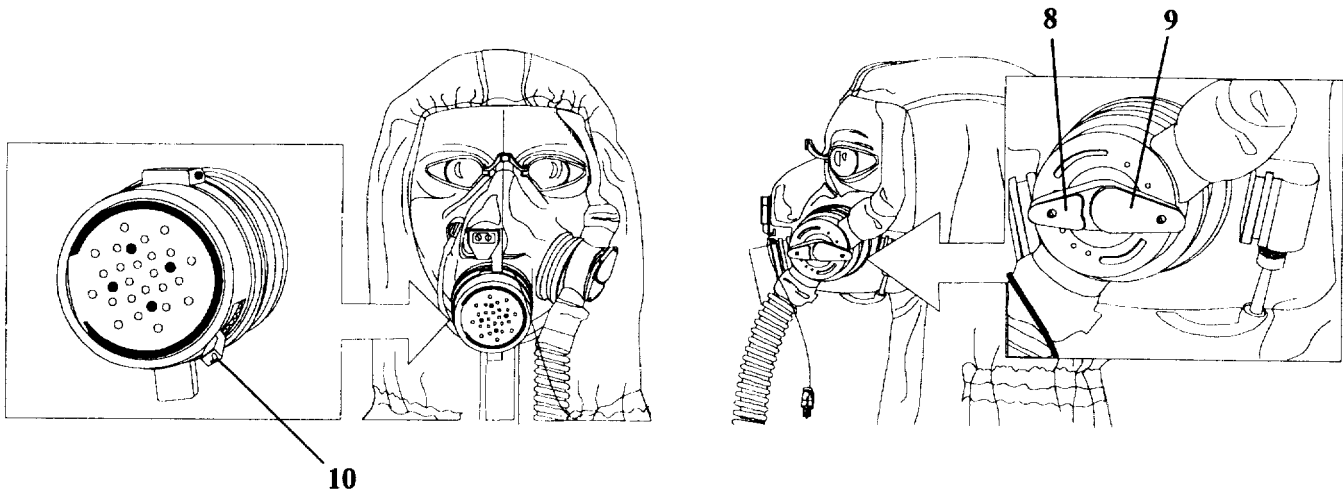


## 2-8. OPERATING PROCEDURES (CONT).

## NOTE

Tucking the inner skirt of the hood into the collar of the overgarment is not required as part of the hasty don. When time permits, after immediate donning, proceed with the remaining procedures.

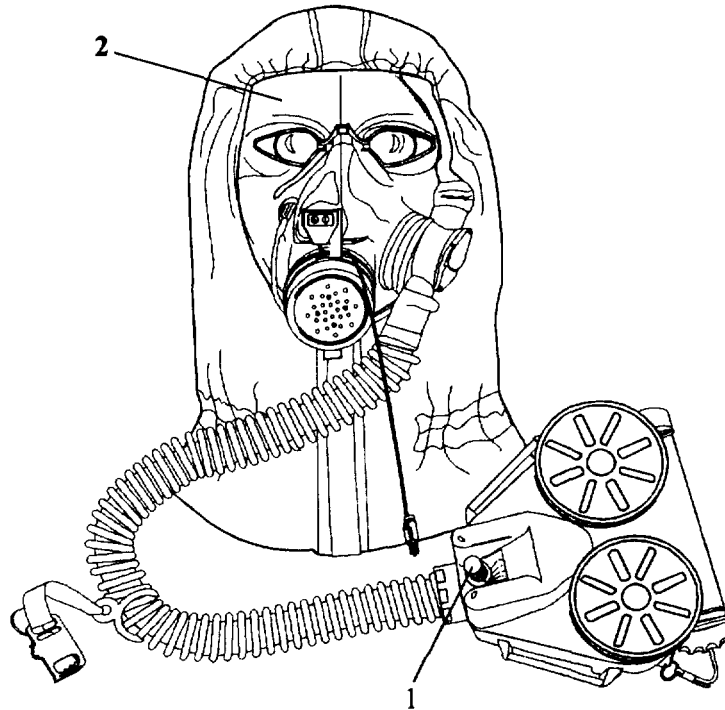
- (j) Tuck inner skirt inside collar of suit.
- (k) Adjust the lens defogging control (8), cooling duct control (9), and outlet valve control (10).
- (l) Put on headgear.



**d. Returning to Mission Carry Mode.****WARNING**

If mask has been exposed to contamination, decontaminate in accordance with Unit SOP.

- (1) Remove headgear.
- (2) Ensure that the blower assembly (1) is turned off.
- (3) Using both hands, gently lift hood of facepiece assembly (2) up over head; let hood hang from front of facepiece assembly.
- (4) Loosen the three suspension harness straps by rolling buckles forward.
- (5) Grip suspension harness and pull facepiece assembly up and off head.



**2-8. OPERATING PROCEDURES (CONT).**

- (6) Check that facepiece assembly is dry and free from oil and solvents before stowing. If facepiece assembly is dirty, clean as directed in para 3-6.

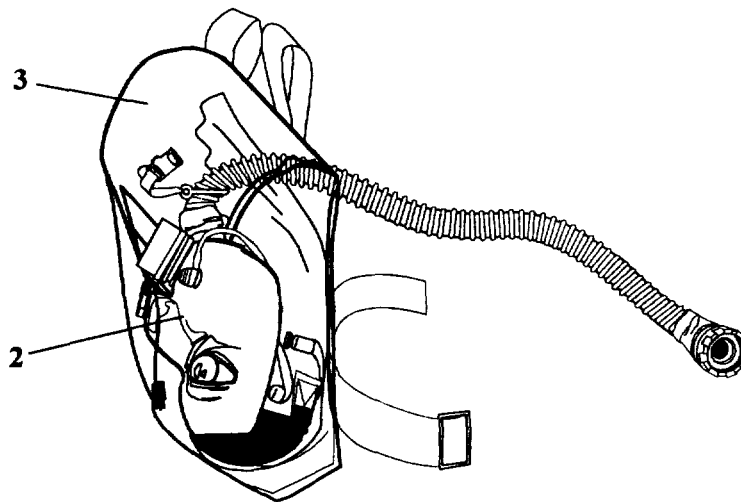
**CAUTION**

When stowing or removing facepiece assembly, be careful not to damage frontserts, if installed.

**NOTE**

Make sure internal drink tube is not wedged behind the microphone or the microphone adapter pin protector.

- (7) With hood assembly hanging in front of facepiece assembly, install facepiece assembly (2) in facepiece carrier (3) with open side of facepiece assembly toward the leg (back of facepiece carrier).
- (8) Tuck remainder of hood into facepiece carrier. Leave hose exposed from facepiece carrier.
- (9) Close flap on facepiece carrier.
- (10) Put on headgear.



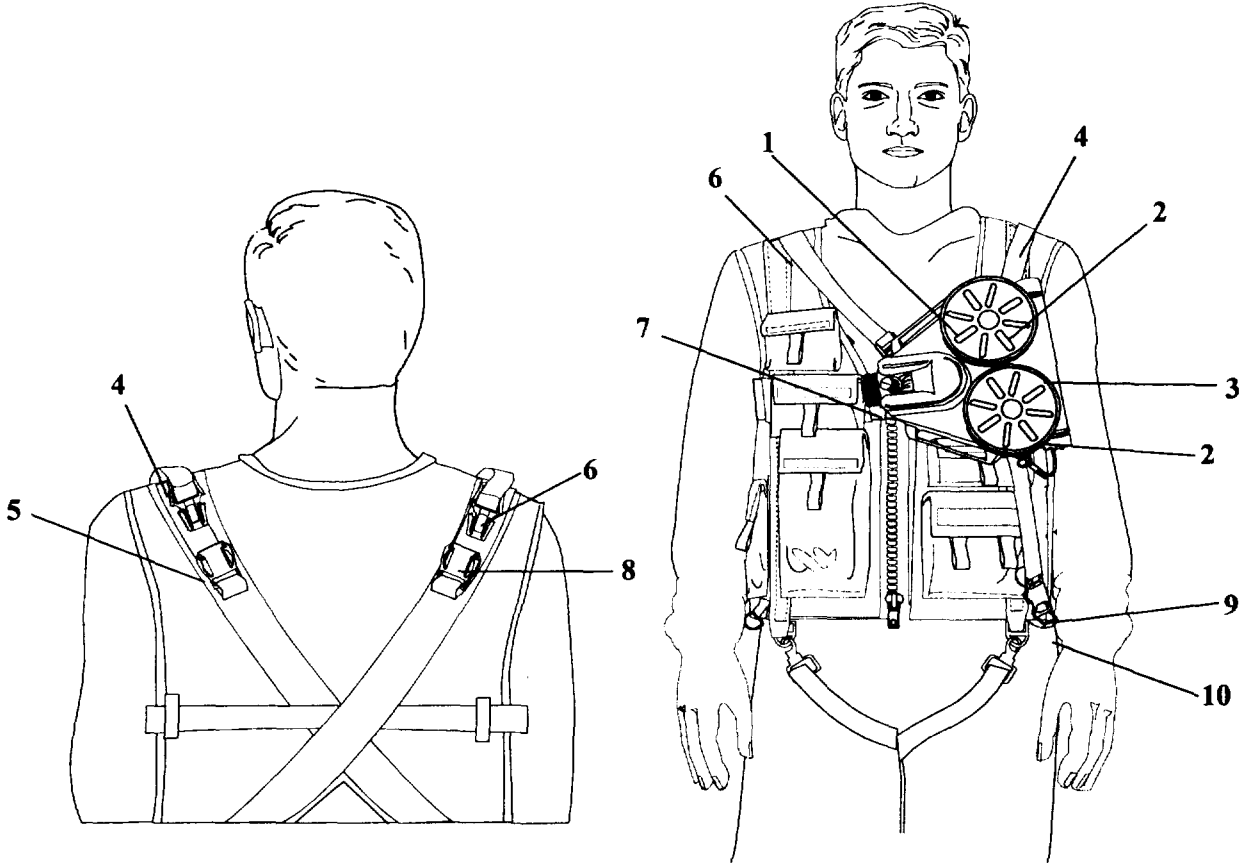
2-8. OPERATING PROCEDURES (CONT).

e. Flight Mission Mode

**NOTE**

**Do not take any carriers into aircraft.**

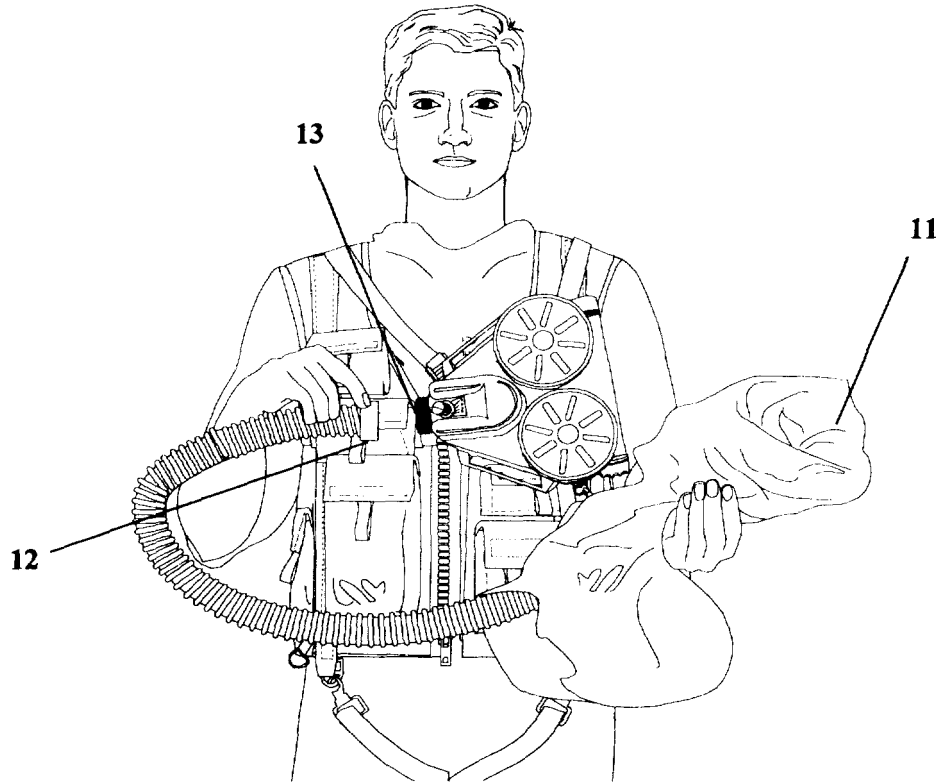
- (1) Don survival equipment.
- (2) Remove blower (1) from mask carrier.
- (3) If the blower does not run, install new battery before proceeding. If the blower assembly still does not run, see Unit Maintenance.
- (3) Place blower with canisters (2) facing down and battery compartment (3) on left.
- (4) Grasp buckle (4) nearest battery compartment and attach to clip (5) on left shoulder blade.
- (5) Grasp buckle (6) nearest to blower outlet (7) and attach to right shoulder clip (8).
- (6) Attach spring clip (9) on remaining strap to D ring (10) under left rear pocket on survival vest.



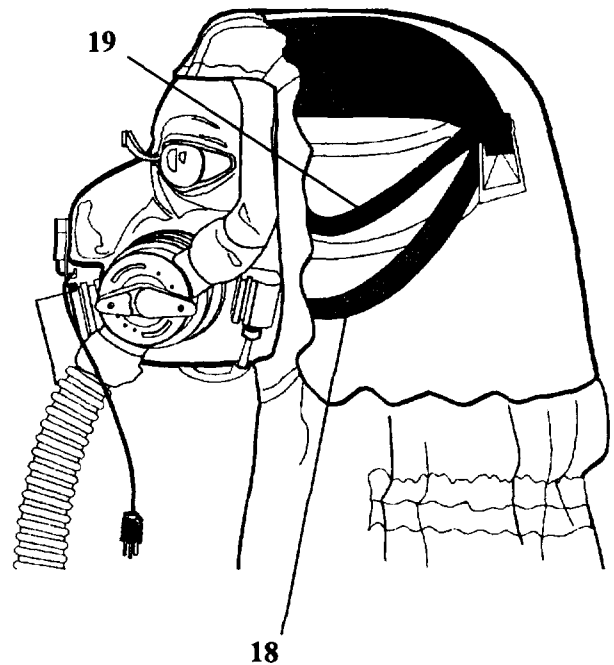
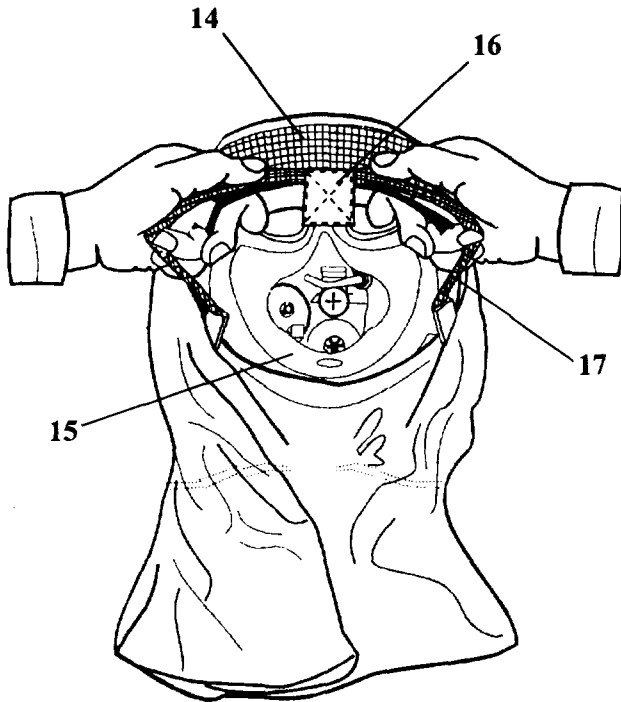


**2-8. OPERATING PROCEDURES (CONT).**

- (7) Remove facepiece assembly (11) from facepiece carrier.
- (8) Grasp facepiece in left hand and attach swivel (12) to blower outlet (13).
- (9) Remove eyeglasses if worn.
- (10) Turn blower on.

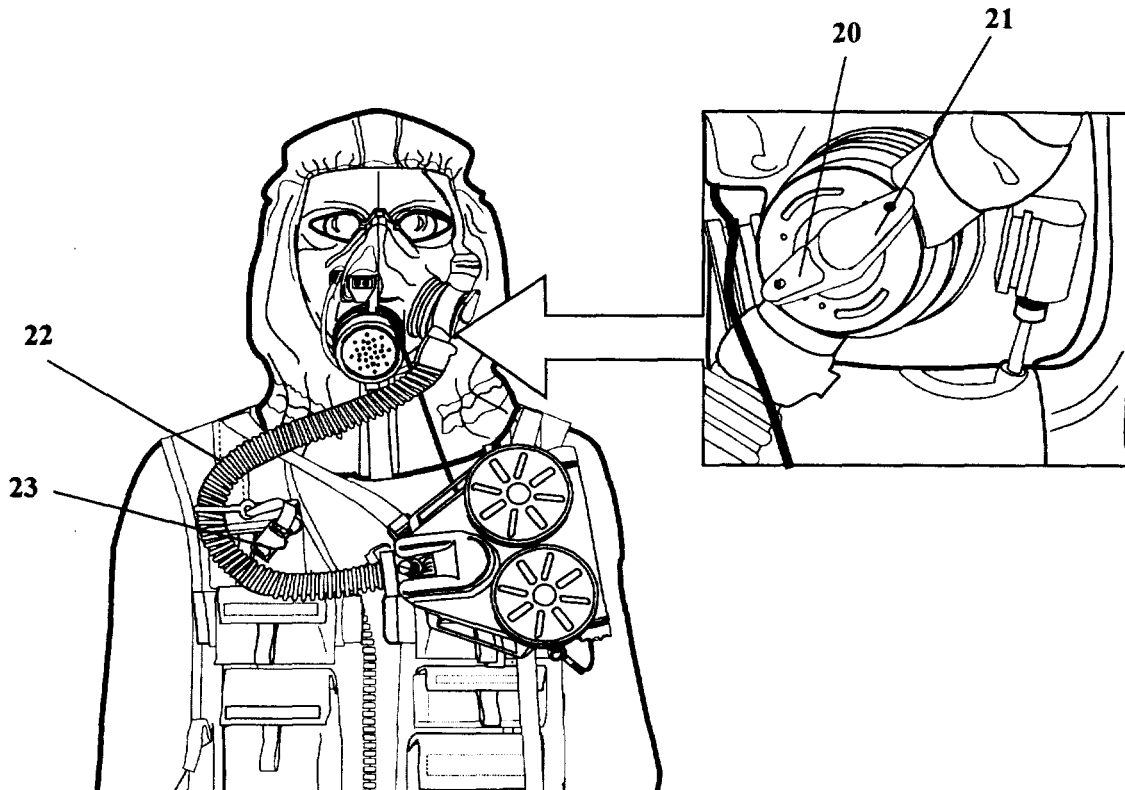


- (11) Hold suspension harness (14) with both hands.
- (12) Slip chin into chin cup (15) and pull suspension harness over head, centering donning tab (16) on back of the head.
- (13) Hold donning tab with the left hand, while adjusting right chin strap (17) with right hand.
- (14) Hold donning tab with right hand, and adjust left chin strap (18) with left hand.
- (15) Make sure straps are not twisted.
- (16) Hold donning tab on back of head with left hand while adjusting the temple strap (19) with right hand.
- (17) Carefully pull the back of hood assembly over the head so hood covers the head, neck, and shoulders.
- (18) Tuck inner skirt inside the collar of the NBC protective suit. This can be done using the buddy system.



**2-8. OPERATING PROCEDURES (CONT).**

- (19) Adjust blower airflow for comfortable operation.
- (21) Adjust lens defogging control (20) to defog the lenses without interfering with normal vision (rotate control up for minimum airflow).
- (22) Adjust the outlet valve flow control (21) to provide a positive pressure without interfering with normal respiration (rotate control to your right for minimum airflow).
- (23) Rotate hose (22) to lay flat against chest. Slide spring clamp (23) approximately 2/3 of the way down the hose. Attach to survival vest to allow full left and right head movement.
- (25) Put on helmet.
- (26) Remove microphone cable cover and place in mask carrier. Attach microphone cable to helmet.



### f. Checking Drinking System for Leaks.

- (1) Withdraw the quick-disconnect coupling half(1) from retainer (2) on facepiece assembly, and let it hang freely.
- (2) Move paddle (3) on drink tube pass-through to position internal drink tube, if required.

#### **CAUTION**

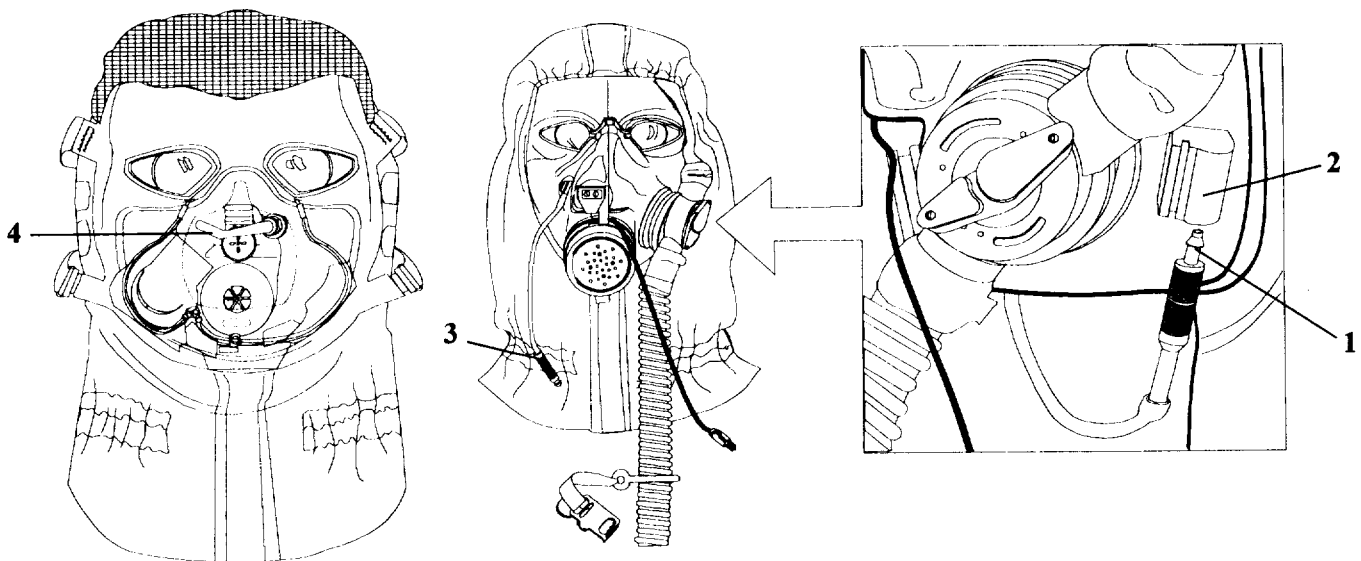
**To prevent damage, do not bite down hard on internal drink tube with your teeth.**

- (3) Take internal drink tube (4) into mouth.

#### **WARNING**

**If resistance is not felt when checking drinking system, your drinking system leaks. Do not drink; see Unit Maintenance.**

- (4) Hold internal drink tube in your mouth and blow into drink tube. You should feel positive pressure (resistance). If not, drinking system is leaking. See Unit Maintenance.
- (5) Release internal drink tube.
- (6) Return quick-disconnect coupling half to retainer on facepiece assembly.



**2-8. OPERATING PROCEDURES (CONT).****g. Using Drinking System.****WARNING**

Use M8 detector paper to check for contamination before using the drinking system. If contamination is detected, decontaminate using decontaminating kit. Do not connect the quick disconnect coupling half to your canteen until all mating surfaces have been checked. Chemical agents could enter your mouth, resulting in sickness or death.

**NOTE**

To use the drinking system, your canteen must be equipped with an M1 canteen cap (Item 2, App D).

- (1) Withdraw quick-disconnect coupling half (1) from retainer (2) on facepiece assembly.
- (2) Remove canteen (3) from its cover, flip open protective cover (4) on M1 canteen cap (5), and hold canteen near your facepiece assembly.

**NOTE**

If pin in M1 canteen cap is off center, insert quick-disconnect coupling half at angle to pick up pin.

- (3) Push and turn quick disconnect coupling half in past lip to connect it to canteen cap. Check that connection is tight.

**WARNING**

If resistance is not felt when blowing into the drink tube, do not drink. Your drinking system leaks. Notify Unit Maintenance as soon as possible.

**CAUTION**

To prevent damage to internal drink tube, do not bite down hard.

**NOTE**

You may have to move the paddle on the drink tube pass-through to move the internal drink tube to the mouth.

- (4) Take internal drink tube into your mouth and blow. You should feel some resistance.

**NOTE**

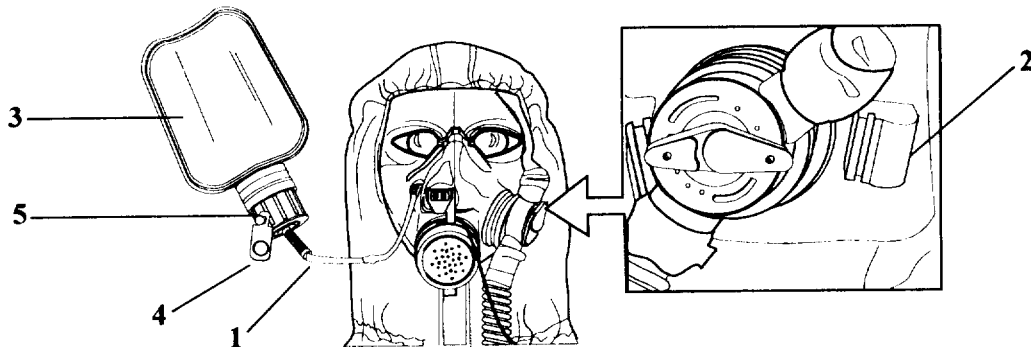
Do not take mouth off internal drink tube while drinking or water may leak into facepiece assembly.

- (5) If drinking system does not leak, raise and invert canteen, keeping internal drink tube in mouth, and drink water from canteen.

**CAUTION**

**When removing quick-disconnect coupling half from canteen, do not pull on drink tube. You may break seal between drink tube and quick-disconnect coupling half.**

- (7) Blow into internal drink tube while pulling quick-disconnect coupling half from M 1 canteen cap; close protective cover in canteen.
- (8) Release internal drink tube from mouth.
- (9) Stow canteen.
- (10) Return quick-disconnect coupling half (1) to retainer (2) on facepiece assembly.



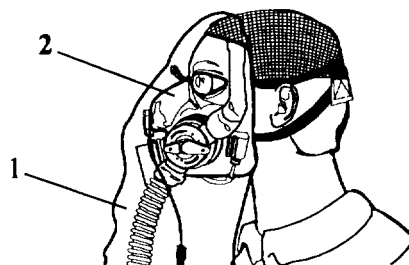
**h. Removing and Stowing Your Mask.**

- (1) Turn blower assembly off.
- (2) Using both hands, gently lift hood (1) up over head; let hood hang from front of facepiece assembly (2).
- (3) Loosen three head harness straps by rolling buckles forward.

**WARNING**

**Any occurrences of redness, puffiness, or itchiness that persist for an extended period of time after removing the facepiece assembly should be referred to the flight surgeon for evaluation.**

- (4) Grip head harness and pull facepiece assembly up and off head.
- (5) Perform all After PMCS (para 2-5).

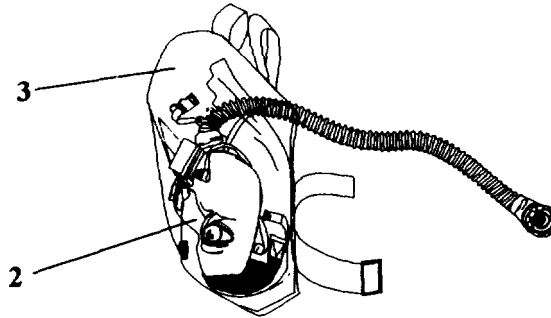


## 2-8. OPERATING PROCEDURES (CONT).

**CAUTION**

If mask is to be stored for more than 30 days, install faceform in facepiece assembly and remove fronserts.

- (6) With hood hanging in front of facepiece assembly (2), install facepiece assembly in facepiece carrier (3) with open side of facepiece assembly toward the leg (back of facepiece carrier).
- (7) Tuck remainder of hood into facepiece carrier. Leave hose exposed from facepiece carrier.
- (8) Close flap on facepiece carrier.



**HOOD NOT SHOWN FOR CLARITY**

- (9) Open top flap on mask carrier (4).

**CAUTION**

When mask is to be turned in to NBC technician for storage, remove batteries from blower assembly, and carrier pocket for separate storage. Do not store other items in carrier on top of facepiece assembly or use carrier for other purposes. Keep interior of carrier free of dirt and trash. Put only authorized items in carrier.

**NOTE**

The carrier is designed to carry your facepiece assembly, facepiece carrier, blower assembly, spare battery, nuclear hood, technical manual, and additional authorized items only. Do not use it for other purposes.





## Section IV. OPERATION UNDER UNUSUAL CONDITIONS

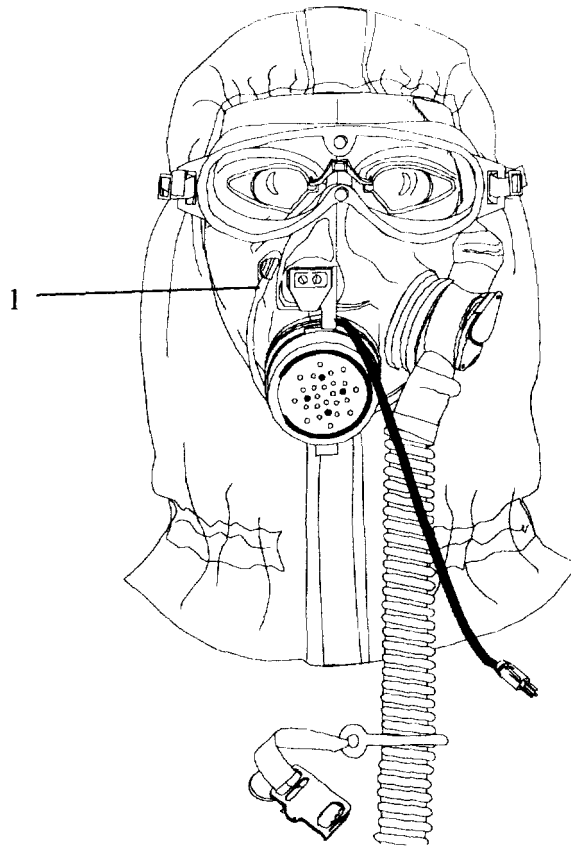
## 2-9. OPERATION UNDER UNUSUAL CONDITIONS.

## a. Donning Mask in Cold Weather.

**WARNING**

For temperature below 32°F (0°C), adjust cooling duct and blower controls to minimum airflow. Subfreezing air may cause ice to form inside facepiece assembly and under hood.

- (1) Don facepiece assembly and blower assembly as described in para 2-8c.
- (2) Adjust blower to lowest possible setting.
- (3) Don goggles (1) and adjust strap to fit.

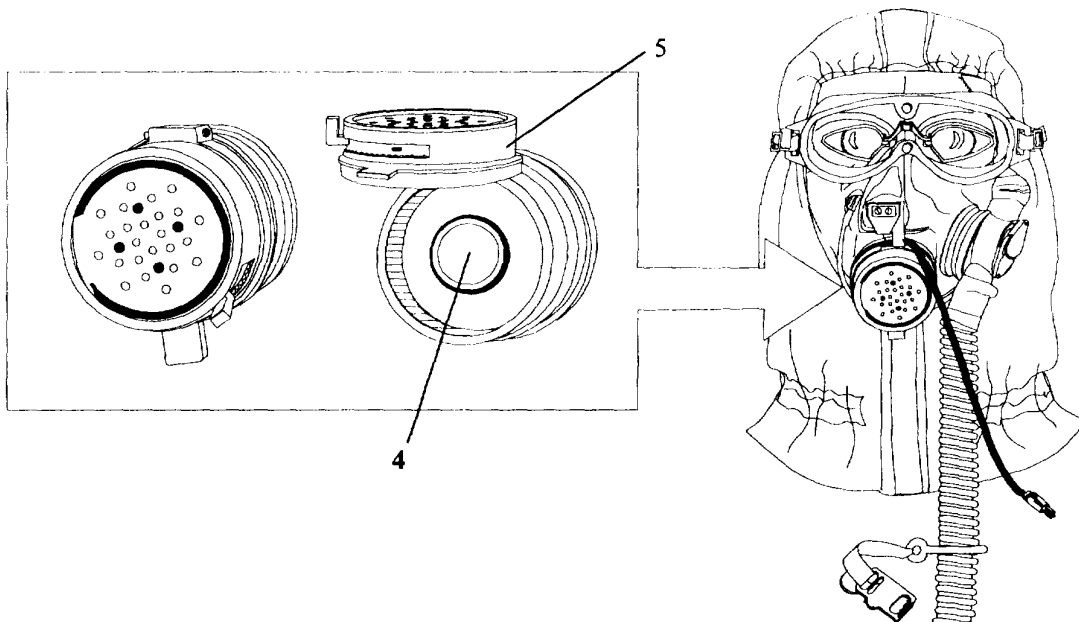
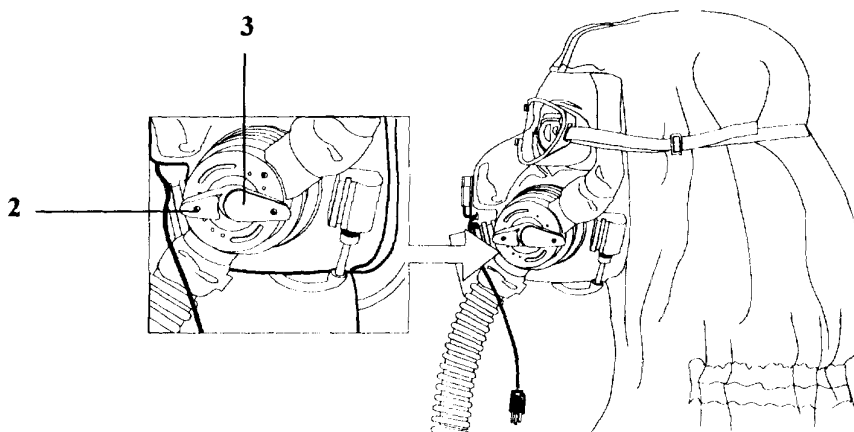


- (4) Adjust lens defogging control (2) to defog lenses without causing excessive eye discomfort. (Rotate control up for a minimum airflow.)

**WARNING**

If the cooling duct control allows excessive cold air to strike the head or face, frostbite may result.

- (5) Close cooling duct control (3). (Rotate control down.)
- (6) Loosen outlet valve disk (4) from outlet valve seat as follows:
- Lift bottom of outlet valve cover (5).
  - While exhaling, massage outlet valve disk with one finger.
  - Lower and snap outlet valve cover into place.



## 2-9. OPERATION UNDER UNUSUAL CONDITIONS (CONT).

### b. Removing Mask in Cold Weather.

#### **WARNING**

If you become overheated in extremely cold weather, do not remove facepiece assembly outdoors until face and head have cooled and sweat has dried. Frostbite may result if the facepiece assembly is removed while face is still wet.

#### **NOTE**

Follow the procedures for operations under usual conditions when removing and stowing your facepiece assembly (para 2-8h) but keep in mind the following steps for cold weather.

- (1) Remove mittens and gloves as necessary.
- (2) Unfasten outer garment at neck. Remove headgear and goggles.
- (3) Unmask and shake snow and ice accumulations from goggles, facepiece assembly, and blower assembly before stowing items in mask carrier.

### c. Care of Mask in Cold Weather.

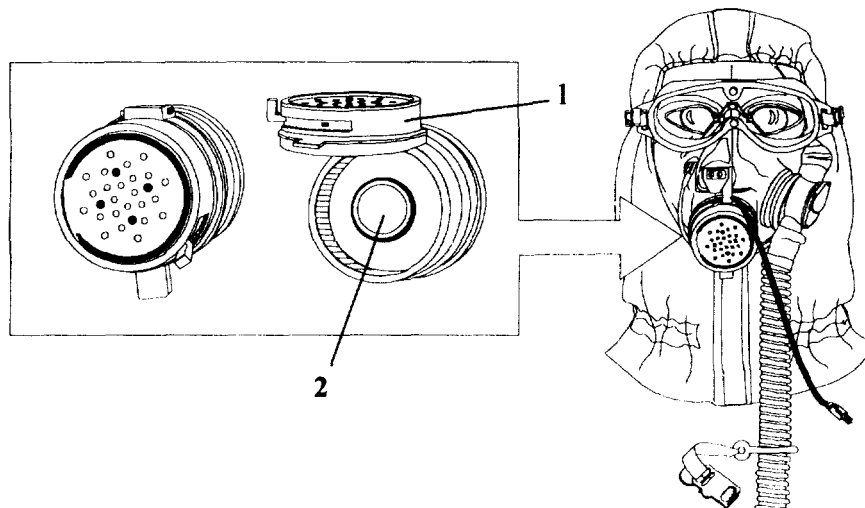
#### **WARNING**

Do not use paper to remove dirt or moisture from valve cover or valve disk. Paper may break up and lodge in outlet valve causing valve to leak.

#### **CAUTION**

When drying or warming facepiece assembly, do not hang it near a heater or open flame.

- (1) Before entering a warm area from subzero temperature, remove frost and snow from facepiece and blower assemblies.
- (2) In a warm indoor air, dry facepiece assembly with a cheesecloth (Item 3, App D); do not use paper. Lift outlet valve cover (1) and check that outlet valve disk (2) is dry.



**CHAPTER 3  
MAINTENANCE INSTRUCTIONS**

---

**Section I. LUBRICATION INSTRUCTIONS**

**3-1. LUBRICATION.**

No lubrication is required.

**Section II. TROUBLESHOOTING PROCEDURES**

**3-2. TROUBLESHOOTING.**

Refer to Table 3-1, Maintenance Action Precise Symptom (MAPS) List, to determine which troubleshooting chart to use for a particular fault.

**Table 3-1. Maintenance Action Precise Symptom (MAPS) List**

<b>TROUBLESHOOTING TABLE</b>	<b>SYMPTOM</b>	<b>PAGE NUMBER</b>
3-2	Insufficient/No Air to User While Using Blower Assembly	3-2
3-3	Poor/No Lens Defogging	3-3
3-4	Poor/No Hood Ventilation	3-3

Table 3-2. Troubleshooting Chart - Insufficient/No Air to User

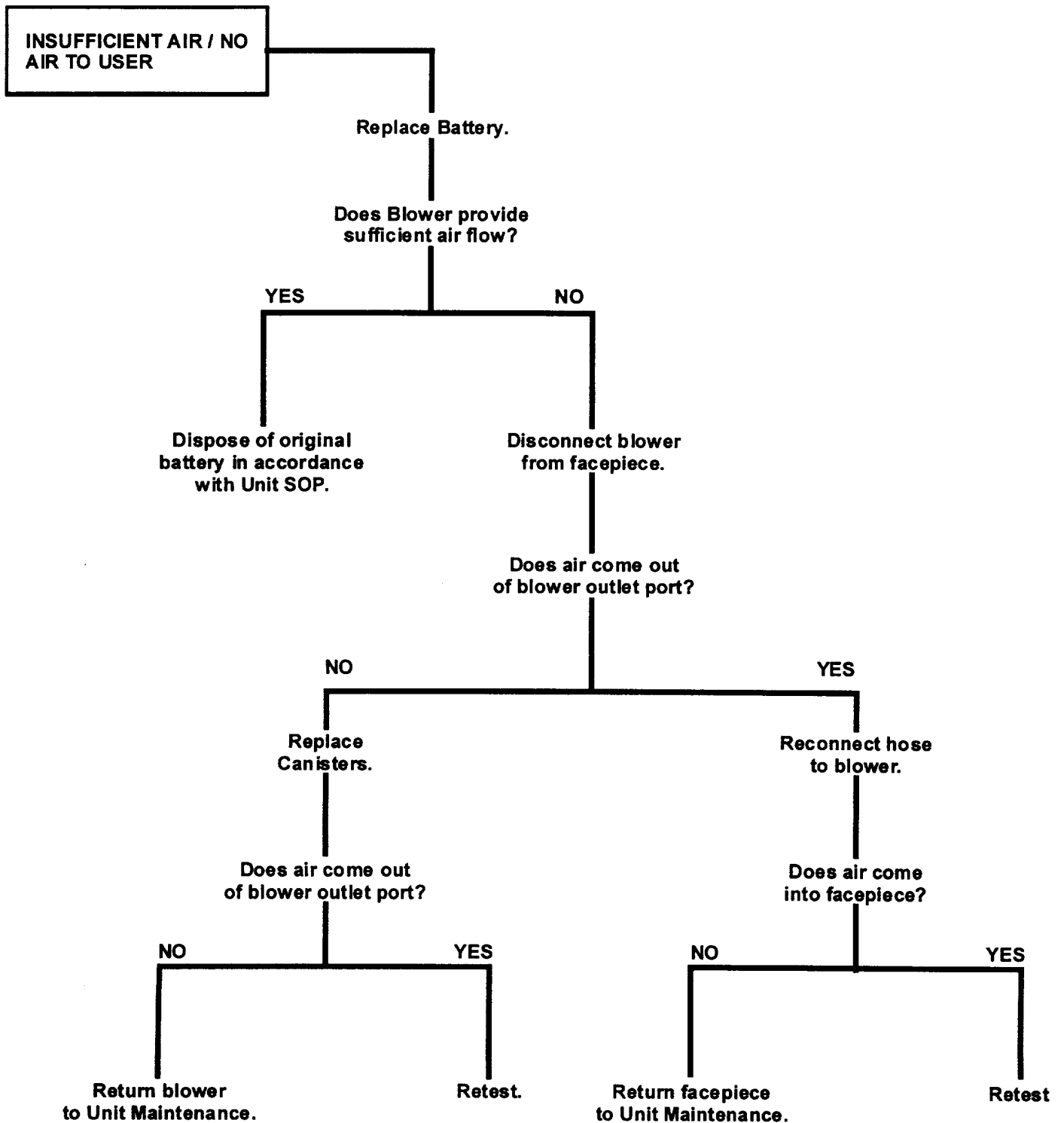


Table 3-3. Troubleshooting Chart - Poor / No Lens Defogging

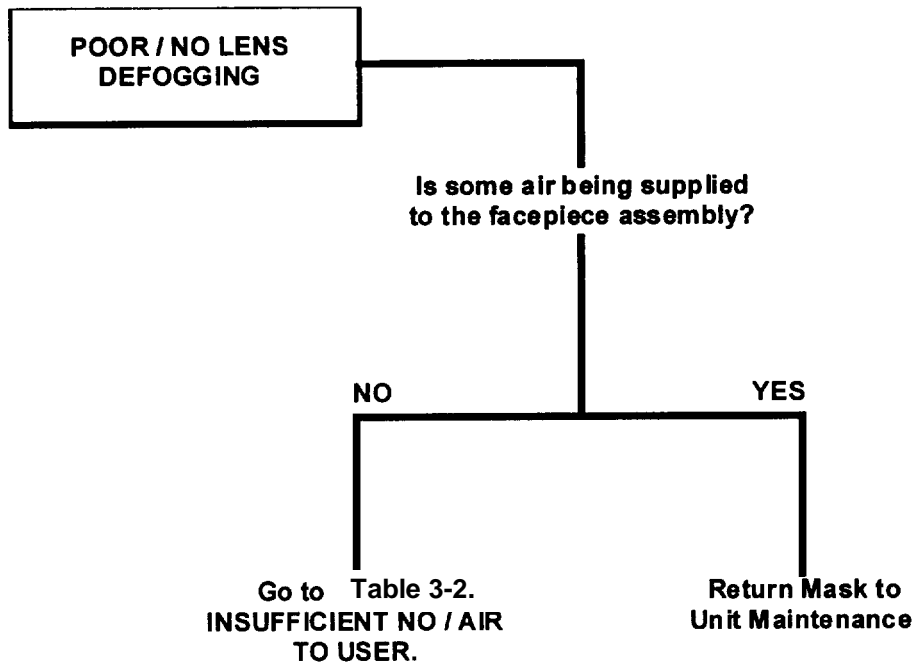
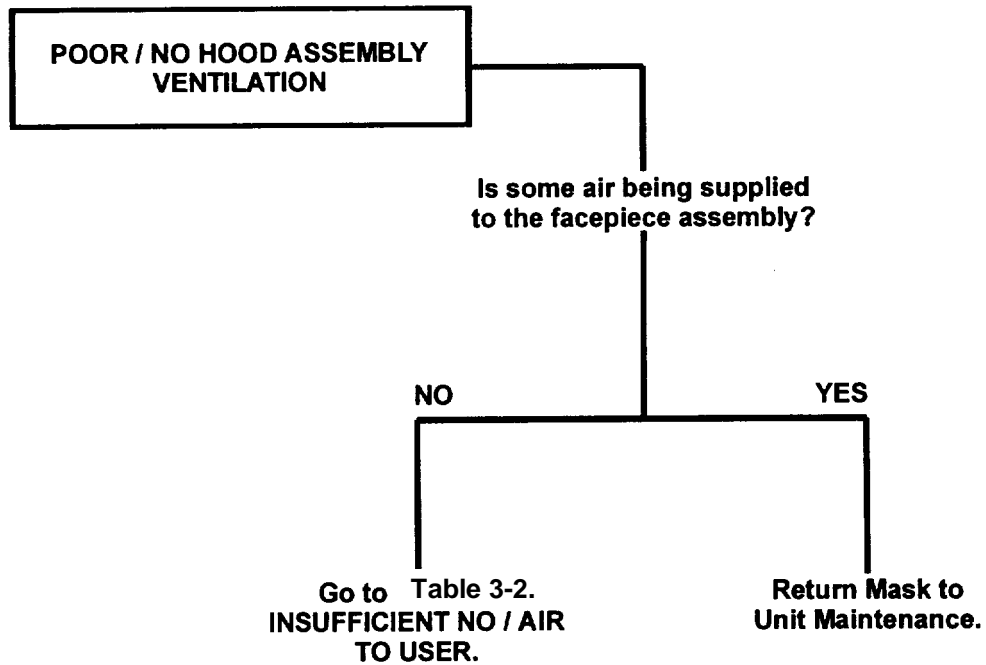


Table 3-4. Troubleshooting Chart - Poor / No Hood Assembly Ventilation



### Section III. MAINTENANCE PROCEDURES

#### 3-3. GENERAL.

Operator maintenance involves inspecting and servicing components of the M49 mask.

**a. Inspecting.** Inspect components of the M49 mask as described in PMCS (Table 2-1).

**b. Servicing.** Service the M49 mask by decontaminating (para 3-6), and by cleaning and sanitizing (para 3-6). Service the blower assembly by removing battery (para 3-4) and installing new battery (para 3-4). Service the frontserts by removing frontserts (para 3-5) and installing frontserts (para 3-5).

### 3-4. BLOWER ASSEMBLY SERVICE.

---

This task covers:

Removal and installation of Battery.

---

#### INITIAL SETUP

Equipment Conditions

Power Off

---

#### **WARNING**

A lithium/sulfur dioxide (Li-SO<sub>2</sub>) battery can explode, release toxic fumes, or release hazardous chemicals if it is punctured, heated to over 160°F (71.1°C), crushed, or the terminals are shorted together.

If battery smells like vinegar or rotten eggs or is leaking chemicals, do not touch battery. Contact Unit Maintenance for battery removal and replacement.

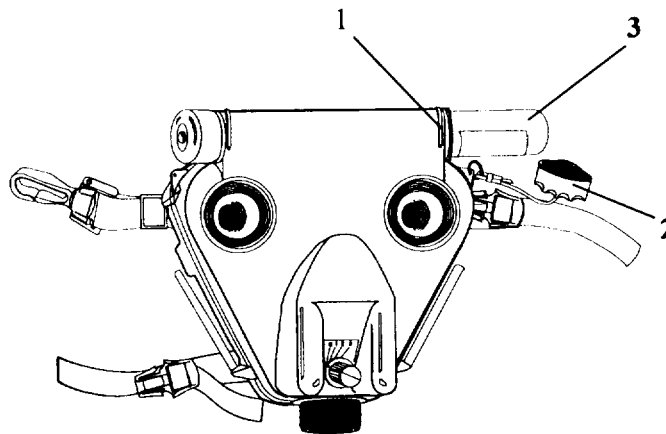
DO NOT use any battery that shows signs of damage, such as bulging, swelling, disfigurement, a swollen plastic wrap, liquid in the plastic wrap, etc.

#### REMOVAL

1. Position the blower assembly for easy access to the battery compartment (1).
2. Remove battery compartment lid (2) and remove battery (3).

#### INSTALLATION

1. Slide new battery into battery compartment with electrical contacts first.
2. Detach battery compartment lid.
3. Turn on blower assembly to verify operation.
4. Turn off blower assembly.





**3-5. FRONTSERTS SERVICING.**

This task covers:

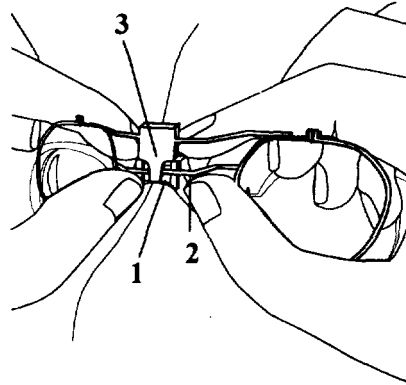
Removal and installation of Frontserts.

**INITIAL SETUP****Equipment Condition**

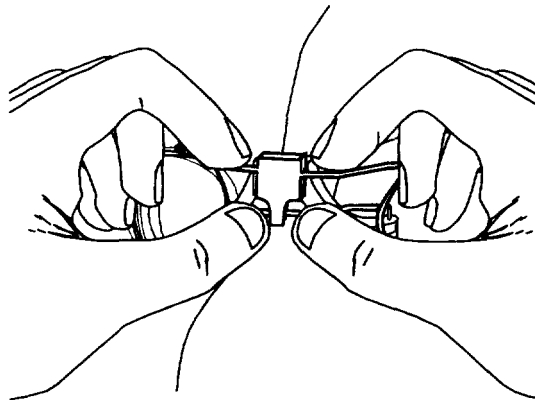
IPD staple installed

**REMOVAL**

- With index fingers pushing downward on top of IPD staple (1) push up on lower bar (2) of frontsert (3).

**INSTALLATION**

- Slide frontsert pin into dove tail of IPD staple until it is securely seated.



**3-6. MASK SERVICING.**

This task covers:

Cleaning of Mask.

Decontamination of Mask

**INITIAL SETUP****Materials/Parts**

Decontaminating Kit (App C)  
 Cheesecloth (Item 3, App D)  
 Isopropyl Alcohol (Item 4, App D)  
 Soapy Water (Item 7, App D)  
 Pail (Item 6, App D)  
 Brush (Item 1, App D)

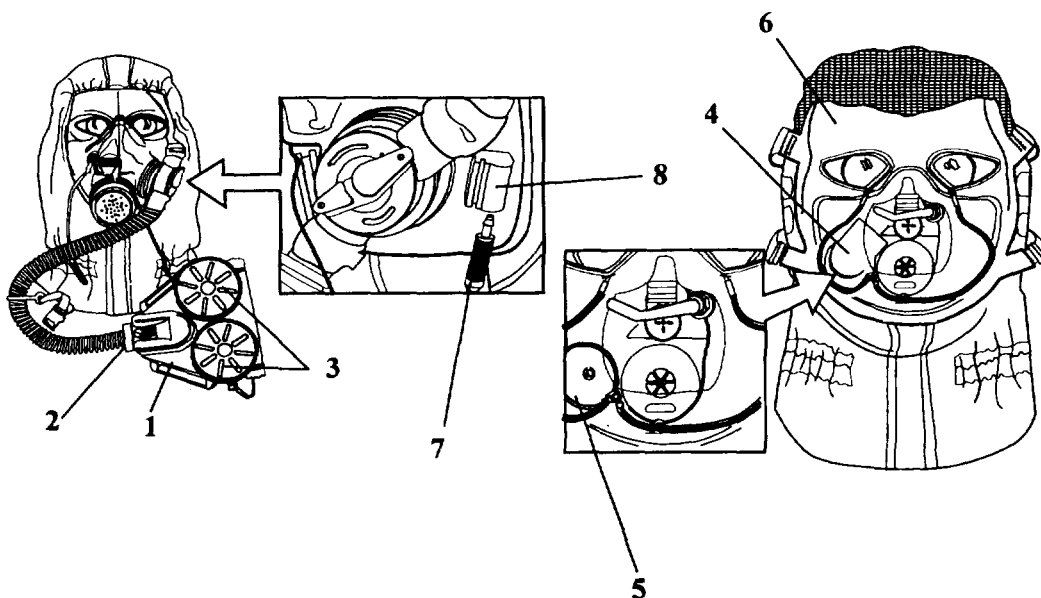
**CLEANING****CAUTION**

Do not allow canisters, inside of hose, or inside of blower to get wet. Set canisters aside.

**NOTE**

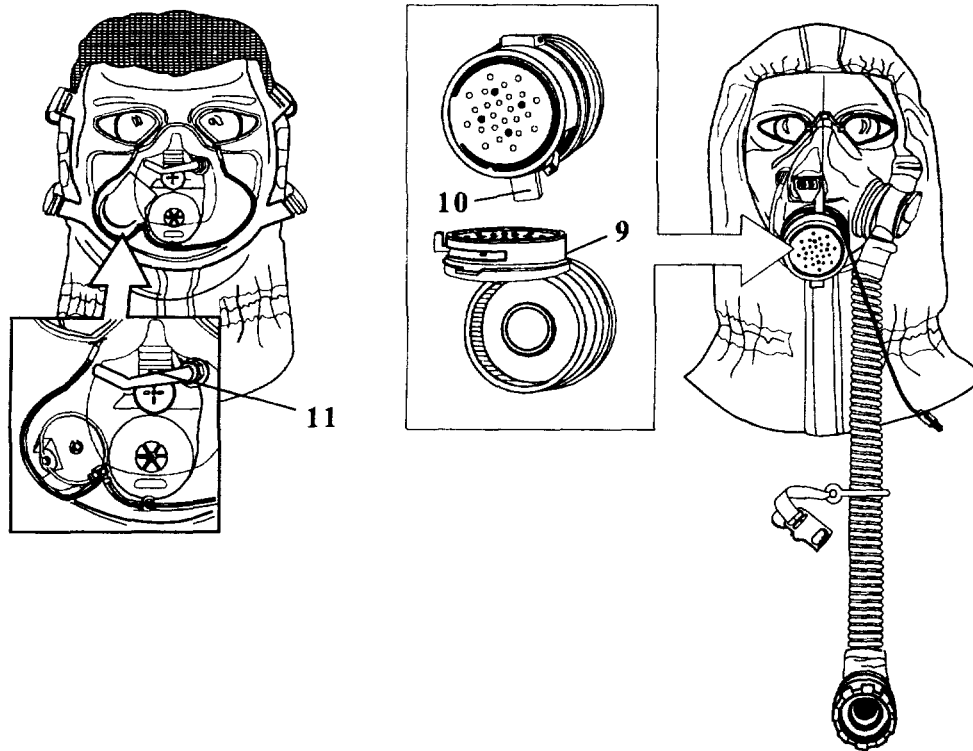
When cleaning, use only potable water. See Unit Maintenance for supplies or assistance if needed.

1. Detach blower (1) from hose by unscrewing swivel (2) counterclockwise.
2. Remove canisters (3) from blower by turning counterclockwise, and set aside.
3. Pull air deflector (4) from inlet valve assembly (5) on inside of facepiece assembly (6).
4. Pull quick-disconnect coupling half (7) from retainer (8) on facepiece assembly.



**3-6. MASK SERVICING (CONT).**

5. Open outlet valve cover (9) by pulling up on tab (10) of cover.
6. If drink tube has been used, flush inside of tube with clean water. Use cheesecloth and isopropyl alcohol to clean external surface of internal drink tube (11).



**CAUTION**

**Do not use a brush to clean the hood assembly. A brush will damage the protective coating on the hood assembly.**

7. Remove greasy or oily substances from facepiece and hood assemblies with isopropyl alcohol and a clean cheesecloth.

**CAUTION**

**When cleaning mask, do not get water inside hose or blower. Be careful not to damage inlet valve disk when cleaning around inlet valve.**

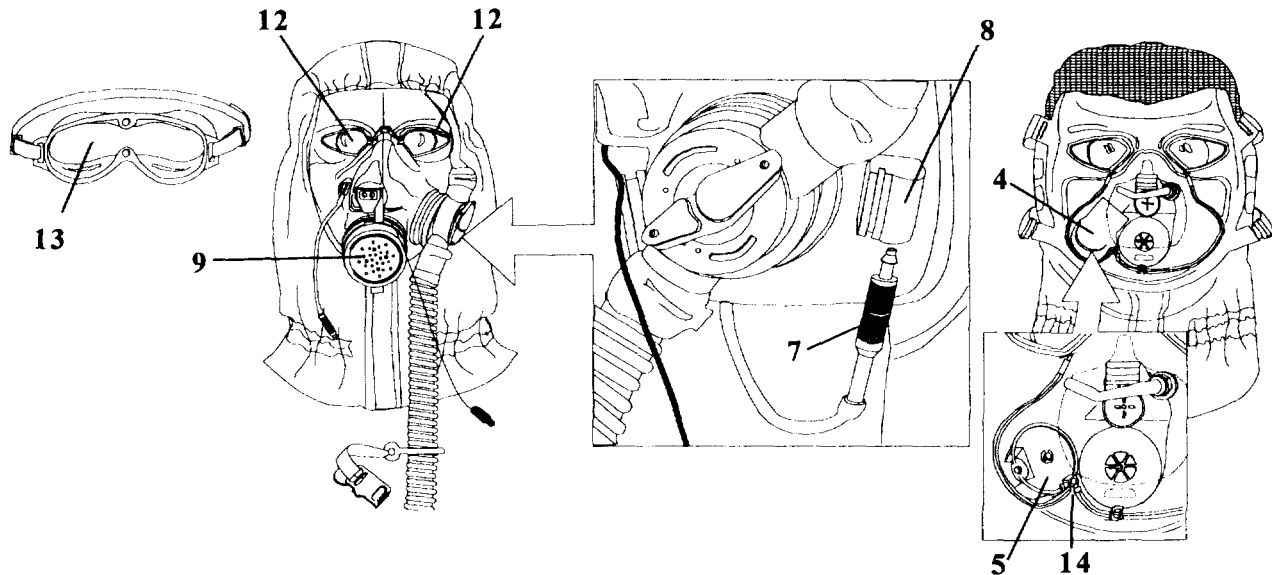
8. Clean facepiece assembly inside and out and exterior of blower, using clean cheesecloth and soapy water and pail. Dip the cheesecloth in warm soapy water and wring cheesecloth almost dry.
9. Rinse by wiping facepiece assembly and blower with a clean cheesecloth that has been dipped in warm clear water and wrung almost dry.
10. Dry facepiece assembly and blower with cheesecloth or allow to air-dry.

**CAUTION**

Use special care cleaning the eyelenses and frontserts. Unauthorized cleaning may result in damaged eyelenses and frontserts.

Do not use paper to clean or dry eyelenses and frontserts. Use only clean cheesecloth.

11. Clean and polish facepiece assembly eyelenses (12) and goggle lens (13) with isopropyl alcohol and cheesecloth.
12. Insert quick-disconnect coupling half (7) into retainer (8) on facepiece assembly.
13. Close and snap the outlet valve cover (9).



14. Snap air deflector (4) into groove in inlet valve assembly (5) on inside of facepiece assembly. Make sure notch in air deflector rim mates with 90° ell branch (14) on inlet valve assembly.

**WARNING**

Do not allow dirt to remain in carriers. Foreign material in carrier may get into valves causing them to leak.

**CAUTION**

Do not allow dirt to remain in carriers. Abrasive material in carrier will scratch lenses.

Do not soak carriers, and do not use hot water, bleach, or detergent to clean it. This will reduce the water and mildew resistance of carriers.

15. Soak brush in a pail of cool, clean water. Drain excess water from brush.
16. Check that carriers are free of any foreign material. Clean soiled carriers with scrub brush and clean water.
17. Stow mask assembly items in clean carriers. Refer to para 2-8h.

**3-6. MASK SERVICING (CONT).**

**DECONTAMINATION**

**WARNING**

**When decontaminating a mask that has been exposed to toxic agents, wear protective mask and clothing in accordance with SOP.**

**CAUTION**

**DS2 can damage the voicemitter. When exposed to DS2, flush area with water, wipe facepiece clean, and dry with cheesecloth. Do not wet the canisters or inside of hose.**

1. Refer to FM 3-5, NBC Decontamination, or unit SOP for complete decon procedures.
2. Use the M295 equipment decontaminating kit according to instructions in TM 3-4230-235-10.

## APPENDIX A REFERENCES

### A-1. SCOPE.

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

### A-2. FORMS.

Quality Deficiency Report.....	SF 368
Recommended Changes to Equipment Technical Publications .....	DA Form 2028-2
Recommended Changes to Publications and Blank Forms.....	DA Form 2028
Report of Discrepancy (ROD).....	SD 364
Preventive Maintenance Schedule and Records .....	DD Form 314
Equipment Inspection and Maintenance Worksheet .....	DA Form 2404

### A-3. FIELD MANUALS.

First Aid for Soldiers.....	FM 21-11
NBC Protection .....	FM 3-4
NBC Decontamination.....	FM 3-5

### A-4. TECHNICAL MANUALS

Destruction of Chemical Weapons and Defense Equipment to Prevent Enemy Use .....	TM 43-0002-31
Aircrew Survival Armor Recovery Vest, Insert, and Packets (SARVIP).....	TM 55-1680-317-23&P
The Army Maintenance Management System (TAMMS) .....	DA PAM 738-750
Decontaminating Kit, Individual Equipment: M295 .....	TM 3-4230-235-10
Paper, Chemical Agent Detector: M8 .....	TM3-6665-254-12

### A-5. MISCELLANEOUS PUBLICATIONS.

Ophthalmic Services.....	AR 40-63
Research, Development, Test and Evaluation of Materiel for Extreme Climatic Conditions .....	AR 70-38
Issue and Sale of Personal Clothing.....	AR 700-84
Chemical-Biological Canisters and Filter Elements: Serviceability Lists .....	SB 3-30-2
Army Medical Department Expendable and Durable Items.....	CTA 8-100
Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).....	CTA 50-970

A-1/(A-2 blank)

**APPENDIX B  
COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS**

---

**Section I. INTRODUCTION**

**B-1. SCOPE.**

This appendix lists components of the end item and basic issue items for the M49 Mask to help you inventory items required for safe and efficient operation of the equipment.

**B-2. GENERAL.**

The Components of End Item (COEI) and Basic Issue Items (BII) Lists are divided into the following sections.

**a. Section II. Components of End Item.** This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the M49 Mask, but they are to be removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to help you find and identify the items.

**b. Section III. Basic Issue Items.** These essential items are required to place the M49 Mask in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the M49 Mask during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

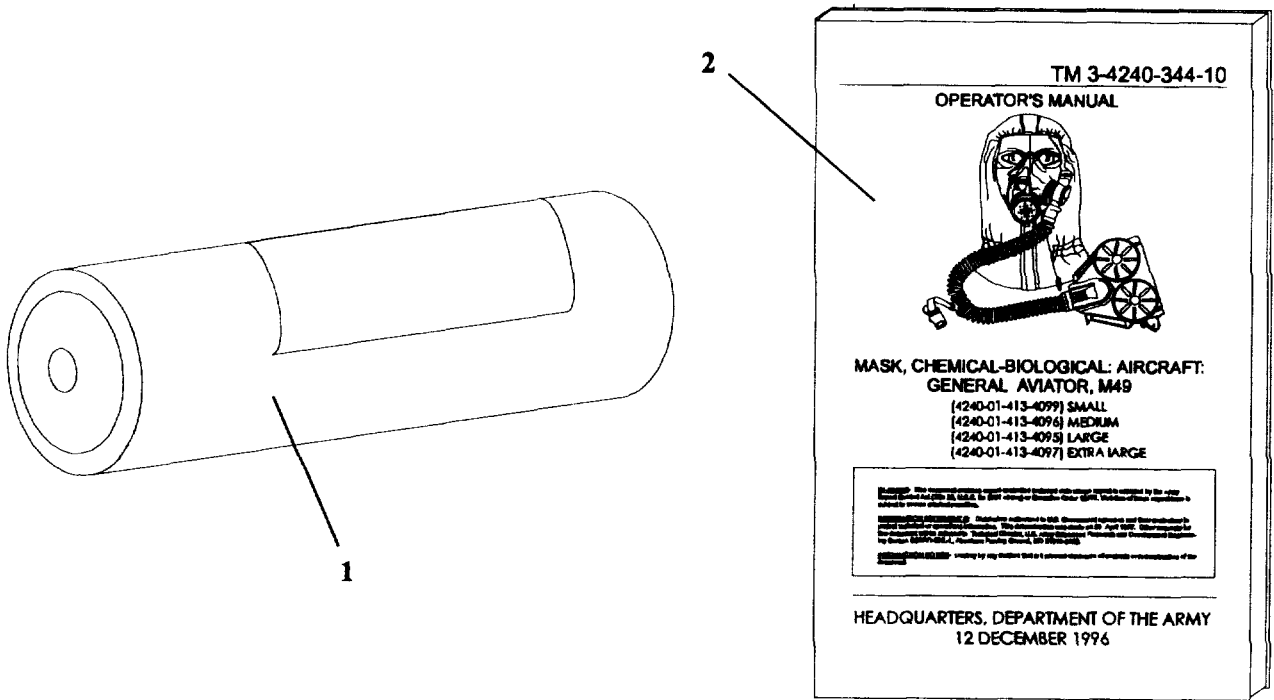
**B-3. EXPLANATION OF COLUMNS.**

- a. Column (1) - Illus Number,** gives you the number of the item illustrated.
- b. Column (2) - National Stock Number,** identifies the stock number of the item to be used for requisitioning purposes.
- c. Column (3) - Description and Usable on Code,** identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (Commercial and Government Entity Code) (in parenthesis) and the part number.
- d. Column (4) - (U/I) Unit of Issue,** indicates how the item is issued for the National stock number in column two.
- e. Column (5) - (QTY RQR) Quantity Required,** indicates the quantity required.

**Section II. COMPONENTS OF END ITEM**

Not Applicable

Section III. BASIC ISSUE ITEMS



(1) Illus Number	(2) National Stock Number	(3) Description CAGEC and Part Number	(4) U/I	(5) Qty Rqr
1	6665-99-760-9742	Battery, Dry Nonrechargeable BA-5800/U	EA	2
2			Manual, Technical: Mask, Chemical-Biological Aircraft, M49	EA



**APPENDIX C  
ADDITIONAL AUTHORIZATION LIST**

**SECTION I. INTRODUCTION**

**C-1. SCOPE.**

This appendix lists additional items you are authorized for the support of the M49 Mask.

**C-2. GENERAL.**

This list identifies items that do not have to accompany the M49 Mask and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, JTA.

**C-3. EXPLANATION OF LISTING.**

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetic sequence by item name under the type of document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

**Section II. ADDITIONAL AUTHORIZED ITEMS LIST**

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION DESCRIPTION CAGEC & PART NUMBER USABLE ON CODE	(3) U/I	(4) QTY RECM
8465-01-115-0026	Canteen, Water: w/M1 Cap (81349)MIL-C-43103  CTA AUTHORIZED ITEMS	EA	1
6540-01-389-7161	Frontserts, Vision Correction- Small (89875) 39MM	PR	1
6540-01-389-7169	Frontserts, Vision Correction - Medium (89875) 43MM	PR	1
6540-01-389-7141	Frontserts, Vision Correction- Large (89875) 47MM	PR	1
8465-01-004-2893	Goggles, Sun, Wind and (84600) 10042893	EA	1
6850-01-357-8456	Kit, Decontaminating, M295 (59678) 5-77-3201	EA	1
6665-00-050-8529	Paper, Chemical Agent Detector VHG, ABC-M8 (81361) D5-67-266	EA	1

**APPENDIX D  
EXPENDABLE AND DURABLE ITEMS LIST**

---

**Section I. INTRODUCTION**

**D-1. SCOPE.**

This appendix lists expendable and durable items that you will need to operate and maintain the M49 Mask. This listing is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except medical, Class V repair parts, and heraldic items) or CTA 8-100, Army Medical Department Expendable/Durable Items.

**D-2. EXPLANATION OF COLUMNS.**

**a. Column (1) - Item Number.** This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item (e.g., "Use soap, item 7, App. D").

**b. Column (2) - Level.** This column identifies the lowest level of maintenance that requires the listed item (C - Operator/Crew, O - Unit Maintenance, F - Direct Support Maintenance).

**c. Column (3) - National Stock Number.** This is the National stock number assigned to the item which you can use to requisition it.

**d. Column (4) - Description.** Indicates the item name, description, Commercial and Government Entity Code (CAGEC) and part number. This provides the other information you need to identify the item.

**e. Column (5) - Unit of Measure (U/M).** This code shows the physical measurement or count of an item, such as gallon (GL), each (EA), dozen (DZ), gross (GR), etc. If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

## Section II. EXPENDABLE AND DURABLE ITEMS LIST

(1) Item Number	(2) Level	(3) National Stock Number	(4) Item Name, Description CAGEC and Part Number	(5) U/M
1	C	7920-00-061-0037	Brush, Scrub (81348) H-B-1490-6-P1	EA
2	C	8465-00-930-2077	Cap, Water, Canteen: M1 (81349) MIL-C-51278	EA
3	C	8305-00-222-2423	Cloth, Cheesecloth (81348) CCCC-440	YD
4	C	6505-00-655-8366	Isopropyl Rubbing Alcohol (56287) Purepac	PT
5	C	5110-00-240-5943	Knife, Pocket (81348) GGG-K-484	EA
6	C	7240-01-094-4305	Pail, Utility (58535) A-A-332	EA
7	C	8520-00-228-0598	Soap, Toilet (81348) P-S-624	GL'

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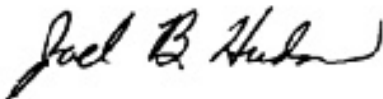
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DISTRIBUTION:

To be distributed in accordance with the initial distribution number (IDN) 280816, requirements for TM 3-4240-344-10.

By Order of the Secretary of the Army:

Official:



JOEL B. HUDSON  
*Administrative Assistant to the  
Secretary of the Army*  
03264

DENNIS J. REIMER  
*General, United States Army  
Chief of Staff*





## The Metric System and Equivalents

### Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

### Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
 1 decagram = 10 grams = .35 ounce  
 1 hectogram = 10 decagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

### Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

### Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

### Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

### Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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