

## CHAPTER 5

# FULL-FACE OXYGEN AND SMOKE MASK

## TYPE MIL-M-19417B

### Section 5-1. Description

#### 5-1. GENERAL.

5-2. The Full-Face Oxygen and Smoke Mask, Type MIL-M-19417B (figure 5-1) is designed to dispense gaseous oxygen from a demand type regulator to the aircrewman. In addition, the mask provides protection from smoke, carbon monoxide or other incapacitating gasses.

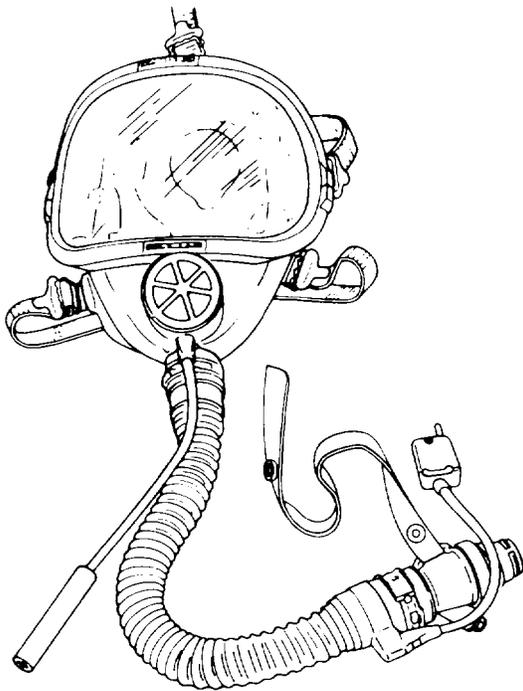


Figure 5-1. Full-Face Oxygen and Smoke Mask  
(MIL-M-19417B)

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5-3. The Full-Face Oxygen and Smoke Mask consists of a molded rubber facepiece with microphone cavity, allyl plastic lens, exhalation valve, molded rubber headstrap assembly, delivery hose with communication lead and an MC-3A type connector. The mask is supplied in one size. Fitting is accomplished by adjusting the five adjustable head straps. The mask may be worn with earphones, or with a protective helmet.

#### 5-4. CONFIGURATION.

5-5. The single configuration of the Full-Face Oxygen and Smoke Mask consists of the facepiece, delivery hose and MC-3A connector. The delivery hose (K-4 hard hose) is composed of nonstretch, nonkinking, smooth bore, flexible hose with an integral corrosion resistant wire. The hose cover is knitted or braided of tubular polyamide or polyester. The communication cable is molded into the hose with leads extending for attachment for a mask mounted microphone and a connection for attaching to the aircraft communications system. The MC-3A connector is provided for access to the aircraft oxygen system.

#### 5-6. FUNCTION.

5-7. When connected to the aircraft system, oxygen flows from the system through the MC-3A connector and into the delivery hose, through the inlet port and enters the mask through two inlet ducts at the bottom of the facepiece lens. These ducts also act as a defogger for the lens. Exhalation is accomplished through an exhalation valve located at the front of the mask below the lens. The exhalation valve consists of a plastic housing with a rubber flapper valve.

**5-8. SERVICE LIFE.**

5-9. Service life of the Full-Face Oxygen and Smoke Mask as established by the cognizant engineering ac-

tivity is indefinite. The mask is considered serviceable if it meets periodic inspection requirements.

**Section 5-2. Modifications**

**5-10. GENERAL.**

5-11. No modifications are required or authorized for this mask.

**Section 5-3. Maintenance**

**5-12. GENERAL.**

5-13. This section contains procedural steps for disassembly, cleaning, inspection, assembly, functional testing, sanitizing, and storage. All work shall be performed in a clean, dust-free area.

**NOTE**

Upon completion of any maintenance action (e.g. inspection, repair, modification, etc.), be sure to complete the required Maintenance Data Collection System forms.

**5-14. INSPECTION.**

**5-15. PREFLIGHT INSPECTION.** The Preflight Inspection consists of a Visual Inspection and Functional Test performed before each flight by the aircrew-member by whom the mask is to be used. Perform the inspection as follows:

1. Examine mask and hose for deterioration, abrasion, cracks, cuts, and security of attachment of mask-to-hose and hose-to-connector.

2. Examine facepiece lens for cracks, excessive scratches.

3. Check mask and communications system for proper operation.

4. Perform Functional Test ([paragraph 5-22](#)).

5. If malfunctions are found or suspected, return mask to Aviator's Equipment Branch for corrective action.

**5-16. ACCEPTANCE/SPECIAL INSPECTION.**

The Acceptance/Special Inspection consists of a Visual Inspection followed by a Functional Test. This inspection and test shall be performed in conjunction with the aircraft inspection requirements for the aircraft in which the masks are installed. To perform the inspection, proceed as follows:

1. Visually inspect the mask in accordance with [paragraph 5-20](#).

2. Functionally test the mask in accordance with [paragraph 5-22](#).

3. Sanitize the mask in accordance with [paragraph 5-23](#).

**NOTE**

Step 4 is performed only on a new mask or during an Acceptance Inspection.

4. Assemble the mask in accordance with [paragraph 5-21](#).

**5-17. CALENDAR/PHASE/SDLM INSPECTION.**

A Calendar/Phase/SDLM Inspection shall be performed upon issue and in accordance with the Planned Maintenance System (PMS) of the aircraft (see PMS publications for specific interval). The Calendar/Phase/SDLM Inspection consists of the following:

1. Disassembly (paragraph 5-18).
2. Cleaning (paragraph 5-19).
3. Visual Inspection (paragraph 5-20).
4. Assembly (paragraph 5-21).
5. Functional Test (paragraph 5-22).
6. Sanitizing (paragraph 5-23).

**5-18. Disassembly.** To disassemble the Full-Face Oxygen and Smoke Mask proceed as follows:

**NOTE**

Refer to figure 5-2 for parts identification.

1. Remove lens (4) to prevent scratching during disassembly.
2. Remove retaining ring (13) and disconnect microphone leads. Remove microphone (16).



To prevent damage to mask material, do not use mechanical assist (screwdriver) when removing oxygen delivery hose (8).

**NOTE**

Remove oxygen hose clamps (10 and 11) by lifting clamp securing tab off securing teeth with small straight screwdriver.

3. Loosen hose clamps (10 and 11) and remove hose and microphone lead. Remove connector from opposite end of oxygen delivery hose (8).
4. Remove exhalation valve assembly and disassemble, if necessary.

**5-19. Cleaning.** To clean the Full-Face Oxygen and Smoke Mask, prepare either of the following cleaning solutions using warm potable water. Quantities are sufficient to clean a minimum of 10 masks.

Materials Required

Quantity	Description	Reference Number
As Required	Cloth, Lint-free, Type II	MIL-C-85043
As Required	Detergent, General Purpose, Type I	MIL-D-16791
As Required	Soap, Laundry, Low-filter	P-S-600
As Required	Swab, Cotton	—

Support Equipment Required

Quantity	Description	Reference Number
1	Brush, Soft Bristle	—
1	Brush, Test Tube, Dia. 1 1/2 Inches	—

**NOTE**

The detergent solution is preferred since there is no risk of contamination due to undissolved soap powder residue.

1. DETERGENT SOLUTION. Make a 1-percent by weight solution of cleaning compound (Detergent, General Purpose) by adding 1/5 to 1/2 ounce (liquid) of the compound to one gallon of water.

**NOTE**

If it is necessary that the soap powder solution be used, agitate solution and use only the lather to clean the mask.

2. SOAP POWDER SOLUTION. Make a suitable soap solution by adding approximately 4 tablespoons of soap powder to one gallon of water. Hardness of water may require more soap but the solution must be sufficiently strong to readily form lather when agitated. Make sure that all soap particles are dissolved.



Do not use alcohol in any form to clean masks. Do not use any flammable solvents or liquid toxicants for cleaning.



When the substitute solution is used, use only the lather from the solution for cleaning. This will prevent undissolved soap powder from getting into exhalation valve.

3. Using the preferred formula, if possible (if a soap must be used as the cleaning medium, use only the lather). Wash exhalation valve. Grasp the valve by gently pinching the flap portion between thumb and index finger. This will expose the underside of the flap and the valve seat for cleaning. Use a soft brush to clean the entire valve, paying special attention to the valve seat recess and the valve recess. Apply only moderate pressure when cleaning as the flap may be damaged. Rinse all parts in clean, potable cold water.

4. Wash external and internal surfaces of the mask thoroughly. A test tube brush approximately 1-1/2 inches in diameter can be used to clean the interiors of the inlet tube and the inhalation ports. A soft brush can also be used to an advantage in cleaning mask surfaces. After all surfaces have been wiped or brushed, submerge entire mask in cleaning solution and agitate thoroughly. Rinse in clean, potable cold water and shake off excess.

5. Clean mask microphone by wiping with a swab of soft, clean cloth lightly dampened in cleaning solution and rinse with a second swab lightly dampened in clean, potable cold water. Make sure no lint remains on microphone.

6. A dry swab can be used to assist in drying the washed items. Be careful that lint is not trapped in valves or mask crevices. Air-dry in a ventilated area out of direct sunlight.



The mask may be forced-air dried using a stream of clean, dried, oil-free air or nitro-

gen. Make sure that parts are completely dry before reassembling mask. Do not use compressed gas for drying exhalation valve or microphone.

7. Examine mask, hose, and exhalation valve for presence of undissolved soap powder. Ensure that all parts are completely dry and lint free.

**5-20. Visual Inspection.** To visually inspect the Full-Face Oxygen and Smoke Mask, examine the following:

**NOTE**

Repair of the Full-Face Oxygen and Smoke Mask shall be limited to parts replacement. Any hole or tear that occurs in any component is basis for rejection of that component.

1. Mask for deterioration; material imperfections; embedded foreign matter; dirty, rough, misaligned, cracked, nicked or otherwise flawed surface; any component loose or not properly attached. Replace defective components or mask assembly.

2. Exhalation valve for nicks, grooves, scratches, or any other damage affecting sealing action. If valve is defective, replace mask assembly.

3. Headstraps for fraying, deterioration, or cuts. Hardware for corrosion or other damage. Replace defective components.

4. Delivery hose for deterioration, cuts, abrasion, creased or flat spots. Replace defective hose.

5. Communications cable/microphone for electrical continuity and proper operation. Replace defective components.

6. Ensure that mask assembly meets requirements of paragraph 5-21.

**5-21. Assembly.** To assemble mask, proceed as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Adhesive	MMM-A-121 NIIN 00-165-8614
1	Brush, Acid	NIIN-00-514-2417

Support Equipment Required

Quantity	Description	Reference Number
1	Pliers, Miniature Channel Lock	—
1	Pliers, Retaining Ring	—

**NOTE**

Refer to [figure 5-2](#) for part identification.

1. Install exhalation valve assembly.

a. Using an acid brush, apply a thin coat of adhesive to the outer surface of the exhalation valve, taking care not to get the adhesive on or into the internal parts of the exhalation valve.

b. Using an acid brush, apply a thin coat of adhesive to the inner walls of the exhalation valve cover.

c. Allow the adhesive to dry on both surfaces, then install the exhalation valve cover onto the exhalation valve.

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2. Install insert (9) in oxygen delivery hose (8) and connect oxygen delivery hose (8) to mask. Tighten hose clamp (10) using miniature channel lock pliers until snug fit is attained.

3. Insert microphone lead through lead inlet port, making sure that molded rubber cable end fits snugly into inlet port.

4. Connect microphone (16) to microphone lead and install microphone base into microphone housing. Secure with retaining ring (13).

**NOTE**

To prevent damage, use retaining ring pliers when installing retaining ring (13).

5. Install MC-3A connector in oxygen delivery hose (8) end and secure hose clamp (11) with miniature channel lock pliers. Tighten until snug.

6. To preclude a possible flight safety hazard in the event a hose clamp loosens, thus compromising the effectiveness of the connection, inspect and test connection at preflight and whenever assemblies containing connections are drawn from supply. Perform inspection and test as follows:



Care must be taken in the performance of this operation as an overtightening of the clamp may lead to pleating of the mask at the hose attachment point and eventual mask failure due to tearing of the material.

a. Grasp connection on both sides of hose clamp.

b. Jerk connection sharply to ensure that clamp has been tightened sufficiently.

c. If connection comes loose, reassemble connection in proper position, tighten hose clamp, and ensure that connection has been sufficiently tightened in accordance with steps a and b.

7. Install lens (4) on facepiece (15) and secure with lens retainer frame assembly (1).

8. Examine mask for proper assembly.

**5-22. Mask Functional Test.** To test the mask after inspection, proceed as follows:

1. Plug inlet end of connector assembly by any suitable method.

2. Holding mask close to face, but not sealed to face, inhale deeply. Then press mask firmly to face, forming a tight seal, and exhale forcibly. If the exhalation valve is operating properly, the exhalation will be smooth and with minimum resistance.

3. Affix mask assembly to face, adjusting straps for a snug, comfortable, leak-tight fit. With inlet end of hose assembly blocked, inhale sharply and deeply and hold inhalation (keep inhaling) as long as possible. If there is no leakage through mask hose, fittings, or exhalation valve, and as soon as all residual air in mask and hose has been inhaled, further inhalation will be impossible.

4. Obtain assistance from Avionics Branch to ensure proper continuity of communications leads.

**5-23. Sanitizing Masks.** Masks not on a personal issue basis shall be sanitized after each use as follows:

Materials Required		
Quantity	Description	Reference Number
As Required	Benzalkonium Chloride Solution	MIL-B-37451
As Required	Pad, Gauze	—
As Required	Sani Com 3205	NIIN 01-299-5061

**NOTE**

Pour benzalkonium chloride solution into a container sufficient to sanitize at least 10 masks.

1. Moisten a gauze pad with solution, squeeze to prevent dripping, and wipe interior of mask, exclusive of valves and microphone. Ensure that sanitizing solution penetrates all crevices.

2. Wipe valves and microphones with a clean, dry cloth. Ensure that no lint remains in mask, on valves, or on microphone.

**NOTE**

If benzalkonium chloride solution is not available, Sani Com 3205 can be used.

5-24. After sanitizing, place mask in a clean approved bag. If the mask is not to be put into immediate service, store in accordance with paragraph 5-25.

**5-25. MASK STORAGE.**

5-26. After using a personal issue mask, wipe it clean and store it in a clean, approved plastic bag or any other suitable container that will keep the mask clean, dry and lint-free. Masks not used on a personal-issue basis are to be sanitized before storage. Stored masks must have ample ventilation and not be exposed to excessive heat or direct sunlight. The mask is not to be stored in an area where other flight gear will be stored on top of it.

**Section 5-4. Illustrated Parts Breakdown**

**5-27. GENERAL.**

5-28. This Section lists and illustrates the procurable parts of the Full-Face Oxygen and Smoke Mask (MIL-M-19417B).

5-29. The Illustrated Parts Breakdown should be used during maintenance when requisitioning and identifying parts.

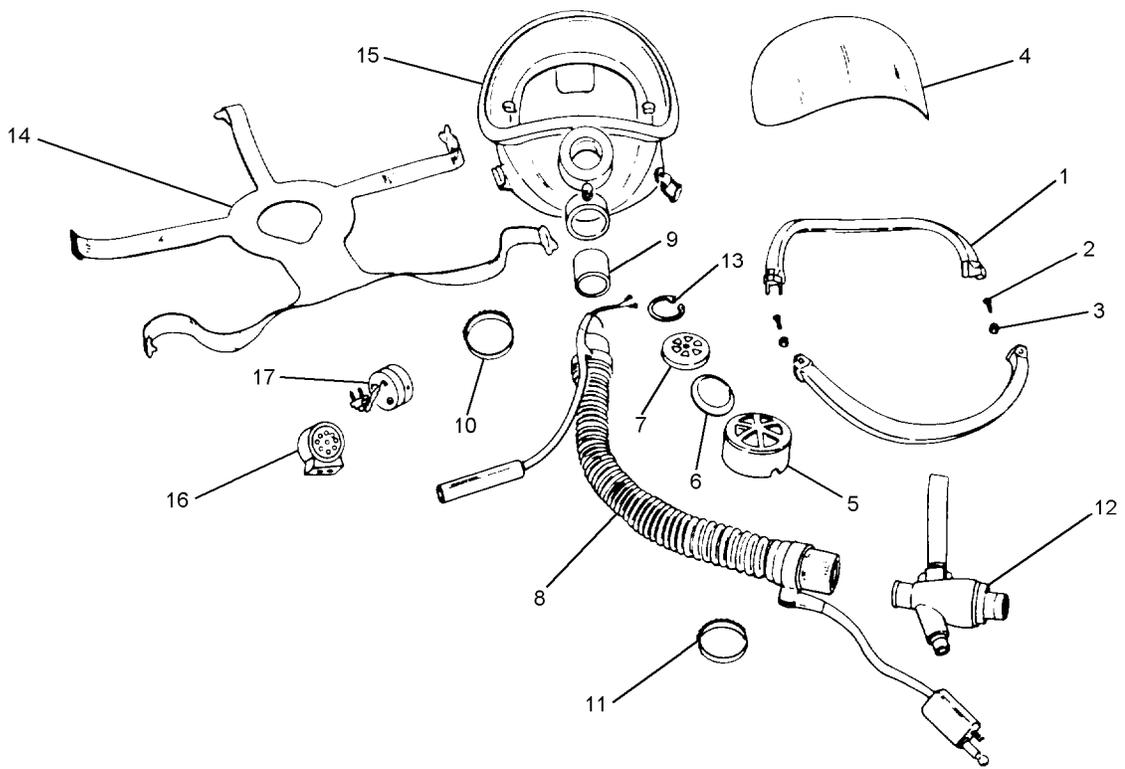


Figure 5-2. Full-Face Oxygen and Smoke Mask Assembly (MIL-M-19417B), IPB

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**NAVAIR 13-1-6.4-1**

Figure and Index Number	Part Number	Description	Units Per Assembly	Usable On Code
		1 2 3 4 5 6 7		
5-2	651-01B	MASK ASSEMBLY, Oxygen and Smoke, . . . . . Full-Face (MIL-M-19417B) (CAGE 92114)	Ref	
-1	651-04	. FRAME ASSEMBLY, Lens retainer . . . . . (ATTACHING PARTS)	1	
-2	00-19	. SCREW, Machine . . . . .	2	
-3	00-2339	. NUT, Self-locking . . . . . ---*---	2	
-4	651-03	. LENS . . . . .	1	
	651-126-1	. VALVE ASSEMBLY, Exhalation . . . . .	1	
-5	651-16	. . COVER, Valve . . . . .	1	
-6	651-19	. . FLAP, Valve . . . . .	1	
-7	651-18-3	. . SEAT, Valve . . . . .	1	
-8	MS90339-3	. HOSE ASSEMBLY, Oxygen delivery . . . . .	1	
-9	651-05	. INSERT . . . . .	1	
-10	NAS397-24	. CLAMP, Hose . . . . .	1	
-11	MS22064-5	. CLAMP, Hose . . . . .	1	
-12	MS22016	. CONNECTOR ASSEMBLY, Type MC-3A . . . . .	1	
-13	00-2398	. RING, Retainer . . . . .	1	
-14	651-02-3	. HARNESS, Mask . . . . .	1	
-15	651-11-3	. FACEPIECE, Mask . . . . .	1	
-16	M-101/AIC	. MICROPHONE ELEMENT (Dynamic) . . . . .	1	
-17	AM4326BA	. AMPLIFIER (CAGE 80058) . . . . . (P/N D525B200) (CAGE 19610) (MIL-A-23595A)	1	

## NUMERICAL INDEX

Part Number	Figure and Index Number	SM&R Code	Part Number	Figure and Index Number	SM&R Code
AM4326BA	5-2-17	PAOZZ	651-02-3	5-2-14	
M-101/AIC	5-2-16	PAOZZ	651-03	5-2-4	
MS22016	5-2-12		651-04	5-2-1	
MS22064-5	5-2-11	PAOZZ	651-05	5-2-9	
MS90339-3	5-2-8	PAOZZ	651-11-3	5-2-15	PAOOZ
NAS397-24	5-2-10	PAOZZ	651-126-1	5-2-4	PAOZZ
00-19	5-2-2		651-16	5-2-5	PAHZZ
00-2339	5-2-3		651-18-3	5-2-7	
00-2398	5-2-13		651-19	5-2-6	
651-01B	5-2				

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