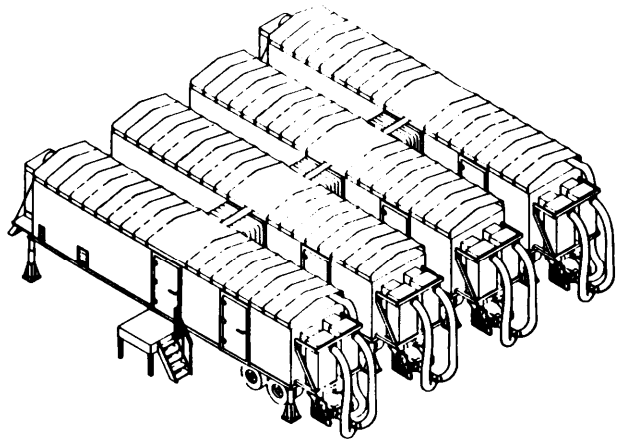
# TM 3-4240-309-20&P

TECHNICAL MANUAL

# ORGANIZATIONAL MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR



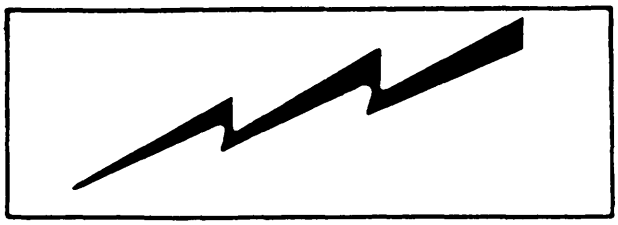


# COLLECTIVE PROTECTION EQUIPMENT, GUARDRAIL CONSISTING OF ENTRANCE, PROTECTIVE, PRESSURIZED: COLLAPSIBLE, M10 (NSN 4240-00-229-2610); FILTER UNIT, GAS-PARTICULATE, 400 CFM, 208 V, 400 HZ, M87 (NSN 4240-01-192-7234); AND CONVERTER, FREQUENCY, STATIC: M5 (NSN 4240-00-394-9571)


HEADQUARTERS, DEPARTMENT OF THE ARMY

JULY 1986

# WARNINGS



## HIGH VOLTAGE

is used in the operation of this equipment

## DEATH ON CONTACT

may result if personnel fail to observe safety precautions when performing troubleshooting and maintenance procedures on the GUARDRAIL collective protection equipment.

**DISCONNECT POWER SUPPLIES BEFORE PERFORMING MAINTENANCE TO PREVENT DEATH OR POSSIBLE SERIOUS PERSONAL INJURY.**

## TOXIC HAZARD

Do not remove covers to service components after toxic exposure without observing proper handling procedures.

Filter seals must be properly seated to prevent bypass of contaminated air:

- Torque access cover bolts 180 to 200 inch-pounds to seat gas filter.
- Tighten inner cover retaining bar until sleeve is flush with top surface to seat particulate filter.

For electrical shock or toxic environment first aid, refer to FM21-11 (TEST)

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 25 January 1990

# ORGANIZATIONAL MAINTENANCE MANUAL
# (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)
# FOR
# COLLECTIVE PROTECTION EQUIPMENT
# GUARDRAIL

1. The purpose of this change is to update guidance for disposal, handling, and storage of filters.

2. New or changed material is indicated by a vertical bar in the margin of the page. RPSTL listing changes are indicated by an asterisk to the left of the item number column adjacent to the line item.

3. Remove old pages and insert new pages as follows:

| Remove Pages | Insert Pages |
|---|---|
| None | a/(b blank) |
| 2-1 and 2-2 | 2-1 and 2-2 |
| 2-91 and 2-92 | 2-91 and 2-92 |
| A-1 and A-2 | A-1 and A-2 |

4. File this transmittal sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

CARL E. VUONO
General, United States Army
Chief of Staff

Official:

WILLIAM J. MEEHAN II
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-28-R (block 43), maintenance requirements for TM 3-4240-309-20&P.

WARNING

HEALTH/ENVIRONMENTAL HAZARD

Filters use ASC Whetlerite Carbon which contains Chromium VI. Chromium VI is a known carcinogen if inhaled or swallowed. Damaged or unusable filters are classified as hazardous waste:

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

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

Filters 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.

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.

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC

No. 3-4240-309-20&P

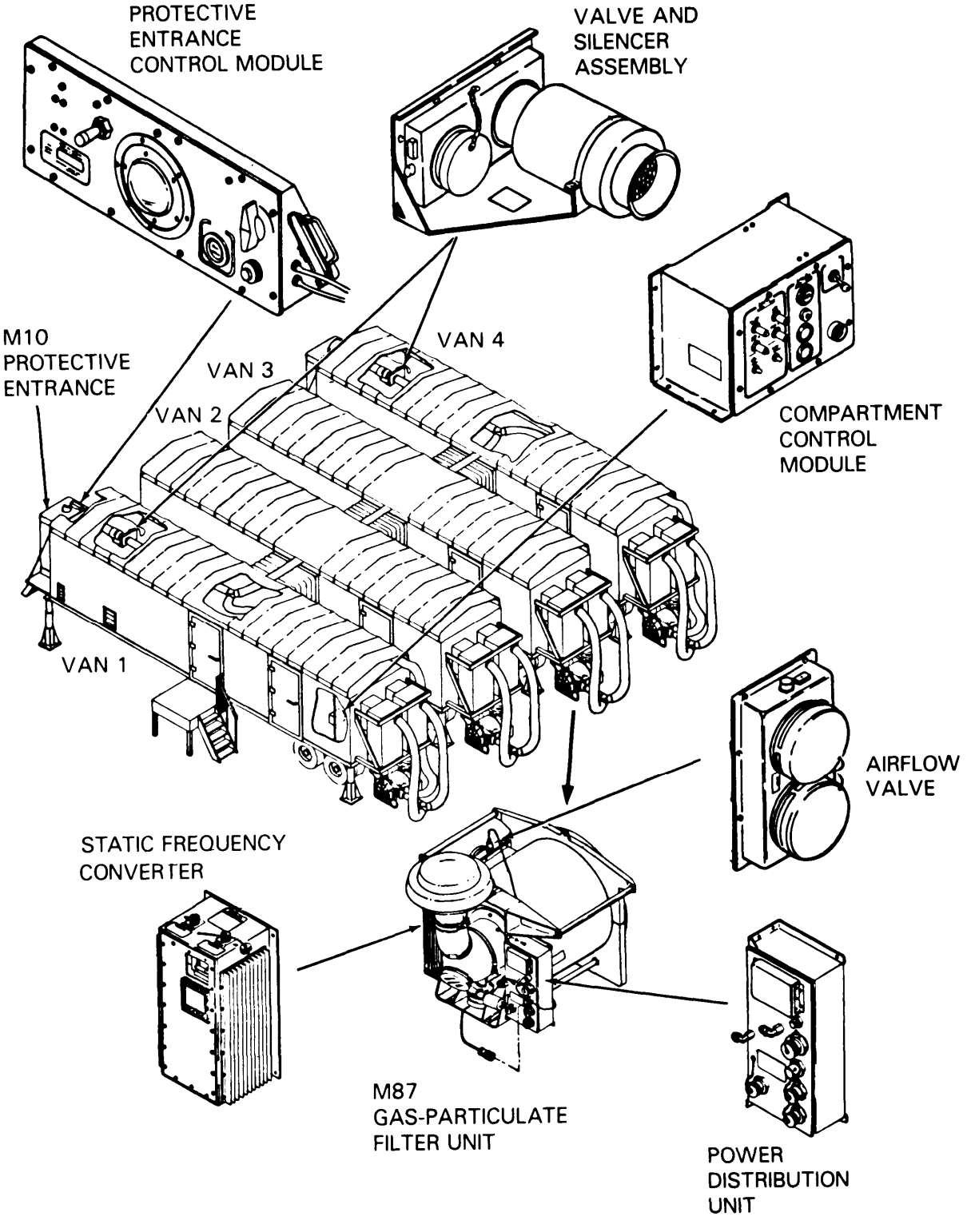
*2 July 1986*

# ORGANIZATIONAL MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST) FOR COLLECTIVE PROTECTION EQUIPMENT, GUARDRAIL CONSISTING OF ENTRANCE, PROTECTIVE, PRESSURIZED: COLLAPSIBLE, M10 (NSN 4240-00-229-2610); FILTER UNIT, GAS-PARTICULATE, 400 CFM, 208 V, 400 HZ, M87 (NSN 4240-01-192-7234); AND CONVERTER, FREQUENCY, STATIC: M5 (NSN 4240-00-394-9571)

Current as of *15 Apri1 1986*

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

You can help improve this manual, If you find any mistakes or if you 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 direct to: Commander. US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAR-T(A), Aberdeen Proving Ground, MD 21010-5423, A reply will be furnished to you.


PROTECTIVE
ENTRANCE
CONTROL MODULE
VALVE AND
SILENCER
ASSEMBLY
M10
PROTECTIVE
ENTRANCE
VAN 3
VAN 4
VAN 2
COMPARTMENT
CONTROL
MODULE
VAN 1
AIRFLOW
VALVE
STATIC FREQUENCY
CONVERTER
M87
GAS-PARTICULATE
FILTER UNIT
POWER
DISTRIBUTION
UNIT

# CHAPTER 1
# INTRODUCTION

## Section I GENERAL INFORMATION

### 1-1. SCOPE.

a. *Type of Manual.* This manual provides organizational maintenance instructions, including the repair parts and special tools list, for the GUARDRAIL collective protection equipment.

b. *Model Number and Equipment Names.*

M10 Protective Entrance (PE): Protective entrance control module (PECM)

M87 Gas-Particulate Filter Unit (GPFU):
Housing Unit
Compartment Control module (CCM)

MS Static Frequency Converter (SFC):
This manual does not cover repair of the static frequency converter. See TM 3-4240-299-23&P for repair and repair parts.

c. *Purpose of Equipment.* This equipment provides filtered air under positive pressure to field shelters.

### 1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

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. 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.

### 1-4. PREPARATION FOR STORAGE OR SHIPMENT,

Refer to TM 740-90-1 for administrative storage instructions.

### 1-5. NOMENCLATURE CROSS-REFERENCE LIST,

Nomenclature cross-references used in this manual include the following:

| *Common Name* | *Official Nomenclature* |
|---|---|
| Diode | Semiconductor device. diode |
| Dome light switch | Toggle switch |
| Female hose adapter | Straight pipe to hose adapter |
| Hose | Nonmetallic hose |
| Housing unit | Fan-valve-collector housing unit |
| Inlet cap | Air cleaner housing cap |
| Inlet collar | Shaft collar |
| Lamp | Incandescent lamp |
| LOW PRESSURE switch/indicator light | Push switch |
| Main fan | Vaneaxial fan |
| Male hose adapter | Straight pipe to hose adapter |
| MASK switch/indicator light | Push switch |
| OCCUPIED switch/indicator light | Push switch |
| Protective cap | Dust and moisture seal protective cap |
| Seal | Nonmetallic special shaped section seal |
| Silencer | Intake muffler |
| Static port adapter | Straight pipe to tube adapter |
| TIMER | Interval timer |
| Tubing | Nonmetallic tubing |
| Warning horn | Buzzer |

### 1-6. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your collective protection equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you do not like about your equipment. Let us know why you do not like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at Commander, US Army Armament, Munitions and Chemical Command. ATTN: AMSMC-QAD(R), Rock Island, IL 61299-6000. We will send you a reply.

## Section II EQUIPMENT DESCRIPTION AND DATA

### 1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

a. *Characteristics.*

(1) Collective protection equipment (CPE) allows operation in a chemical/biological agent contaminated zone.

(2) The filter units provide filtered air under positive pressure to the M10 Protective Entrances and to the GUARDRAIL vans.

(3) Positive pressure prevents dangerous amounts of chemical and biological (CB) agents from entering the protected area.

(4) The M10 Protective Entrances, while under positive pressure, allow personnel to enter or leave without loss of positive pressure protection in GUARDRAIL van 1 and van 4.

b. *Capabilities and Features.*

(1) Both the M10 Protective Entrances and the GUARDRAIL vans contain control modules.

(2) Major CPE components may be attached or detached from the GUARDRAIL system without affecting shelter operation.

(3) Modular CPE design permits the following:

(a) Easy access to major components for servicing and maintenance.

(b) Quick replacement of malfunctioning components.

### 1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

a. The protective entrances (A) consist of the following:

(1) A shell assembly, which is in two halves and forms the roof and floor.

(2) A door assembly that, when fully extended, provides access to the protective entrance. The door frame supports the protective entrance front.

(3) Two support assemblies that, when fully extended, form rigid poles between shell assembly roof and the floor. The support assemblies are located at the protective entrance rear.

(4) An impermeable fabric assembly that attaches to the two shell assembly halves. The fabric forms the protective entrance walls when fully extended.

b. The protective entrance control modules (B) mount in the shell assembly roof and provide white or blackout red light, purge timing, and low pressure warning for the protective entrances.

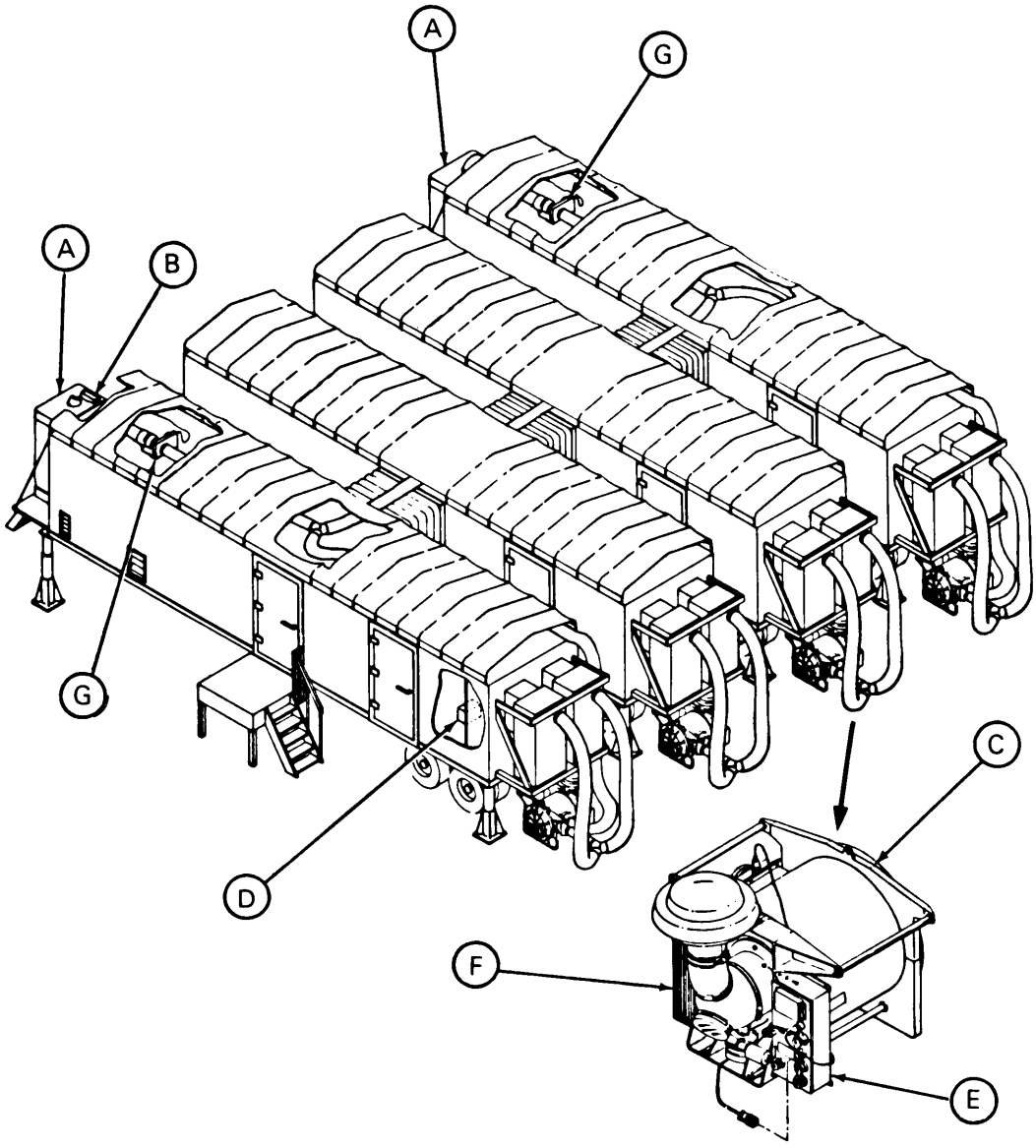
c. The housing units (C) contain the main fan, gas filter, and particulate filter. Inner and outer access covers permit filter changing.

d. The compartment control modules (D) mount inside the vans and contain controls and indicators to operate the collective protection equipment. They also serve as the electrical power distribution centers for the collective protection equipment.

e. The power distribution units (E) mount on the filter units opposite the static frequency converters. They serve as the electrical power distribution centers for the collective protection equipment.

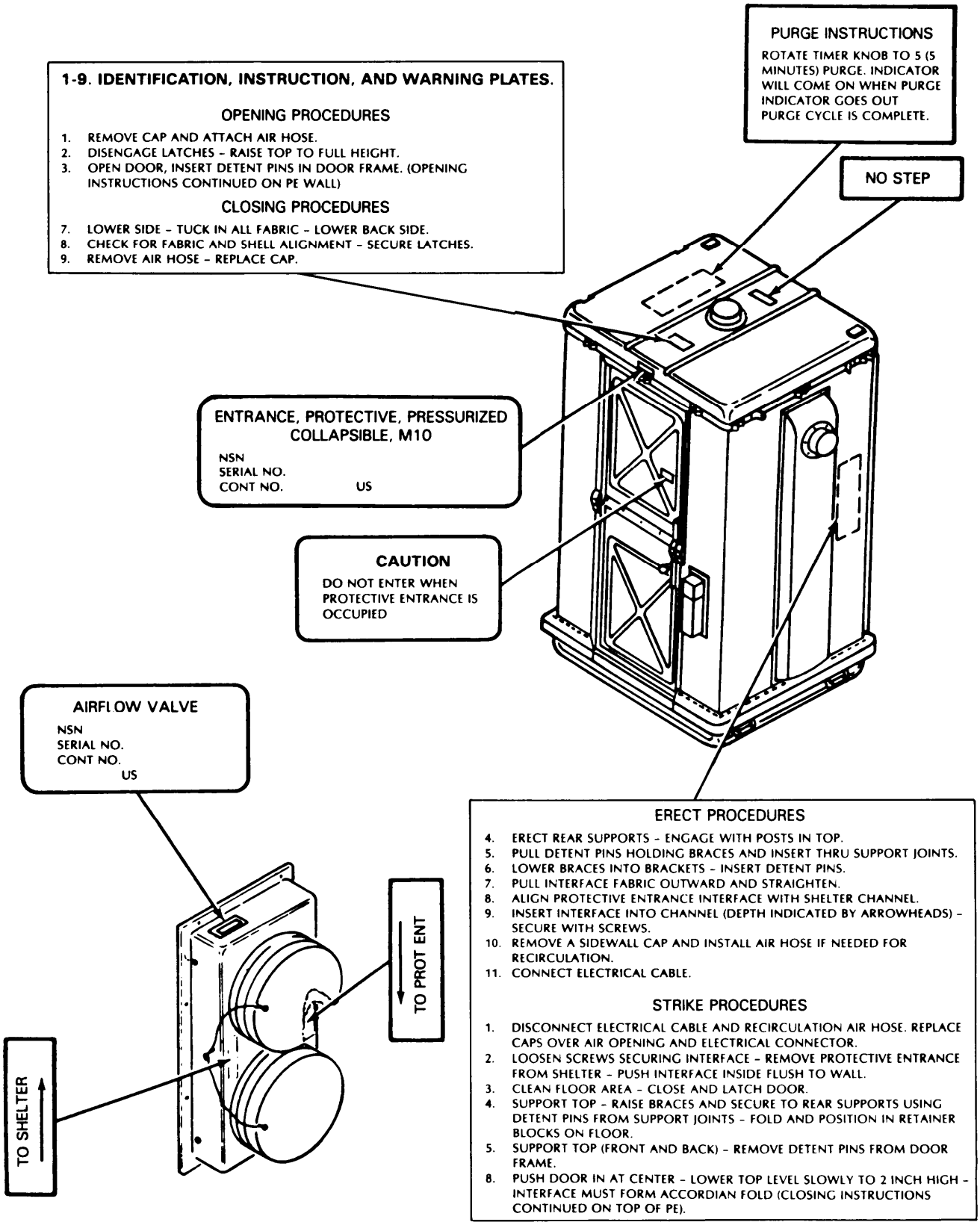
f. The static frequency converters (F) mount on the housing unit stands and convert 3 phase, 60 Hz, 208 V shelter power to 3 phase. 400 Hz, 208 V power for CPE use.

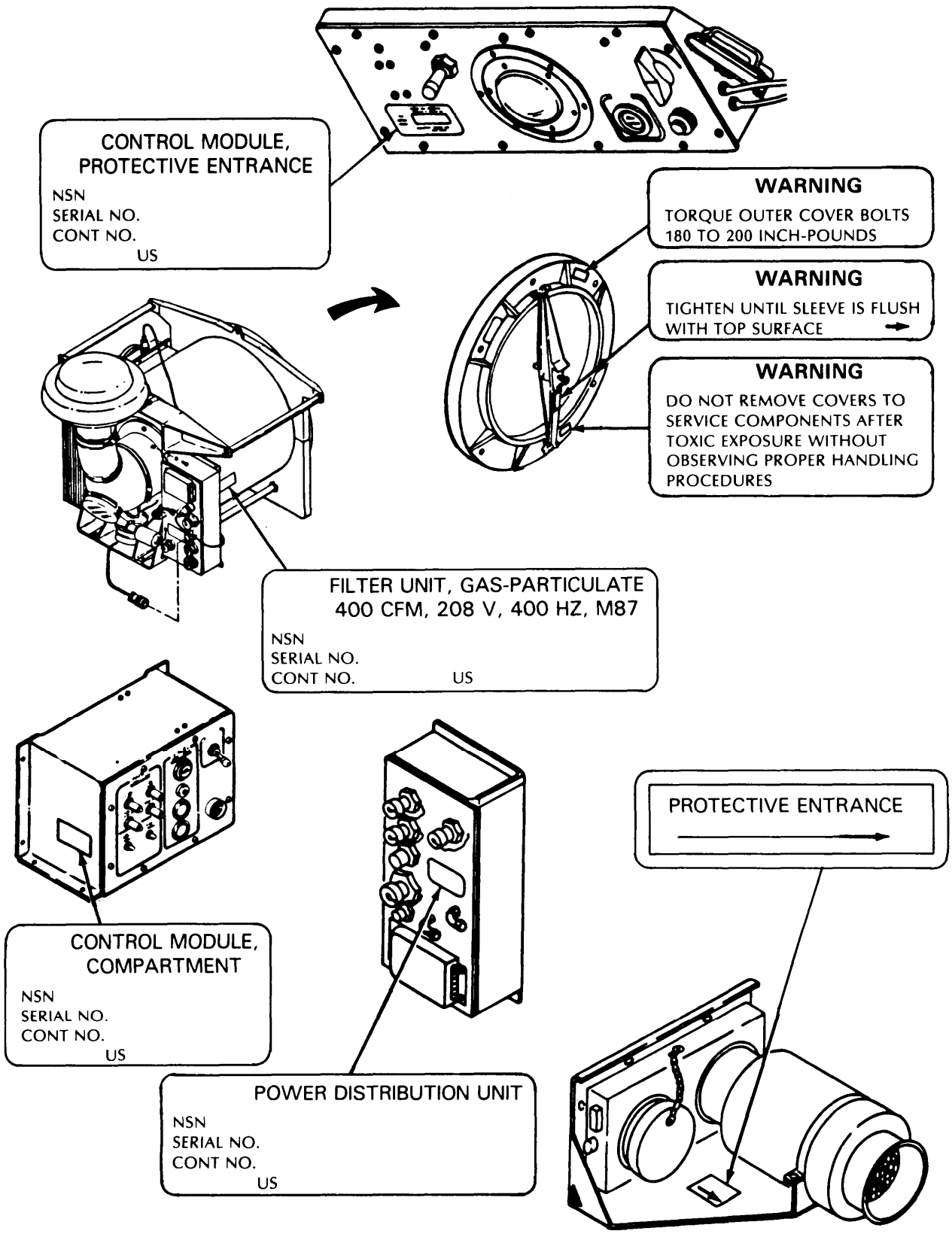
g. The airflow valves and silencers (G) adjust and silence the flow of filtered air to the protective entrances. The valves are controlled by the protective entrance control modules.



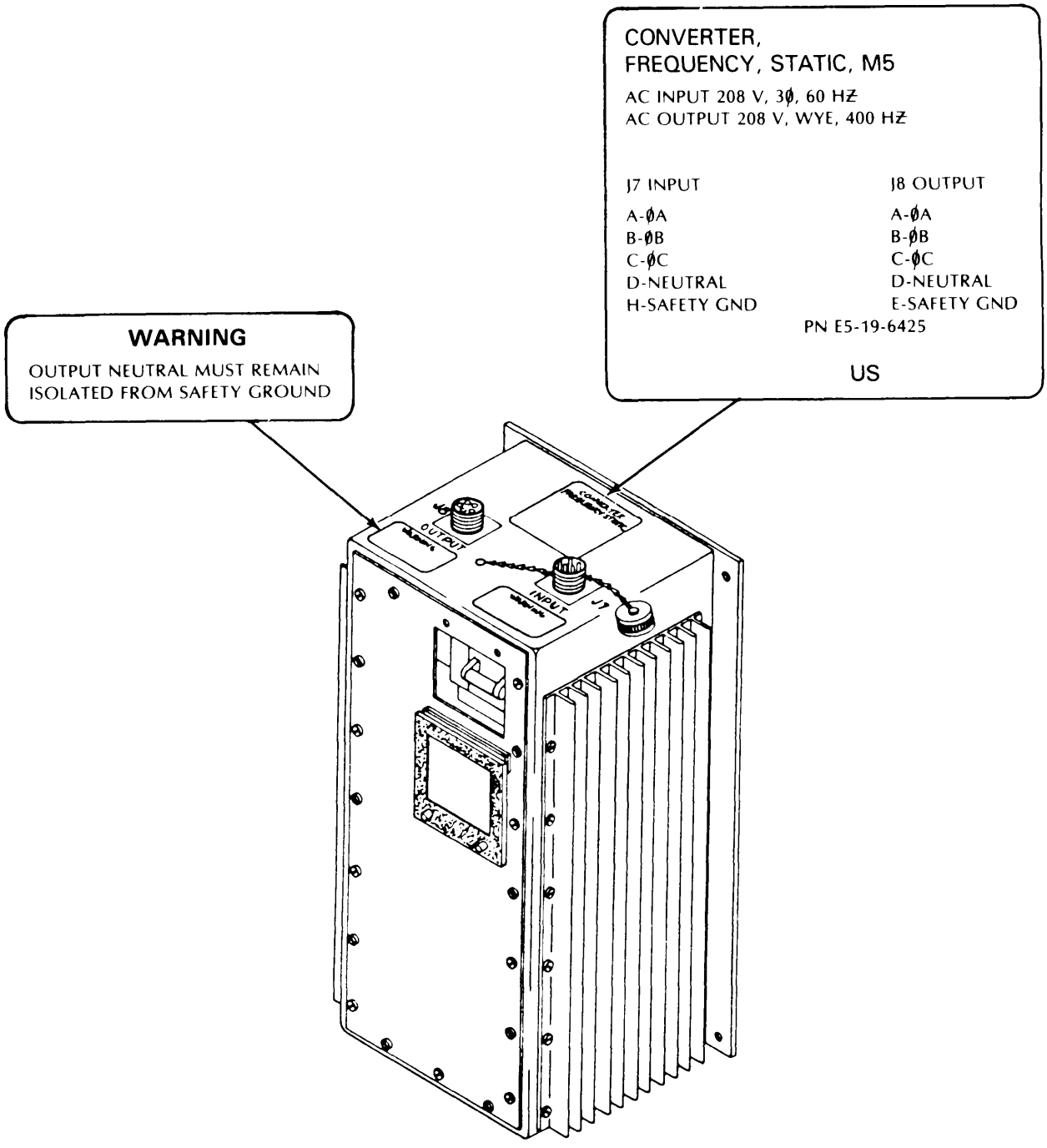

MAJOR COMPONENTS

## 1-9. IDENTIFICATION, INSTRUCTION, AND WARNING PLATES.




CONTROL MODULE, PROTECTIVE ENTRANCE
NSN
SERIAL NO.
CONT NO.
US
WARNING
TORQUE OUTER COVER BOLTS 180 TO 200 INCH-POUNDS
WARNING
TIGHTEN UNTIL SLEEVE IS FLUSH WITH TOP SURFACE
WARNING
DO NOT REMOVE COVERS TO SERVICE COMPONENTS AFTER TOXIC EXPOSURE WITHOUT OBSERVING PROPER HANDLING PROCEDURES
FILTER UNIT, GAS-PARTICULATE 400 CFM, 208 V, 400 HZ, M87
NSN
SERIAL NO.
CONT NO.
US
CONTROL MODULE, COMPARTMENT
NSN
SERIAL NO.
CONT NO.
US
POWER DISTRIBUTION UNIT
NSN
SERIAL NO.
CONT NO.
US
PROTECTIVE ENTRANCE

## 1-9. IDENTIFICATION, INSTRUCTION, AND WARNING PLATES (CONT).



## 1-10. EQUIPMENT DATA.

### Dimensions and Weights

| Component | Length (in.) | Length (cm) | Width (in.) | Width (cm) | Height (in.) | Height (cm) | Weight (lb) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| M10 Protective Entrance | | | | | | | | |
| Packaged dimensions | 49.3 | 125,22 | 43.3 | 109.98 | 12.5 | 31.75 | 145 | 65.77 |
| Erected dimensions | 49.3 | 125.22 | 43.3 | 109.98 | 85.4 | 216.91 | 145 | 65.77 |
| Protective Entrance Control Module | 16 | 40.64 | 6.75 | 17.14 | 5 | 12.70 | 7.5 | 3.40 |
| M87 Gas-Particulate Filter Unit | 34 | 86.4 | 36 | 91.40 | 32 | 81.30 | 256 | 125.3 |
| PE Airflow Valve and Silencer | 15 | 38.10 | 8 | 20.32 | 4 | 10.16 | 13 | 5.90 |
| Power Distribution Unit | 18.5 | 46.99 | 8.25 | 20.95 | 4.25 | 10.79 | 16 | 7.26 |
| Compartment Control Module | 7.7 | 19.55 | 11.75 | 29.84 | 6.5 | 16.51 | 9 | 4.09 |
| M5 Static Frequency Converter | 8.5 | 21.59 | 10.50 | 26.67 | 20.00 | 50.80 | 65.0 | 29.48 |
| | Outer Diameter | | Inner Diameter | | | | | |
| Particulate Filter | 16.6 | 42.16 | 12 | 30.48 | 10 | 25.40 | 7.8 | 3.54 |
| | Outer Diameter | | Inner Diameter | | | | | |
| Gas Filter | 21.4 | 54.35 | 16.7 | 42.41 | 10 | 25.40 | 37.8 | 17.15 |

Operating Power Requirements

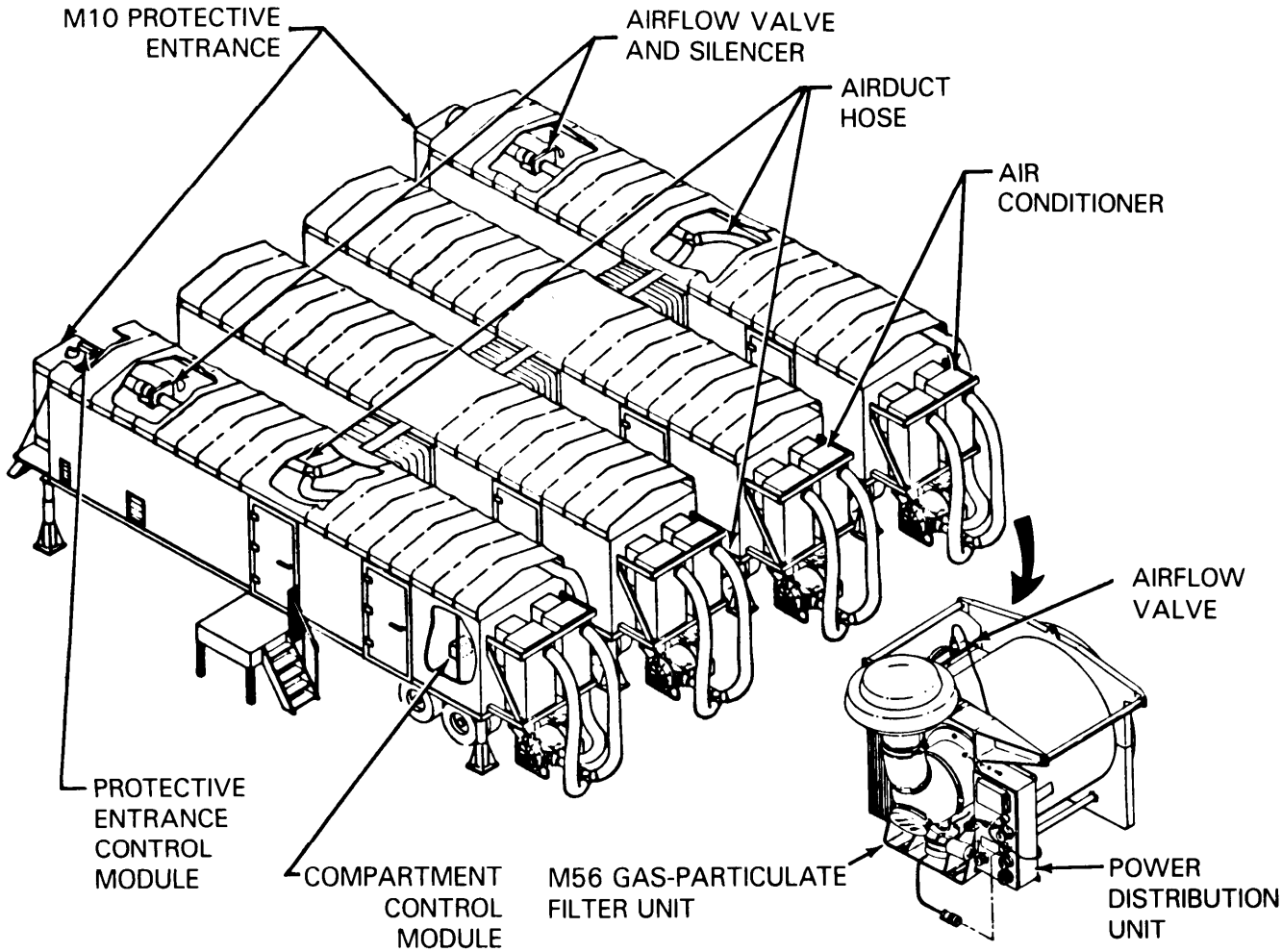
| *Component* | *Power Requirements* | *Input Voltage* | *Maximum Capacity* | *Airflow (cm)* |
|---|---|---|---|---|
| Protective Entrance Control Module | 2 A at 28 V dc | 28 V dc | | |
| M87 Gas-Particulate Filter Unit | 1,600 W | 208 V, 400 Hz, 3 phase | | 400 max |
| Airflow Valve | 1 A max at 28 V dc | | | 40 minimum at 20.0 in. wg |
| Power Distribution Unit | | 208 V, 400 Hz, 3 phase | 3.5 kW | |
| Compartment Control Module | 1 A max at 28 V dc | 28 V dc | | |
| Particulate Filter | | | | 200 |
| Gas Filter | | | | 200 |
| | Output Voltage | | | |
| M5 Static Frequency Converter | 208 V, 400 Hz, 3 phase | 208 V, 60 Hz, 3 phase | 3.2 kW | |

## Section III PRINCIPALS OF OPERATION

### 1-11. AIR FILTERING AND PRESSURIZATION SYSTEM.

a. Four M87 Gas-Particulate Filter Units remove toxic gases and dust from the air supplied to four vans and two M10 Protective Entrances. The airflow valves on the gas-particulate filter units on vans 2 and 3 remain in the wide open position. The fans on vans 2 and 3 draw outside air through the inlet caps and dust separators and force the air into the filter units. The fans force all of their filtered air into the vans. The fans on vans 1 and 4 draw outside air through the inlet caps and dust separators and force it into the filter units. The fans force cleaned air from the filter units into the airflow valves. The airflow valves direct the filtered air to the vans and the M10 Protective Entrances. Airduct hoses carry the filtered air through airflow valves and silencers at each protective entrance. Filtered air enters each van through air conditioners. The pressure sensing components in the compartment control modules in vans 1 and 4 automatically adjust the associated airflow valves to maintain positive pressure in all four vans.

b. The M10 Protective Entrances provide pressurized transition areas between the vans (1 and 4) and the outside contaminated zone. A balance hose between the two protective entrance airduct hoses ensures balanced pressurization between the two protective entrances. Personnel entering from the outside must wait 5 minutes within either of the protective entrances before entering van 1 or 4. Contamination is purged by the flow of the filtered air. The protective entrance control modules automatically adjust the airflow valve and silencer assemblies to maintain the proper air pressure inside the protective entrances and contain purge timers and low pressure warning indicators.



# CHAPTER 2
# MAINTENANCE INSTRUCTIONS

## Section I REPAIR PARTS, SPECIAL TOOLS, TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE), AND SUPPORT EQUIPMENT

**2-1. COMMON TOOLS AND EQUIPMENT.** For authorized common tools and equipment, refer to the modified table of organization and equipment (MTOE) applicable to your unit.

**2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.** No special tools, TMDE, or support equipment are required.

**2-3. REPAIR PARTS.** Repair parts are listed and illustrated in appendix C of this manual.

## Section II SERVICE UPON RECEIPT

**2-4. SERVICE UPON RECEIPT.** Refer to the appropriate maintenance manual.

TM 11-5865-234-23&P . . . . . Surveillance Information Processing Center, AN/TSQ-105 NSN 5895-01-177-6015

## Section III PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

**2-5. PMCS PROCEDURES.**

a. *General.* The PMCS procedures are contained in table 2-1. They are arranged in logical sequence requiring a minimum amount of time and motion on the part of the persons performing them and are arranged so that there will be a minimum interference between persons performing checks simultaneously on the same end item.

b. *Item Number Column.* Checks and services are numbered in chronological order regardless of interval. This column shall be used as a source of item numbers of the TM Number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

c. *Item To Be Inspected Column.* The items listed in this column are divided into groups indicating the portion of the equipment of which they are a part (for example, Falter Unit, Protective Entrance). Under these groupings, the items to be inspected are identified by as few words, usually the common name, as will clearly identify the item (for example, main fan assembly, airflow valve).

d. *Procedures Column.* This column contains a brief description of the procedure by which the check is to be performed. It contains all the information required to accomplish the checks and services, including appropriate tolerances, adjustment limits, and instrument and gage readings.

**NOTE**

Perform checks and services in the order listed before you perform functional testing

**Table 2-1. Preventive Maintenance Checks and Services (PMCS) Semiannual Schedule**

| *Item No.* | *Item to be Inspected* | *Procedures* |
|---|---|---|
| 1 | M87 Gas-Particulate Filter Unit | |
| | Housing Unit | Inspect instruction plates. You must be able to read them. Replace plates if necessary (p. 2-107). |
| | | Inspect outside surfaces for rust, chipped paint, or bare metal on painted surfaces. Repaint or touch up as necessary (p. 2-106). |
| | | Make sure that all parts are secure and that there is no loose or missing hardware. Tighten loose hardware. Replace missing hardware. |
| | Main fan assembly cable | Inspect cable assembly for bare wires, broken insulation, or broken connector. Replace damaged main fan assembly (p. 2-111). |
| | Compartment control module | Inspect unit for loose or missing mounting hardware. Tighten loose hardware. Replace missing hardware. |
| | | Inspect warning plate. Warning plate must be legible. Replace plate if necessary. |
| | Power distribution unit | Inspect unit for loose or missing mounting hardware. Tighten loose hardware. Replace missing hardware. |
| | | Inspect for damaged or missing electrical covers. Replace power distribution unit if the covers are damaged or missing (p. 2-95). |
| | Gas-particulate falters | WARNING<br>DO NOT throw away damaged or unusable filters as ordinary trash.<br>DO turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing Office (DRMO). |
| | | Remove falters (p. 2-91 and p. 2-92) and check for physical or water damage. |
| | | Inspect housing seal and inner cover seal for cracks, rips, hardening, etc. Replace seal if damaged (p. 2-93). Reinstall falters or install new falters (p. 2-91 and p. 2-93). |
| | Airflow valve | Inspect valve for damage and loose mounting hardware. Replace missing mounting hardware. Replace damaged airflow valve (p. 2-119). |
| 2 | M 10 Protective Entrance | Inspect instruction plates. Instruction plates must be legible. Replace plate if necessary (p. 2-80). |
| | | Inspect outside surface for chipped paint or bare metal on painted surfaces. Repaint or touch up as necessary (p. 2-73). |
| | | Make sure that all parts are secure and that there is no loose or missing hardware. Tighten loose hardware (p. 2-83). Replace missing hardware. |

**Table 2-1. Preventive Maintenance Checks and Services (PMCS) Semiannual Schedule**

| *Item No.* | *Item to be Inspected* | *Procedures* |
|---|---|---|
| 3 | M5 Static Frequency Converter | Inspect unit for loose or missing mounting hardware. Tighten loose hardware. Replace missing hardware. |
| | | Inspect for chipped, dented, cracked, or missing electrical covers. Replace covers if unserviceable or missing. (See TM 3-4240-299-23&P.) |
| 4 | Valve and Silencer | Inspect instruction plate. Instruction plates must be legible. Replace instruction plate (p. 2-126). |
| | | Inspect valve and silencer for cracked, loose, or missing hardware. Tighten loose hardware. Replace missing hardware. Replace damaged valve and silencer (p. 2-123). |
| 5 | Collective Protection Equipment | Perform functional testing (p. 2-3 through p. 2-14). |
| 6 | Dust Exhaust Blower | Inspect dust exhaust blower for loose or missing hose clamps on the inlet and outlet. Tighten loose hose clamps. Replace missing clamps. (p. 2-10 1). |
| | | Inspect dust exhaust blower for loose or missing mounting hardware. Tighten loose hardware. Replace missing hardware (p. 2-10 1). |

## Section IV FUNCTIONAL TESTING

**2-6. SCOPE.** This section contains instructions for functional testing the collective protection equipment for the vans. These tests must be performed following installation of the equipment and semiannually thereafter.

a. *Preventive Maintenance Checks and Services (PMCS).* Perform PMCS in paragraph 2-5 before performing functional testing.

b. *Troubleshooting Procedures.* Refer to troubleshooting on page 2-15 for malfunctions and corrections.

**NOTE**

Functional tests will be conducted with all interconnecting doors open and all van doors closed unless other specified in individual functional tests.

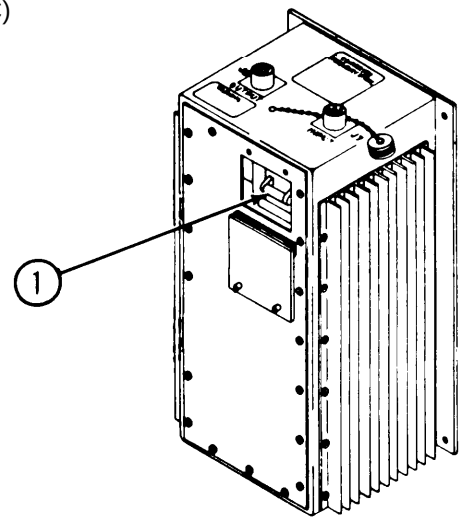
## 2-7. FUNCTIONAL TEST.

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|

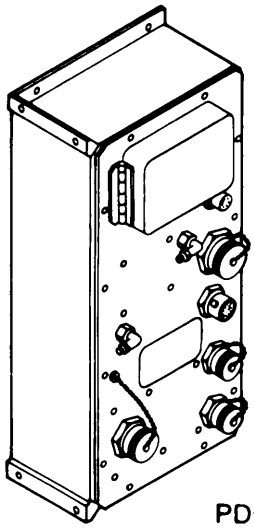
**NOTE**

This part of the functional test applies to vans 1 and 4 only. First perform the functional test on van 1 and then repeat the steps on van 4.

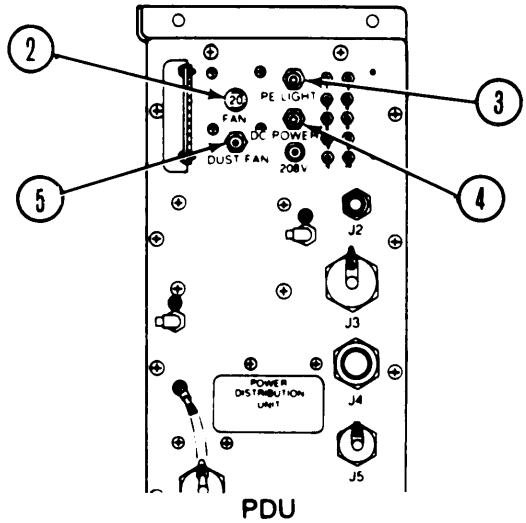
| | | | |
|---|---|---|---|
| Power Circuit | Cables | Check that all connections are tight. | Start at van 1. |
| | Power source | Check that power is supplied to power distribution unit. | |
| Static Frequency Converter (SFC) | Circuit breaker | Open access cover on the SFC. Check that circuit breaker CB1 (1) is set to ON (down). Close access cover. | |




| | | | |
|---|---|---|---|
| Power Distribution Unit (PDU) | Circuit breakers | Open access cover on PDU to expose circuit breakers.<br>Check that circuit breakers (2, 3, 4, and 5) are set. Press to set. | |

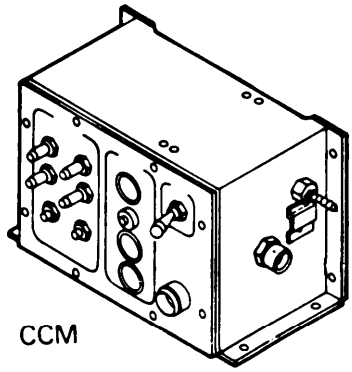


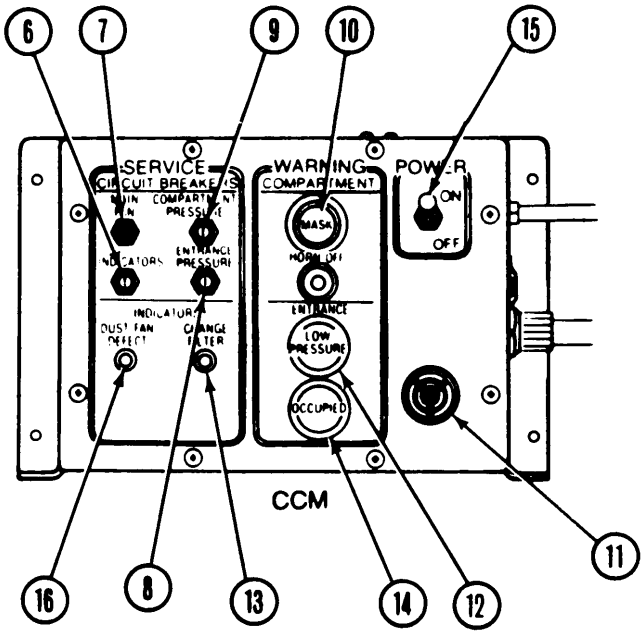
PDU




PDU

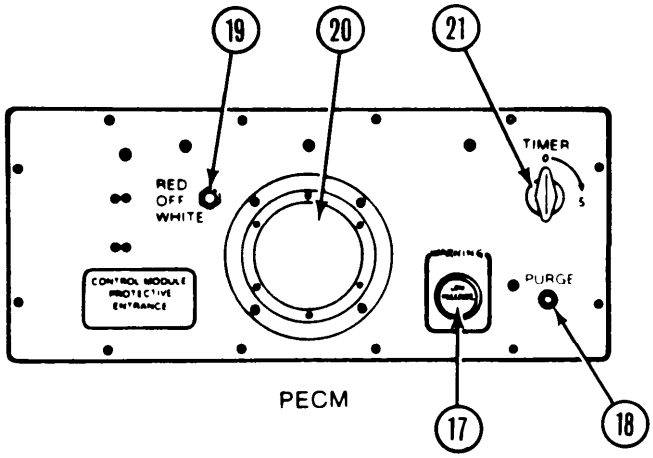
| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|
| Compartment Control Module (CCM) | | Set POWER switch (15) to OFF. | |
| | Circuit breakers | Check that circuit breakers (6, 7, 8, and 9) are set. Press to test. | |
| | Indicator lights | Press to test lamps: | |
| | MASK (10) | | Light will flash and warning horn (11) will sound. Replace lamp if necessary (p. 2-116). |
| | ENTRANCE LOW PRESSURE (12) | | Light will glow when pressed. Replace lamp if necessary (p, 2-116). |
| | CHANGE FILTER (13) | | Light will glow when pressed. Replace lamp if necessary (p. 2-116). |
| | OCCUPIED (14) | | Light will glow when pressed. Replace lamp if necessary (p. 2-116). |
| | DUST FAN DEFECT (16) | | Light will glow when pressed. Replace lamp if necessary (p. 2-116). |

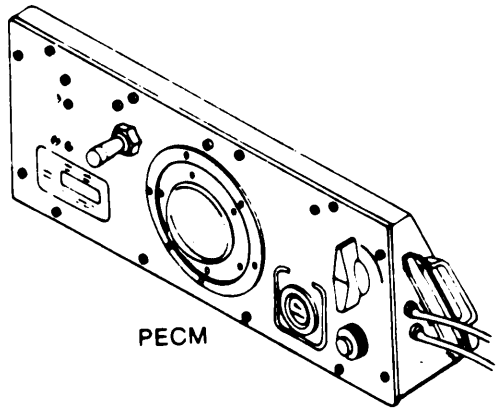


## 2-7. FUNCTIONAL TEST (CONT).

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|
| Protective Entrance Control Module (PECM) | Indicator lights | Press to test lamps: | |
| | | LOW PRESSURE (17) | Light will glow when pressed. Replace lamp if necessary (p. 2-76). |
| | | PURGE (18) | Light will glow when pressed. Replace lamp if necessary (p. 2-75). |



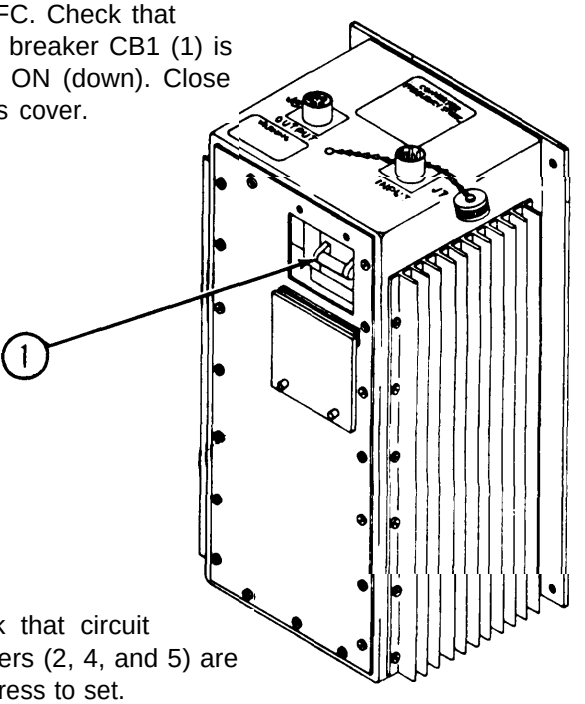

| | | | |
|---|---|---|---|
| | Dome light | Set dome light switch (19) to WHITE. | Dome light (20) will show white light. Replace lamp if necessary (p. 2-77). |
| | | Set switch (19) to RED. | Dome light (20) will show red light. Replace lamp if necessary (p. 2-77). |
| | | Set switch (19) to OFF. | Dome light (20) will go off. |
| | Timer | Rotate TIMER (21) fully clockwise. | PURGE light (18) will glow. |
| | | | OCCUPIED light in compartment control module will glow |
| | | Allow TIMER (21) to return to 0 (approximately 5 minutes). | PURGE AND OCCUPIED lights will go off. |
| | | Close van door and PE. | |
| | | Repeat functional test for van 4. | After van 4 is complete, proceed to next page. |

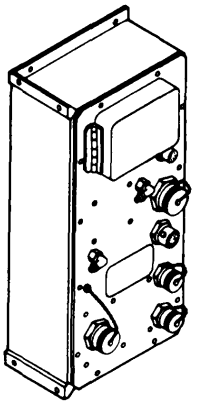
| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|

**NOTE**

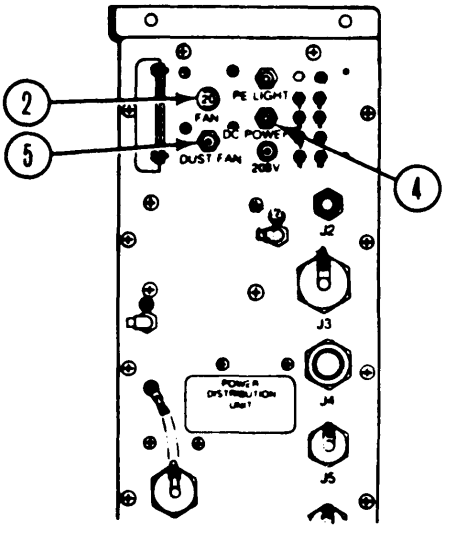
This part of the functional test applies to vans 2 and 3 only. First perform the functional test on van 2 and then repeat the steps on van 3.

| | | | |
|---|---|---|---|
| Power Circuit | Cables | Check that all connections are tight. | Start at van 2. |
| | Power source | Check that power is supplied to PDU. | |
| SFC | Circuit breaker | Open access cover on the SFC. Check that circuit breaker CB1 (1) is set to ON (down). Close access cover. | |
| PDU | Circuit breakers | Check that circuit breakers (2, 4, and 5) are set. Press to set. | |



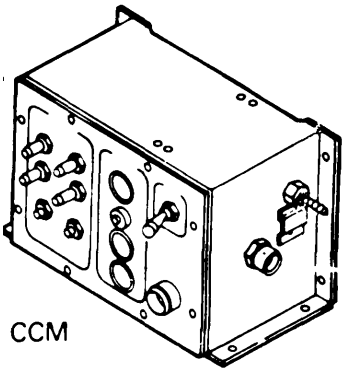
PDU

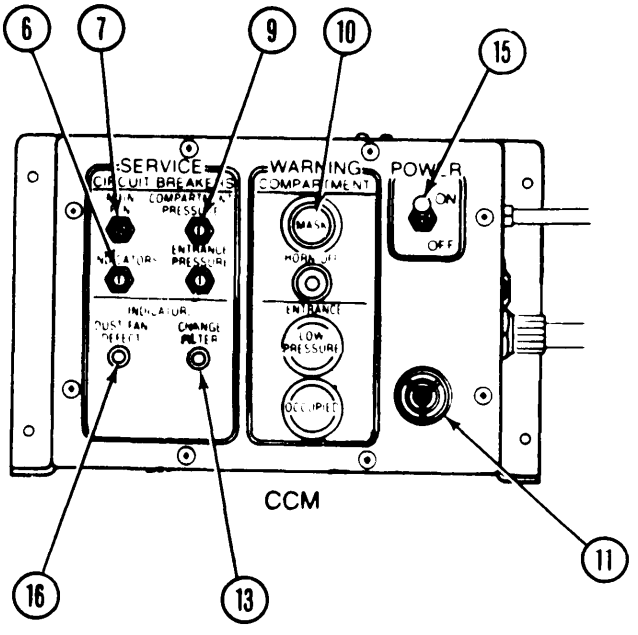



PDU

## 2-7. FUNCTIONAL TEST (CONT).

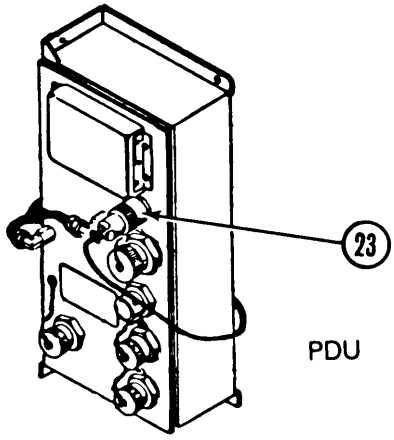
| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|
| CCM | | Set POWER switch (15) to OFF. | |
| | Circuit breakers | Check that circuit breakers (6, 7, and 9) are set. Press to test. | |
| | Indicator lights | Press to test lamps: | |
| | MASK (10) | | Light will flash and warning horn (11) will sound. Replace lamp if necessary (p. 2-116). |
| | CHANGE FILTER (13) | | Light will glow when pressed. Replace lamp if necessary (p. 2-116). |
| | DUST FAN DEFECT (16) | | Light will glow when pressed. Replace lamp if necessary (p. 2-116). |
| Repeat functional test for van 3. | | | After van 3 is complete, proceed to next page. |


CCM

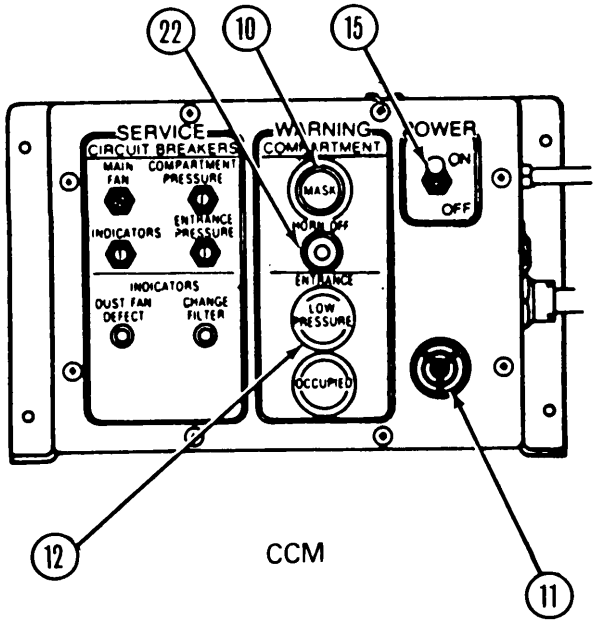


CCM

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|
| CCM | Pressure circuit | Ensure that all van doors are closed. Ensure that PE doors on vans 1 and 4 are closed. Leave interconnecting doors open. | Main fans must start and run. |
| | | Set POWER switches (15) in vans 2 and 3 to ON. | MASK switch/indicator lights (10) will flash in vans 2 and 3. Warning horns (11) will sound in vans 2 and 3. |
| | | After 10 seconds, disconnect plug P2 (23) from connector J2 on PDUs. | This will lock airflow valves in fully open position. |
| | | Set POWER switches (15) in vans 1 and 4 to ON. | MASK switch/indicator lights (10) will begin flashing in vans 1 and 4. Warning horns (11) will begin to sound in vans 1 and 4. |
| | | Allow warning horns to silence automatically. This will indicate proper system operation. | MASK switch/indicator lights (10) in each van will go off and warning horns (11) will silence when proper van pressure is reached (approximately 30 seconds). |
| | | | ENTRANCE LOW PRESSURE switch/ indicator lights (12) on vans 1 and 4 will light when filter unit is started and then go off when proper PE pressure is reached (approximately 30 seconds). |
| | | | When loss of power to CPE occurs with the CCM POWER switch in ON position, MASK switch/indicator lights (10) will flash and warning horns (11) will sound for the affected van. |



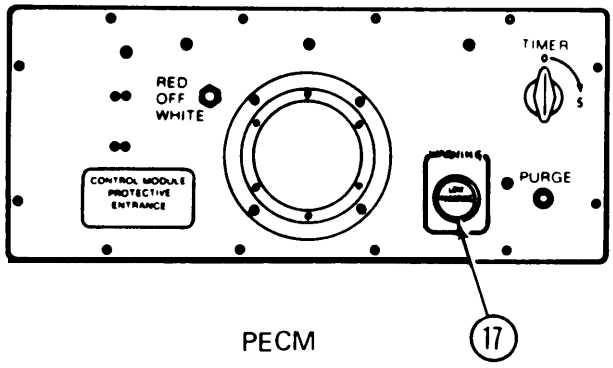

PDU



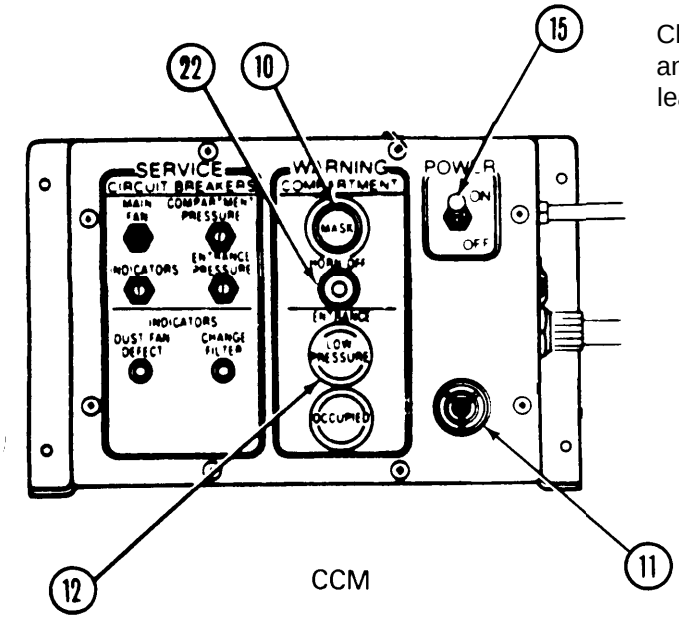

CCM

## 2-7. FUNCTIONAL TEST (CONT).

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|
| | | Open PE doors on vans 1 and 4. | |
| CCM | Pressure circuit | | ENTRANCE LOW PRESSURE switch/ indicator lights (12) will glow in vans 1 and 4. |
| PECM | | | LOW PRESSURE switch/ indicator lights (17) will glow in vans 1 and 4. |
| | | Open van door leading to PE on van 1. | MASK switch/indicator lights (10) will flash in vans 1, 2, 3, and 4. |
| | | | Warning horns (11) will sound in vans 1, 2, 3, and 4. |
| | | Press HORN OFF buttons (22) in vans 1, 2, 3, and 4. | Button will stay in pressed position. Warning horns will stop sounding. MASK switch/ indicator lights (10) will glow and stay on. |
| | | Close PE doors on vans 1 and 4. Close van doors leading to PE on van 1. | Within 30 seconds: |
| | | | All ENTRANCE LOW PRESSURE switch/ indicator lights (12) will go off. Also, all the LOW PRESSURE switch/indicator lights (17) on the PECMS will go off. |
| | | | MASK switch/indicator lights (10) will go off. All HORN OFF buttons (22) will reset. |




PECM




CCM

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|

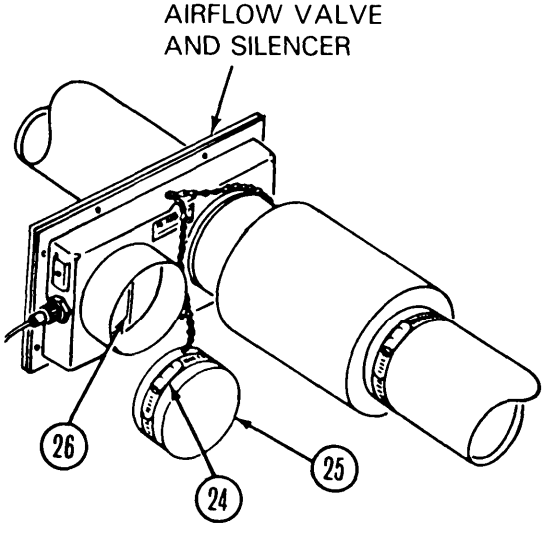
**NOTE**

Two technicians are needed for this checkout procedure: one on the outside of the PE and the other on top of the shelter at the airflow valve and silencer.

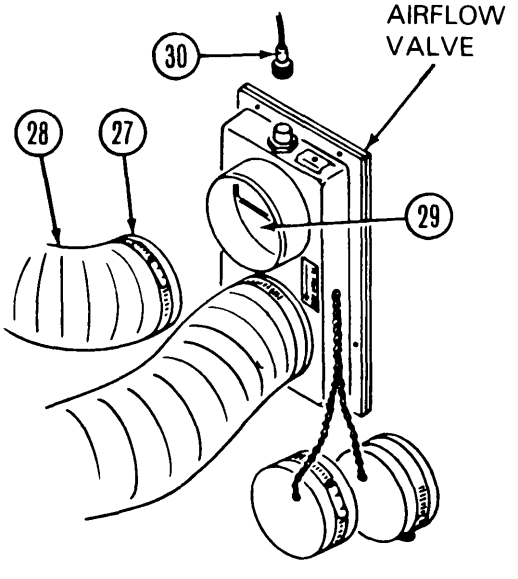
**NOTE**

This part of the functional test applies to vans 1 and 4 only. First perform the functional test on van 1 and then repeat the steps on van 4.

| | | | |
|---|---|---|---|
| Airflow Valve and Silencer | Airflow valve | Ensure that all van doors are closed. Ensure that PE doors on vans 1 and 4 are closed. | |
| | | Loosen hose clamp (24) and remove protective cap (25) from outlet port. | |
| | | Observe the sliding plate. | The sliding plate (26) will move in a direction to allow more airflow into the PE. |
| | | Replace protective cap (25) on outlet port. Tighten hose clamp (24). | |




| | | | |
|---|---|---|---|
| Fan and Airflow Valve Housing Unit | Airflow valve | Disconnect cable P15 (30). | |
| | | Hold airduct hose (28) going to the PE and loosen hose clamp (27). Remove airduct hose. | |
| | | Wait about 15 seconds and reconnect cable P15 (30). | Sliding plate (29) will move to reduce airflow into the PE. |
| | | Replace airduct hose (28). Tighten hose clamp (27). | |
| | | Repeat this test on the airflow valves on van 4. | After van 4 is completed, proceed to next page. |



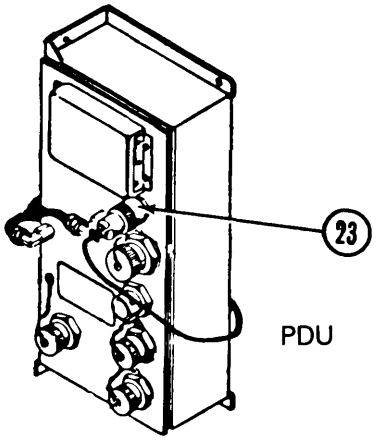
## 2-7. FUNCTIONAL TEST.

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|

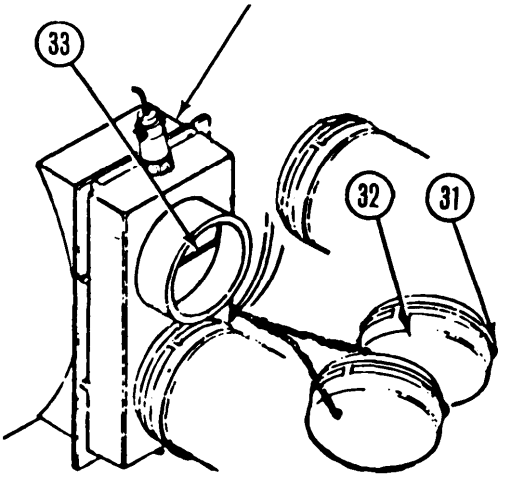
**NOTE**

This part of the functional test applies to vans 2 and 3 only. First perform the functional test on van 2 and then repeat the steps on van 3.

| | | | |
|---|---|---|---|
| PDU | Plug P2 | Reconnect plug P2 (23) to connector J2 on PDU. | |
| Fan and Airflow Valve Housing Unit | Airflow valve | Ensure that all van doors are closed. Ensure that PE doors on vans 1 and 4 are closed. | Start on van 2. All filter units must be operating. |
| | | Loosen hose clamp (31) on protective cap (32) and remove cap from outlet port marked TO PROT ENT. | |
| | | Open all van doors. Open PE doors on vans 1 and 4. | The sliding plate (33) in the airflow valve must move to completely close off the outlet marked TO PROT ENT. |
| | | Disconnect plug P2 (23) from connector J2 on PDU. | This will lock the airflow valve in the fully open position. |
| | | Turn off filter unit: | |
| | | Set CCM POWER switch (15) to OFF. | |
| | | Close van and PE doors on vans 1 and 4. | |
| | | Replace protective cap (32) on port marked TO PROT ENT. Tighten hose clamp (31). | |
| | | Repeat this test on the airflow valve on van 3. | After van 3 is complete, proceed to next page. |




AIRFLOW VALVE

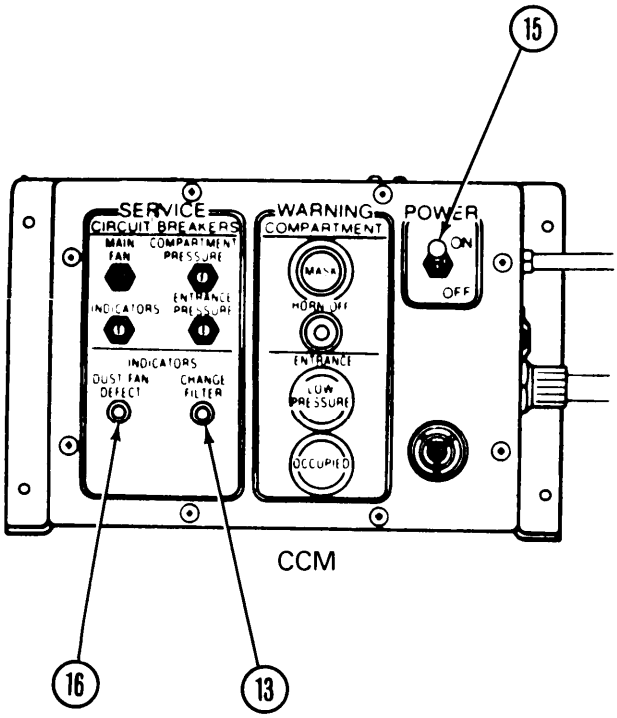


| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|

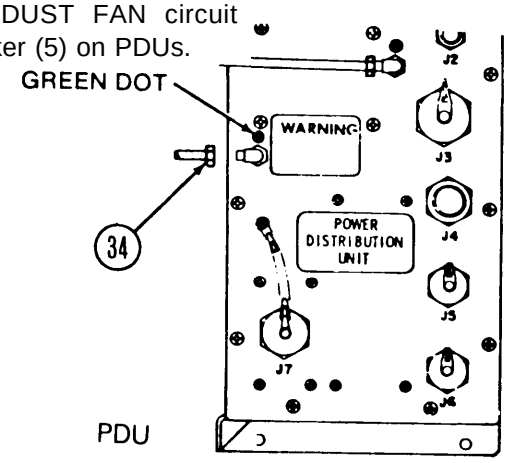
**NOTE**

Perform the following functional tests one van at a time starting at van 1 then repeating each test at vans 2, 3, and 4.

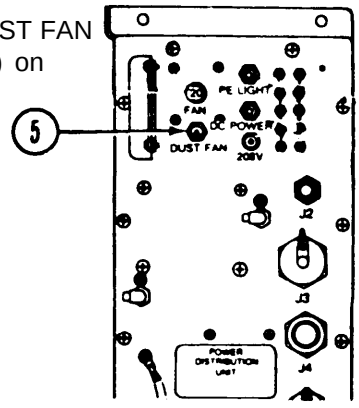
| | | | |
|---|---|---|---|
| PDU | CHANGE FILTER indicator light | Disconnect tubing (34) (green dot). | Filter unit must be operating. |
| CCM | CHANGE FILTER indicator light | | CHANGE FILTER indicator light (13) will glow. |
| PDU | | Reconnect tubing (34) (green dot) removed above. | |
| CCM | DUST FAN DEFECT indicator light | Tighten finger tight. | |
| | | Set POWER switches (15) to OFF on CCMS. | |




Trip DUST FAN circuit breaker (5) on PDUs.

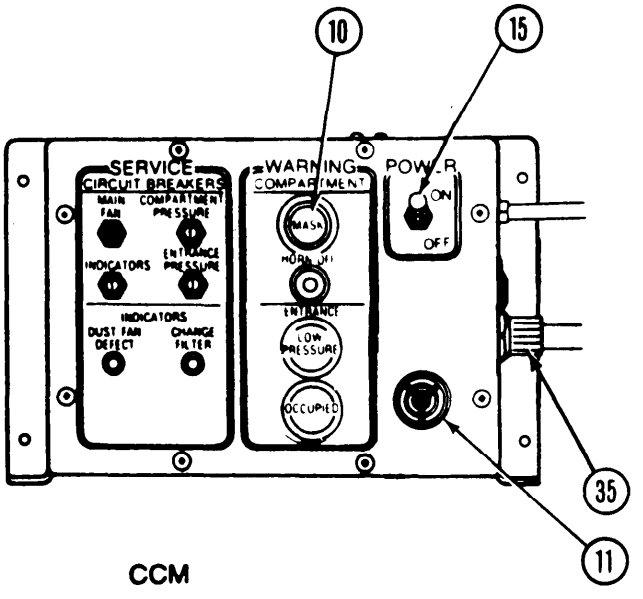



| | | | |
|---|---|---|---|
| | | Set POWER switches (15) to ON on CCMs. | DUST FAN DEFECT indicator light (16) will glow. |
| | | Set POWER switches (15) to OFF on CCMs. | |
| | | Press to reset DUST FAN circuit breaker (5) on PDUs. | |



## 2-7. FUNCTIONAL TEST (CONT).

| LOCATION | ITEM | ACTION | INDICATION/REMARKS |
|---|---|---|---|
| CCM | Loss of power warning system | Disconnect plug PI (35). | |
| | | Set POWER switch (15) to ON. | MASK switch/indicator light (10) will flash.<br>Warning horn (11) will sound. |
| | | Set POWER switch (15) to OFF. | |
| | | Reconnect plug P1 (35). | Repeat until tests are completed for vans 1, 2, 3, and 4. |
| | | Set POWER switches (15) to ON on 4 CCMS. | Filter units must be operating and vans and PEs must be pressurized. |




CCM

## Section V TROUBLESHOOTING

### 2-8. SCOPE.

a. This section contains troubleshooting information for locating and correcting most of the operating troubles which may develop in your collective protection equipment. A symptom is provided for each malfunction that is likely to occur. Each symptom is followed by a troubleshooting procedure to isolate the fault to a replaceable component.

b. This manual cannot list all possible malfunctions that may occur. If a malfunction is not listed (except when malfunction and cause are obvious) or is not corrected by the troubleshooting procedure, notify your supervisor.

c. Direct support maintenance procedures are found in the appropriate technical manuals listed in appendix A.

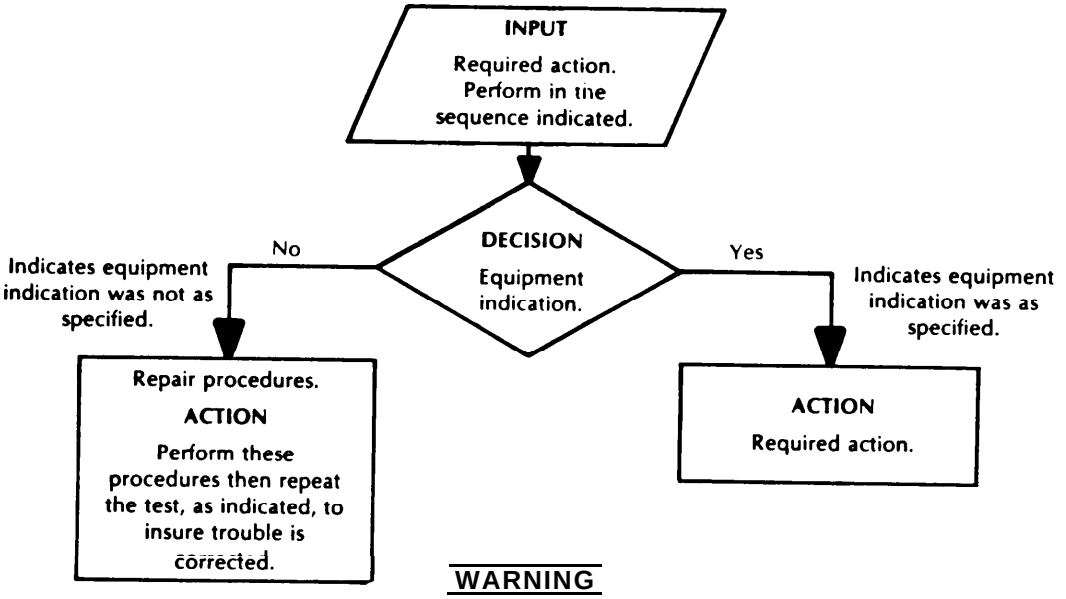
**NOTE**

When measuring voltage at the power distribution unit (PDU), TP #10 is ground.

### 2-9. TROUBLESHOOTING PROCEDURES.

a. Perform functional test first. Then, use the symptom index for quick access to the troubleshooting procedures.

b. The following describes the use of the troubleshooting procedures.




**WARNING**

High voltage is used to power this equipment. Before removing or installing power cable. be sure that POWER switch on control module is set to OFF and power source is shut down to avoid personal injury or loss of life.

**SYMPTOM INDEX**

## 1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING.

START

MASK switch/ indicator light and/ or horn on.

Be sure power is available to CCM and main power switch on CCM is turned on.

Are one or more MASK switch/ indicator lights on?

No

Yes

Are one or more horns on?

No

Yes

Wait about 3 minutes. Proceed to page 2-17.

Is HORN OFF button pressed?

No

Yes

Replace CCM (p. 2-89). Repeat functional test (p. 2-3).

Proceed to page 2-17.

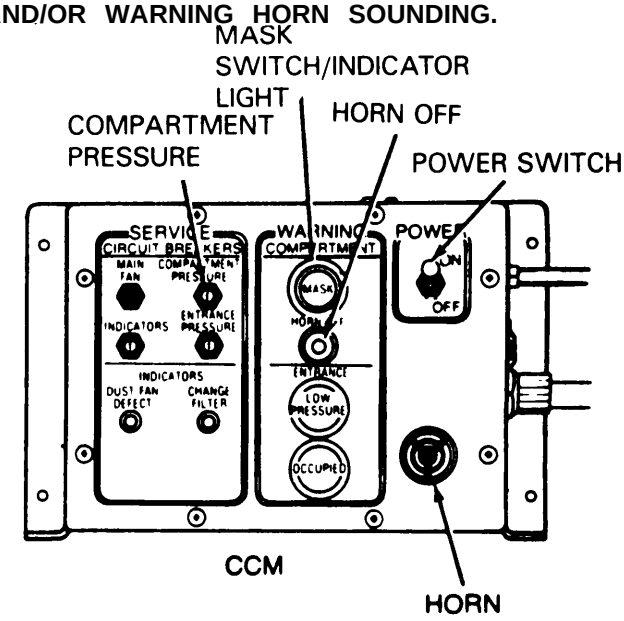
Is COMPARTMENT PRESSURE circuit breaker open?

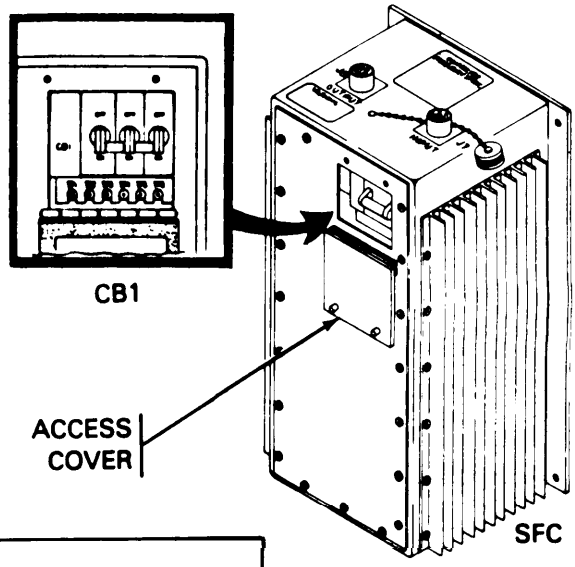
No

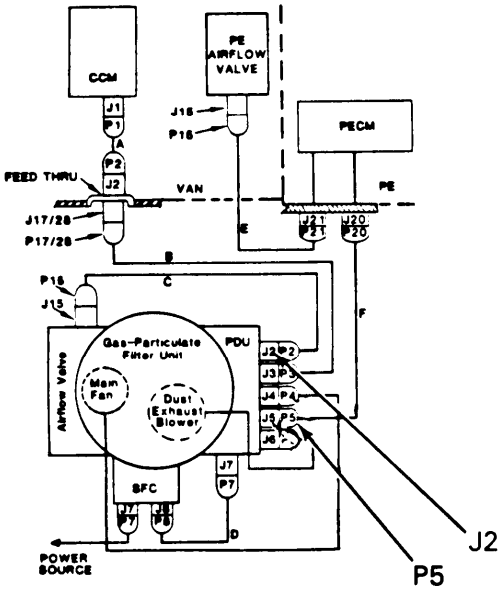
Yes

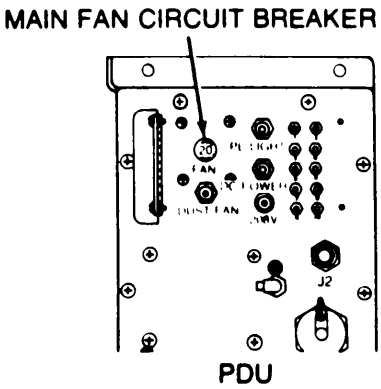
Replace CCM (p. 2-89). Repeat functional test (p. 2-3).

Proceed to page 2-26



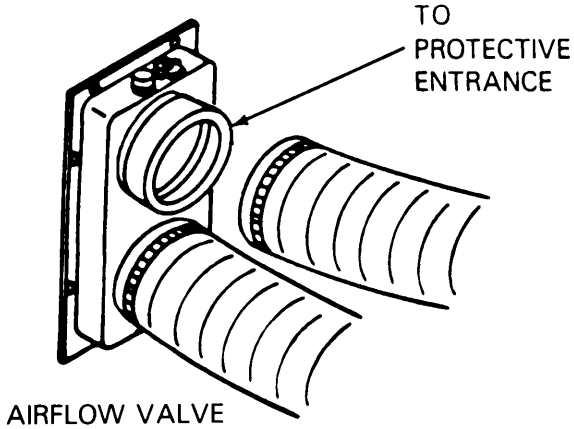






LEGEND

CCM – Compartment Control Module
SFC – Static Frequency Converter




Page 2-16

Connect plugs P2 to J2 at PDUs on vans 2 and 3. Remove airduct hose from port marked TO PROT ENT at filter unit airflow valve on vans 1 and 4. Install protective cap on port marked TO PROT ENT and tighten hose clamp. Disconnect plug P5 on vans 1 and 4. Close interconnecting doors between vans 1 and 2, vans 2 and 3, and vans 3 and 4.

Do any MASK switch/indicator lights go out or warning horns silence?

No

Check that input power is supplied to the SFCs (208 V ac, 3 phase, 60 Hz).

Yes

Set POWER switches to OFF on CCMs where MASK switch/indicator lights go out and warning horns silence.

Is input power supplied?

No

Check out power distribution unit panel power cables and power sources. Repair power related fault. Perform functional test (p. 2-3).

Yes

Set POWER switch on CCMs to OFF, Set circuit breaker CB1 at SFCs to OFF. Replace SFCs (p. 2-104). Perform functional test (p. 2-3).

Is MASK switch/ indicator light on and warning horn sounding on van 1 or 4?

No

This procedure applies to van 1 or 4. Proceed to page 2-18, and troubleshoot one van at a time.

Yes

This procedure applies to van 2 or 3. Proceed to page 2-28, and troubleshoot one van at a time.

## 1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING (CONT).

Page 2-17

Is MAIN FAN circuit breaker pressed on CCMs?

No → Proceed to page 2-22.

Yes →

Is main fan running?

No → Proceed to page 2-24.

Yes → With power on, disconnect P15 on filter unit airflow valve. Then disconnect airduct hose at van outlet of the airflow valve.

Is airflow valve fully open?

No → Proceed to page 2-20.

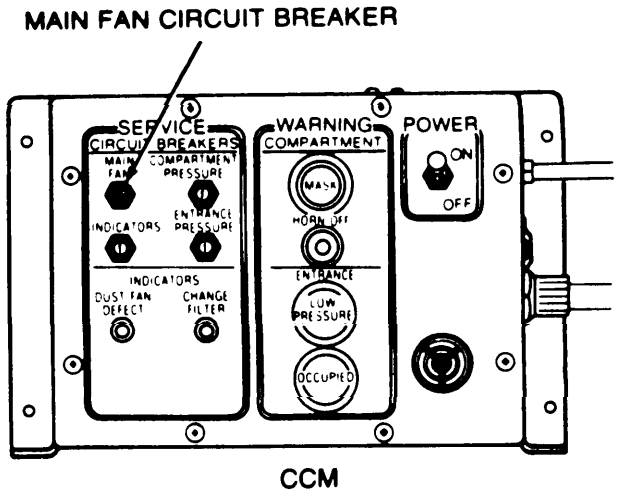
Yes → Reconnect P15 and airduct hose.

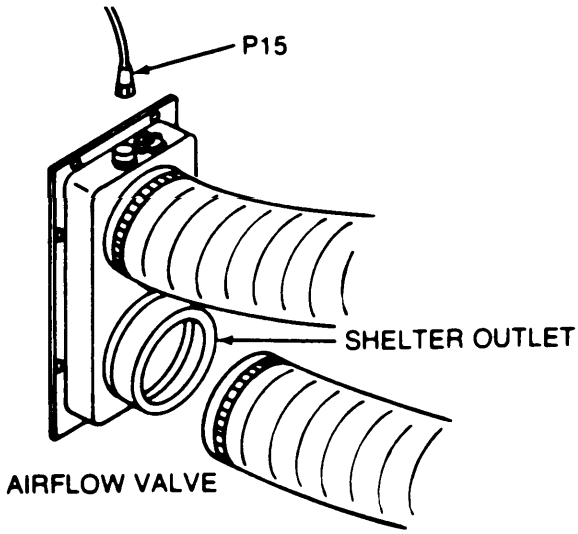
Is pressure hose to CCM properly installed and functional.

No →

Yes → Proceed to page 2-19.

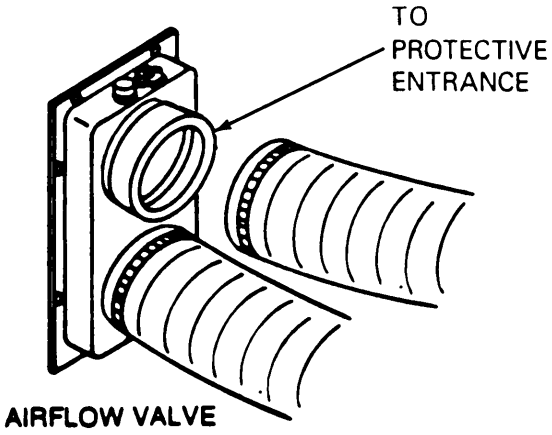
Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plugs P5 to J5 at PDUs on vans 1 and 4. Correct installation or replace pressure hose.

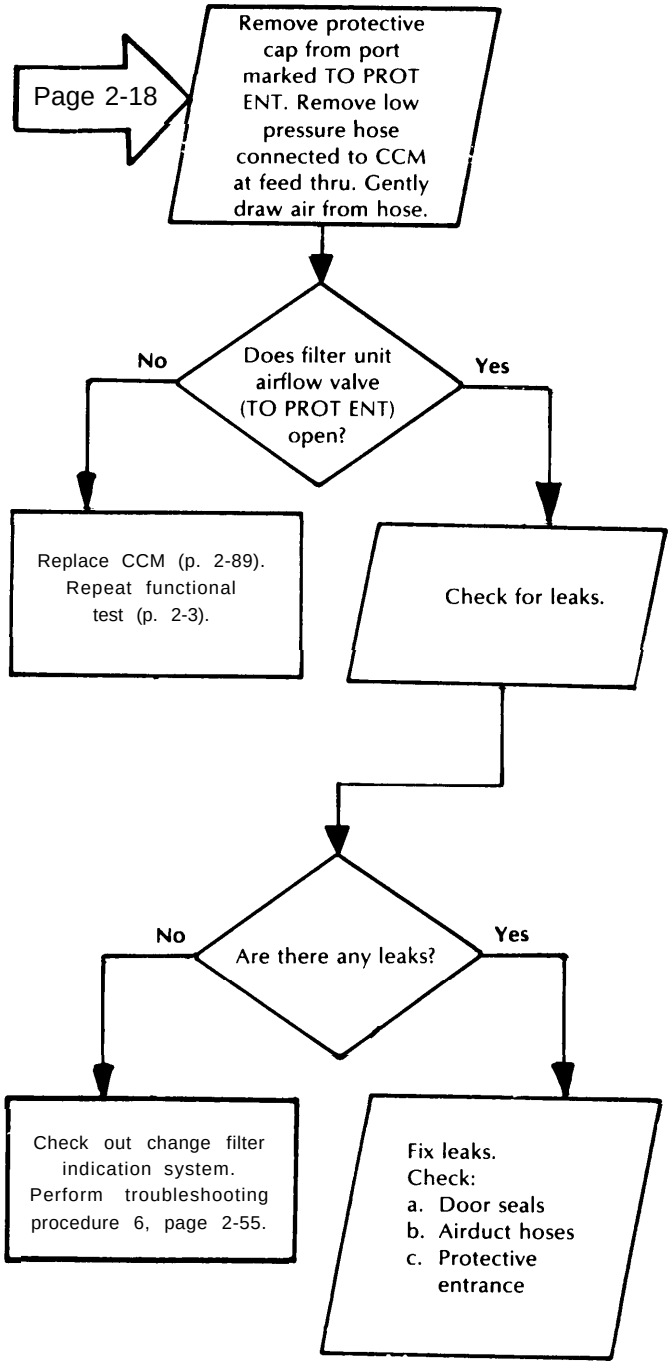



LEGEND

CCM – Compartment Control Module
PDU – Power Distribution Unit
PE – Protective Entrance


TO
PROTECTIVE
ENTRANCE
AIRFLOW VALVE


Page 2-18
Remove protective cap from port marked TO PROT ENT. Remove low pressure hose connected to CCM at feed thru. Gently draw air from hose.
Does filter unit airflow valve (TO PROT ENT) open?
No
Yes
Replace CCM (p. 2-89). Repeat functional test (p. 2-3).
Check for leaks.
Are there any leaks?
No
Yes
Check out change filter indication system. Perform troubleshooting procedure 6, page 2-55.
Fix leaks.
Check:
a. Door seals
b. Airduct hoses
c. Protective entrance

## 1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING (CONT).

Connect P15 on filter unit airflow valve.

Pages 2-18 and 2-28

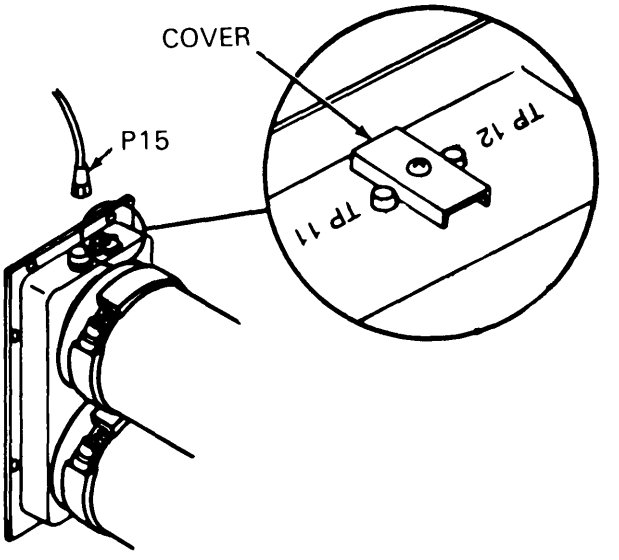
Does airflow valve fully open?

No

Yes

Loosen test point cover on top of airflow valve and rotate it 90°.

Replace CCM (p. 2-89). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to 15 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).




AIRFLOW VALVE

Is there approximately 28 V dc at TP #12(+) with respect to TP #11(−) on airflow valve?

No

Yes

Replace airflow valve (p. 2-119). Replace cable C. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3. and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Turn off power. Disconnect P15 and P2 from PDU to filter unit airflow valve. Check continuity:

| From | To |
|---|---|
| P15A | P2A |
| P15B | P2B |

Is there continuity?

No

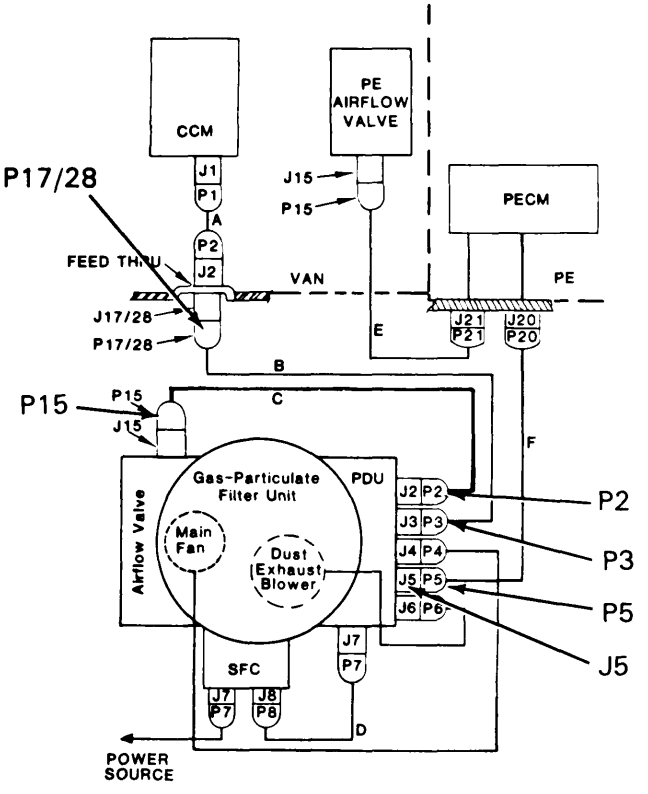
Yes

Replace cable C. Reconnect PE airduct hose 10 port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Reconnect P15. Proceed to page 2-21.

LEGEND

CCM – Compartment Control Module
Feed thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
PE – Protective Entrance
TP – Test Point




Page 2-20

Disconnect P3 at PDU. Check continuity:

| From | To |
|---|---|
| J2A | J3P |
| J2B | J3N |

Is there continuity?

No → Replace PDU (p. 2-95). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Yes → Reconnect P2. Disconnect P17/28 at the feed thru. Check continuity:

| From | To |
|---|---|
| P3P | P17/28P |
| P3N | P17/28N |

Is there continuity?

No → Replace cable B. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Yes → Reconnect cable B. Disconnect P1 at CCM and P2 at feed thru. Check continuity:

| From | To |
|---|---|
| P2P | P1P |
| P2N | P1N |

Is there continuity?

No → Replace cable A. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4, Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Yes → Replace CCM (p. 2-89). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

**1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING (CONT).**

Pages 2-18 and 2-28

Press MAIN FAN circuit breaker and wait about 3 minutes.

Does MAIN FAN circuit breaker remain set?

Yes → Proceed to page 2-24.

No → Turn off power. Disconnect P4. Turn on power. Reset MAIN FAN circuit breaker on CCM.

Does MAIN FAN circuit breaker on CCM remain set?

Yes → Proceed to page 2-25.

No → Open circuit breaker access cover on the PDU.

Is MAIN FAN circuit breaker open?

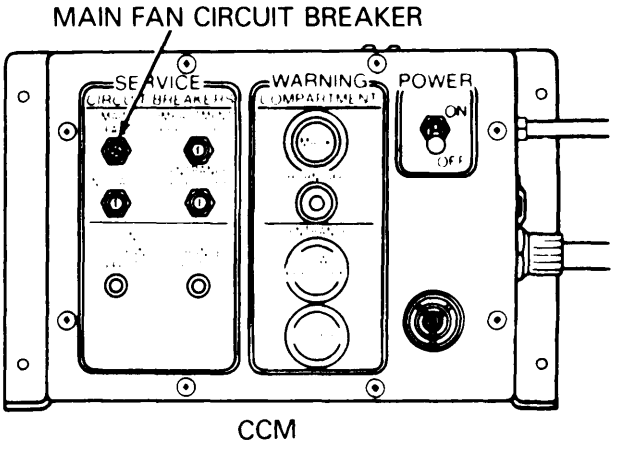
Yes → Reset MAIN FAN circuit breaker on PDU.

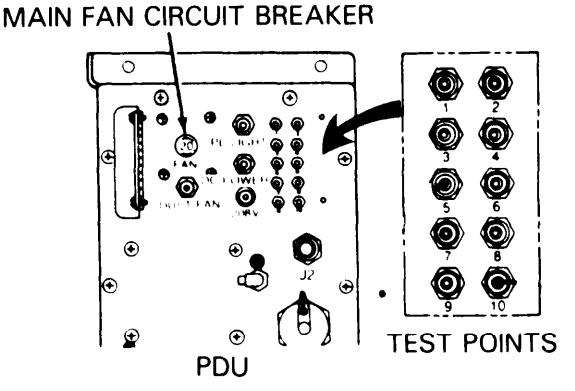
No → Proceed to page 2-23.

Does MAIN FAN circuit breaker on PDU remain set?

Yes → Proceed to page 2-25.

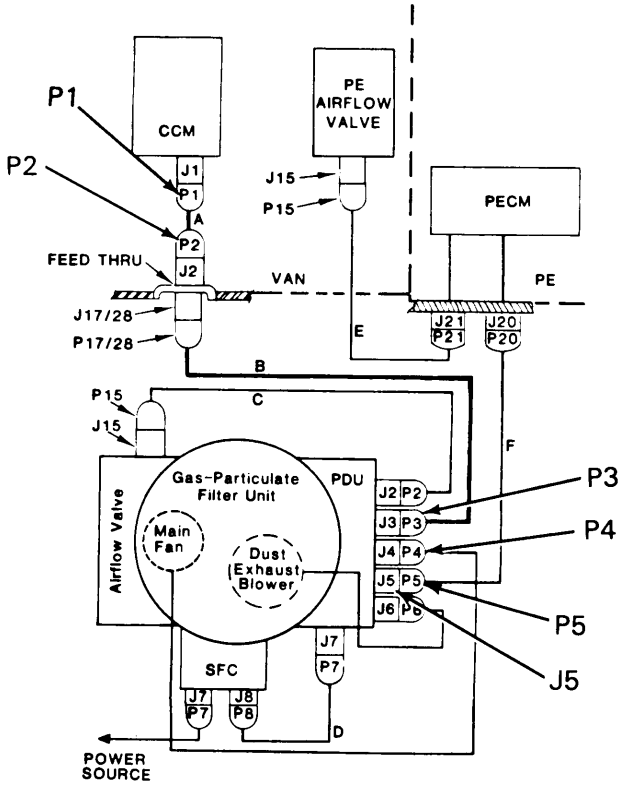
No → Replace PDU (p. 2-95). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).




LEGEND

C C M – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
PE – Protective Entrance




LEGEND

C C M – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
PE – Protective Entrance
TP – Test Point

Page 2-22

Turn off power. Reconnect P4. Disconnect P1 at CCM. Check continuity:

| From | To |
|---|---|
| TP #1(+) | TP #10(−) |

Is there continuity between TP #1 and TP #10 at PDU?

**No:** Replace CCM (p. 2-89). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

**Yes:** Disconnect P2 at the feed thru. Check continuity:

| From | To |
|---|---|
| TP #1 (+) | TP #10(−) |

Is there continuity between TP #1 and TP #10 at PDU?

**No:** Replace cable A. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

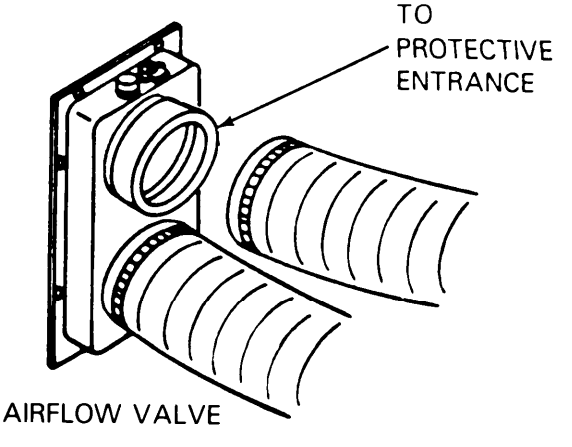
**Yes:** Reconnect cable A. Disconnect P3 at PDU. Check continuity:

| From | To |
|---|---|
| TP #1(+) | TP #10(−) |

Is there continuity between TP #1 and TP #10 on PDU?

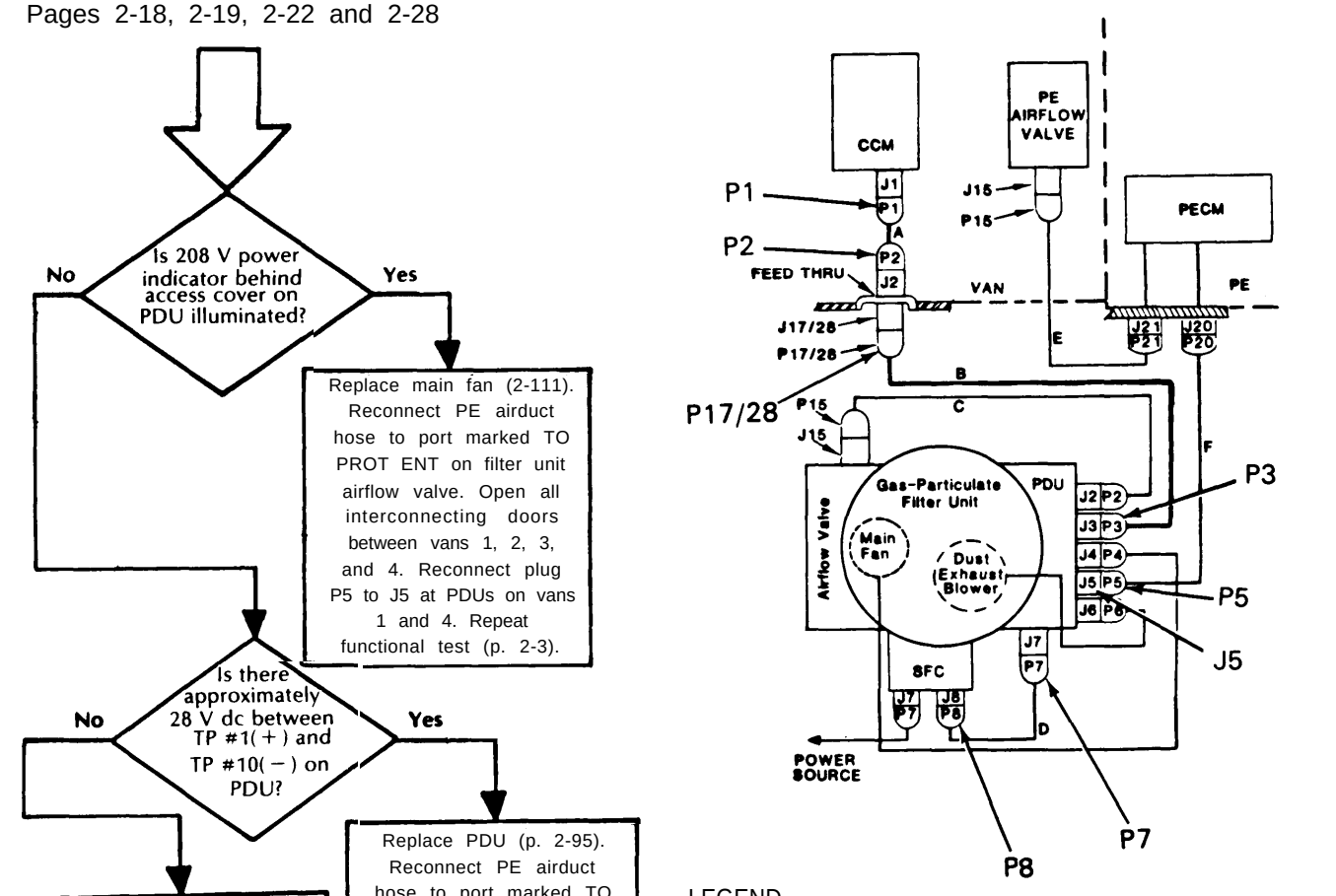
**No:** Replace cable B. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

**Yes:** Replace PDU (p. 2-95). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (P. 2-3).



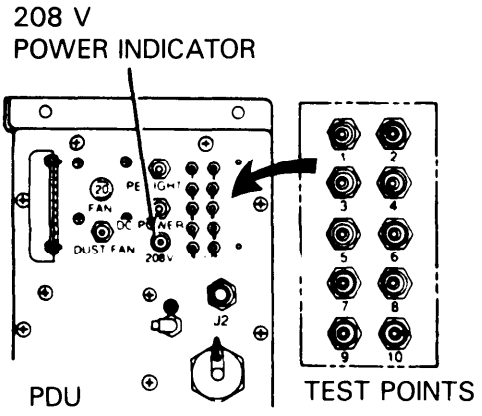
## 1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING (CONT).

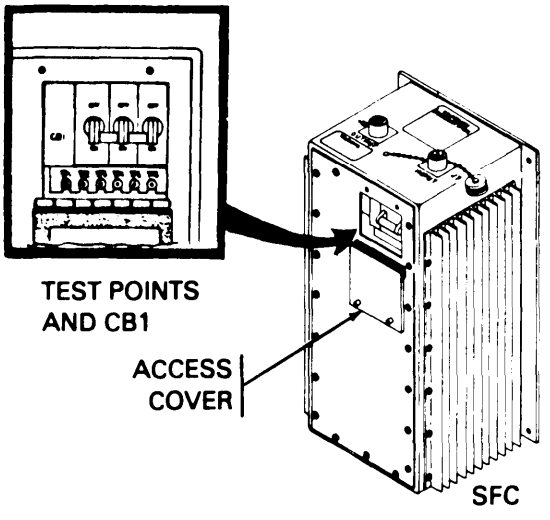
Pages 2-18, 2-19, 2-22 and 2-28




LEGEND

C C M – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
TP – Test Point




Page 2-16, 2-22

Is 208 V power indicator behind the access cover on PDU on?

No

Yes

Open access cover on SFC. Measure voltage at test points:

| (+) | (−) |
|---|---|
| TP #1 | TP #4 |
| TP #2 | TP #4 |
| TP #3 | TP #4 |

Replace main fan (2-111). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve, Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Is 12.0 ± 1.25 V dc obtained for each measurement?

No

Yes

Check that input power is supplied to SFC (208 V ac, 3 phase, 60 Hz).

Set POWER switch on CCM to OFF. Set CB1 on SFC to OFF. Disconnect plug P7 from PDU and plug P8 from SFC. Check continuity:

| From | To |
|---|---|
| P7A | P8A |
| P7B | P8B |
| P7C | P8C |
| P7D | P8D |

Is input power supplied?

No

Yes

Check out power supply. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Set POWER switch on CCM to OFF. Set CB1 at SFC to OFF. Replace SFC (p. 2-104). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Is continuity obtained on all four wires?

No

Yes

Replace cable D. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

Set POWER switch on CCM to OFF. Replace PDU (p. 2-95). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

## 1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING (CONT).

Page 2-16

Turn off power.
Disconnect P15.
Check continuity:

| From | To |
|---|---|
| P15A | P15C |
| P15B | P15C |
| P15A | P15B |

Is there continuity?

**No:** Replace airflow valve (p. 2-119). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

**Yes:** Disconnect P1 at CCM. Check continuity:

| From | To |
|---|---|
| P15A | P15C |
| P15B | P15C |
| P15A | P15B |

Is there continuity?

**No:** Replace CCM (p. 2-89). Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

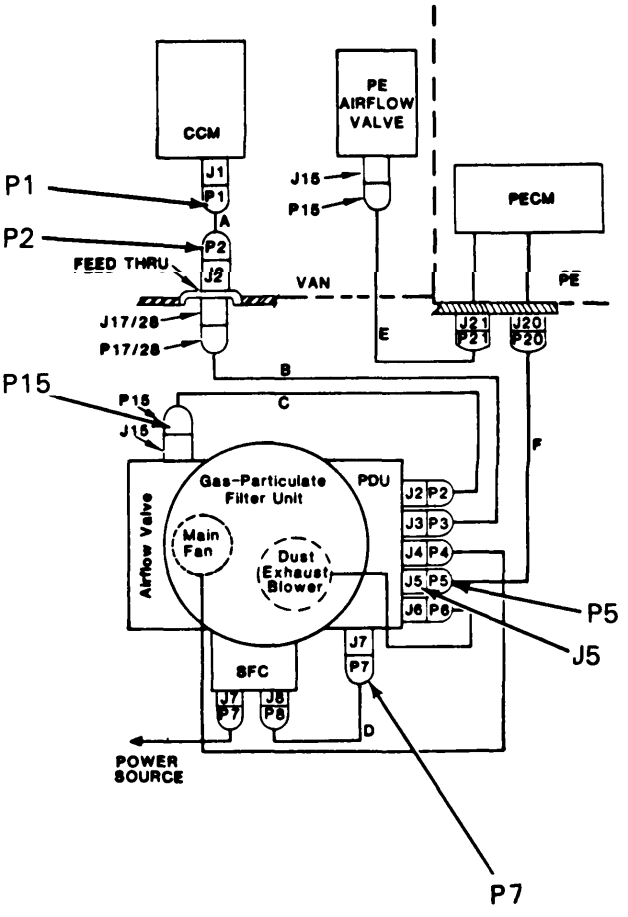
**Yes:** Disconnect P2 at feed thru. Check continuity:

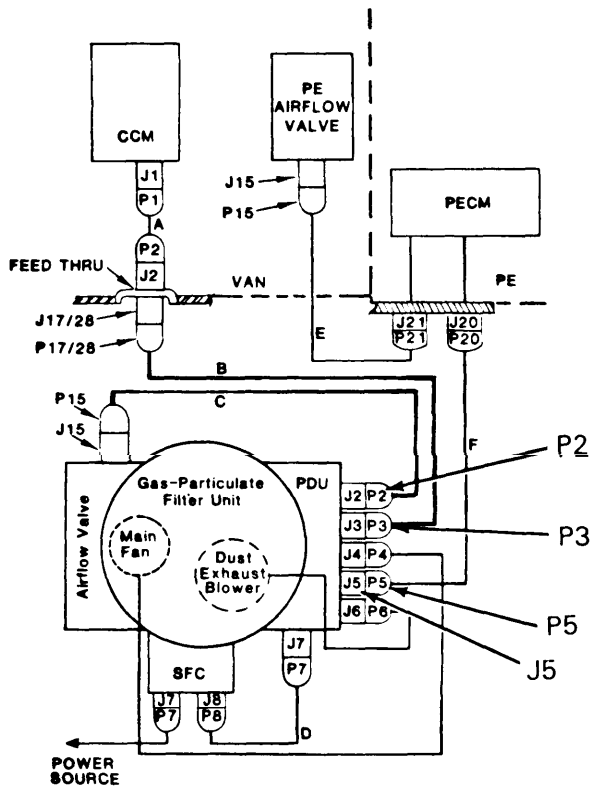
| From | To |
|---|---|
| P15A | P15C |
| P15B | P15C |
| P15A | P15B |

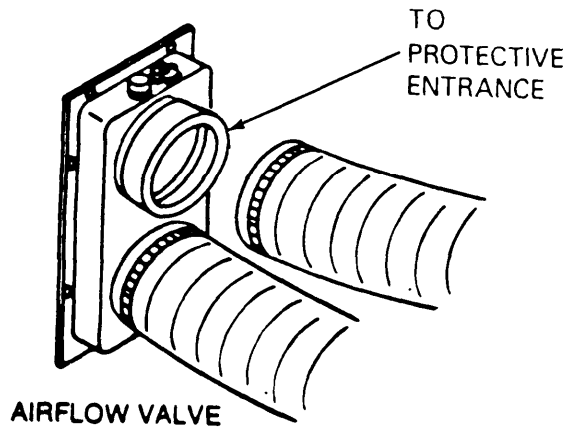
Is there continuity?

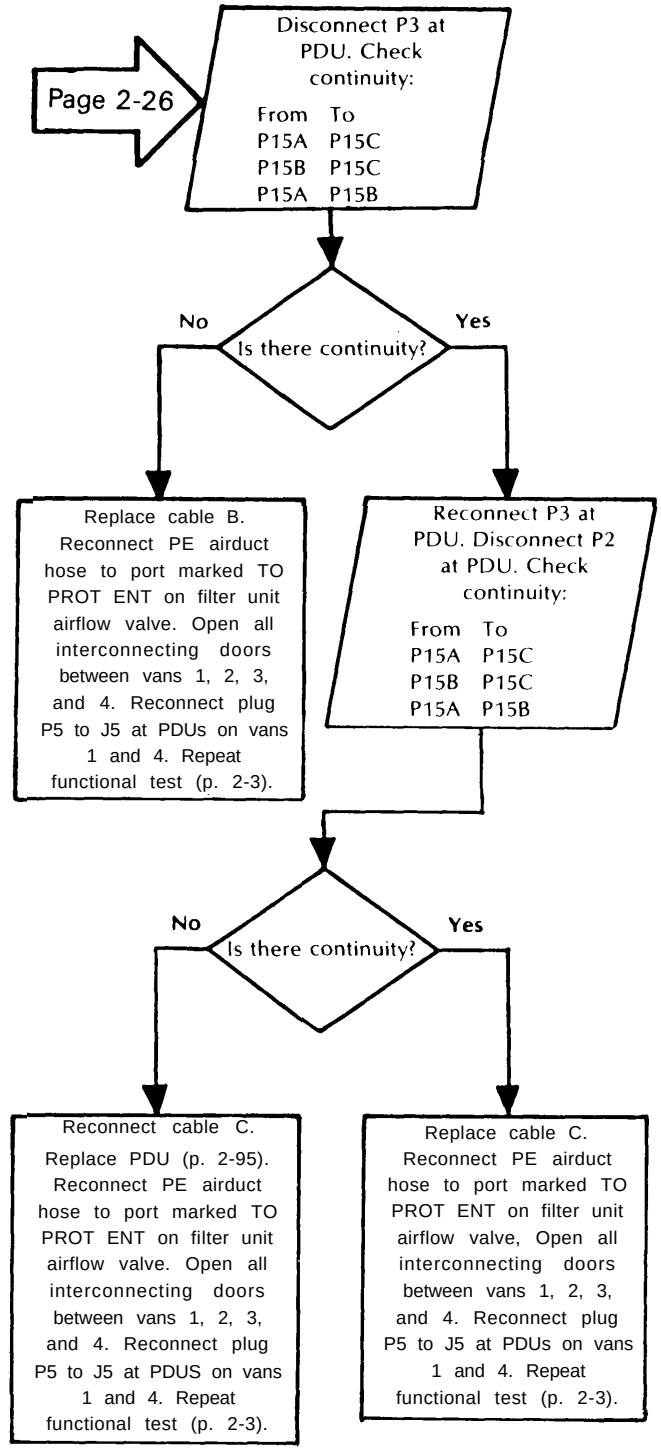
**No:** Replace cable A. Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

**Yes:** Reconnect cable A. Proceed to page 2-27.






LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
PE – Protective Entrance

**1. MASK SWITCH/INDICATOR LIGHT FLASHING AND/OR WARNING HORN SOUNDING (CONT).**

Page 2-17

Is MAIN FAN circuit breaker pressed on CCM?

No → Proceed to page 2-22.

Yes → Is main fan running?

No → Proceed to page 2-24.

Yes → With power on, disconnect hose on airflow valve. Then disconnect P15 on airflow valve.

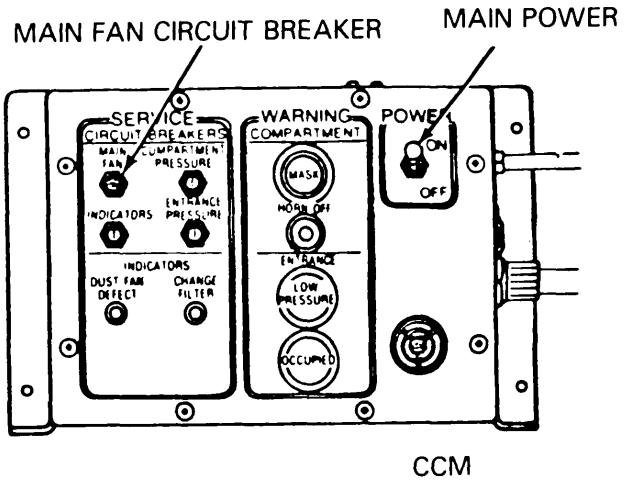
Is airflow valve fully closed?

No → Proceed to page 2-20.

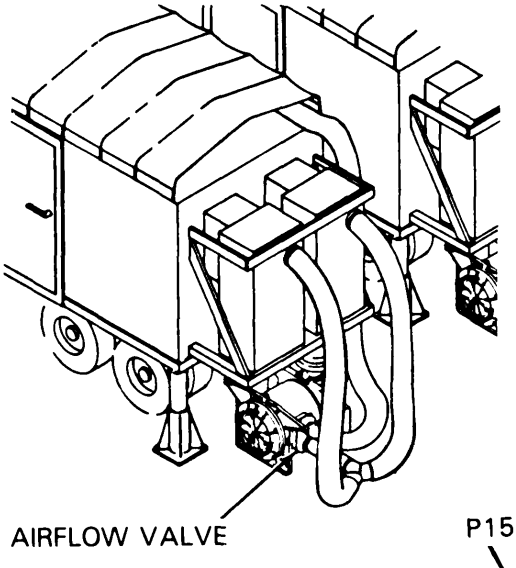
Yes → Is pressure hose to CCM properly installed and functional?

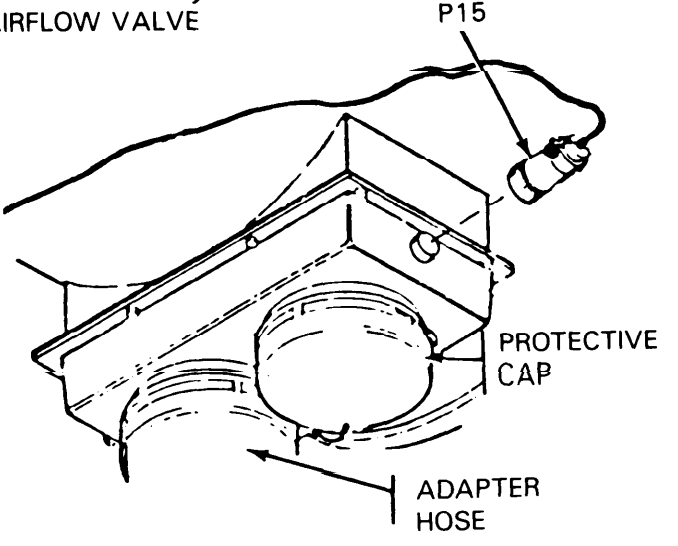
No → Reconnect PE airduct hose to port marked TO PROT ENT on filter unit airflow valve. Open all interconnecting doors between vans 1, 2, 3, and 4. Reconnect plug P5 to J5 at PDUs on vans 1 and 4. Repeat functional test (p. 2-3).

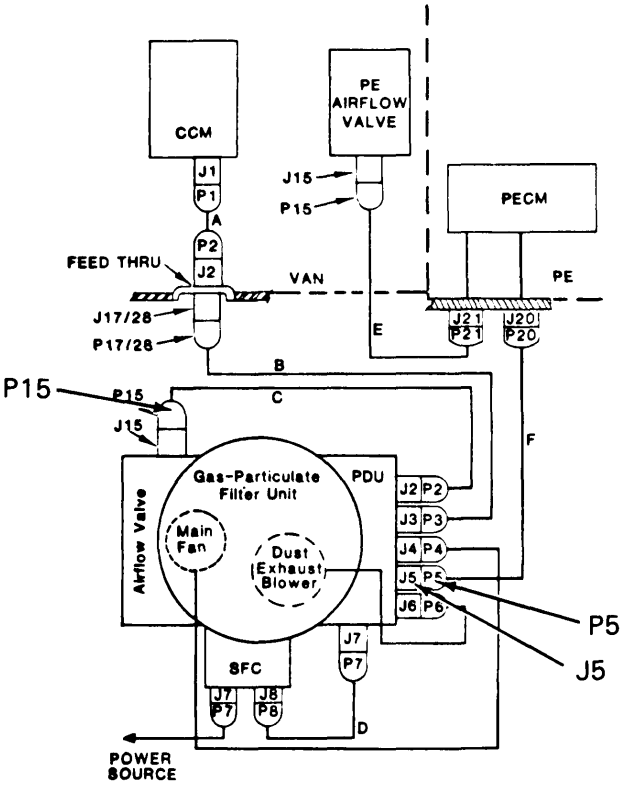
Yes → Proceed to page 2-29.

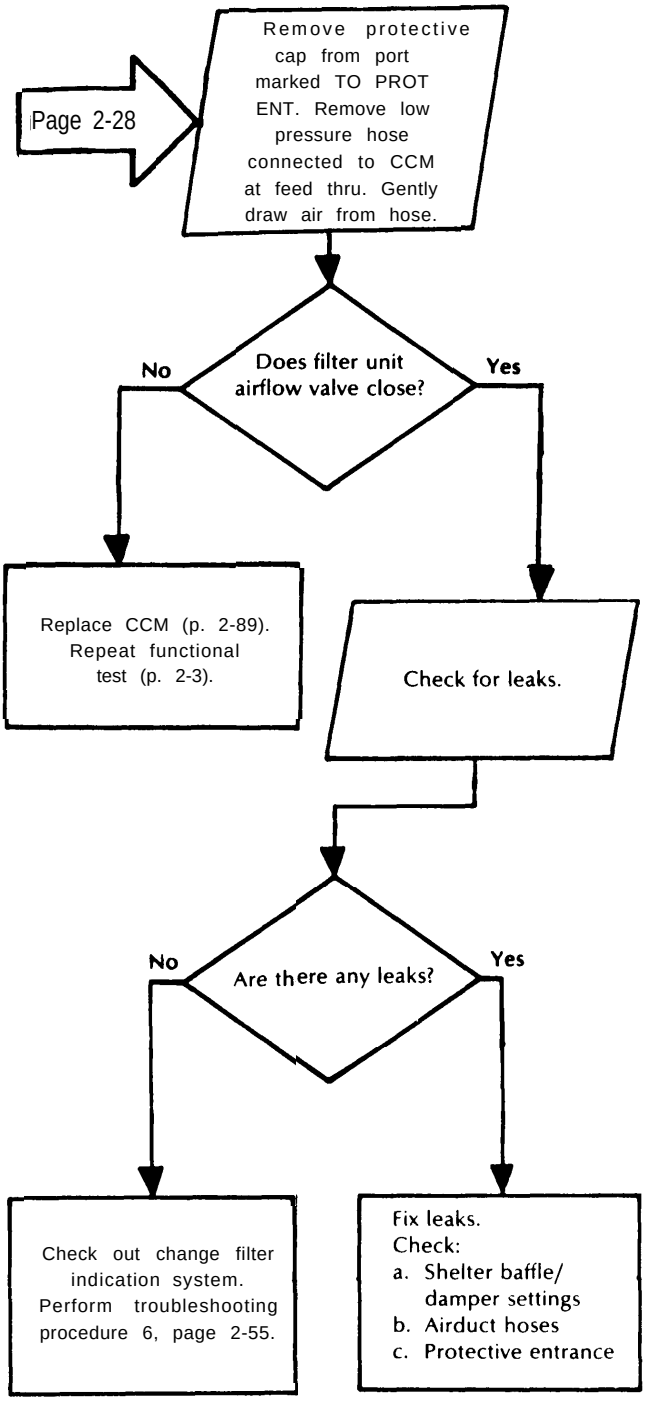



CCM





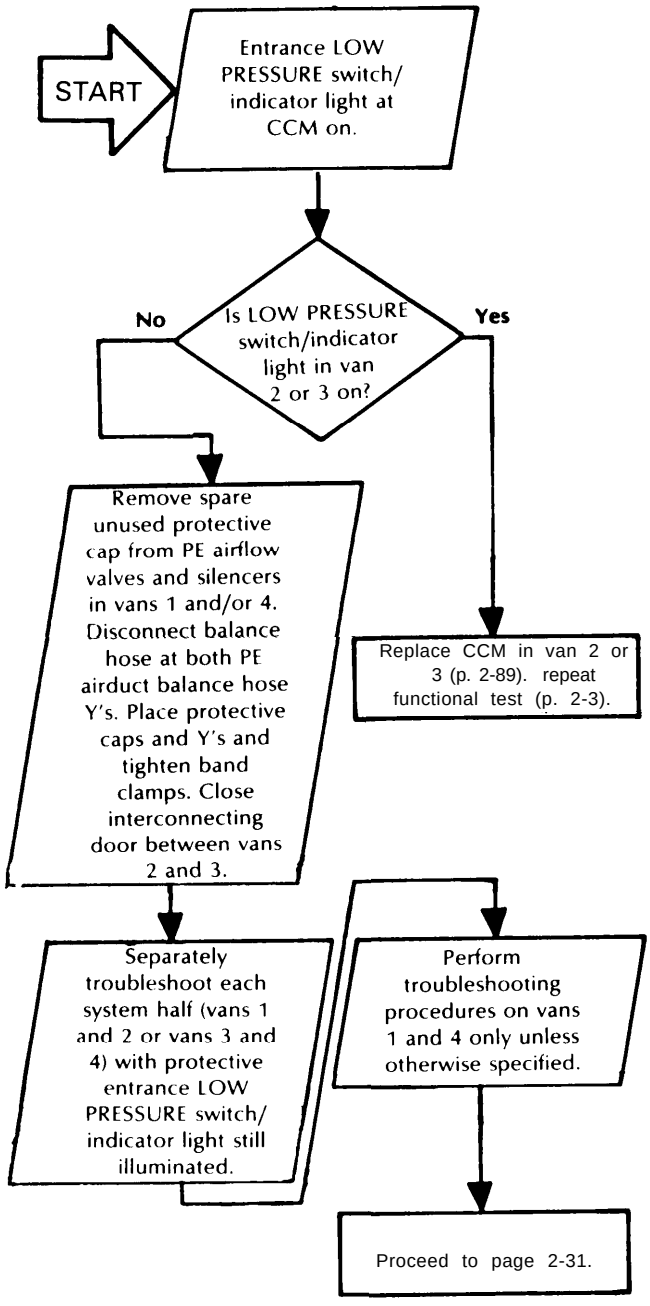



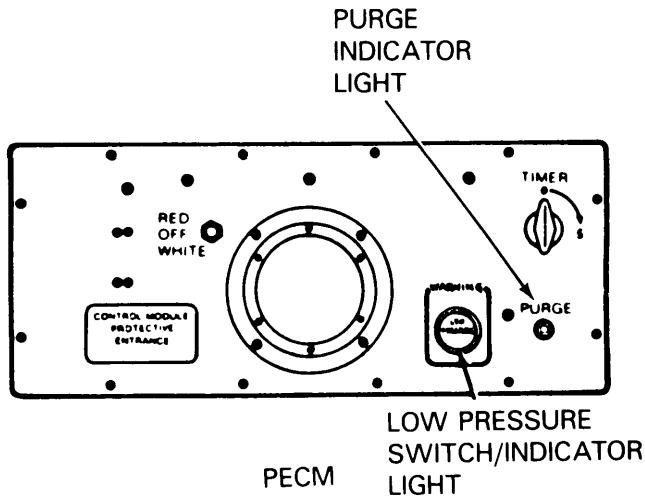

LEGEND
CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit

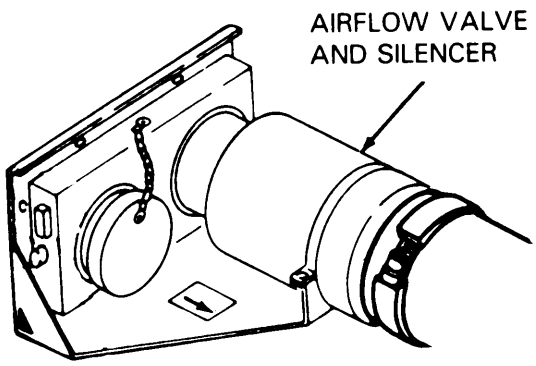
## 2. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS ON.

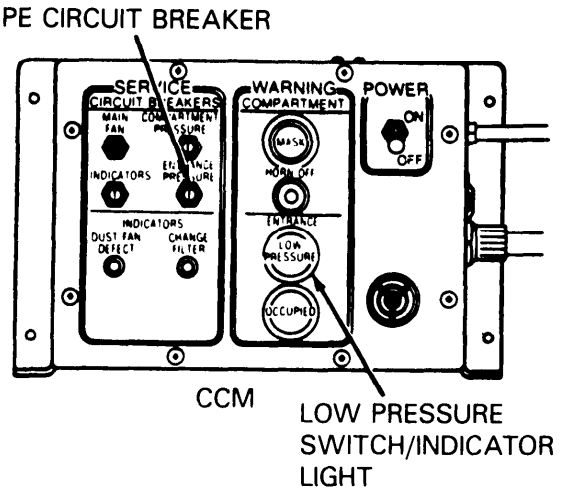
**NOTE**

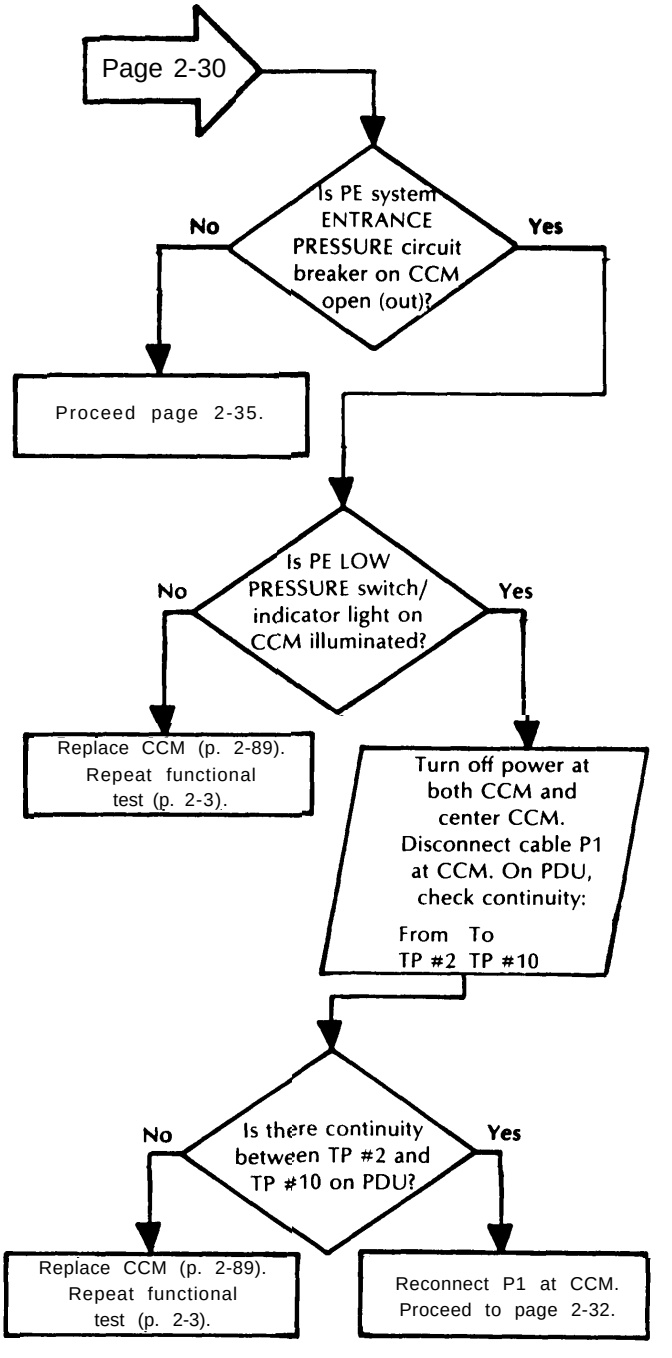
Modules in van 2 or 3 to be tested or replaced will be referred to as center modules. Example: Center CCM, Center Cable E. etc.



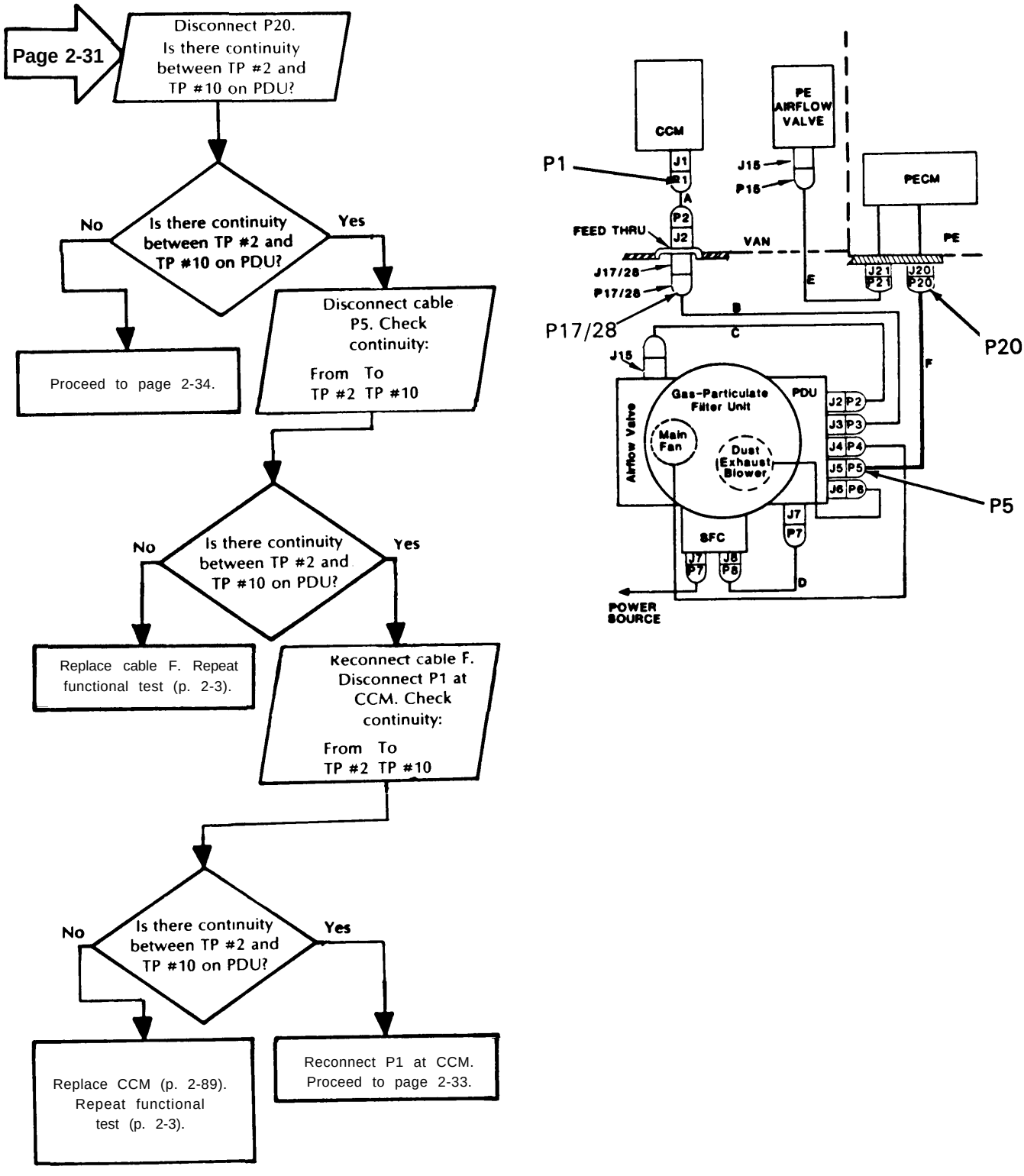


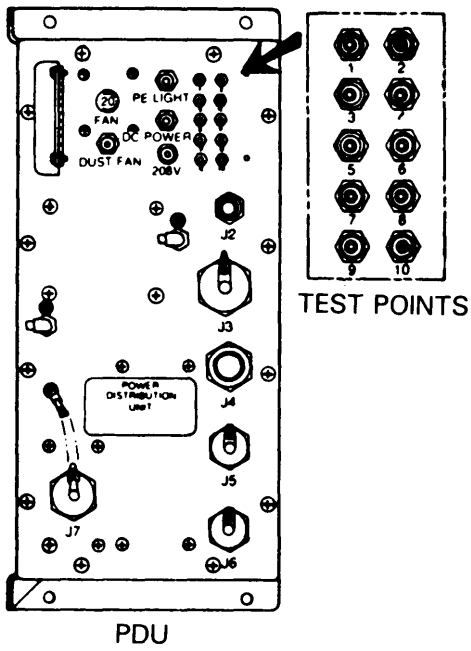




LEGEND

CCM – Compartment Control Module
PDU – Power Distribution Unit
PE – Protective Entrance
PECM – Protective Entrance Control Module
TP – Test Point

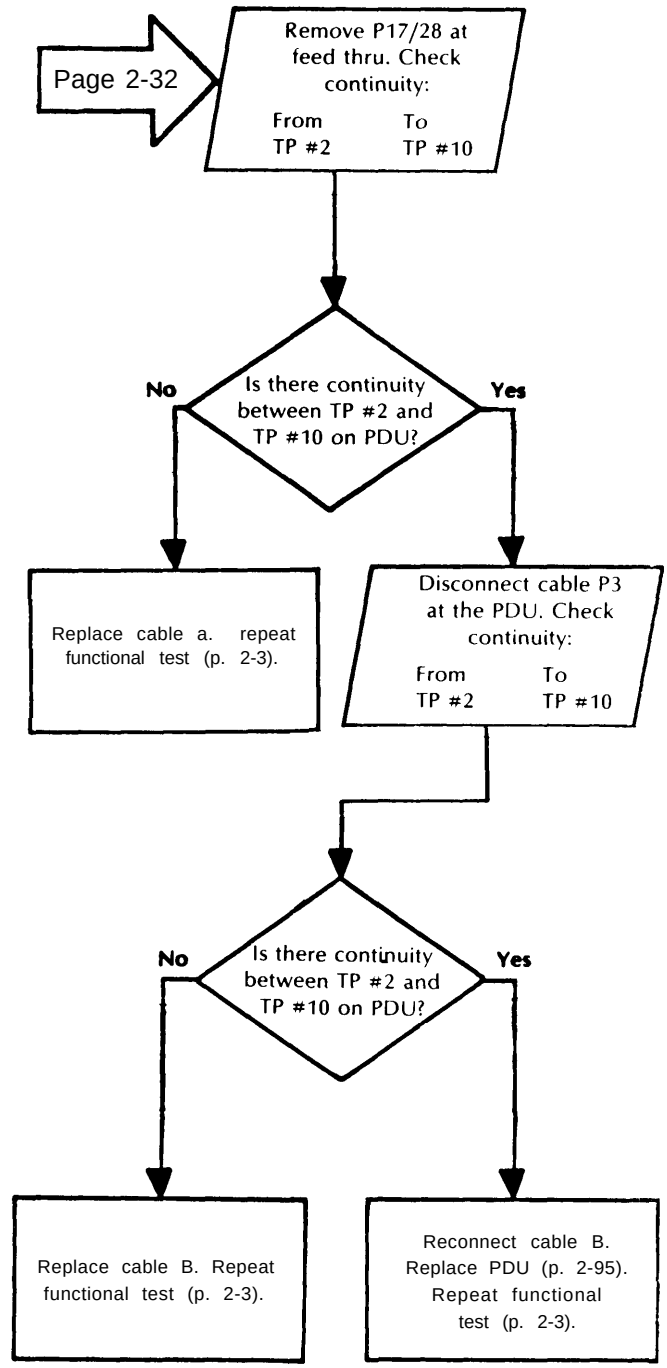
## 2. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS ON (CONT).






LEGEND

| | | |
|---|---|---|
| C C M | – | Compartment Control Module |
| Feed Thru | – | Elec/Pneu Feed Thru |
| PDU | – | Power Distribution Unit |
| TP | – | Test Point |



## 2. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS ON (CONT).

Page 2-32

Connect P20. Loosen test point cover on airflow valve and silencer and rotate it 90°. Check continuity:

| From | To |
|---|---|
| TP #11 | GRD |
| TP #12 | GRD |
| TP #11 | TP #12 |

Is there continuity?

No → Replace PECM (p. 2-70). Repeat functional test (p. 2-3).

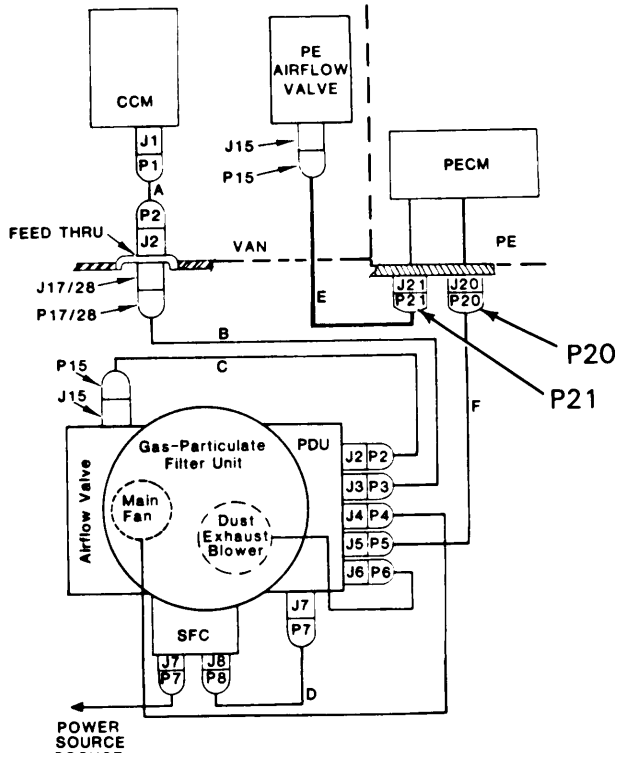
Yes → Disconnect P21 at PE. Check continuity:

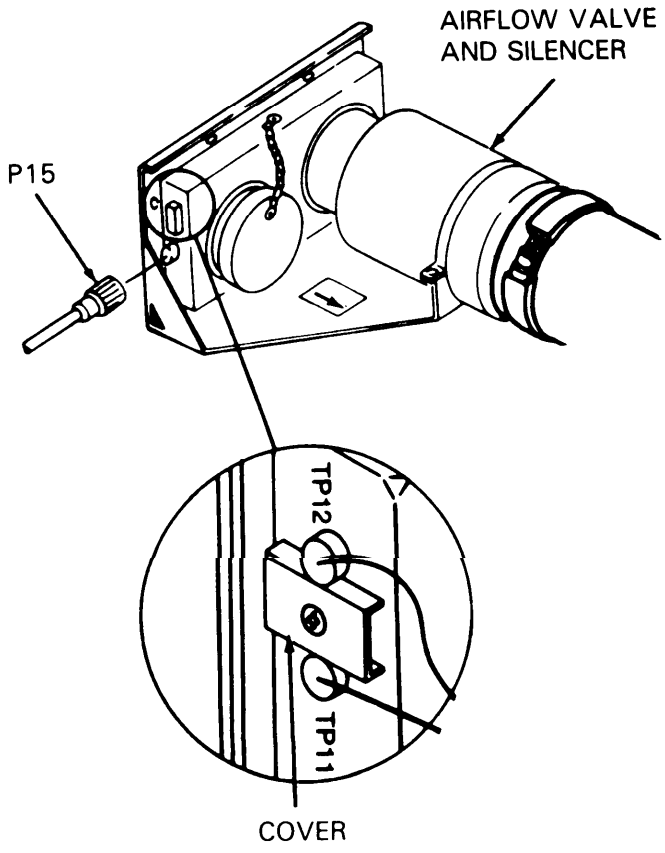
| From | To |
|---|---|
| TP #11 | GRD |
| TP #12 | GRD |
| TP #11 | TP #12 |

Is there continuity?

No → Replace test point cover. Replace cable E. Repeat functional test (p. 2-3).

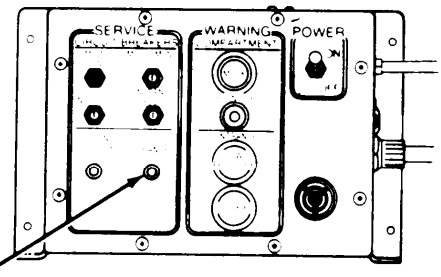
Yes → Reconnect P21. Replace PE airflow valve (p. 2-119). Repeat functional test (p. 2-3).

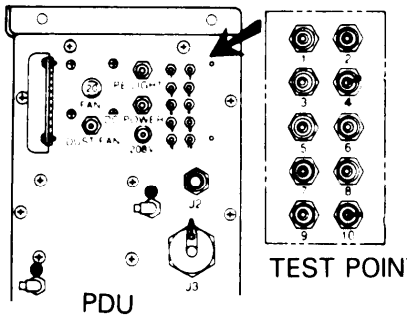


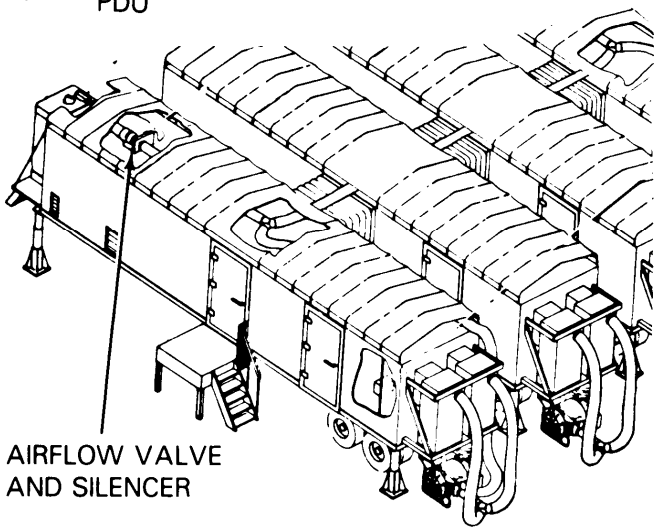




LEGEND

GRD – Ground
PE – Protective Entrance
PECM – Protective Entrance Control Module
TP – Test Point




Page 2-31

With power on at both CCM and center CCM and the van and entrance doors closed, disconnect P15 at PE airflow valve and remove airduct to PE airflow valve and silencer.

Is airflow valve fully open?

- No → Proceed to page 2-38.
- Yes → Remove hose from port marked TO PROT ENT on filter unit airflow valve.

Is this port on filter unit airflow valve fully open?

- No → Remove low pressure hose connected to CCM at feed thru. Gently draw air from hose.
- Yes → Check PE attachment to shelter and hose for leaks.

Are there any leaks?

- Yes → Repair leaks.
- No → Is CHANGE FILTER indicator light or center CHANGE FILTER indicator light on?
  - No → Checkout change filter indication system. Perform troubleshooting procedure 6 (p. 2-55).
  - Yes → Replace particulate filter or center particulate (p. 2-91). Repeat functional test (p. 2-3).

airflow valve port (TO PROT ENT) open?

- Reconnect all cables and hoses. Proceed to page 2-36.
- Reconnect all cables and hoses. check PE attachment to van and hose for leaks. If there are no leaks, replace PECM (p. 2-70). Repeat functional test (p. 2-3).

LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PE – Protective Entrance
P E C M – Protective Entrance Control Module

## 2. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS ON (CONT).

Page 2-35

Loosen test point cover on filter unit airflow valve and rotate it 90°.

Is there approximately 25 V dc on TP #12(+) with respect to TP #11(−)?

No

Replace test point cover. Turn off power. Disconnect P15 at filter unit airflow valve and P2 at PDU. Check continuity:

| From | To |
|---|---|
| P15A | P2A |
| P15B | P2B |

Yes

Replace airflow valve (p. 2-119). Repeat functional test (p. 2-3).

Is there continuity?

No

Replace cable C. Repeat functional test (p. 2-3).

Yes

Disconnect P3 at PDU. Check continuity.

| From | To |
|---|---|
| J2A | J3P |
| J2B | J3N |

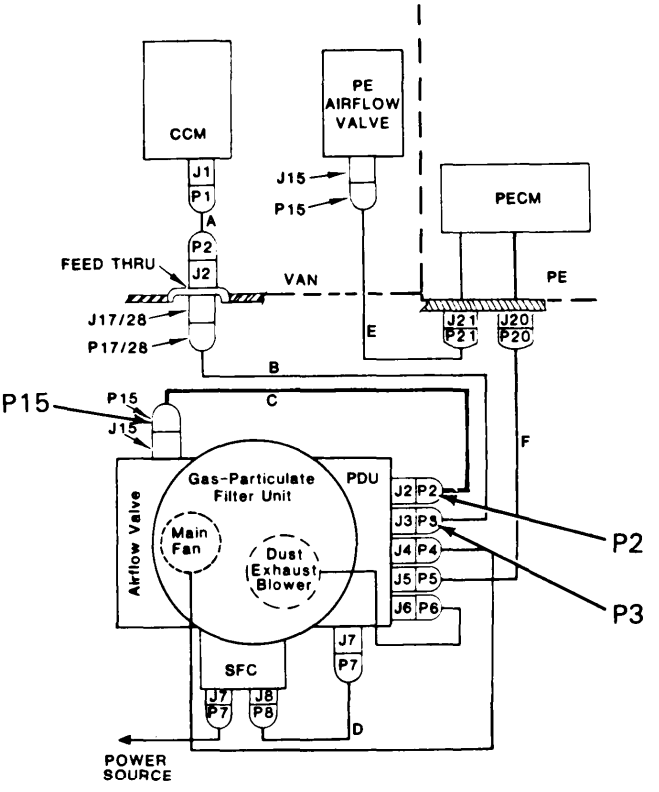
Is there continuity?

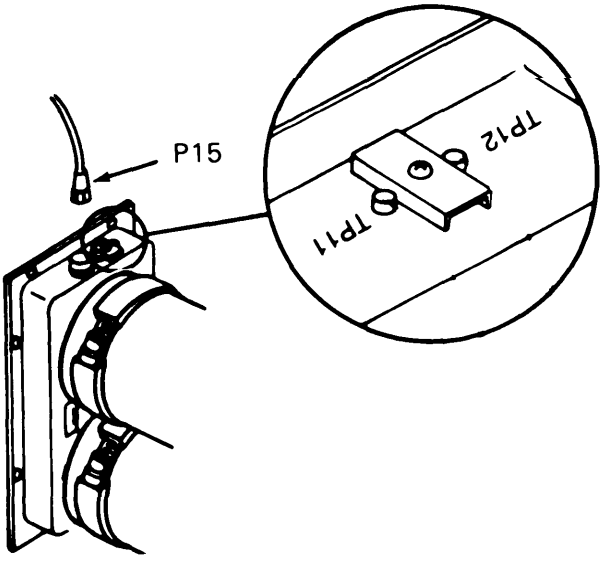
No

Replace PDU (p. 2-95). Repeat functional test (p. 2-3).

Yes

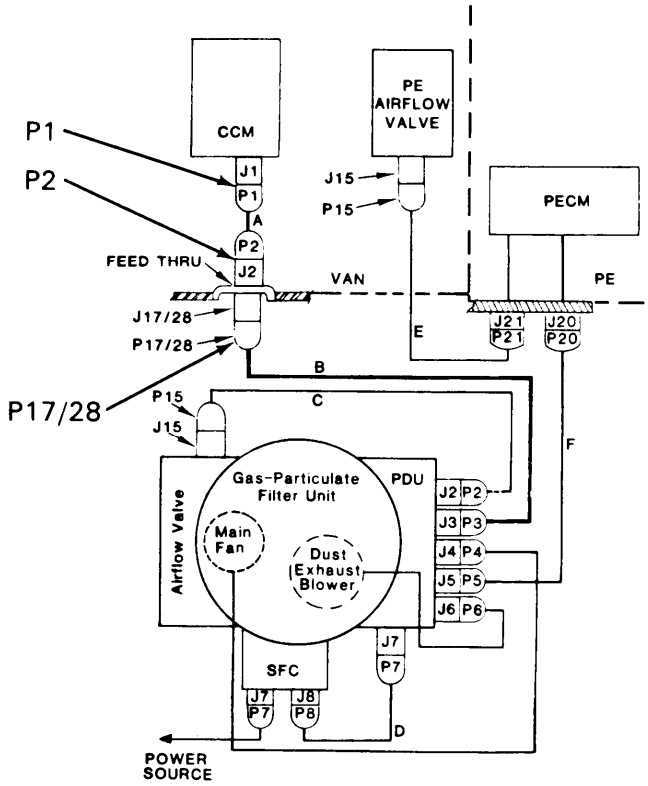
Reconnect cable C. Proceed to page 2-37.

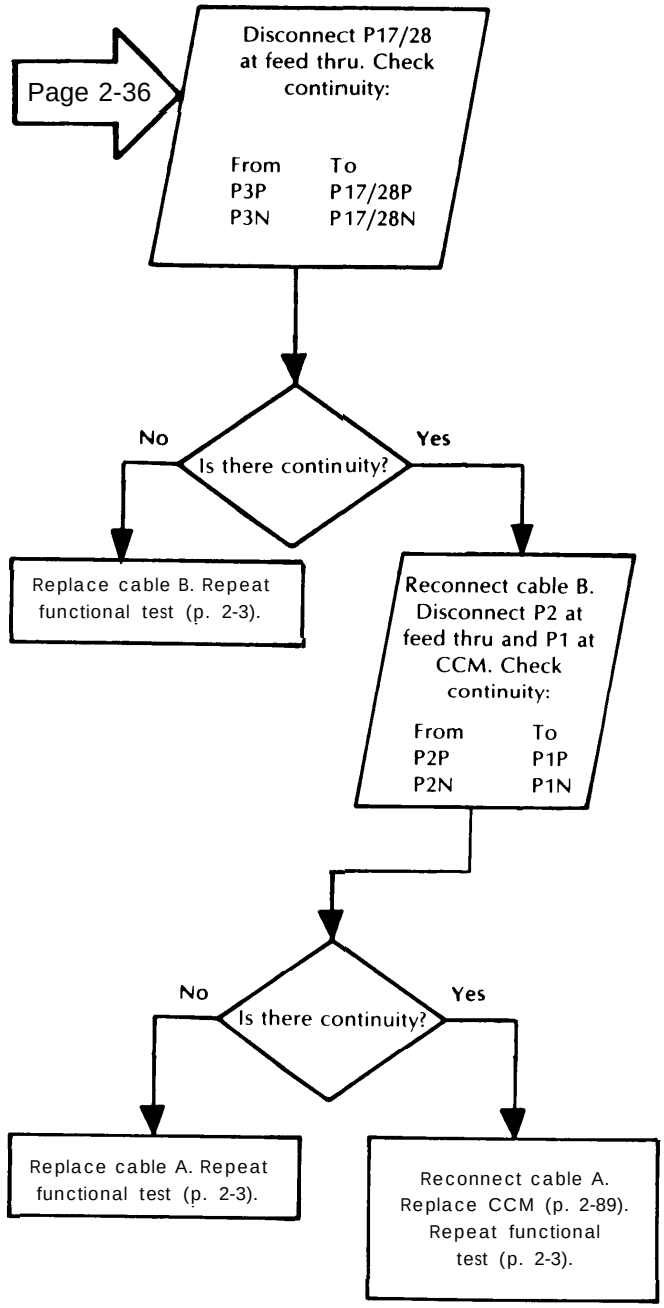



LEGEND

Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
TP – Test Point




LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru

## 2. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS ON (CONT).

Page 2-35

Open PE door and connect P15.

Does airflow valve fully open?

- No → Reconnect airduct hose. Proceed to page 2-40.
- Yes → Reconnect airduct hose. Turn off power. Disconnect P3 at PDU. Check continuity:

| From | To |
|---|---|
| TP #7 | TP #10 |

Is there continuity between TP #7 and TP #10 on PDU?

- No → Connect P3 at PDU. Disconnect P1 at CCM.
- Yes → Proceed to page 2-39.

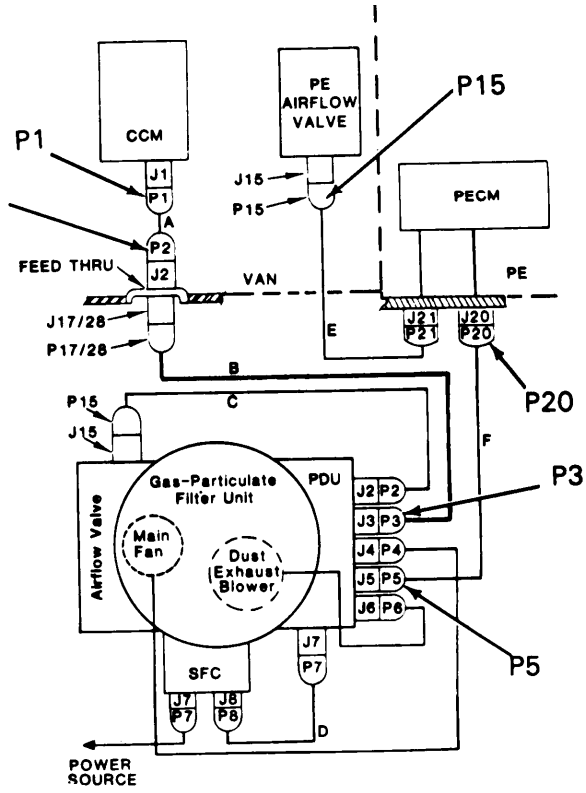
Is there continuity between TP #7 and TP #10 on PDU?

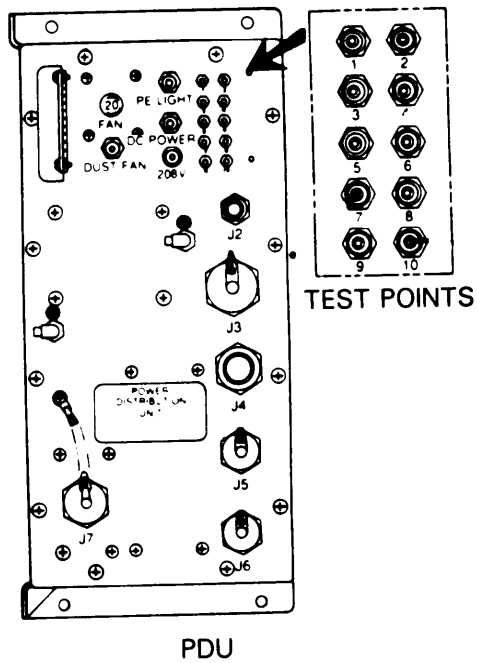
- No → Replace CCM (p. 2-89). Repeat functional test (p. 2-3).
- Yes → Disconnect P2 at feed thru. Check continuity:

| From | To |
|---|---|
| TP #7 | TP #10 |

Is there continuity between TP #7 and TP #10 on PDU?

- No → Replace cable A. Repeat functional test (p. 2-3).
- Yes → Reconnect cable A. Replace cable B. Repeat functional test (p. 2-3).

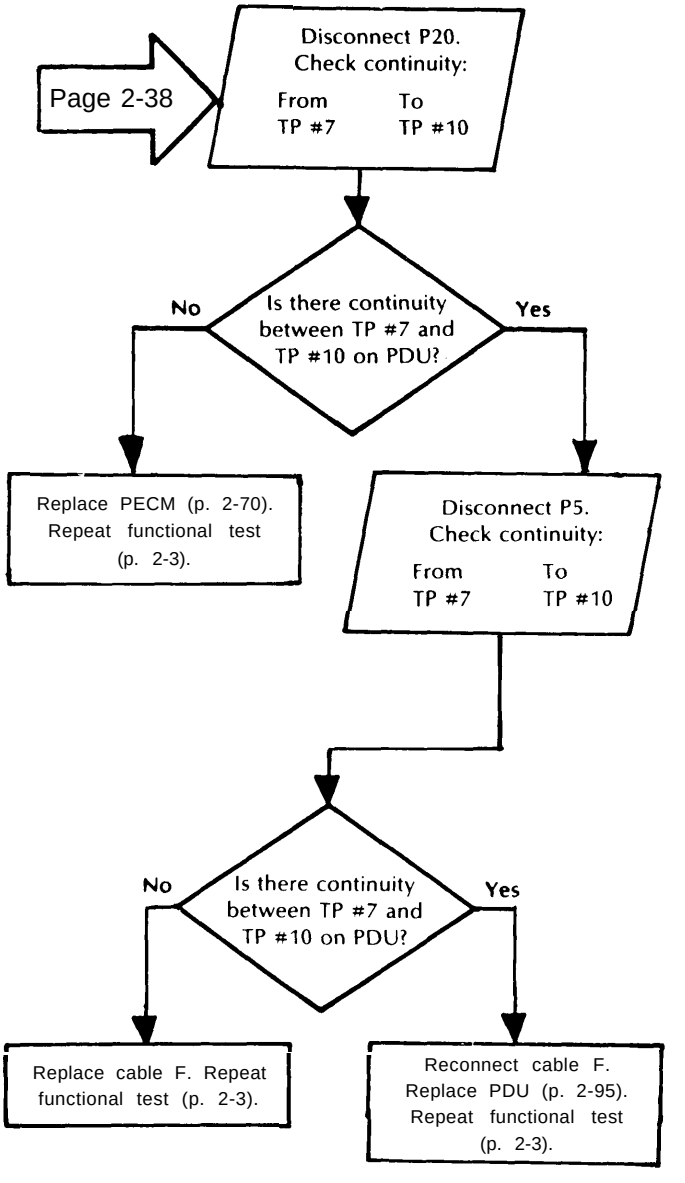



PDU

LEGEND

| | | |
|---|---|---|
| C C M | – | Compartment Control Module |
| Feed Thru | – | Elec/Pneu Feed Thru |
| PDU | – | Power Distribution Unit |
| PE | – | Protective Entrance |
| TP | – | Test Point |




LEGEND

| | |
|---|---|
| PDU | – Power Distribution Unit |
| PECM | – Protective Entrance Control Module |
| TP | – Test Point |

## 2. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS ON (CONT).

Page 2-38

Loosen test point cover on PE airflow valve and silencer and rotate it 90°.

Is there approximately 25 V dc at TP #12(+) with respect to TP #11(−) on PE airflow valve?

No

Yes

Replace test point cover.

Replace PE airflow valve (p. 2-119). Repeat functional test (p. 2-3).

Is there approximately 28 V dc between TP #2(+) and TP #10(−) on PDU?

No

Yes

Proceed to page 2-41.

Turn off power. Disconnect P20 and P5. Check continuity:

| From | To |
|---|---|
| P5C | P20C |

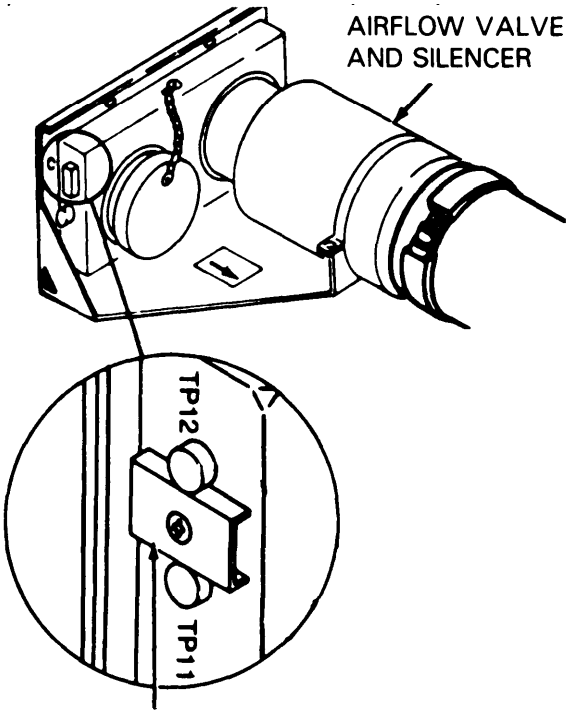
Is there continuity?

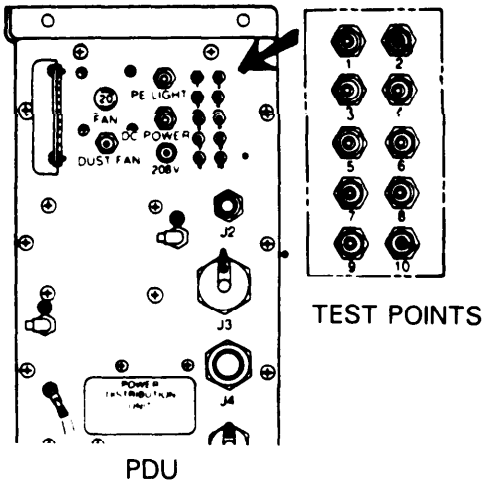
No

Yes

Replace cable F. Repeat functional test (p. 2-3).

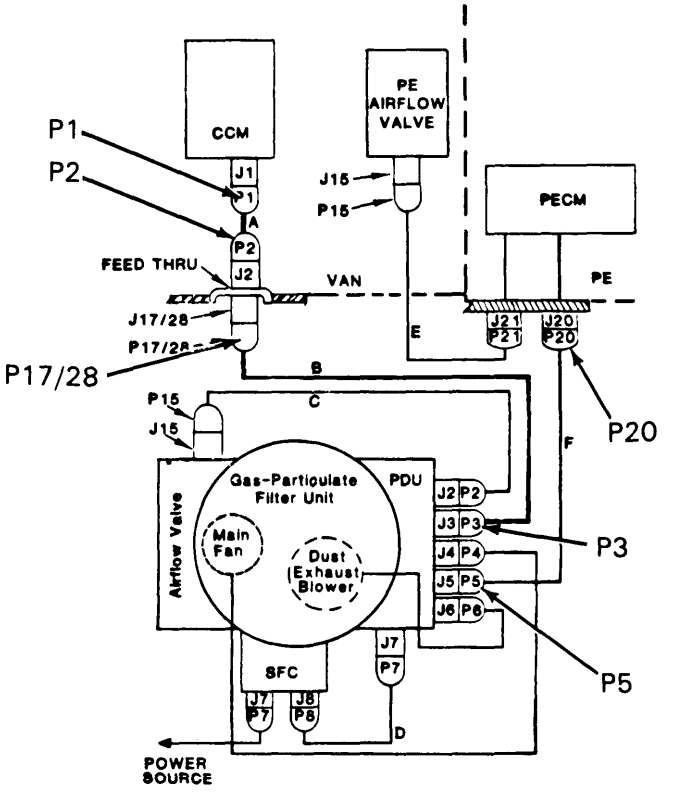
Reconnect cable F. Replace PECM (p. 2-70). Repeat functional test (p. 2-3).

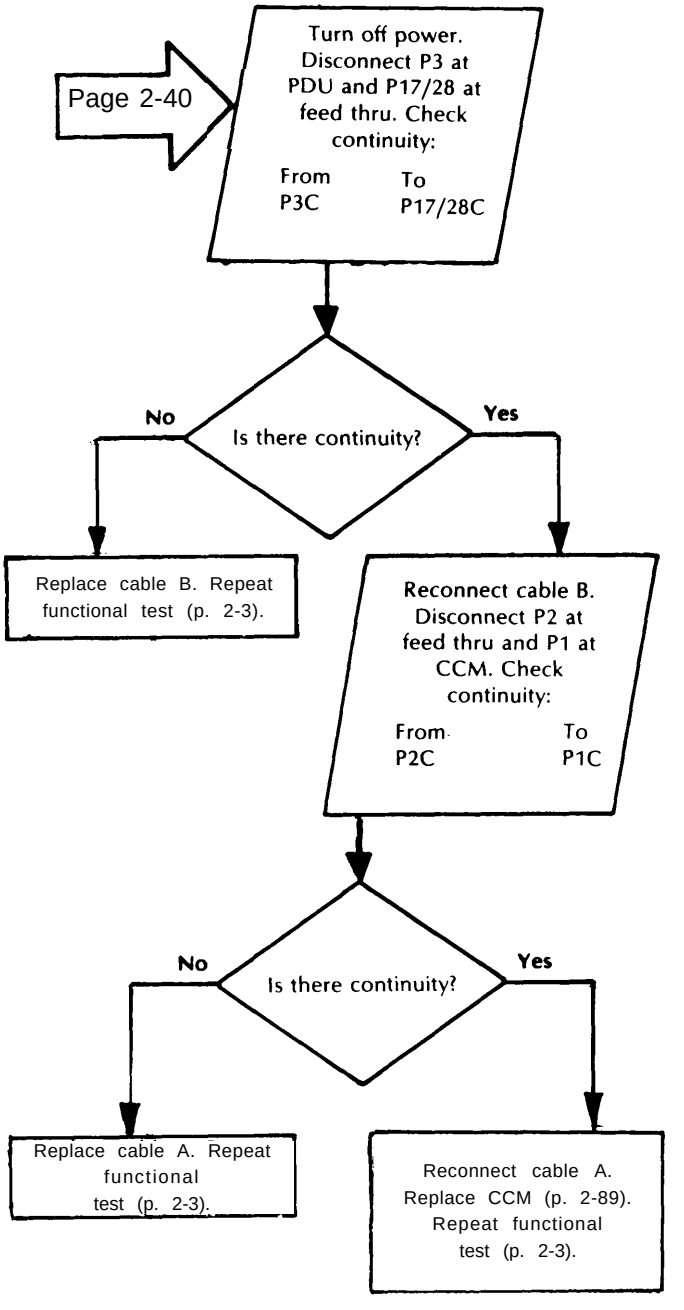



LEGEND

PDU – Power Distribution Unit
PE – Protective Entrance
PECM – Protective Entrance Control Module
TP – Test Point




LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit

**3. NO POWER INDICATION (ALL INDICATOR LIGHTS DO NOT ILLUMINATE WHEN PRESSED TO TEST).**

START

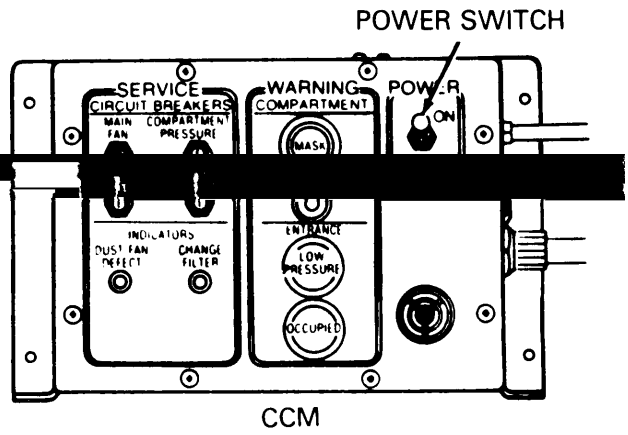
No power indication.

Is POWER switch on CCM in ON position?

No

Set POWER switch to ON position.

Yes




CCM

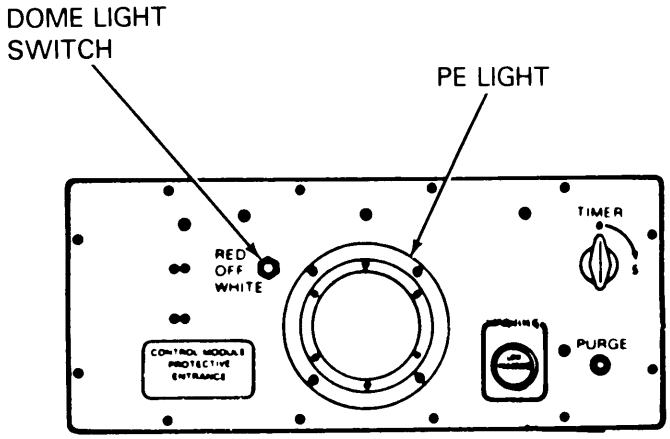
Is filter unit operating?

No

Open circuit breaker access cover on PDU.

Yes

Replace CCM (p. 2-89). Repeat functional test (p. 2-3).




PECM

Is DC POWER circuit breaker open (out)?

No

Proceed to page 2-46.

Yes

Turn off power. Check that PE light switch is OFF if in van 1 or 4. Check continuity:

From TP #5(+) To TP #10(−)

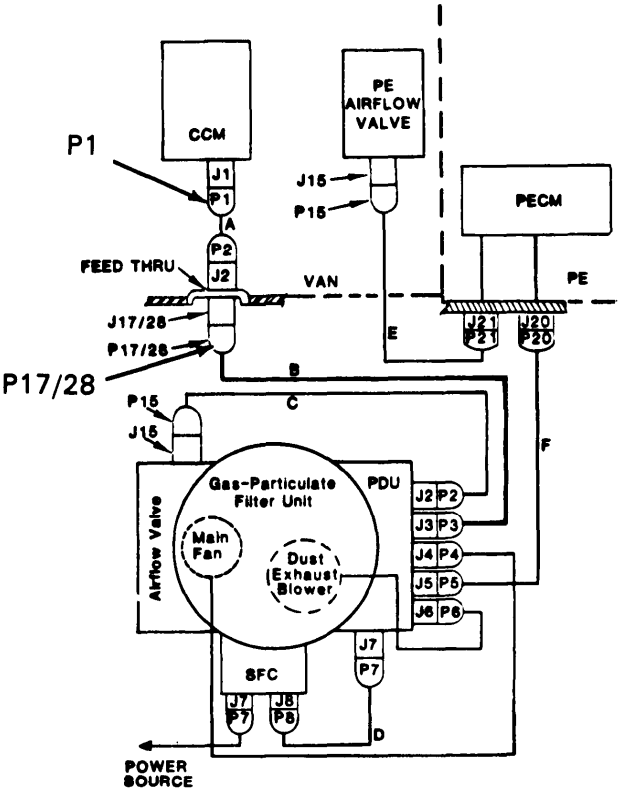
Is there continuity between TP #5 and TP #10 on PDU?

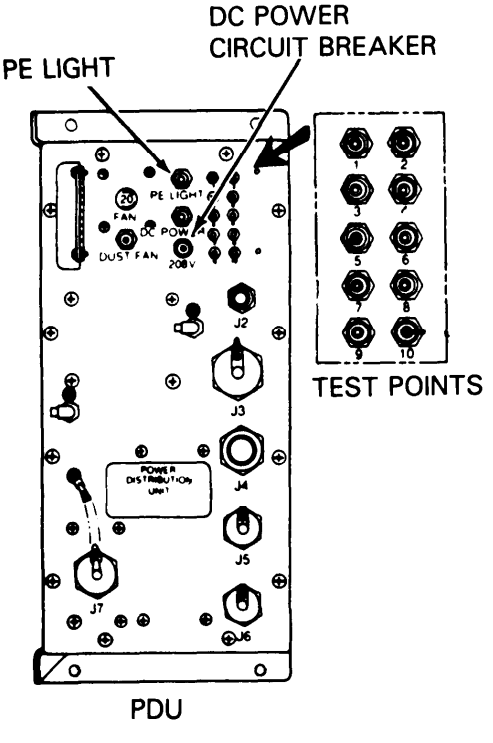
No

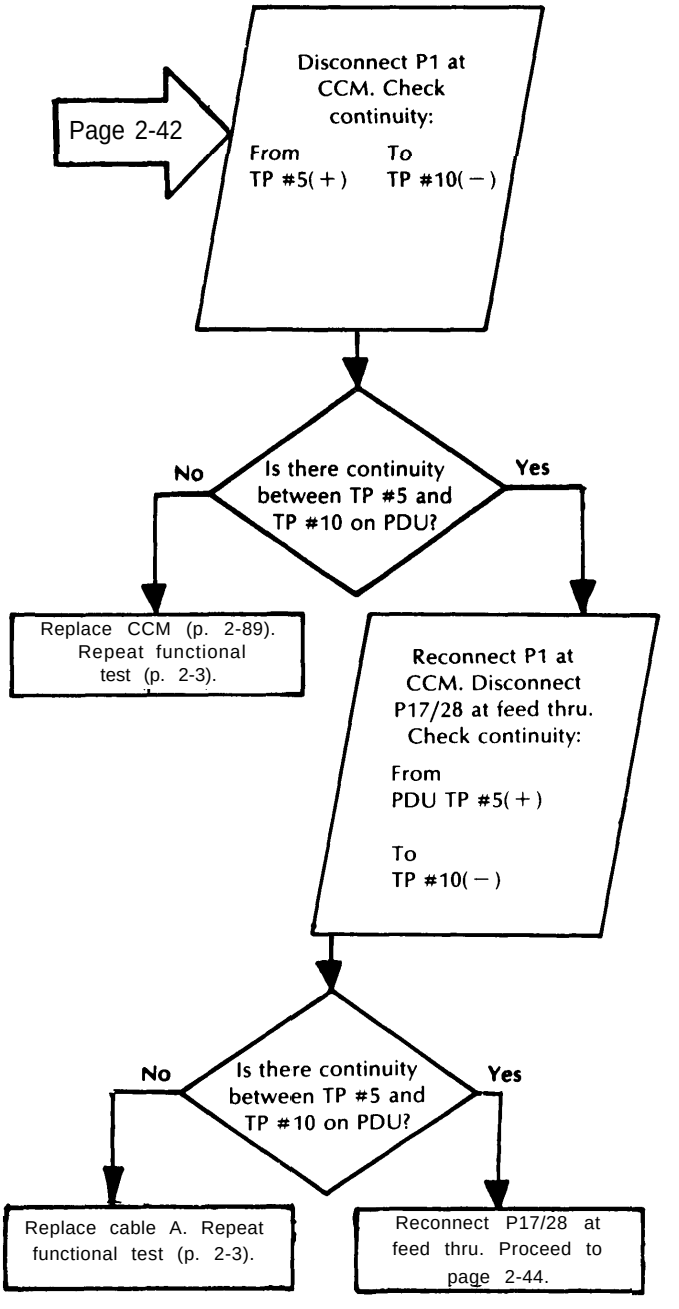
Replace PDU (p. 2-95). Repeat functional test (p. 2-3).

Yes

Proceed to page 2-43.



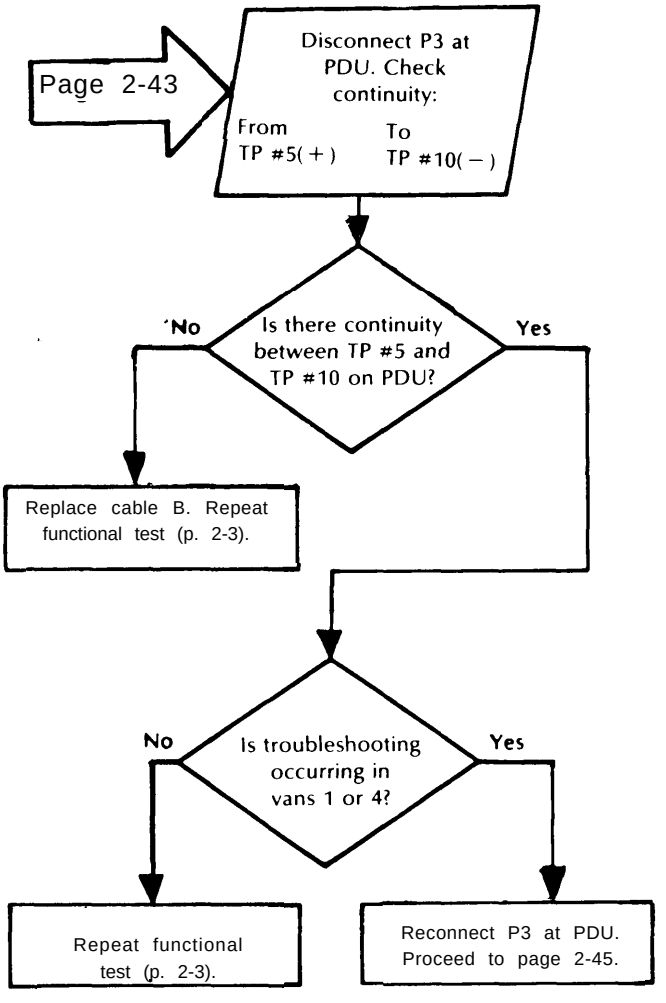



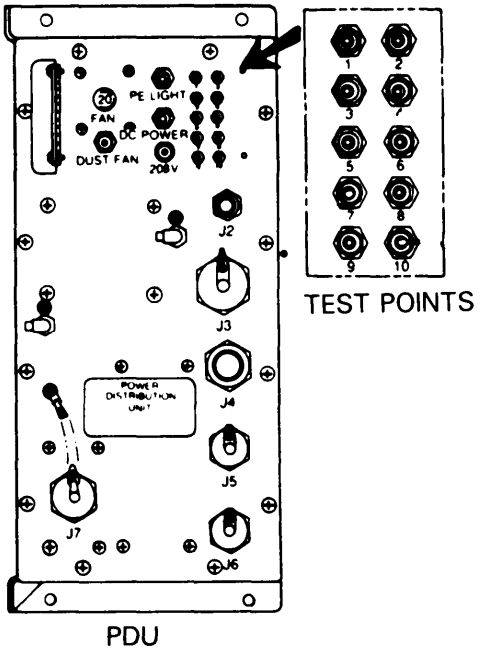



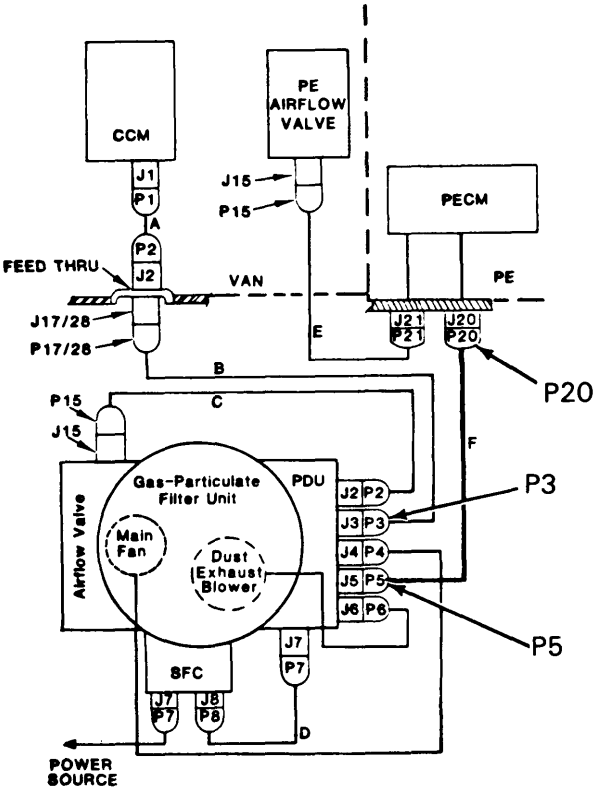

LEGEND

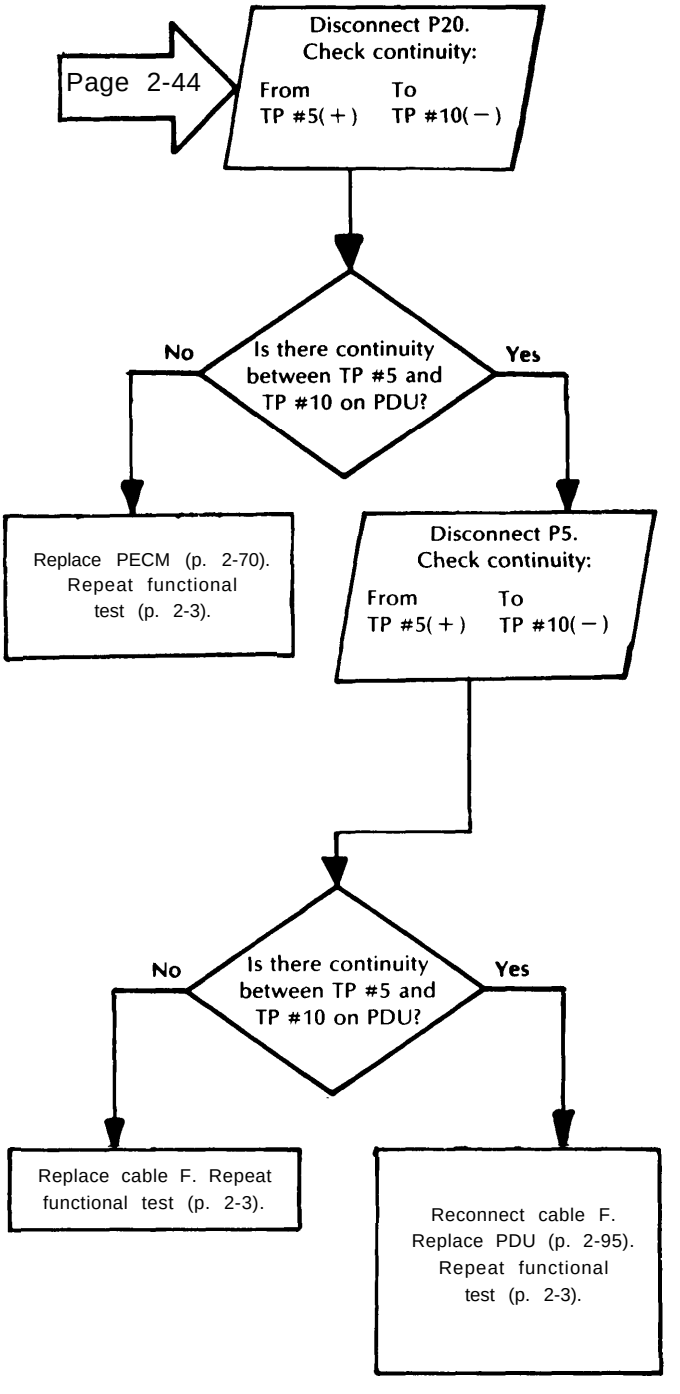
| | | |
|---|---|---|
| CCM | – | Compartment Control Module |
| Feed Thru | – | Elec/Pneu Feed Thru |
| PE | – | Protective Entrance |
| PDU | – | Power Distribution Unit |
| TP | – | Test Point |

**3. NO POWER INDICATION (ALL INDICATOR LIGHTS DO NOT ILLUMINATE WHEN PRESSED TO TEST) (CONT).**






LEGEND

PDU – Power Distribution Unit
PECM – Protective Entrance Control Module
TP – Test Point

**3. NO POWER INDICATION (ALL INDICATOR LIGHTS DO NOT ILLUMINATE WHEN PRESSED TO TEST) (CONT).**

Page 2-42

Is there approximately 28 V dc between TP# 5(+) and TP# 10(-) on PDU?

No → Proceed to page 2-47.

Yes → Turn off power. Disconnect P1 at CCM and P2 at feed thru. Check continuity:

| From | To |
|---|---|
| P1B | P2B |

Is there continuity?

No → Replace cable A. Repeat functional test (p.2-3).

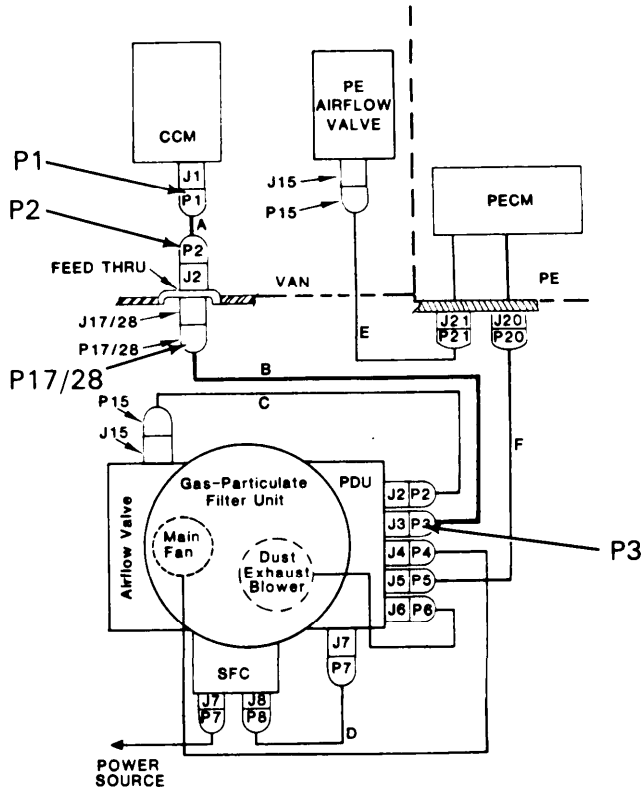
Yes → Reconnect cable A. Disconnect P17/28 at feed thru and P3 at PDU. Check for continuity:

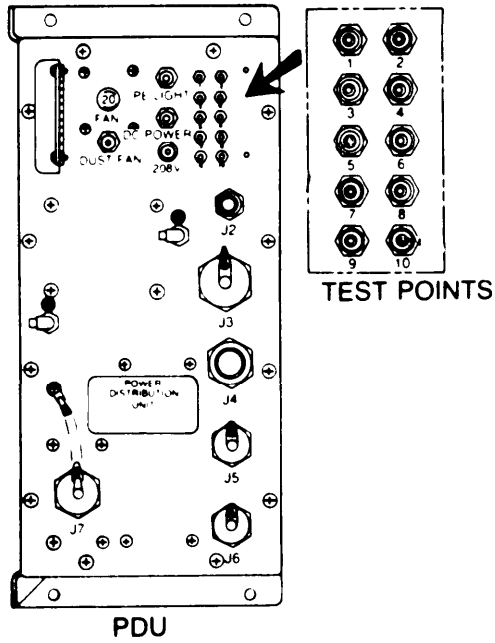
| From | To |
|---|---|
| P17/28B | P3B |

Is there continuity?

No → Replace cable B. Repeat functional test (p. 2-3).

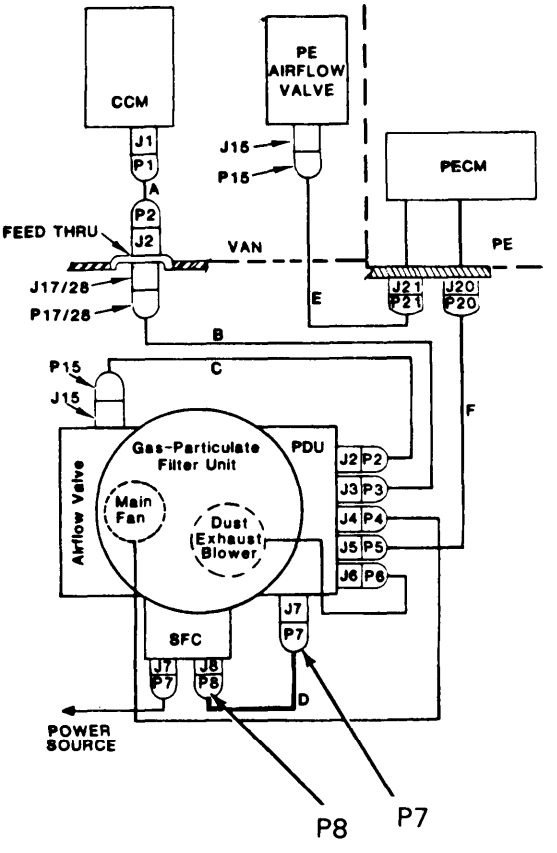
Yes → Reconnect cable B. Replace CCM (p. 2-89). Repeat functional test (p. 2-3).

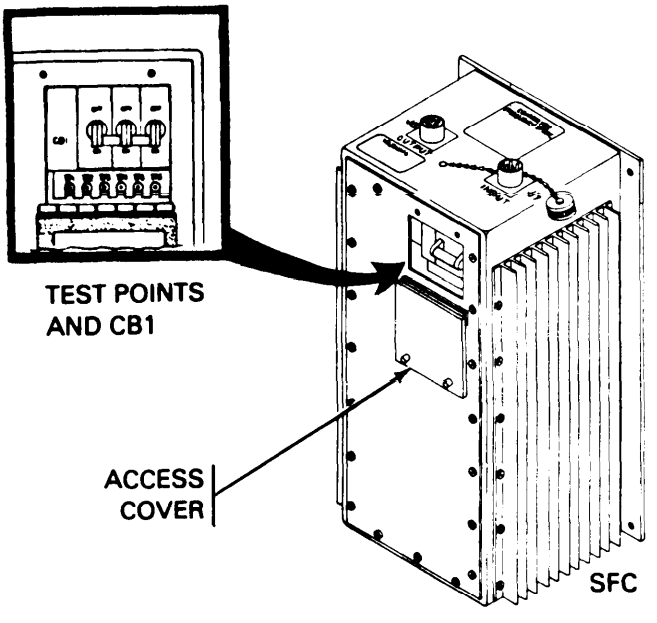


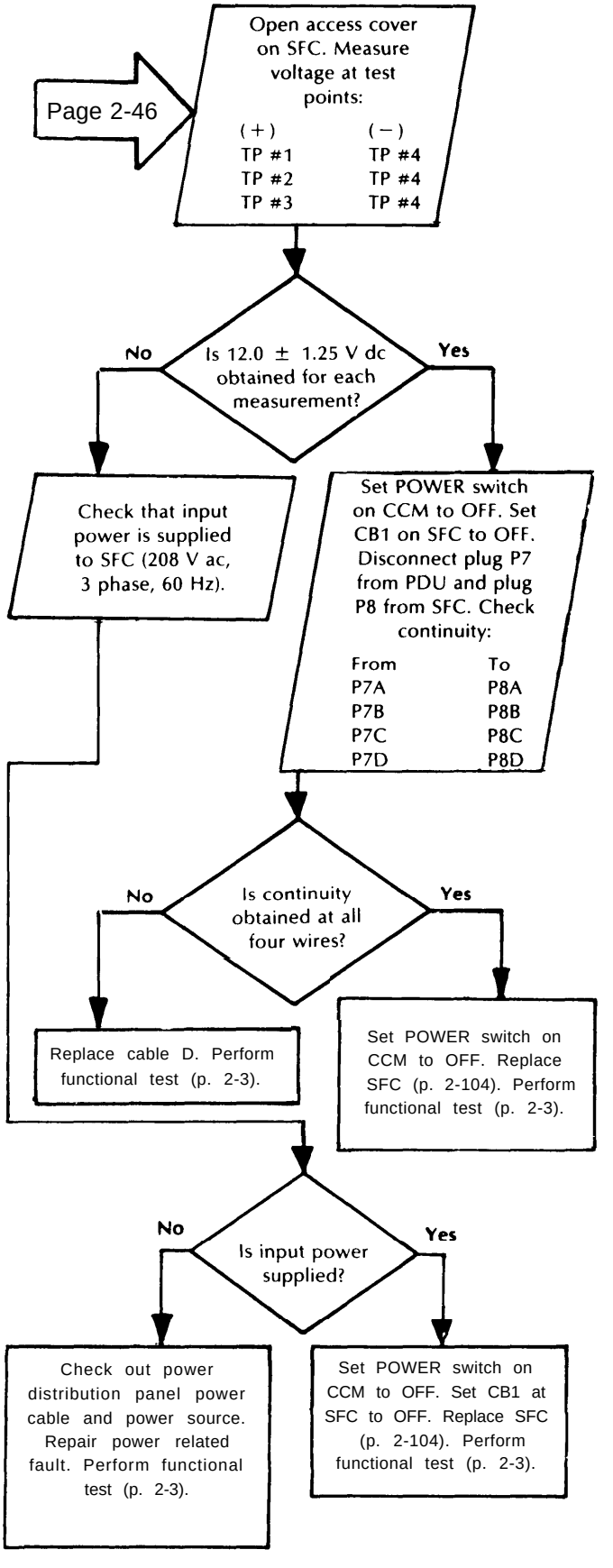




LEGEND

C C M – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
P D U – Power Distribution Unit



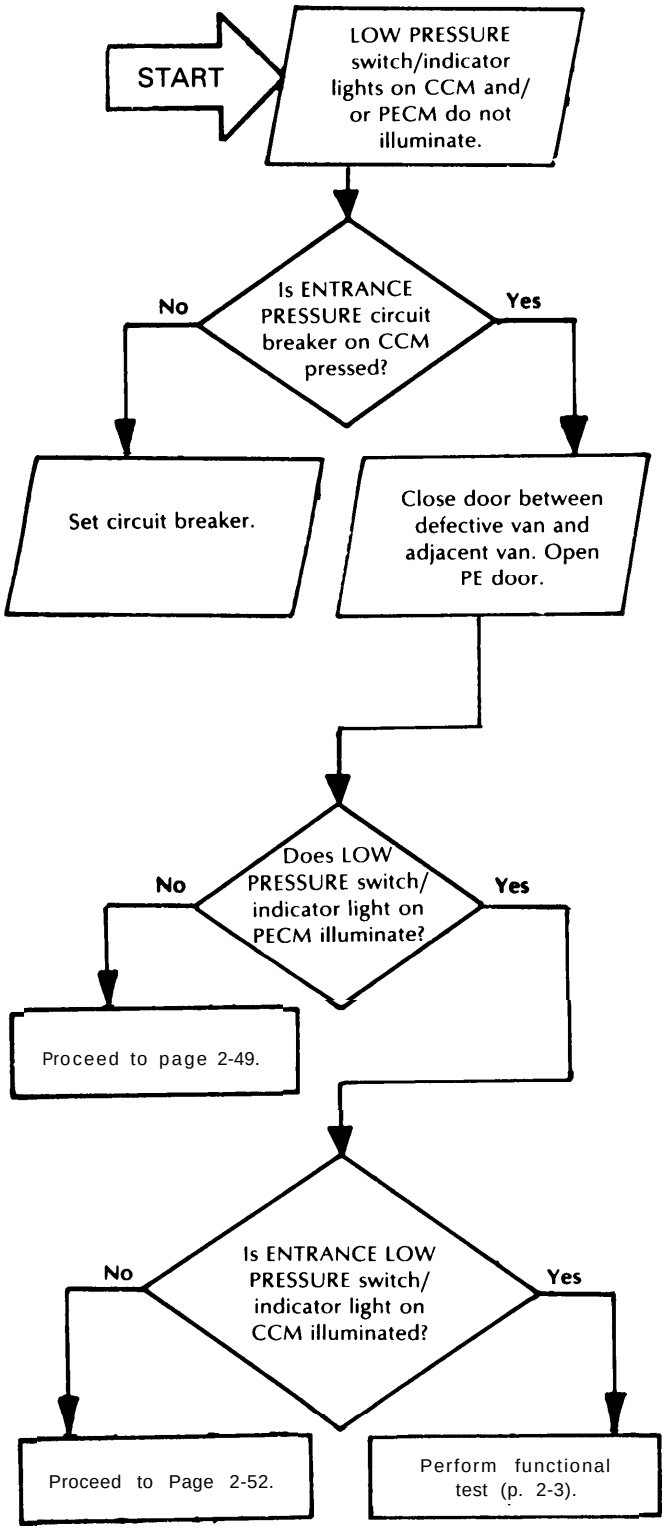

LEGEND

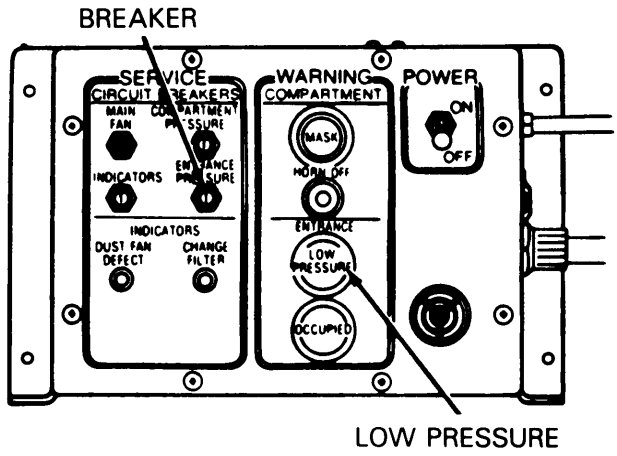
CCM – Compartment Control Module
PDU – Power Distribution Unit
SFC – Static Frequency Converter
TP – Test Point

## 4. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS WILL NOT COME ON.

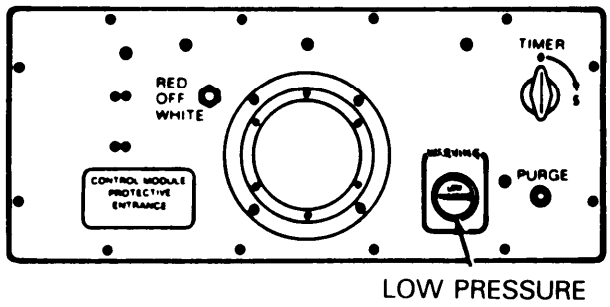
**NOTE**

This troubleshooting procedure applies to vans 1 and 4 only.



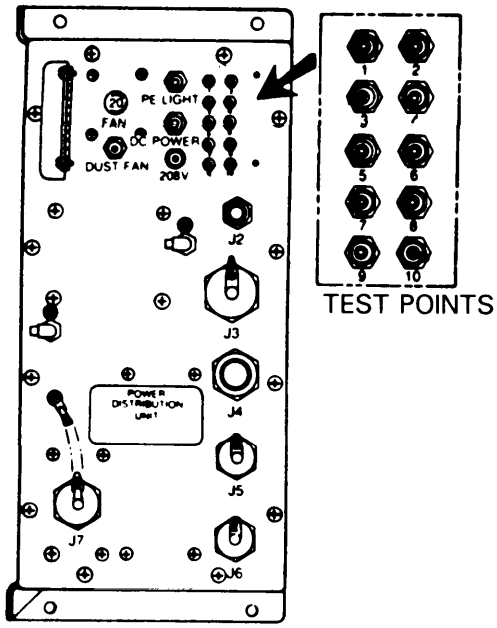

CCM

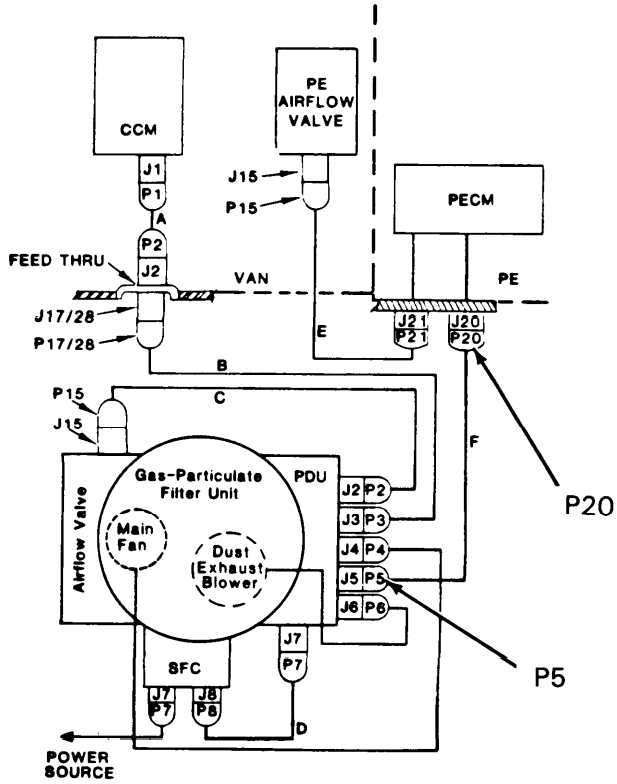



PECM

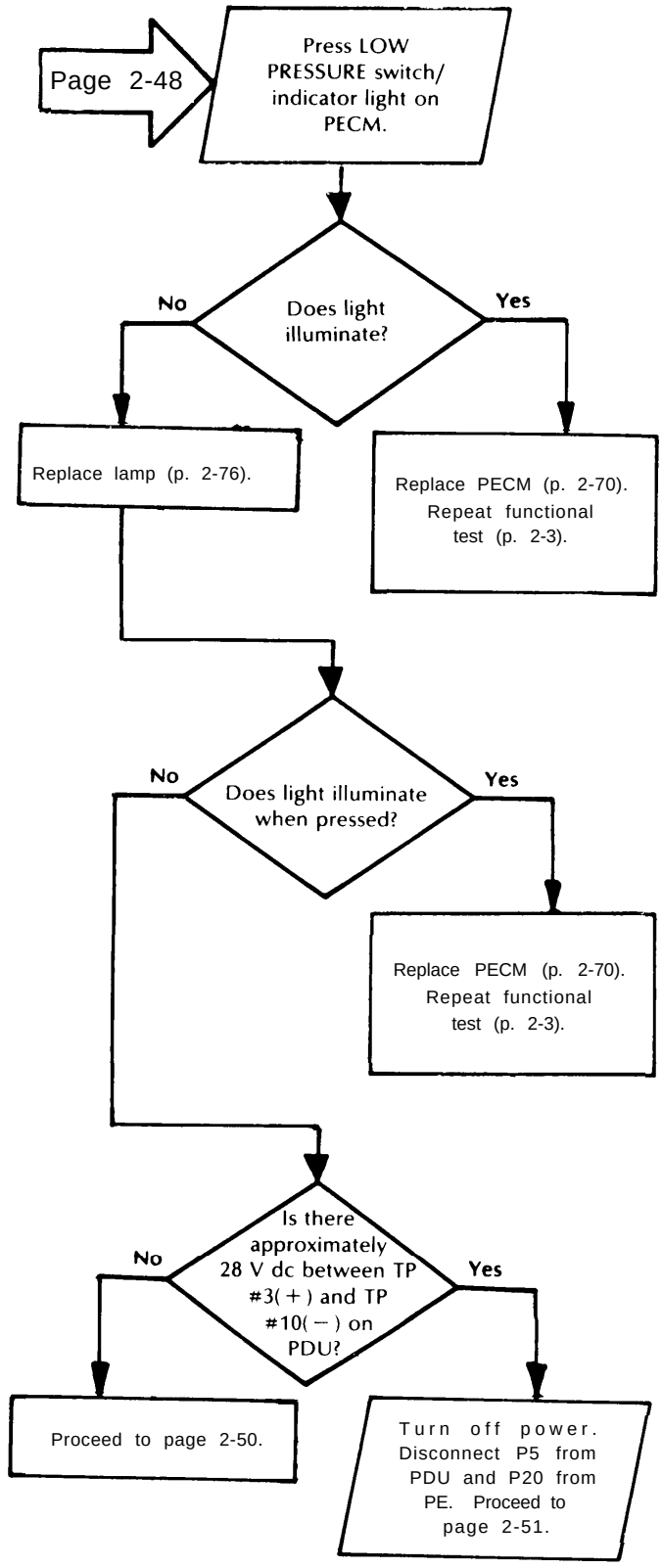
LEGEND

CCM – Compartment Control Module
PE – Protective Entrance
PECM – Protective Entrance Control Module

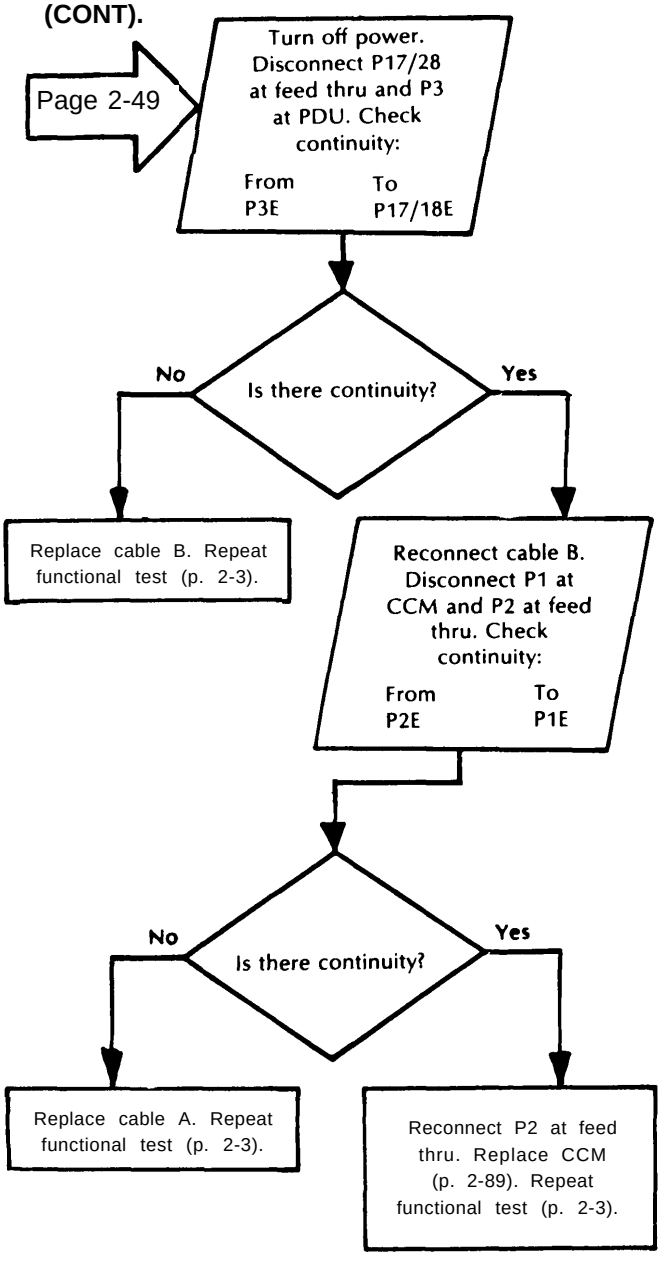


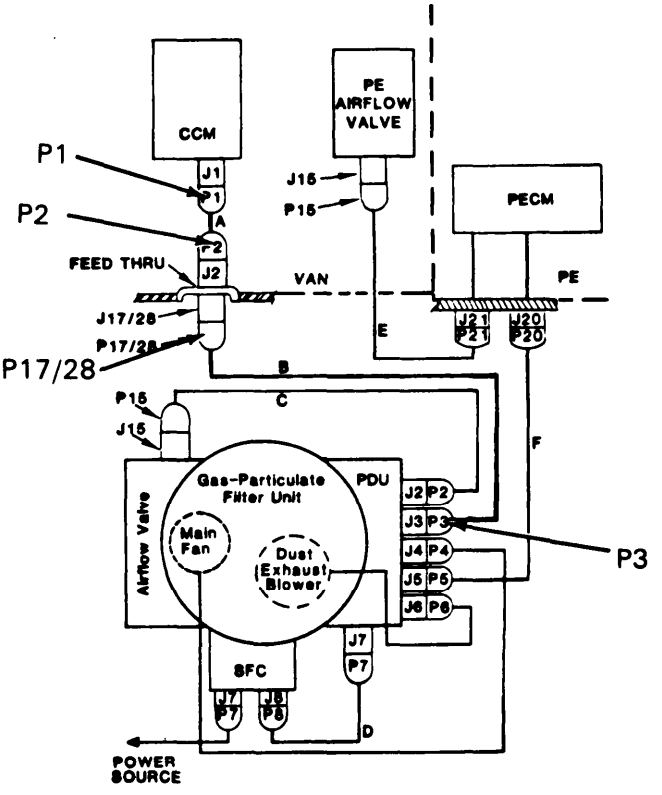




LEGEND
PDU – Power Distribution Unit
PECM – Protective Entrance Control Module
TP – Test Point



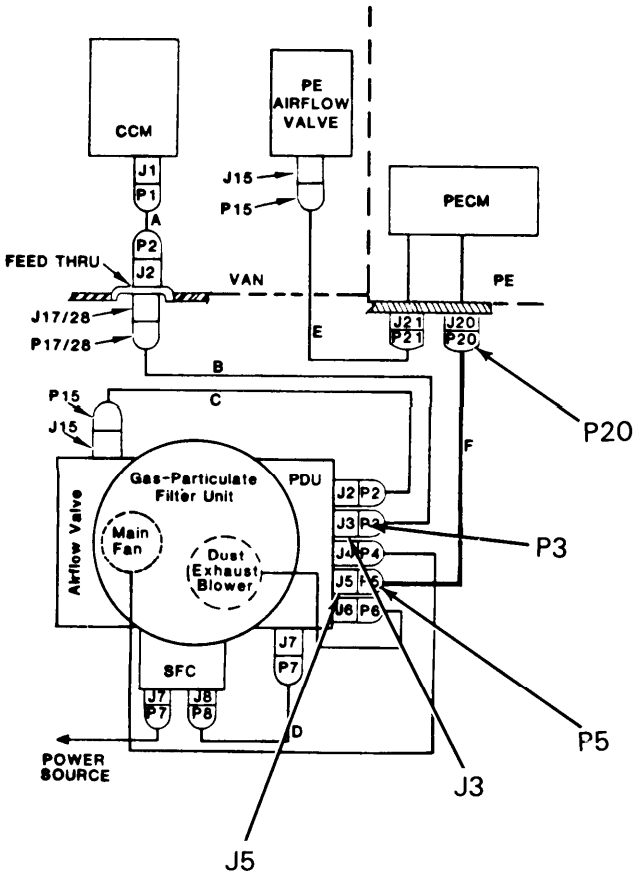
**4. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS WILL NOT COME ON (CONT).**

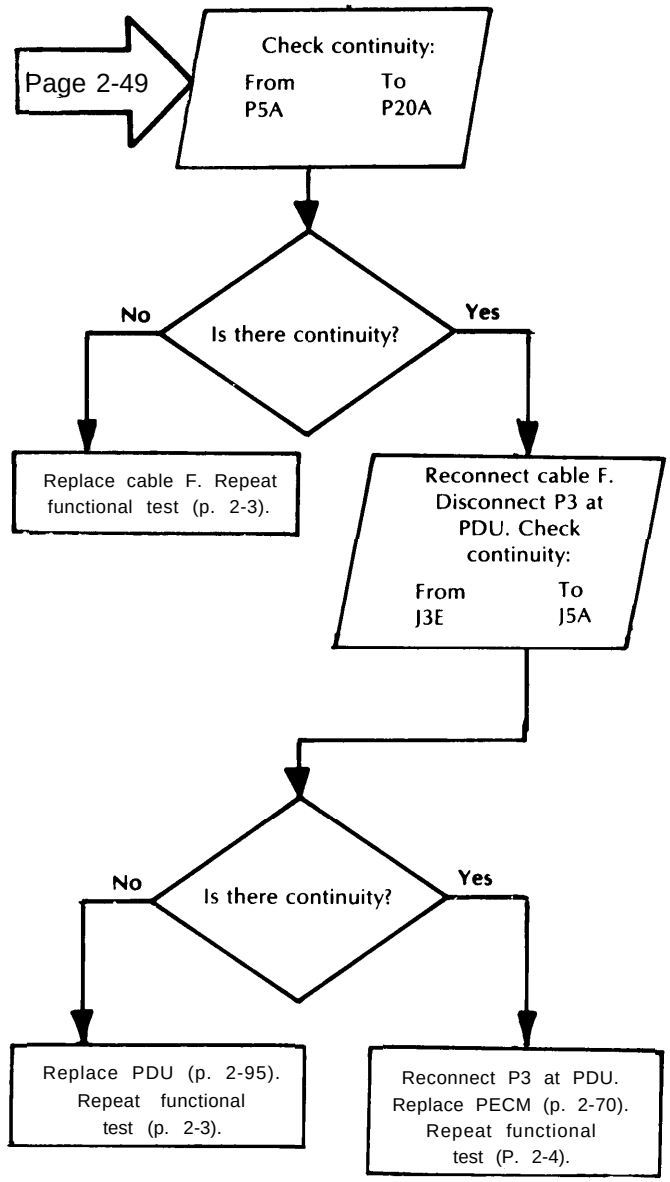



LEGEND

CCM – Compartment Control Module
PDU – Power Distribution Unit
Feed Thru – Elec/Pneu Feed Thru




LEGEND

PDU – Power Distribution Unit
PECM – Protective Entrance Control Module

**4. PROTECTIVE ENTRANCE LOW PRESSURE SWITCH/INDICATOR LIGHTS WILL NOT COME ON (CONT).**

Page 2-48

Turn off power. Disconnect P3 at PDU. Check continuity:

| From | To |
|---|---|
| TP #7 | TP #10 |

Is there continuity?

- No → Proceed to page 2-53.
- Yes → Disconnect P17/28 at feed thru. Check continuity:

| From | To |
|---|---|
| P17/28H | P3H |

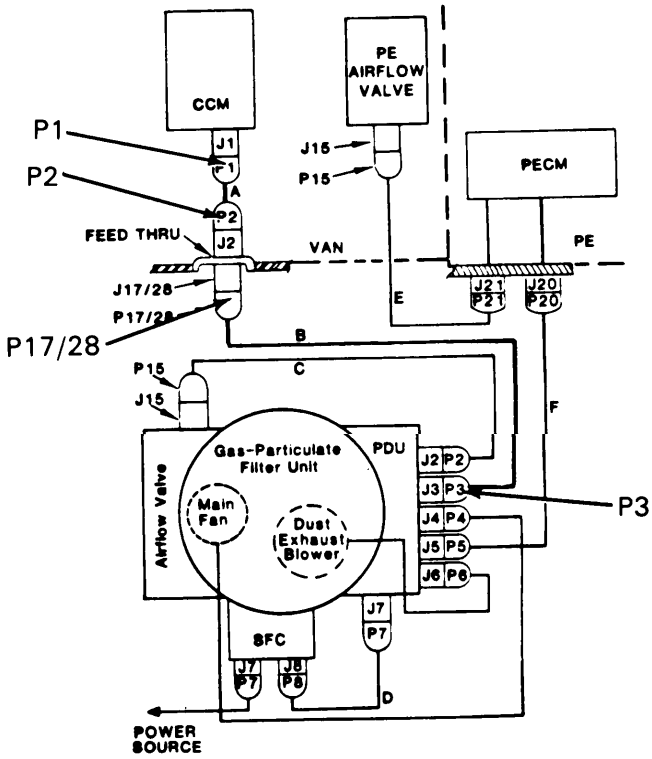
Is there continuity?

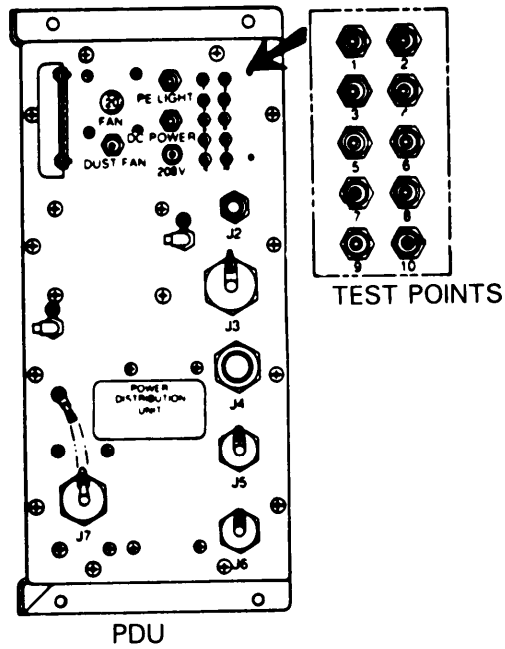
- No → Replace cable B. Repeat functional test (p. 2-3).
- Yes → Reconnect cable B. Disconnect cable P1 at CCM and P2 at feed thru. Check continuity:

| From | To |
|---|---|
| P1H | P2H |

Is there continuity?

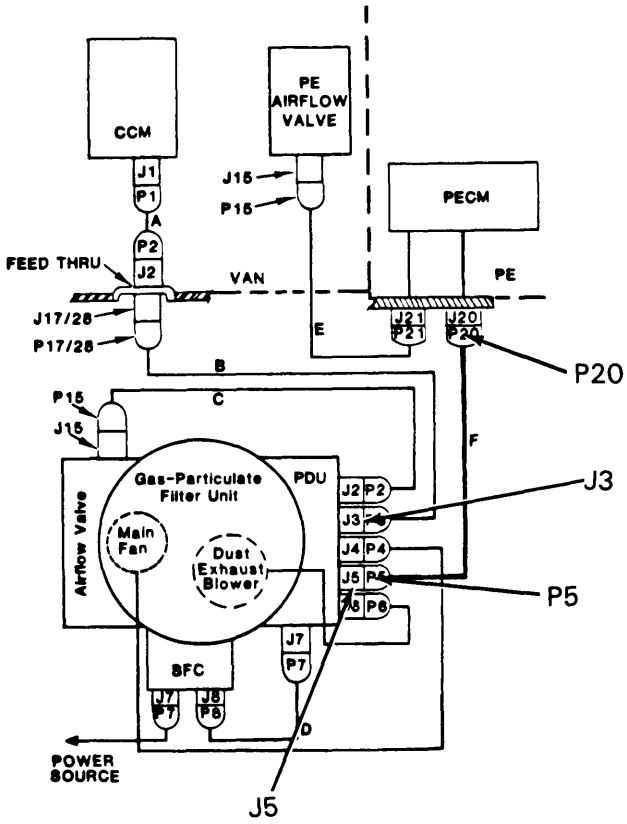
- No → Replace cable A. Repeat functional test (p. 2-3).
- Yes → Reconnect P2 at feed thru. Replace CCM (p, 2-89). Repeat functional test (p. 2-3).

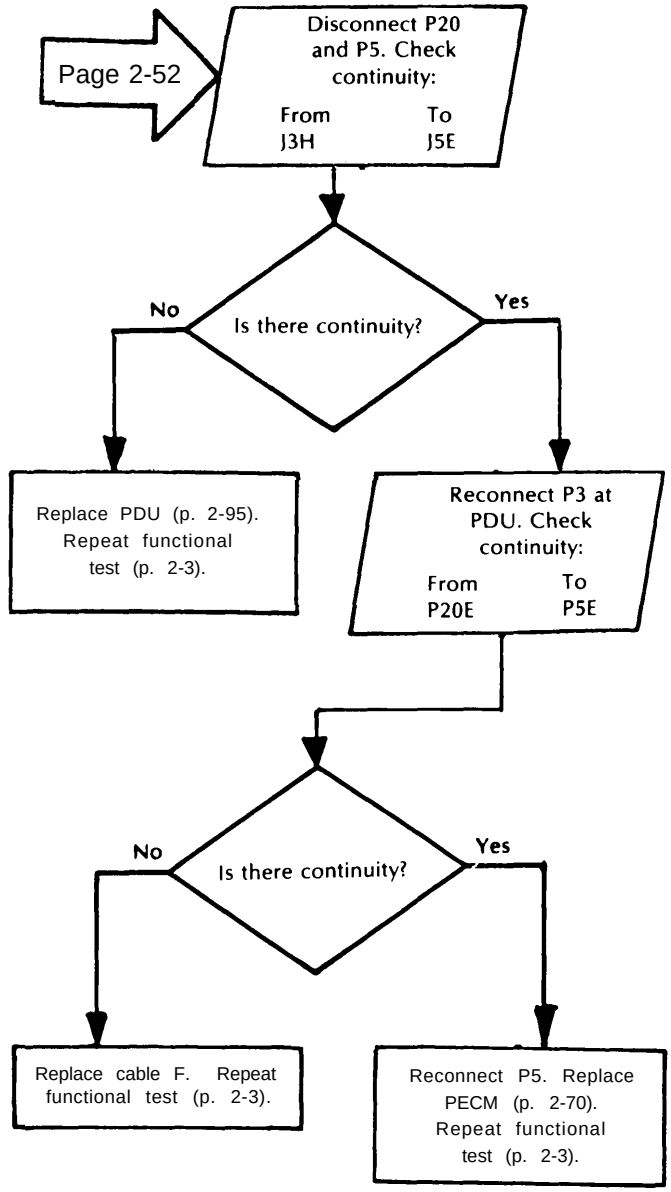



LEGEND

CCM – Compartment Control Module
PDU – Power Distribution Unit
TP – Test Point
Feed thru – Elec/Pneu Feed Thru




LEGEND

PDU – Power Distribution Unit
PECM – Protective Entrance Control Module

## 5. CHANGE FILTER INDICATOR LIGHTS WITH CLEAN FILTER.

START

CHANGE FILTER indicator light illuminates with a clean particulate filter installed.

Turn off power. Disconnect P3 at PDU. Check continuity:

| From | To |
|---|---|
| TP #4 | TP #10 |

Is there continuity between TP #4 and TP #10 on PDU?

- No → Connect cable P3. Disconnect P1 at CCM. Check continuity:

| From | To |
|---|---|
| TP #4 | TP #10 |

  Is there continuity between TP #4 and TP #10 on PDU?

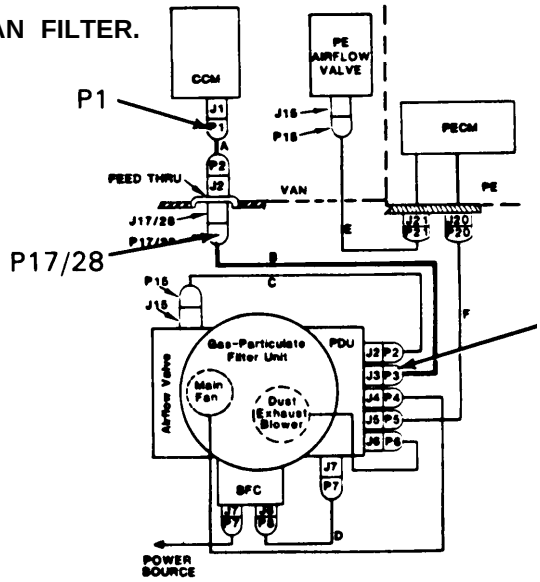
  - No → Replace CCM (p. 2-89). Repeat functional test (p. 2-3).
  - Yes → Disconnect cable P17/28 at feed thru. Check continuity:

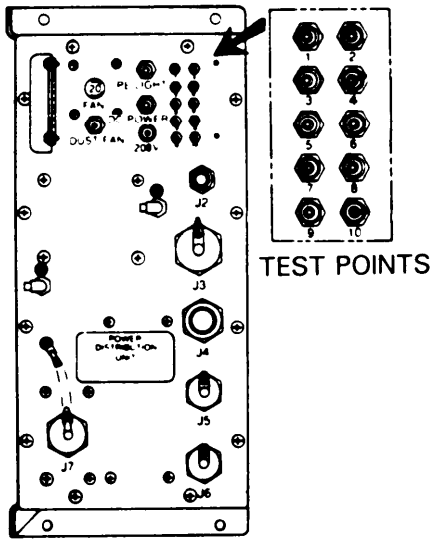
| From | To |
|---|---|
| TP #4 | TP #10 |

    Is there continuity between TP #4 and TP #10 on PDU?

    - No → Reconnect P17/28 at feed thru. Replace cable A. Repeat functional test (p. 2-3).
    - Yes → Reconnect P1 at CCM. Replace cable B. Repeat functional test (p. 2-3).

- Yes → Replace PDU (p. 2-95). Repeat functional test (p. 2-3).

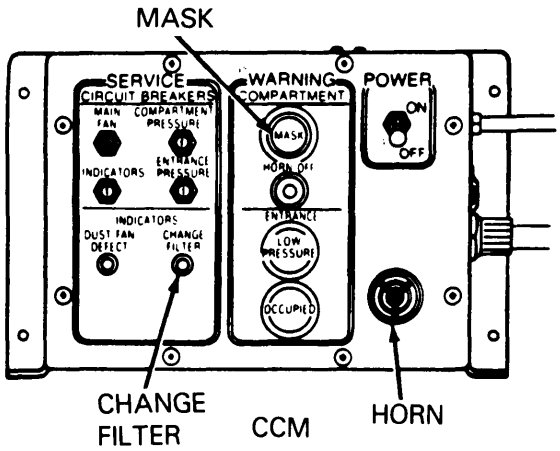


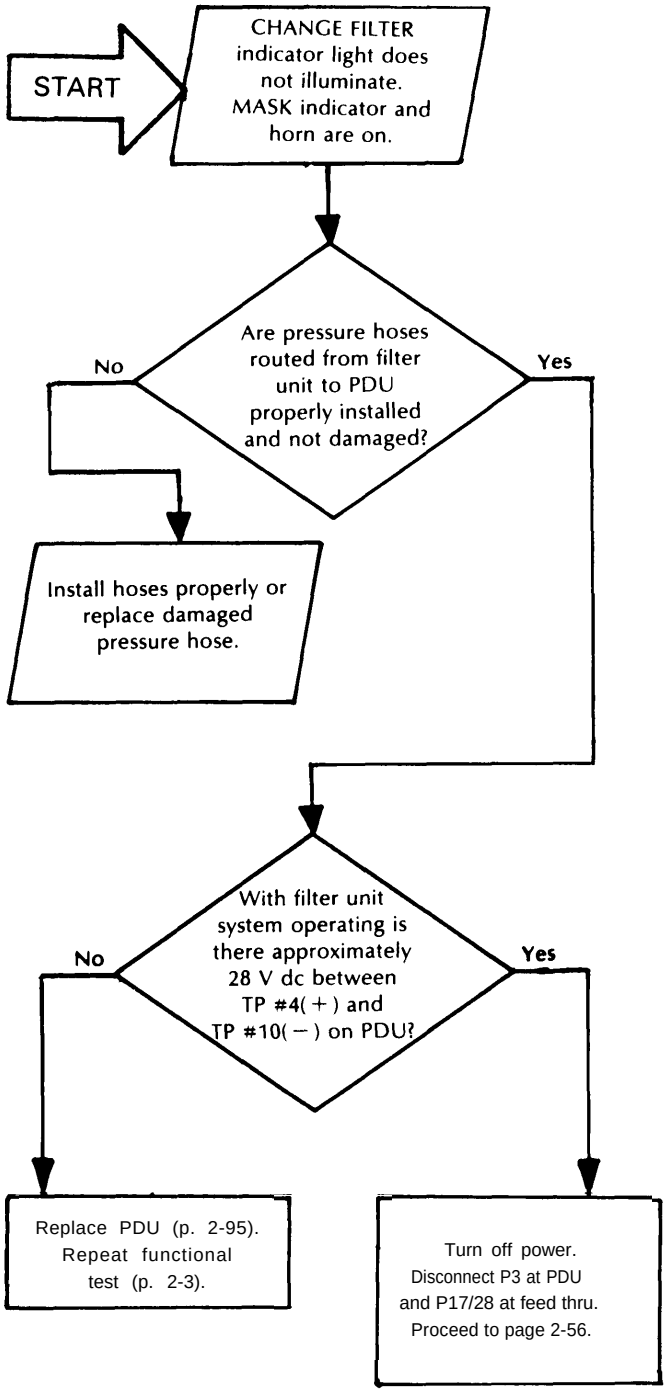



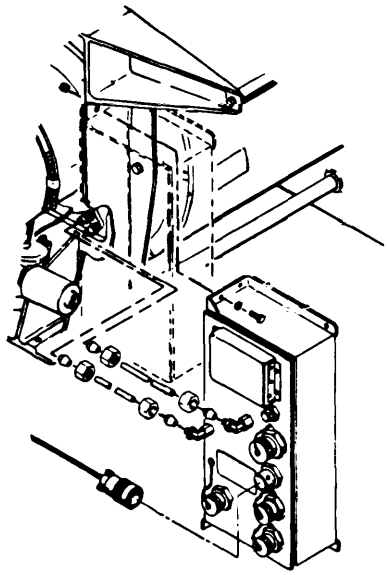

LEGEND

| | | |
|---|---|---|
| C C M | – | Compartment Control Module |
| Feed Thru | – | Elec/Pneu Feed Thru |
| PDU | – | Power Distribution Unit |
| T P | – | Test Point |

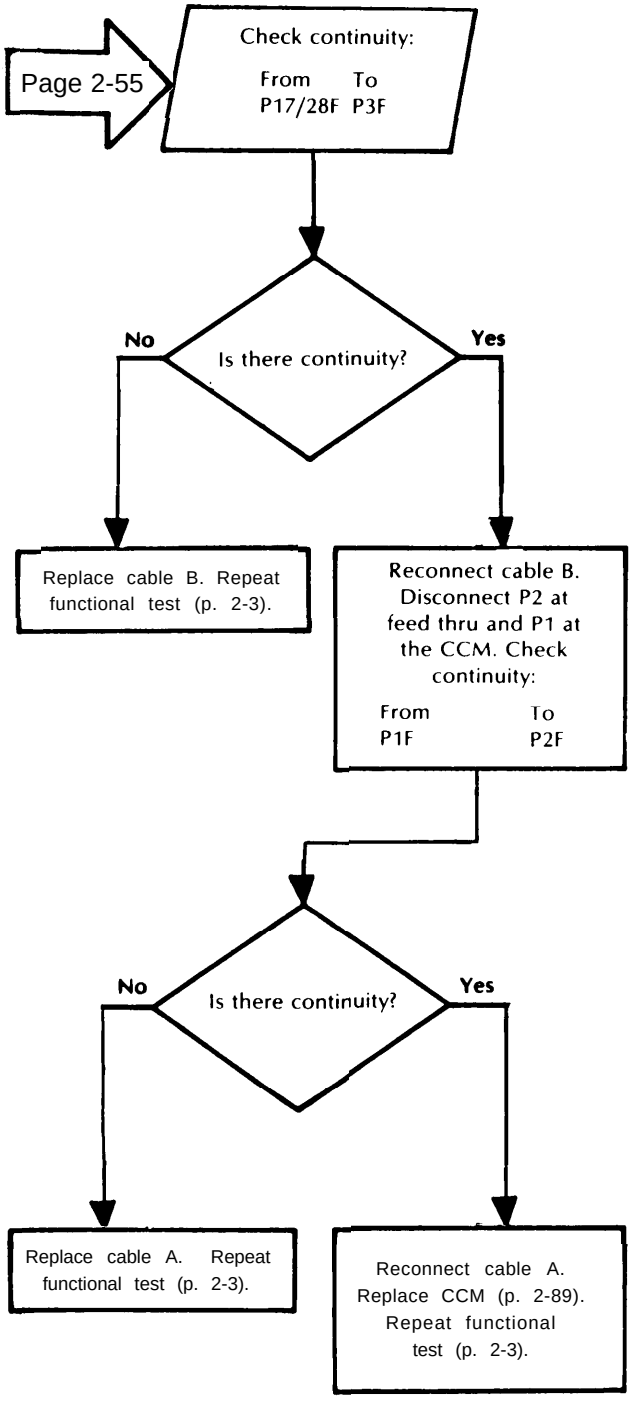
## 6. CHANGE FILTER INDICATOR LIGHT DOES NOT LIGHT.

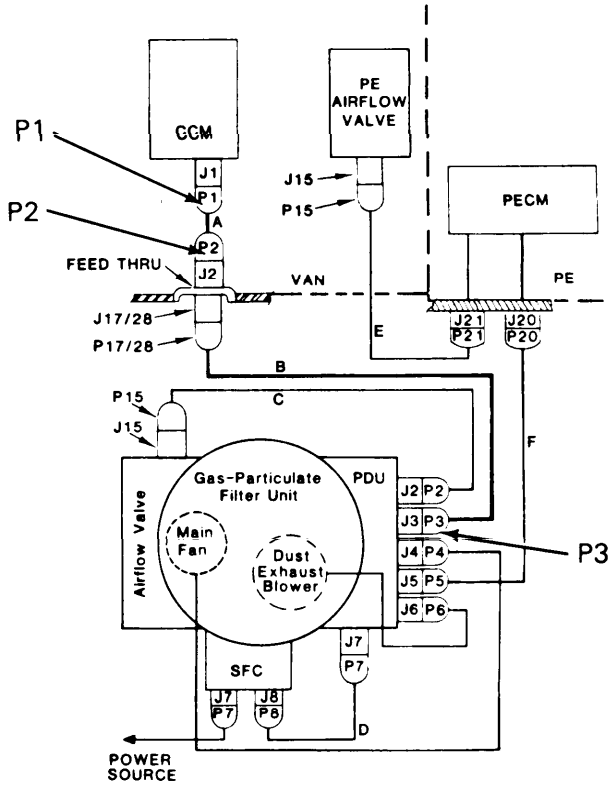


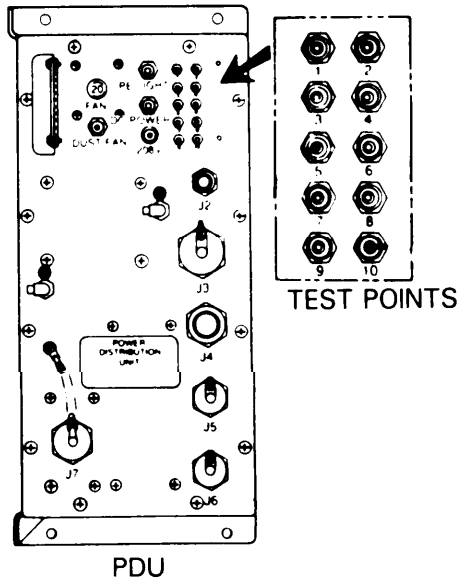



## 6. CHANGE FILTER INDICATOR LIGHT DOES NOT LIGHT



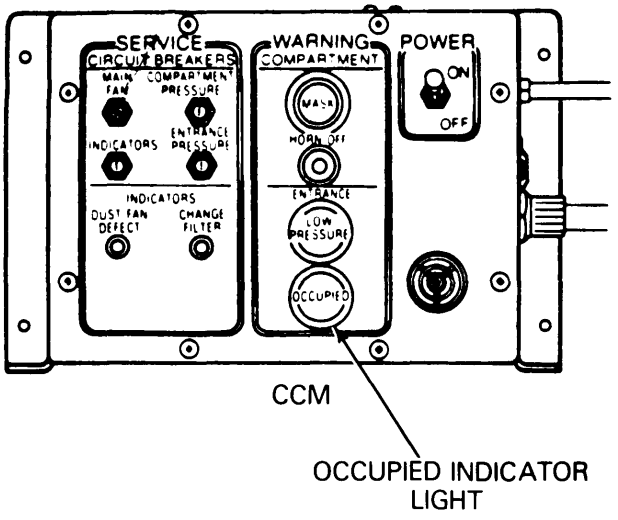

LEGEND

CCM – Compartment Control Module
PDU – Power Distribution Unit
PECM – Protective Entrance Control Module
TP – Test Point
Feed Thru – Elec/Pneu Feed Thru

## 7. OCCUPIED AND PURGE INDICATOR LIGHTS DO NOT OPERATE PROPERLY.

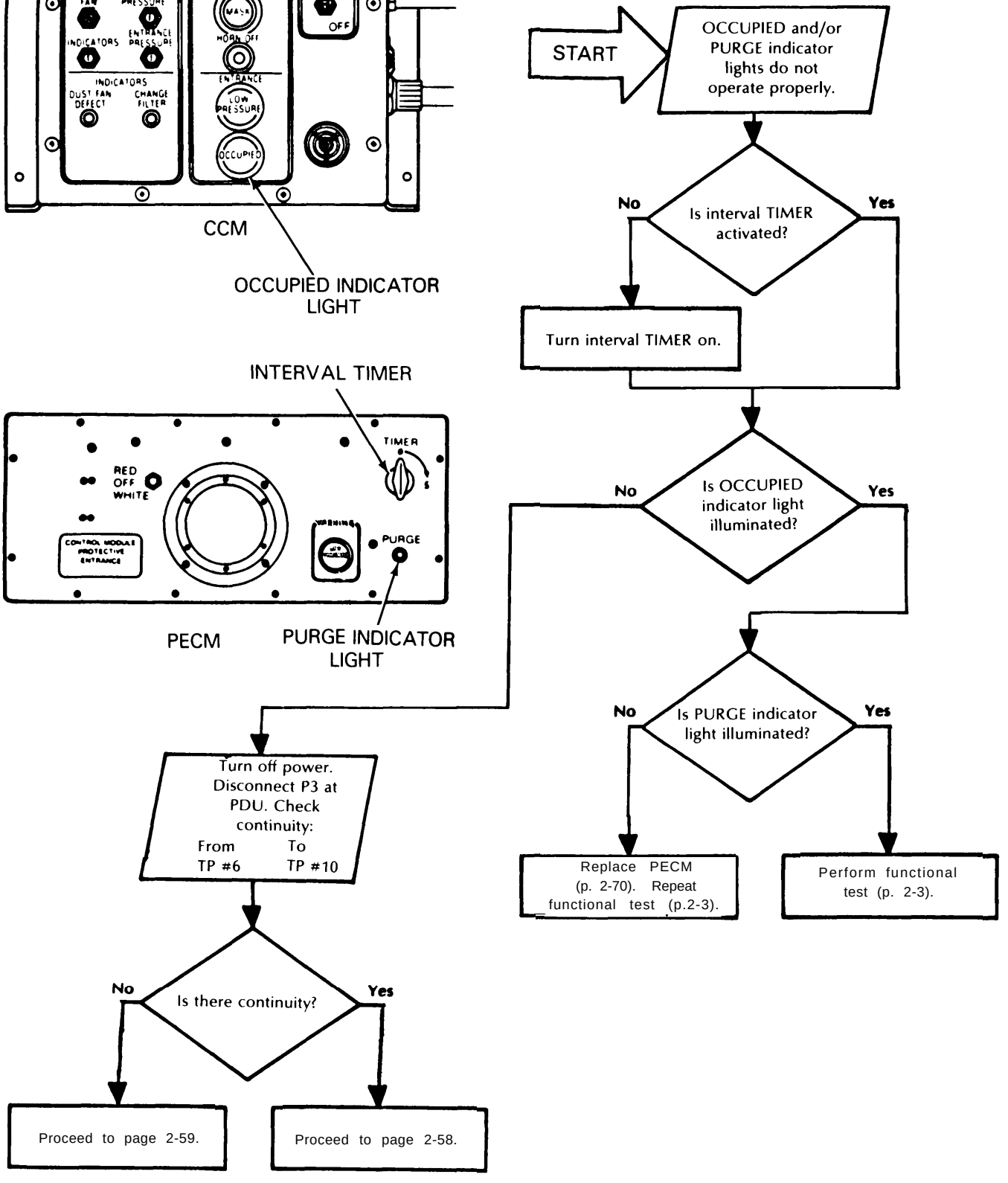
**NOTE**

This troubleshooting procedure applied to vans 1 and 4 only.

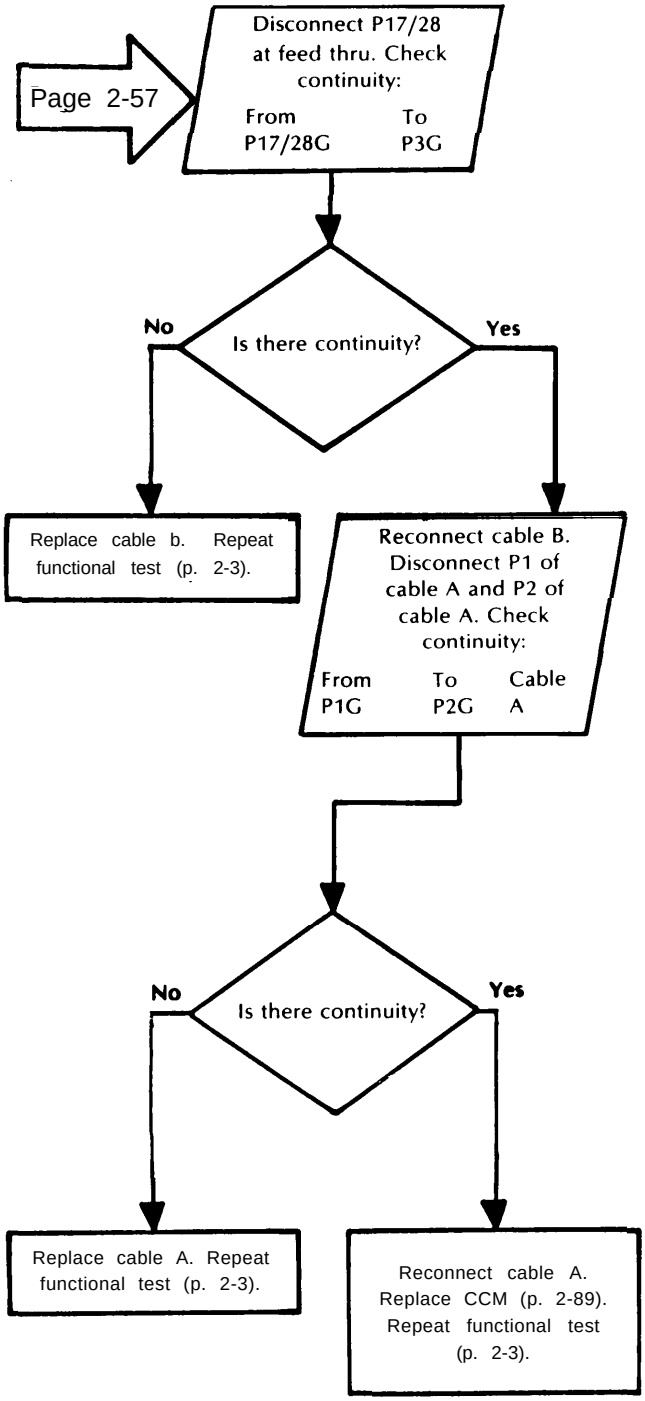


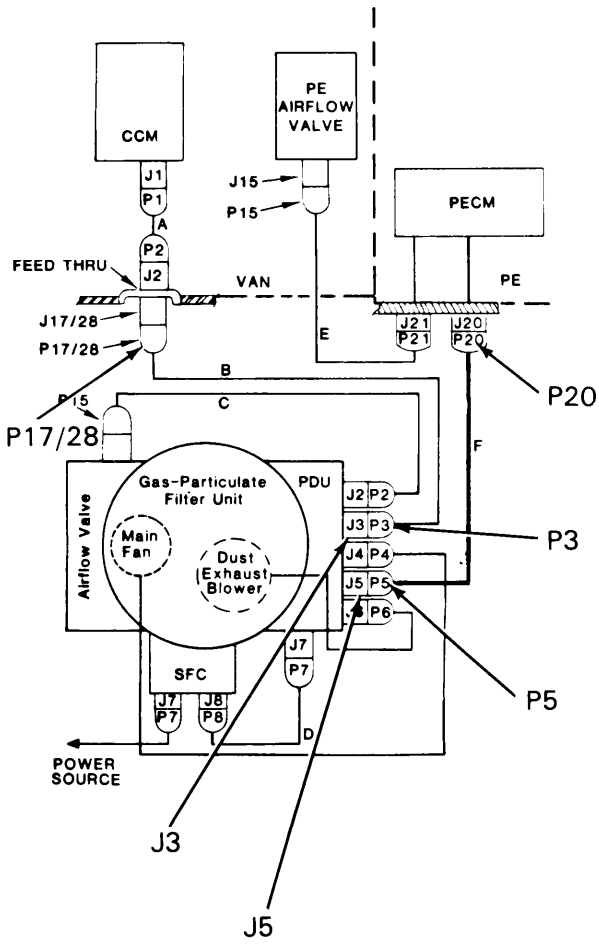


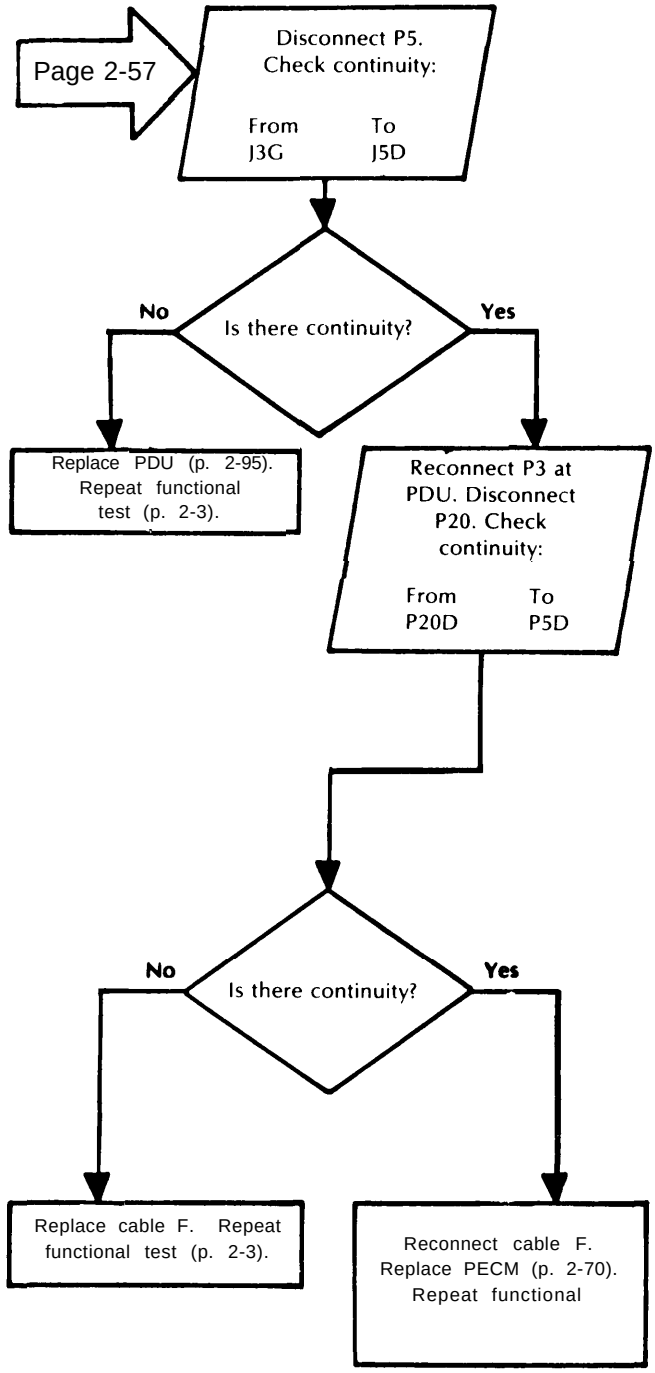




**7. OCCUPIED AND PURGE INDICATOR LIGHTS DO NOT OPERATE PROPERLY (CONT).**






LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
PECM – Protective Entrance Control Module

## 8. INDICATORS CIRCUIT BREAKER TRIPS

START

INDICATORS circuit breaker is open (out) and will not remain pressed.

Turn off power. Disconnect P1 at CCM. Check continuity:

From TP #3 To TP #10

Is there continuity between TP #3 and TP #10 on PDU?

No

Replace CCM (p. 2-89). Repeat functional test (p. 2-3).

Yes

Reconnect P1 at CCM. Disconnect P17/28 at feed thru. Check continuity:

From TP #3 To TP #10

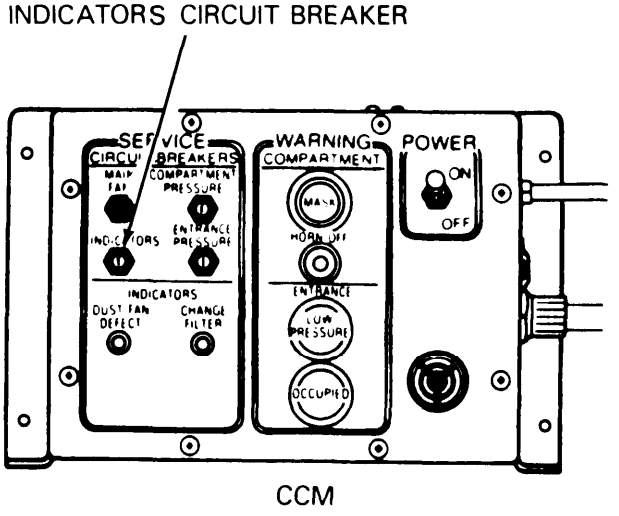
Is there continuity between TP #3 and TP #10 on PDU?

No

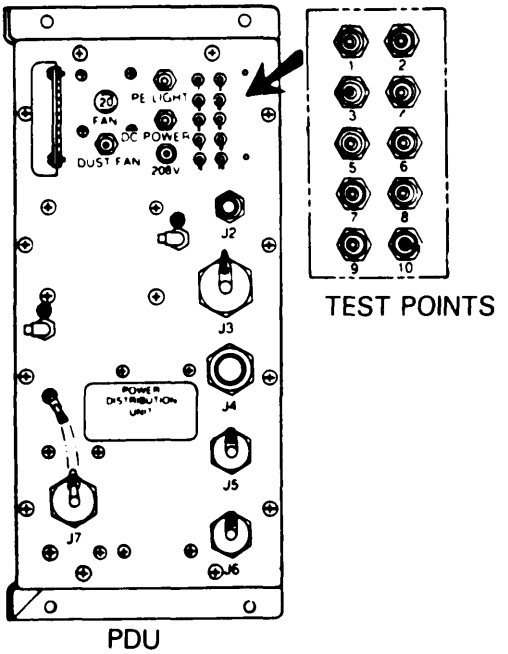
Replace cable A. Repeat functional test (p. 2-3).

Yes

Proceed to page 2-61.

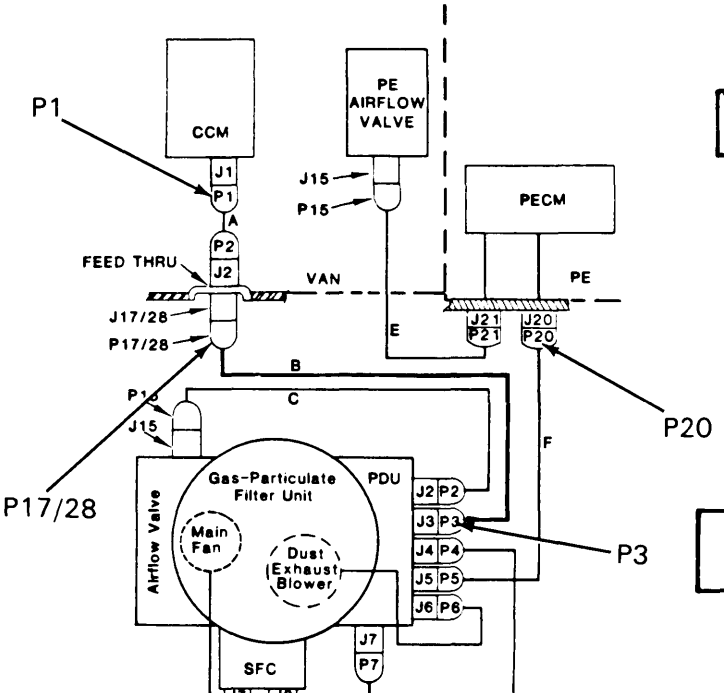


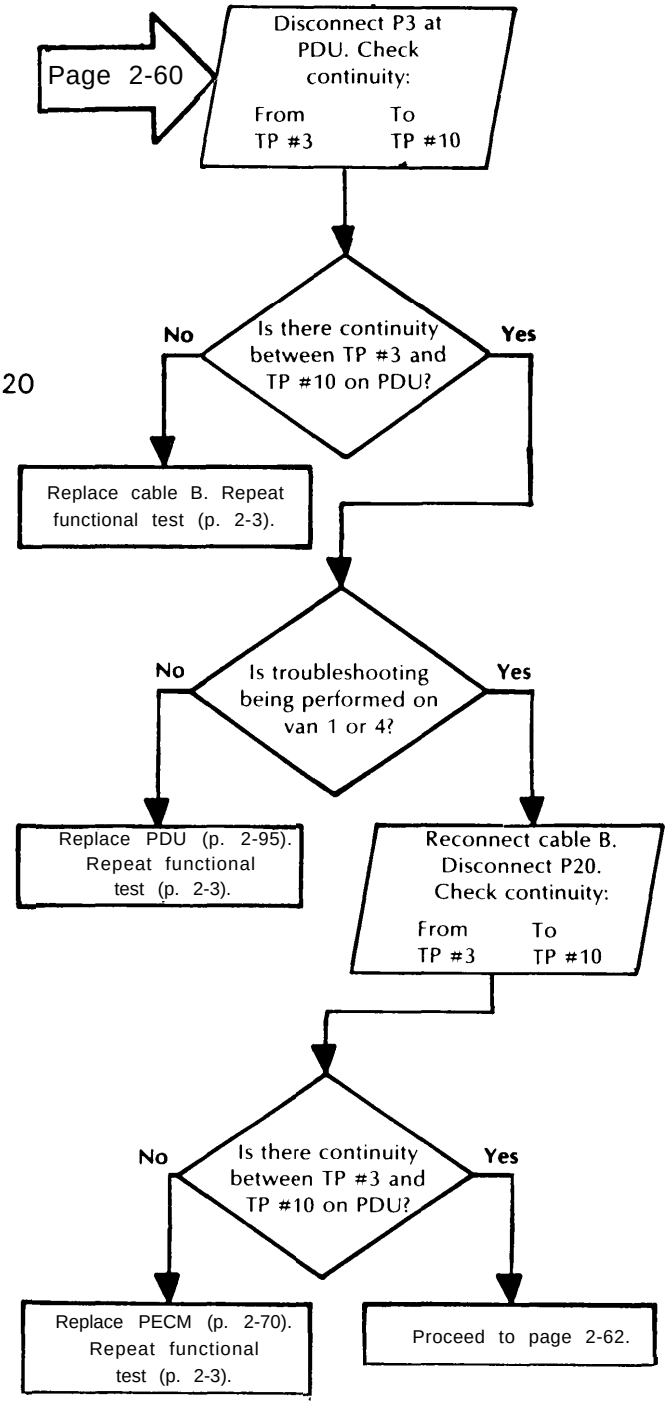

CCM




TEST POINTS

PDU

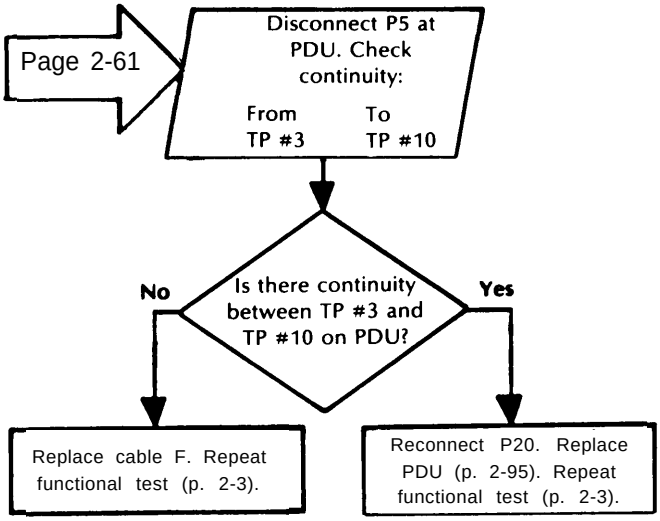



LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PECM – Protective Entrance Control Module
PDU – Power Distribution Unit
TP – Test Point

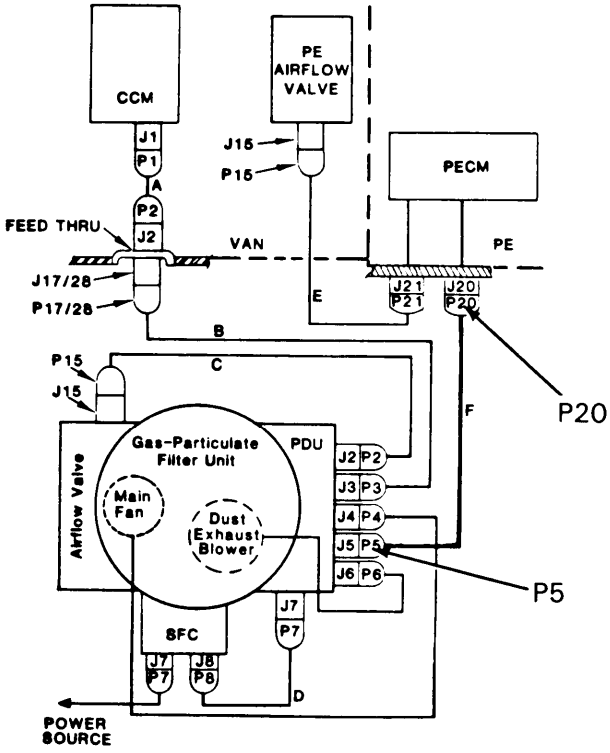
**8. INDICATORS CIRCUIT BREAKER TRIPS (CONT).**

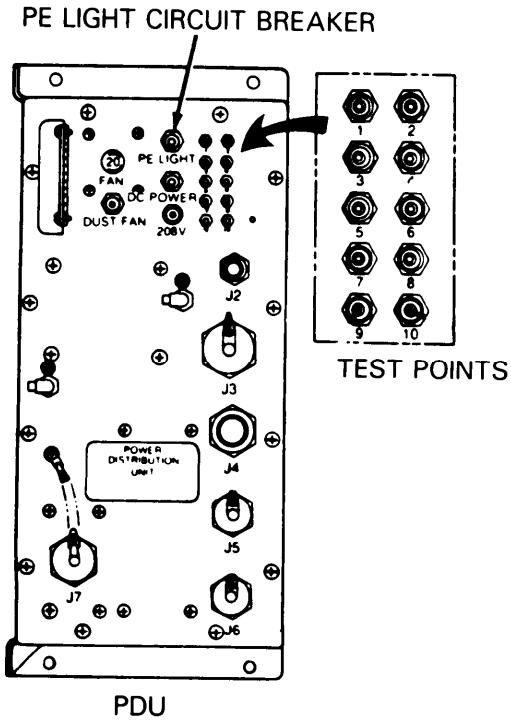


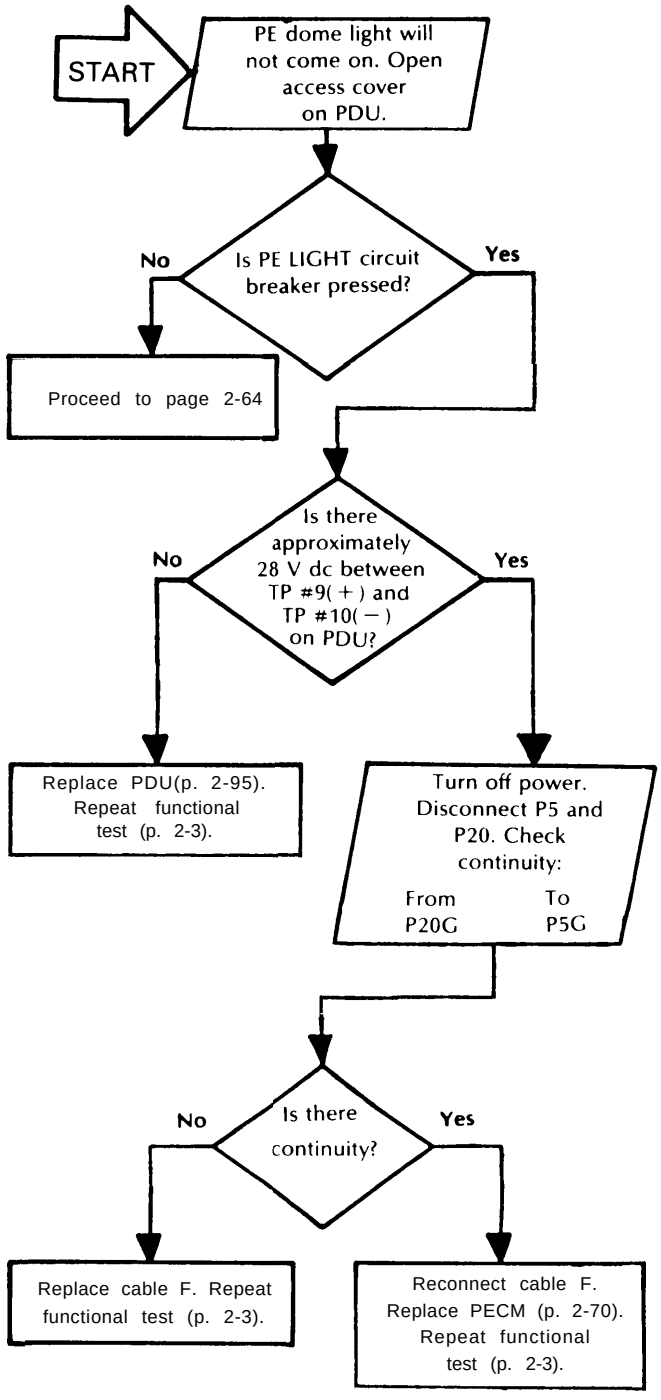
## 9. PROTECTIVE ENTRANCE DOME LIGHT DOES NOT COME ON.

**NOTE**

This troubleshooting procedure vans 1 and 4 only.

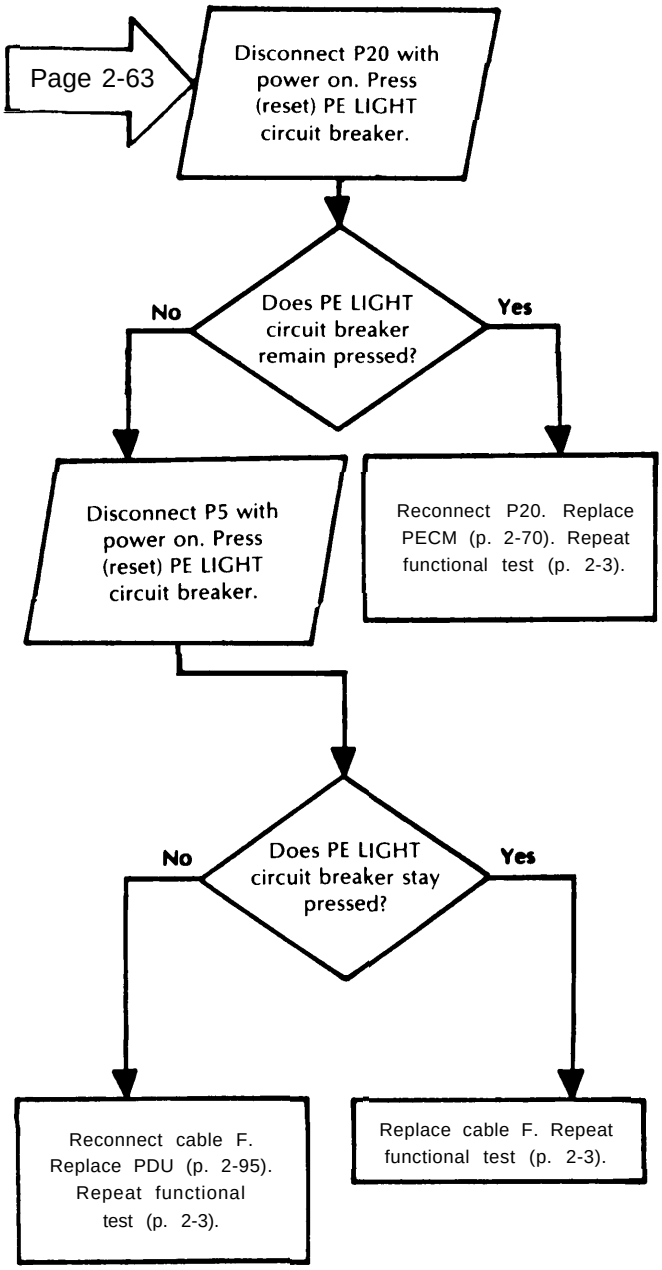


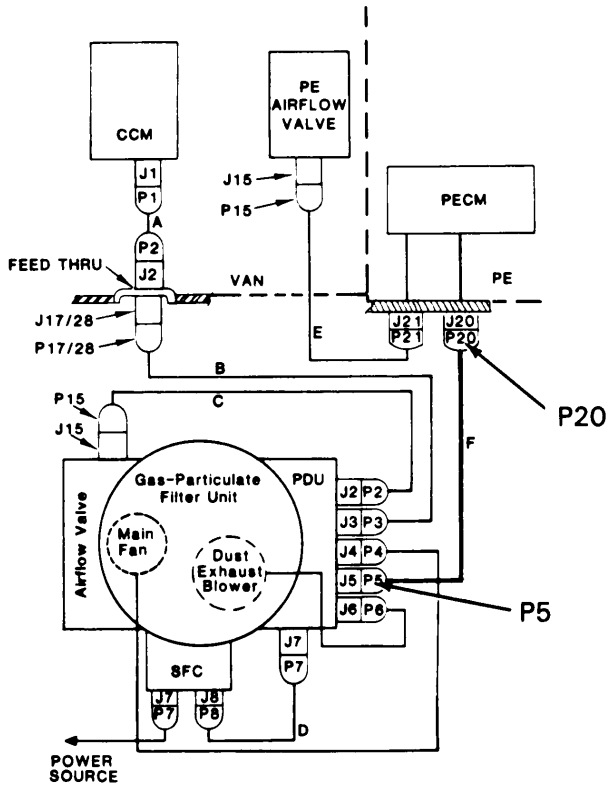



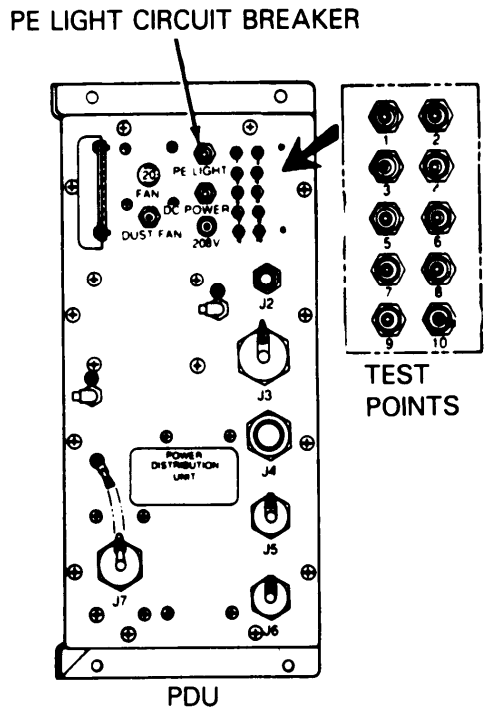




LEGEND
PDU – Power Distribution Unit
PE – Protective Entrance
PECM – Protective Entrance Control Module
TP – Test Point

## 9. PROTECTIVE ENTRANCE DOME LIGHT DOES NOT COME ON (CONT).



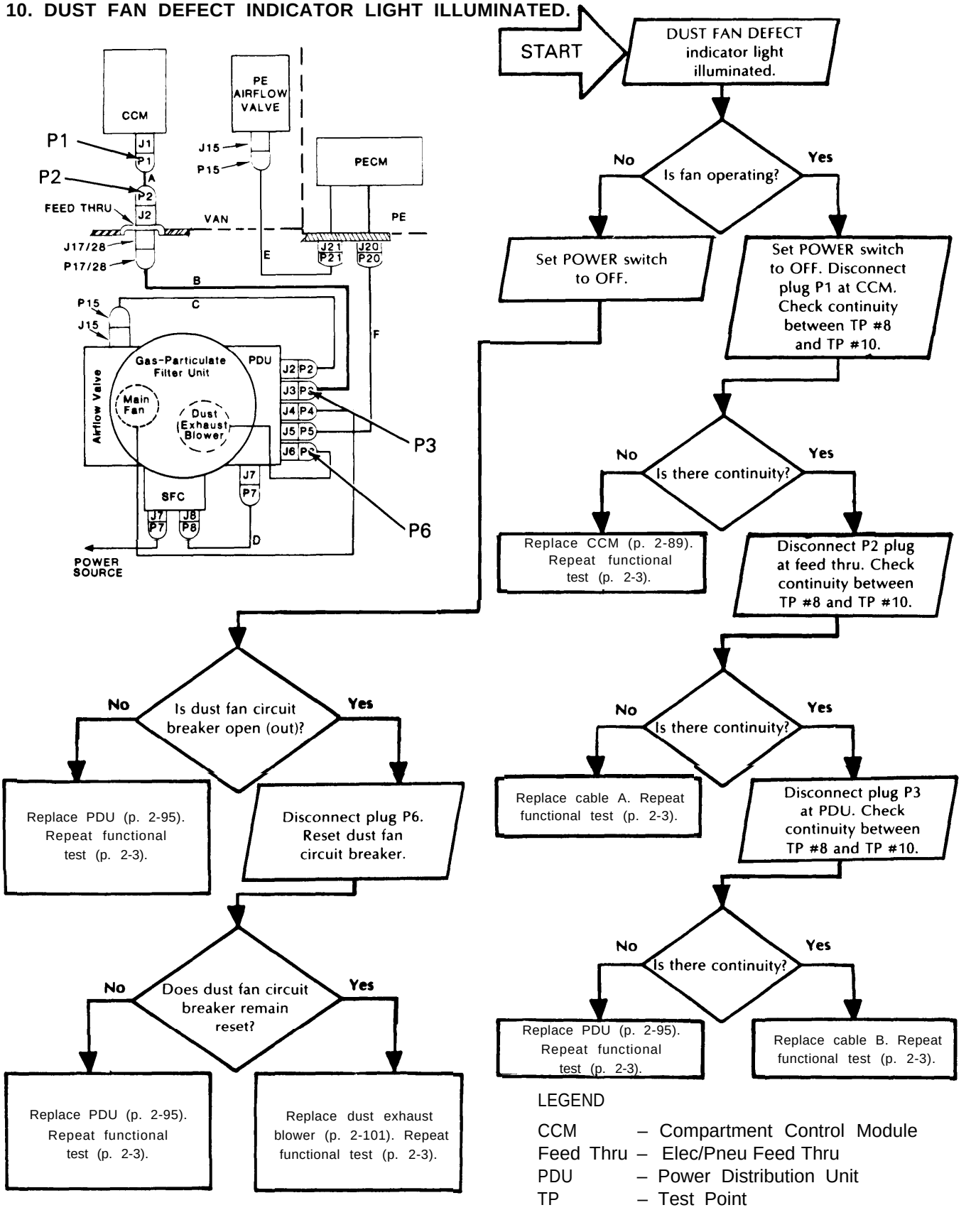




LEGEND

PDU – Power Distribution Unit
PE – Protective Entrance
PECM – Protective Entrance Control Module

## 10. DUST FAN DEFECT INDICATOR LIGHT ILLUMINATED.

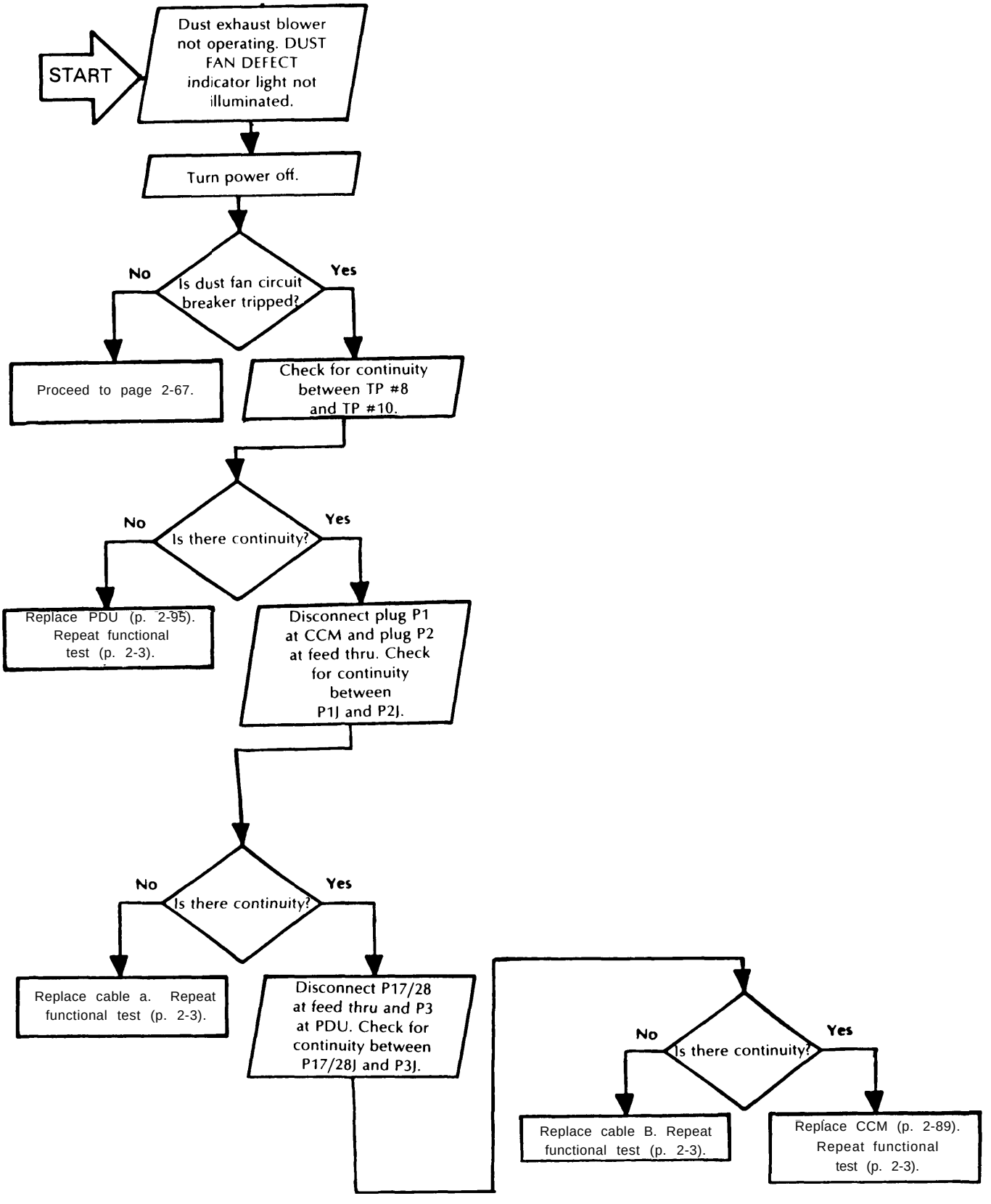


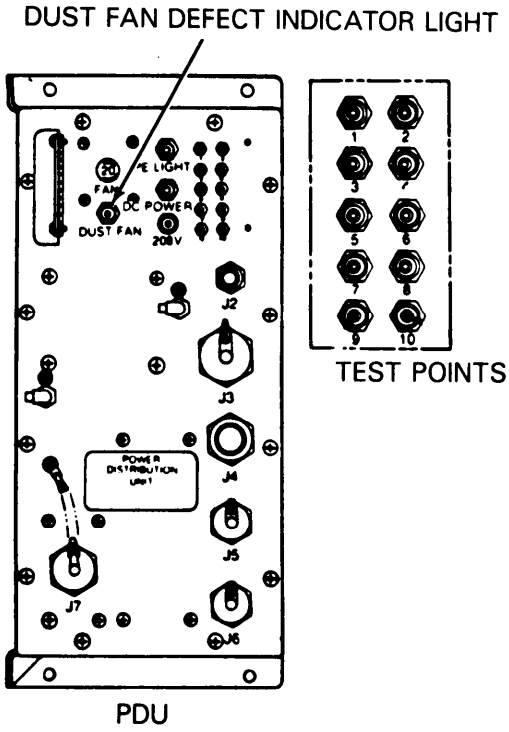



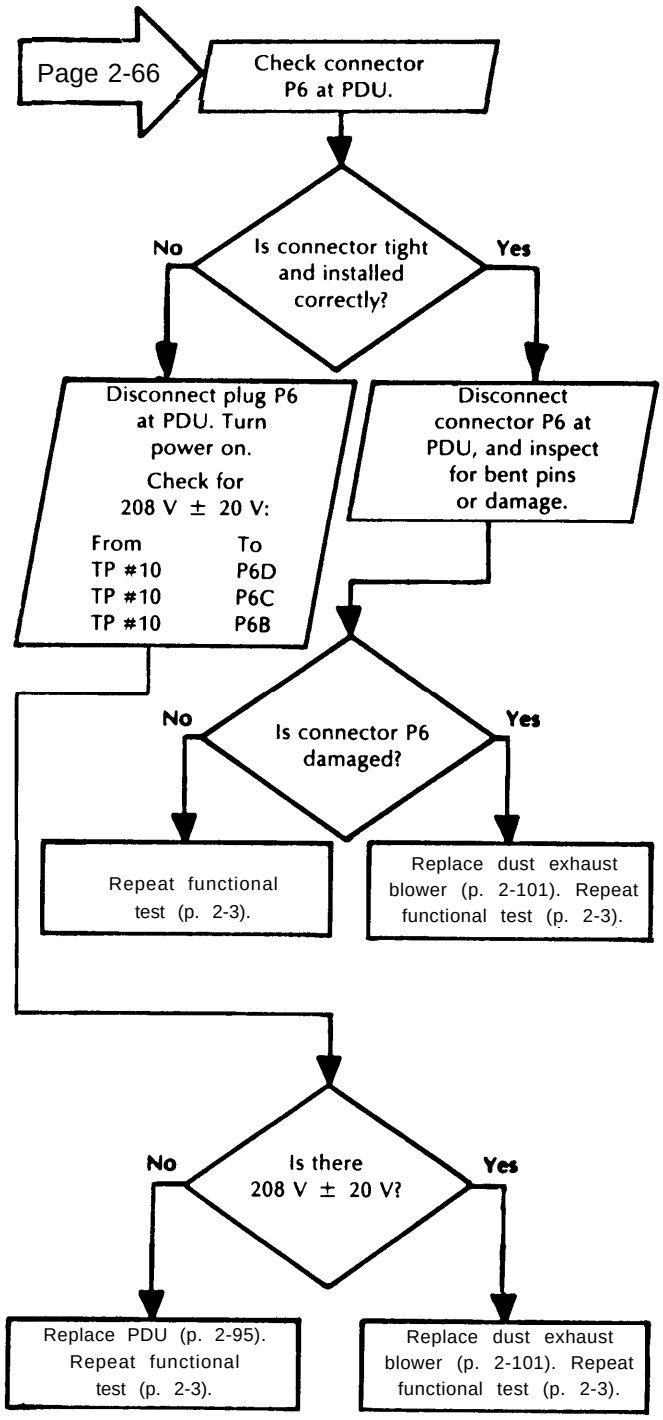

LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
TP – Test Point

**11. DUST FAN DEFECT INDICATOR LIGHT DOES NOT ILLUMINATE AND DUST FAN IS NOT RUNNING.**






LEGEND

CCM – Compartment Control Module
Feed Thru – Elec/Pneu Feed Thru
PDU – Power Distribution Unit
TP – Test Point

## Section VI MAINTENANCE PROCEDURES

**2-10. INTRODUCTION.** The next two sections contain information and instructions for performing corrective maintenance of the GUARDRAIL system collective protection equipment consisting of M10 Protective Entrance, and M87 Gas-Particulate Filter Unit. Removal and installation procedures are provided for the following components.

Section VII MAINTENANCE PROCEDURES FOR M 10 PROTECTIVE ENTRANCE

| *Component* | *Paragraph* |
|---|---|
| M10 Protective Entrance | 2-11 |
| Protective Entrance Control Module | 2-12 |
| Dome Light | 2-13 |
| Protective Entrance | 2-14 |

Section VIII MAINTENANCE PROCEDURES FOR M87 GAS-PARTICULATE FILTER UNIT

| *Component* | *Paragraph* |
|---|---|
| M87 Gas-Particulate Filter Unit | 2-15 |
| Housing Unit | 2-16 |
| Compartment Control Module | 2-17 |
| Power Distribution Panel | 2-18 |
| Airflow Valve | 2-19 |
| Airflow Valve and Silencer Assembly | 2-20 |

## Section Vll MAINTENANCE PROCEDURES FOR Ml O PROTECTIVE ENTRANCE

### 2-11. M10 PROTECTIVE ENTRANCE.

This task covers:

a. Fabric repair (p. 2-69)
b. Protective entrance control module replacement (p. 2-70).
c. Protective entrance replacement (p. 2-72)
d. Painting (p. 2-73)

### INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

*References*
TM 43-0139

*Personnel Required*
Two persons are needed to replace protective entrance

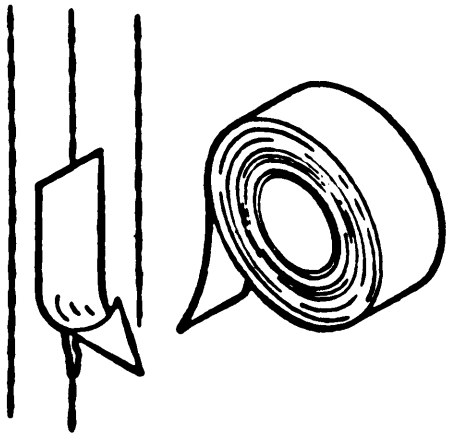
*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)
Tape (item 7, app D)
Primer coating (item 5, app D)
Polyurethane coating (item 4, app D)

| LOCATION | ITEM | ACTION |
|---|---|---|

**REPAIR**

M10 Protective Entrance

Impermeable wall fabric



To repair tears or slits:

1. Clean damaged area using rags (item 6, app D) and dry cleaning solvent (item 3, app D).
2. Cut a piece of tape (item 7, app D) about 4 inches longer than the tear or slit. Position tape over the tear or slit and press firmly in place.
3. Apply tape to the inside of the protective entrance impermeable fabric wall. If necessary for added strength, crossed strips of tape may be used.

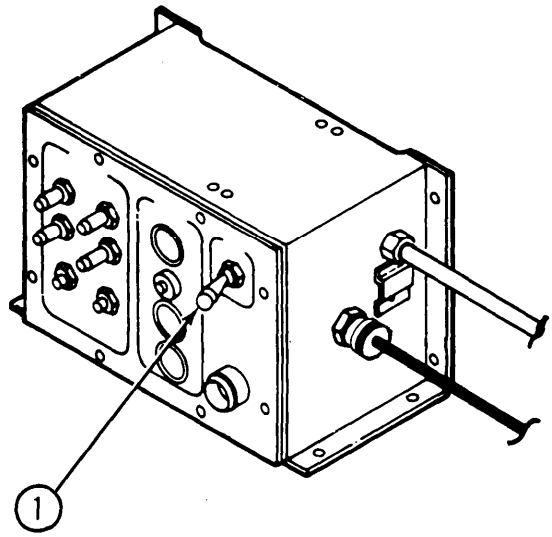
## 2-11. M10 PROTECTIVE ENTRANCE (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

**REMOVAL**

M10 Protective Entrance

Protective entrance control module

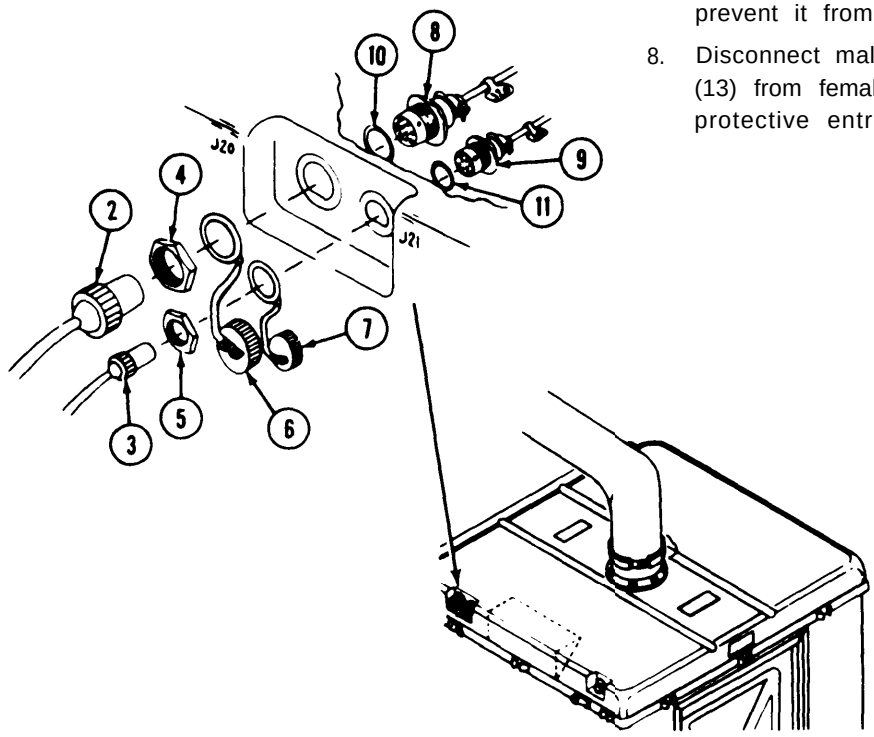



1. Set POWER switch (1) on compartment control module to OFF.
2. Shut down collective protection equipment power source.
3. Disconnect electrical cable plugs P20 (2) and P21 (3) from outside of protective entrance, and remove nuts (4 and 5).
4. Remove electrical connector covers (6 and 7) with chains and loops. Withdraw electrical cable connectors (8 and 9). Remove and retain preformed packings (10 and 11) on connectors (8 and 9).
5. Disconnect female hose adapter (12) on hose (13) from coupling (14).
6. Remove screws (15) and washers (16).
7. Remove protective entrance control module (17) from inside the protective entrance.

**CAUTION**

Hold female hose adapter (19) on protective entrance control module with a wrench to prevent it from turning.

8. Disconnect male hose adapter (18) on hose (13) from female hose adapter (19) on protective entrance control module.



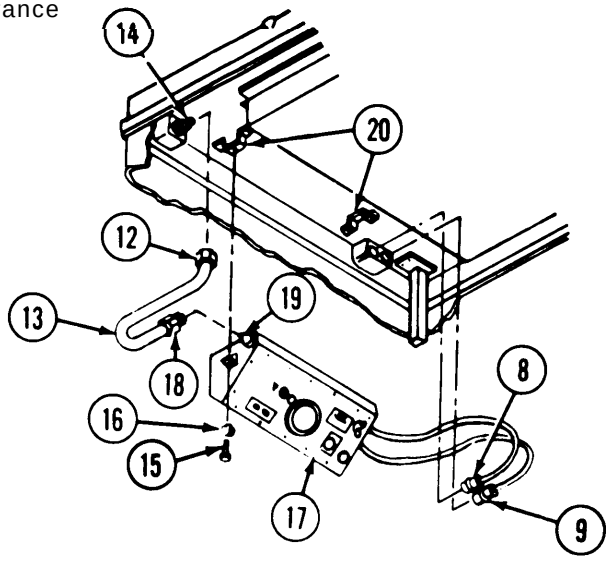
| LOCATION | ITEM | ACTION |
|---|---|---|

## REPAIR

M10 Protective Entrance

Hose

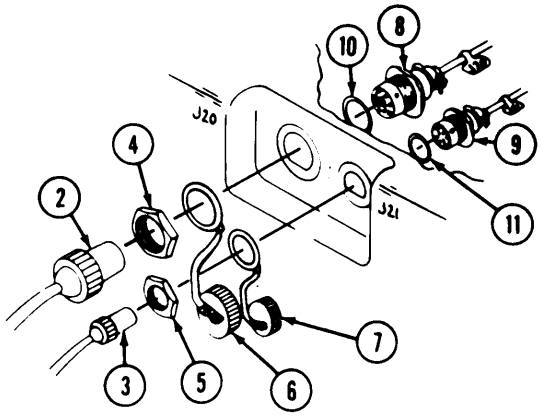
Fabricate replacement hose (13) (fig E-3[A], app E). Remove adapters (12 and 18) from old hose, and insert adapters in new hose.




Hose

## INSTALLATION

Protective entrance control module



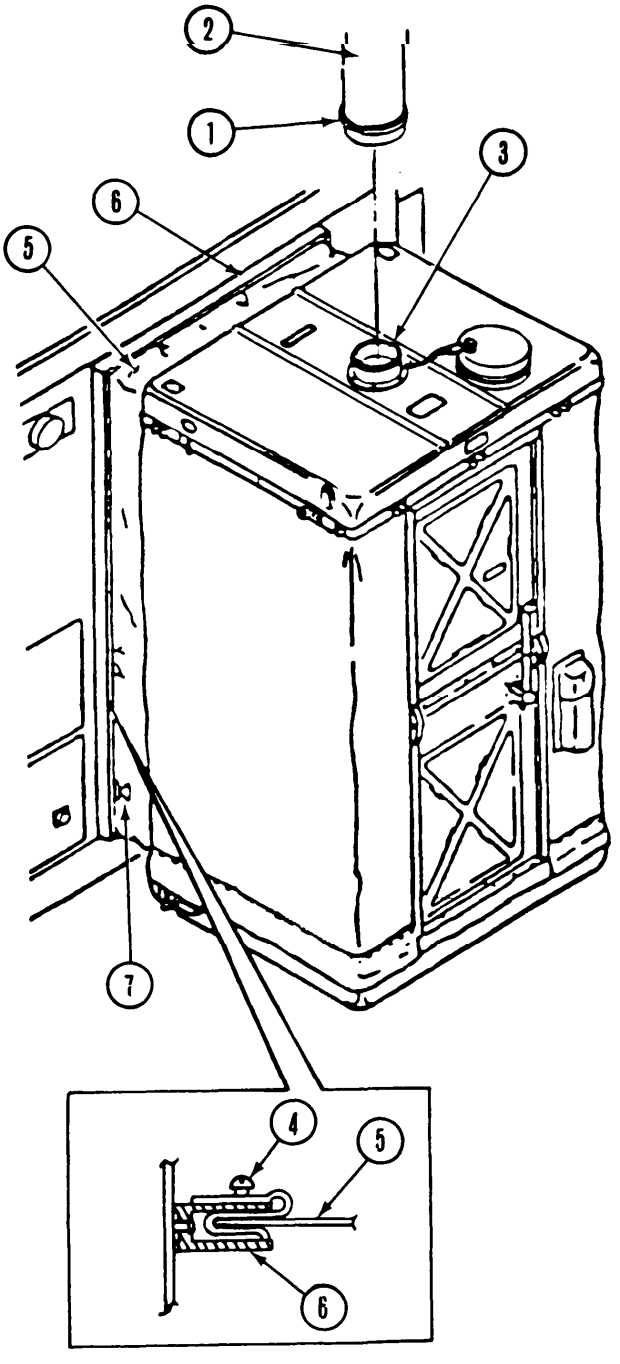

1. Install hose on protective entrance control module. Hold female hose adapter (19) with a wrench, and tighten male hose adapter (18).
2. Position protective entrance control module (17) against brackets (20) in protective entrance.
3. Install screws (15) through washers (16) and into brackets (20).
4. Install female hose adapter (12) on coupling (14).
5. Install electrical cable connectors J21 (9) and J20 (8) with preformed packings (10 and 11) in protective entrance from the inside.
6. From the outside, install loop of connector cover (7) and nut (5) on cable connector J21 (9). From the outside, install loop of connector cover (6) and nut (4) on cable connector J20 (8). Tighten nut securely.
7. Reconnect electrical cable plugs P20 (2) and P21 (3).

## 2-11. M10 PROTECTIVE ENTRANCE (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

| | | |
|---|---|---|
| M10 Protective Entrance | Protective entrance | 1. Loosen hose clamp (1). Remove hose (2) from inlet airduct (3).<br>2. Loosen screws (4) securing interface fabric (5) in channel (6).<br>3. Pull fabric free of channel. |



| LOCATION | ITEM | ACTION |
|---|---|---|
| **INSTALLATION** | | |
| M10 Protective Entrance | Protective entrance | 1. Erect protective entrance. Refer to erect procedures on top of entrance and inside entrance on right-hand wall (p. 1-4).<br>2. Insert interface fabric (5) into channel (6) to depth of arrow mark (7) on fabric.<br>3. Tighten screws (4) along channel.<br>4. Install airduct hose (2) on inlet (3).<br>5. Tighten hose clamp (1). |
| **PAINTING** | | |
| M10 Protective Entrance | Painting | Touchup painting of metal surfaces is authorized.<br>1. Clean surface to be painted using rags (item 6, app D) and dry cleaning solvent (item 3, app D).<br>**NOTE**<br>Refer to TM 43-0139 for painting instructions for field use.<br>2. Paint surfaces with one coat of primer (item 5, app D).<br>3. Paint surfaces of equipment mounted outside of the protective entrance with polyurethane coating (item 4, app D). |

## 2-12. PROTECTIVE ENTRANCE CONTROL MODULE.

This task covers replacement of:

a. Hose (p. 2-74)
b. interval TIMER switch knob (p. 2-75)
c. Incandescent lamp (PURGE indicator light) (p. 2-75)
d. Incandescent lamp (LOW PRESSURE switch/indicator light) (p. 2-76)

## INITIAL SETUP

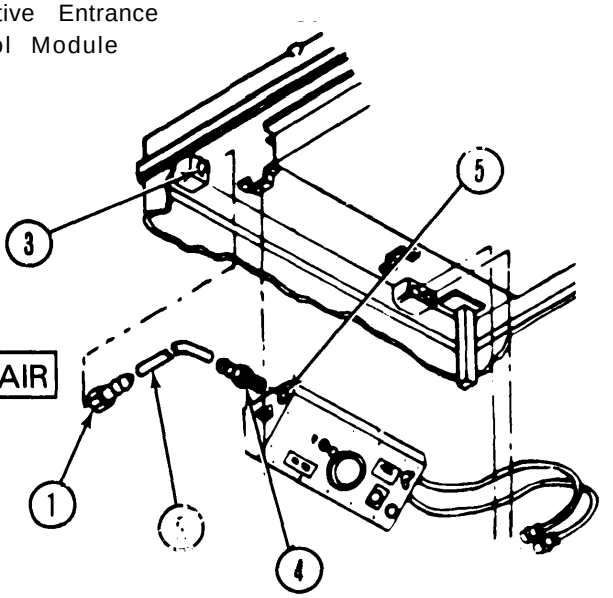
*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)

| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|

## REMOVAL

Protective Entrance Control Module




1. Disconnect female hose adapter (1) on (2) from coupling (3).

**CAUTION**

Hold female hose adapter on protective entrance control module with a wrench to prevent it from turning.

2. Disconnect male hose adapter (4) on hose (2) from female hose adapter (5) on protective entrance control module.

## REPAIR

Fabricate replacement hose (2) (fig E-3[A], app E). Cut adapters (1 and 4) from hose and insert adapters in new hose.

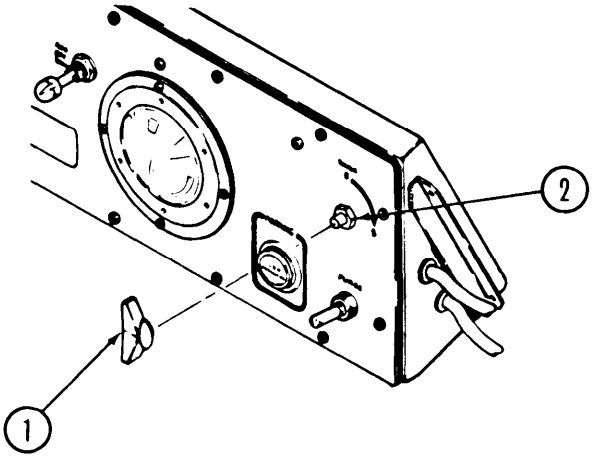
## INSTALLATION

1. Install nonmetallic hose on protective entrance control module. Hold female hose adapter (5) with a wrench and tighten male hose adapter (4).
2. Install female hose adapter (1) on coupling (3).

| LOCATION | ITEM | ACTION |
|---|---|---|

**REMOVAL**

| | | |
|---|---|---|
| Protective Entrance Control Module | Interval TIMER switch knob | Pull interval TIMER switch knob (1) from interval TIMER switch shaft (2). |

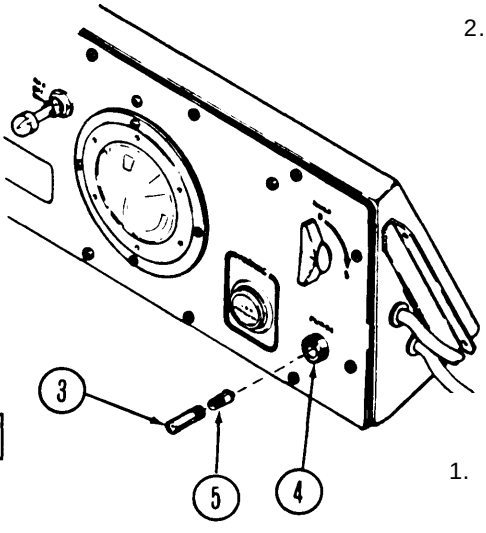



**INSTALLATION**

Align interval TIMER switch knob pointer with 0 on lettered plate. Push interval TIMER switch knob (1) on interval TIMER switch shaft (2).

**REMOVAL**

| | | |
|---|---|---|
| Protective Entrance Control Module | Incandescent lamp (PURGE indicator light) | 1. Unscrew indicator light (3) from indicator light base (4).<br>2. Pull out incandescent lamp (5) from indicator light (3). |




**INSTALLATION**

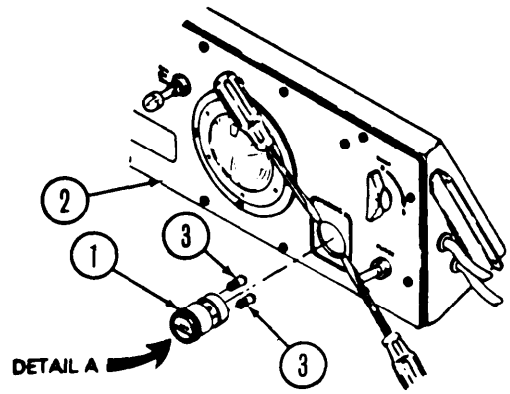
1. Insert incandescent lamp (5) in indicator light (3).
2. Install indicator light (3) in indicator light base (4).

## 2-12. PROTECTIVE ENTRANCE CONTROL MODULE (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

| | | |
|---|---|---|
| Protective Entrance Control Module | Incandescent lamp (LOW PRESSURE switch/ indicator light) | 1. Using two screwdrivers, gently pry lamp module (1) from lettered plate. (2).<br>2. Remove incandescent lamps (3) from lamp module (1). |





DETAIL A

### INSTALLATION

1. Insert incandescent lamps (3) in lamp module (1).
2. Insert lamp module (1) into lettered plate (2) as shown in detail A. Press lamp module into lettered plate until it snaps into place.

## 2-13. DOME LIGHT

This task covers replacement of:

a. Incandescent lamps
b. Light lens
c. Gasket

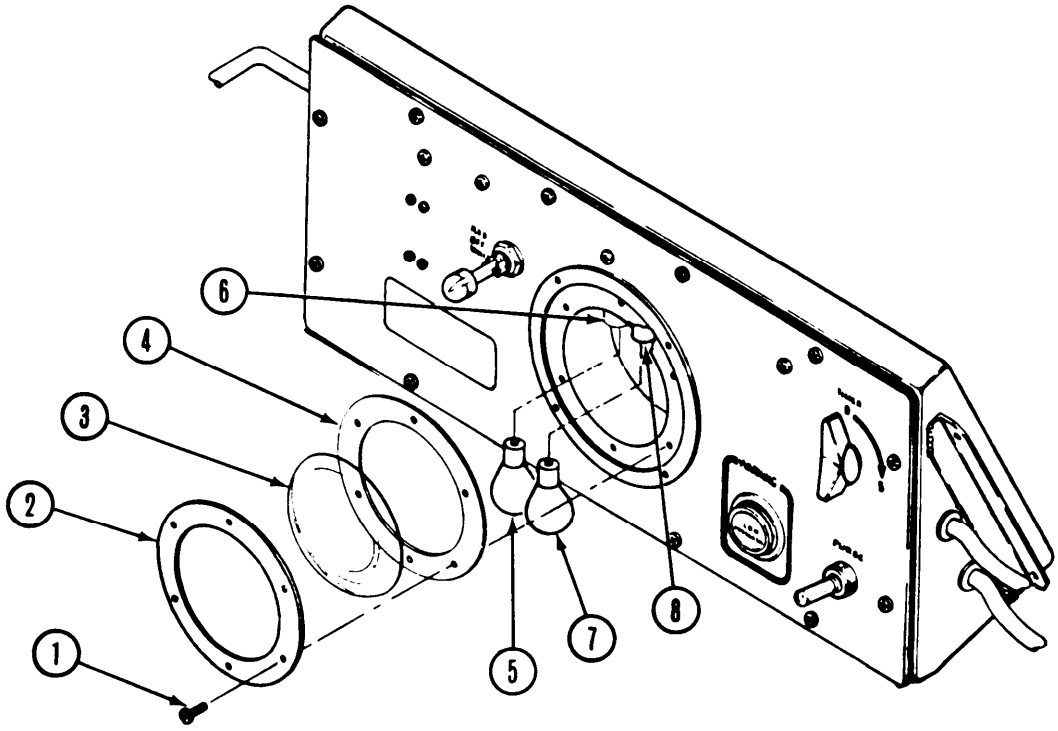
## INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Dome Light | Incandescent lamps, light lens, and gasket | 1. Remove six screws (1), light retainer (2), light lens (3) and gasket (4).<br>2. Remove (red) lamp (s) by pressing in on the bulb and rotating it counterclockwise. Pull (red) lamp from socket (6).<br>3. Remove (white) lamp (7) by pressing in on the bulb and rotating it counterclockwise. Pull (white) lamp from socket (8). |

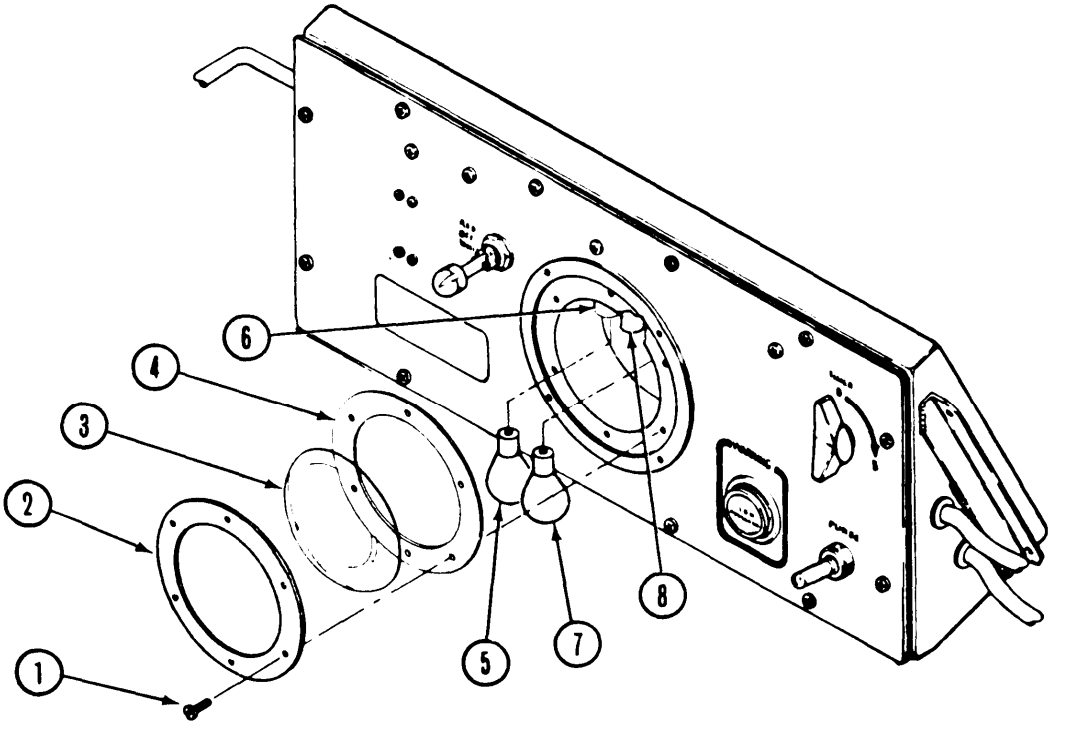


**2-13. DOME LIGHT (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

| | | |
|---|---|---|
| Dome Light | Incandescent lamps, light lens, and gasket | 1. Insert (red) lamp (5) in socket (6). Align studs in lamp base with slot in socket. Press in and turn (red) lamp clockwise to lock in place.<br>2. Insert (white) lamp (7) in socket (8). Align studs in lamp base with slot in socket. Press in and turn (white) lamp clockwise to lock in place.<br>3. Place gasket (4) on light lens (3).<br>4. Place light retainer (2) on gasket and align screw holes.<br>5. Position assembly in place and install six screws (1). |



## 2-14. PROTECTIVE ENTRANCE.

This task covers replacement of:

a. Static port adapter (p. 2-79)
b. Instruction plates (p. 2-80)
c. Air inlet protective cap (p. 2-81)
d. Clamping catch (p. 2-83)
e. Keeper plate (p. 2-85)
f. Quick release pins (p. 2-87)

## INITIAL SETUP

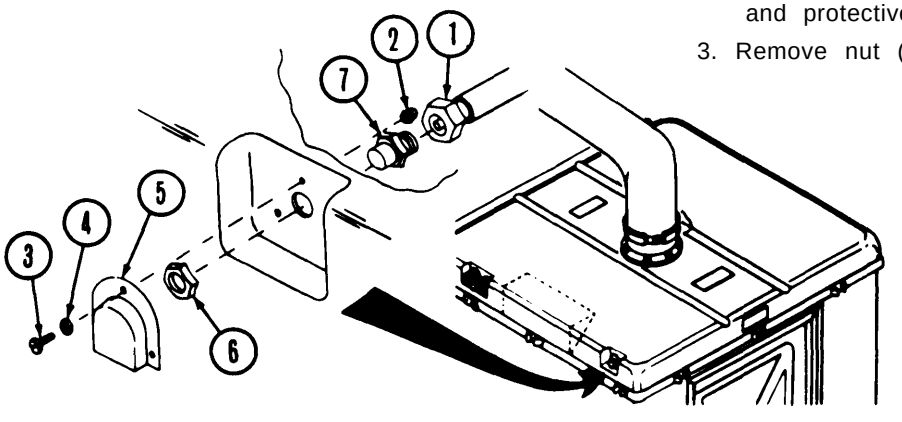
*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)

| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|

## REMOVAL

Protective Entrance — Static port adapter




1. Disconnect female hose adapter (1).
2. Remove three nuts (2), screws (3), washers (4), and protective cover (5).
3. Remove nut (6) and straight adapter (7).

## INSTALLATION

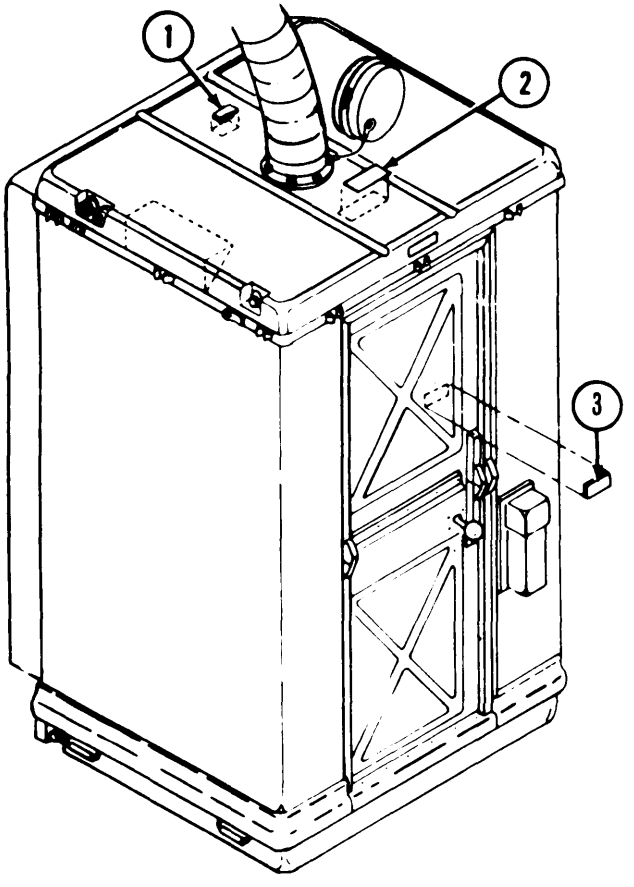
1. Install straight adapter (7) and nut (6).
2. Install protective cover (5) using screws (3), washers (4), and nuts (2).
3. Connect female hose adapter (1) to static port adapter (7).

## 2-14. PROTECTIVE ENTRANCE (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

| | | |
|---|---|---|
| Protective Entrance | Instruction plates | 1. Pick up edge of plate (1, 2, or 3) with sharp tool.<br>2. Pull plate completely off the mounting surface. |



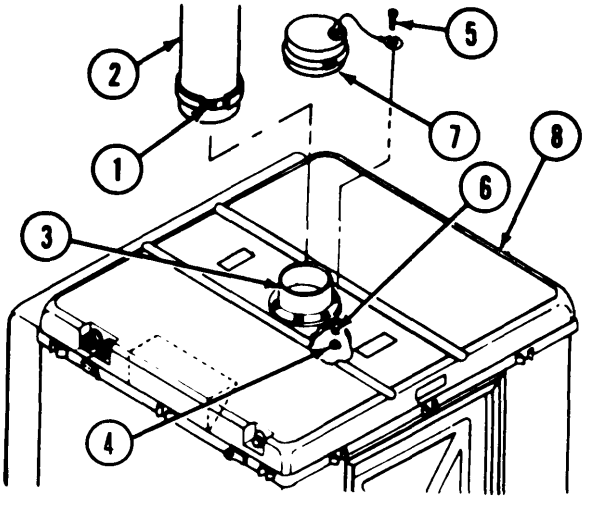

### INSTALLATION

1. Thoroughly clean mounting surface with rags (items 6, app D) and dry cleaning solvent (item 3, app D). Surface must be free of oil, grease, dirt, or any foreign matter.
2. Peel paper from adhesive back of instruction plate.
3. Mount plate and apply pressure to plate surface.

| LOCATION | ITEM | ACTION |
|---|---|---|

REMOVAL

| | | |
|---|---|---|
| Protective Entrance | Airduct inlet protective cap | 1. Loosen hose clamp (1). Remove airduct hose (2) from airduct inlet (3).<br>2. Reach through airduct inlet and hold nut (4) with a wrench.<br>3. Remove screw (5) from nut (4), washer (6), and nylon cable loop on protective cap (7) from airduct inlet (3).<br>4. Remove protective cap (7) from protective entrance (8). |

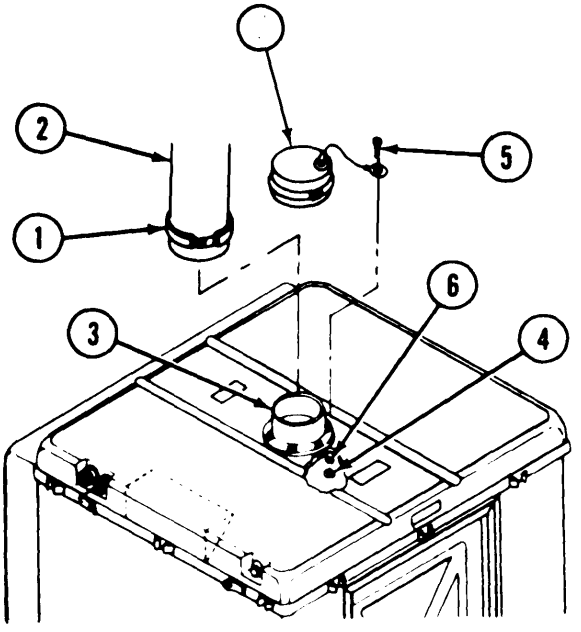


**2-14. PROTECTIVE ENTRANCE (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

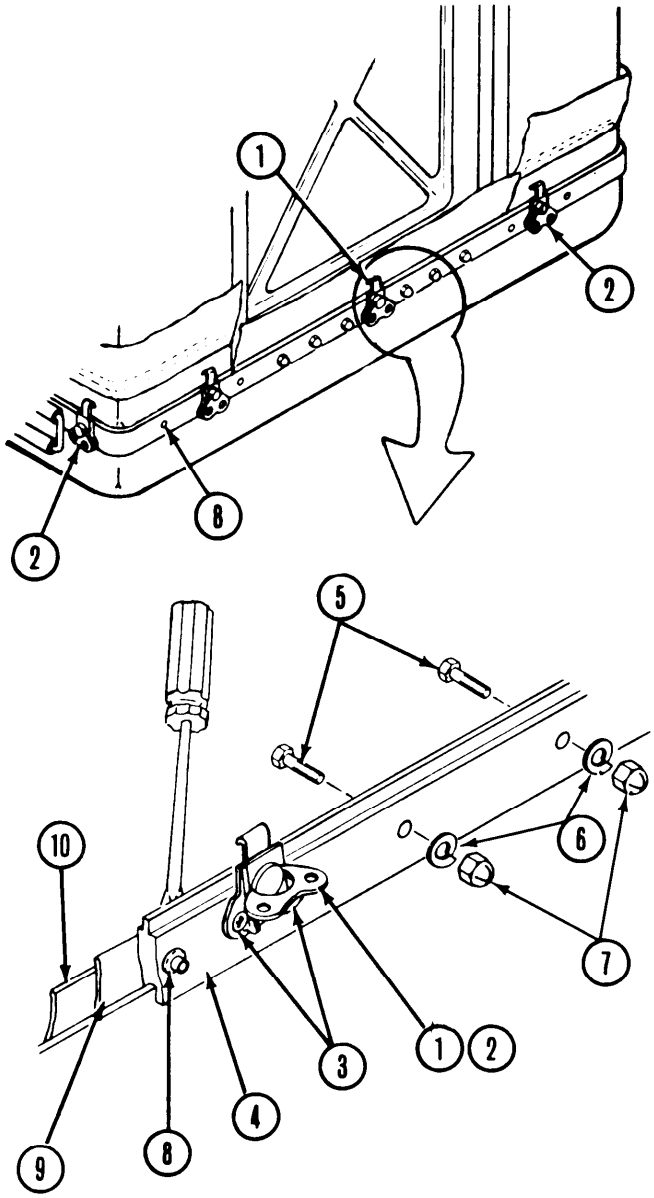
| | | |
|---|---|---|
| Protective Entrance | Airduct inlet protective cap | 1. Place screw (5) through nylon cable loop on protective cap (7) and screw hole at base of airduct inlet (3).<br>2. Reach through airduct inlet and install washer (6) and nut (4). Tighten securely.<br>3. Place airduct hose (2) on airduct inlet (3).<br>4. Tighten hose clamp (1) securely. |



| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Protective Entrance — Clamping catch




**NOTE**

The PE has three clamping catches per side (12 total). For the clamping catch (1) directly under the PE outer door, follow steps 1 through 3. For the remaining 11 clamping catches (2), follow steps 1 and 3.

1. Using 3/16 inch twist drill, drill heads off two rivets (3) securing clamping catch (1, 2) to edge frame (4).
2. To remove clamping catch (1) directly under the PE door, remove two bolts (5), lockwashers (6), and acorn nuts (7) on each side of the clamping catch (1).

**NOTE**

The rest of the edge frame (4) is secured with rivets (8) which are not removed.

3. To remove clamping catches (2) other than the one under the door, use a flat tip screwdriver to carefully pry edge frame (4) from fabric (9) and clamping strip (10) just far enough to remove rivets (3). Using a 3/16 inch drive pin punch and hammer, push drilled out rivet between edge frame (4) and fabric (9). Remove and discard damaged clamping catch.

**NOTE**

Clamping strip (10) may be bent during removal of the rivets (3). Use a mallet to restore it to the original shape.

**2-14. PROTECTIVE ENTRANCE (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL (CONT)

Protective Entrance — Clamping catch

4. Using the old rivet holes in the edge frame (4) as a guide, drill two 3/16 inch holes through fabric (9) and clamping strip (10).

**NOTE**

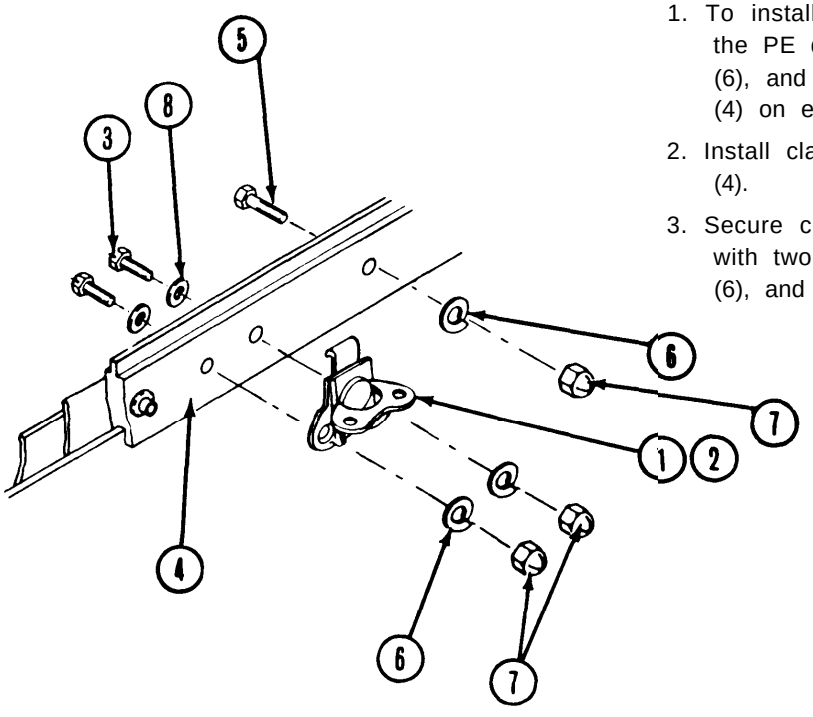
Check for and remove any obstructions before drilling through the clamping strip.

5. Using ½ inch twist drill, carefully debur the hole in the clamping strip (10).

## INSTALLATION

**NOTE**

Step 1 applies only to the clamping catch (1) under the PE door. For the remaining 11 clamping catches (2), begin with step 2.

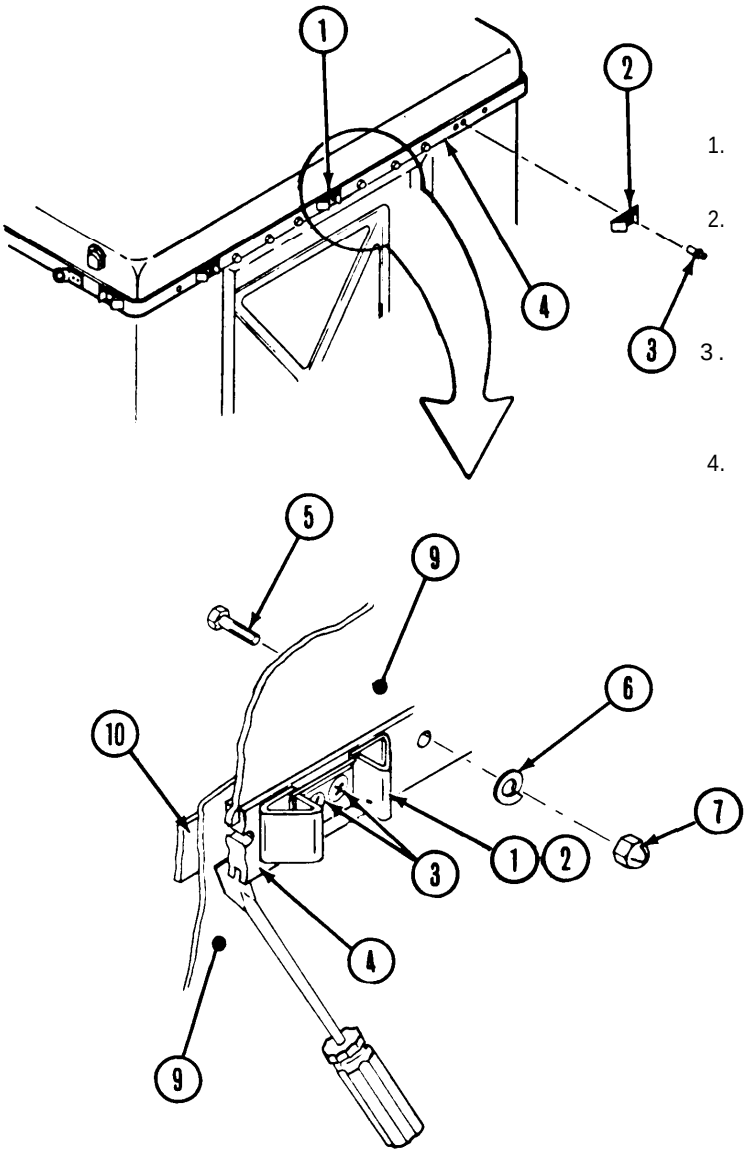



1. To install the clamping catch (1) directly under the PE door, replace two bolts (5), lockwashers (6), and acorn nuts (7) securing the edge frame (4) on each side of the clamping catch (1).
2. Install clamping catch (1, 2) over edge frame (4).
3. Secure clamping catch (1, 2) to edge frame (4) with two screws (3), washers (8), lockwashers (6), and acorn nuts (7).

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Protective Entrance Keeper plate




**NOTE**

The PE has three keeper plates per side (12 total). For the keeper plate (1) directly over the PE outer door, follow steps 1 through 4. For the remaining 11 keeper plates (2), follow steps 1, 2, and 4.

1. Center punch two rivets (3) securing keeper plate (1, 2) to edge frame (4).
2. Using a 3/16 inch twist drill, drill out two rivets (3) securing keeper plate (1, 2) to edge frame (4). Remove keeper plate (1, 2).
3. For the keeper plate (1) directly over the PE door, remove two bolts (5), lockwashers (6), and acorn nuts (7) on each side of the keeper plate (1).
4. Using a flat tip screwdriver, carefully pry edge frame (4) from fabric (9) and clamping strip (10) just far enough to remove rivets (3). Using a 3/16 inch drive pin punch, push rivets out. Remove and discard damaged keeper plate.

**NOTE**

Clamping strip (10) may be bent during removal of the rivets (3). Use a mallet to restore it to the original shape.

**2-14. PROTECTIVE ENTRANCE (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL (CONT)

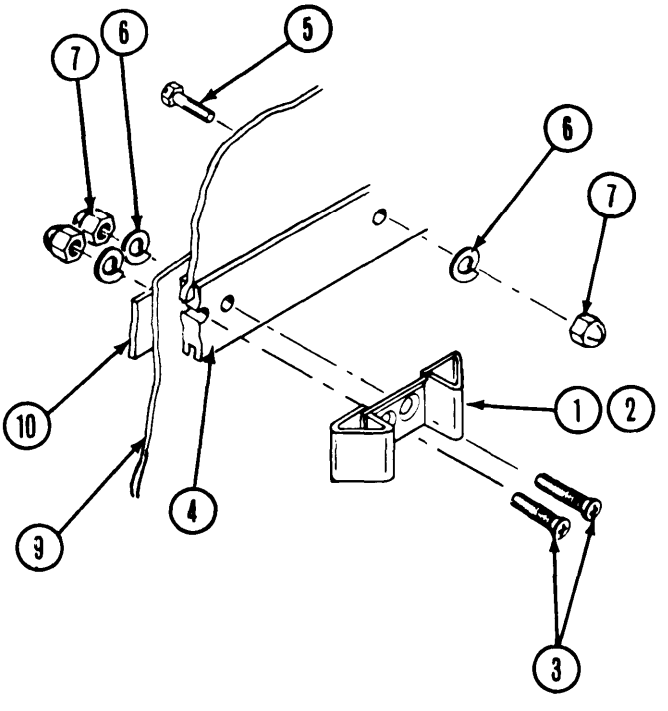
| | | |
|---|---|---|
| Protective Entrance | Keeper plate | 5. Using old rivet holes in edge frame (4) as a guide, drill 3/16 inch holes through fabric (9) and clamping strip (10). |

**NOTE**

Check the inside of the PE for obstructions (i.e., protective entrance control module). Remove if necessary.

6. Using the drill and ½ inch twist drill, carefully debur the hole in the clamping strip (10).

## INSTALLATION




**NOTE**

Step 1 applies only to the keeper plate (1) over the PE door. For the remaining 11 keeper plates (2), begin with step 2.

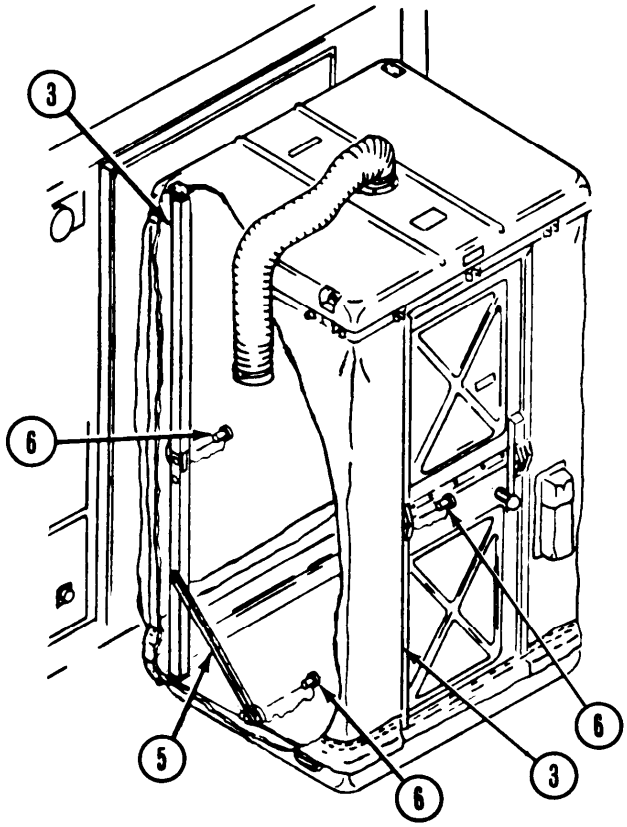
1. To install the keeper plate (1) directly over the PE door, replace two bolts (5), lockwashers (6), and acorn nuts (7) on each side of the keeper plate (1).
2. Install keeper plate (1, 2) on edge frame (4) and secure it using two screws (3), lock washers (6), and acorn nuts (7).

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Protective Entrance

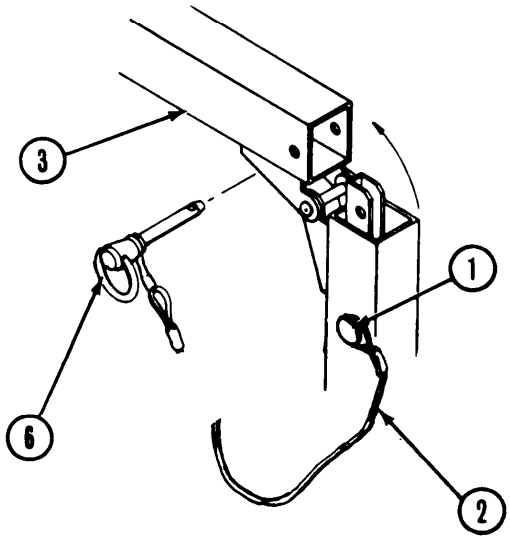
Quick release pin

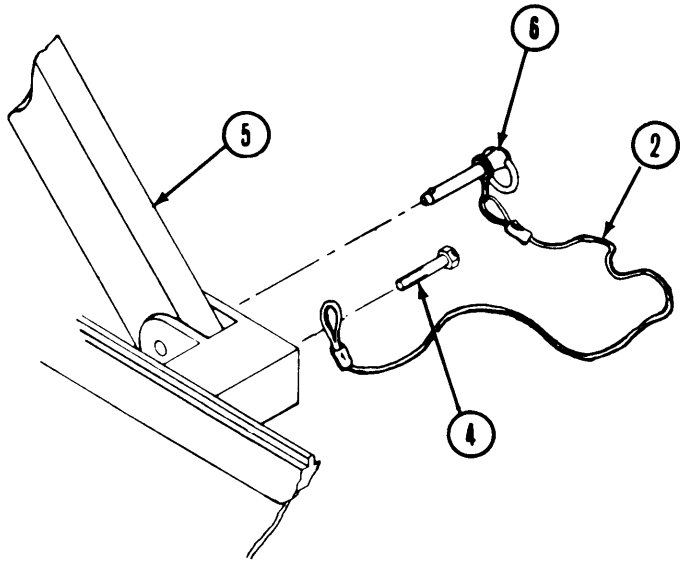



**NOTE**

Quick release pins and nylon cables are secured to vertical supports using rivets and to the diagonal braces using screws. Use steps 1, 2, and 4 to remove quick release pins and nylon cables from vertical supports and steps 1, 3, and 4 to remove them from the diagonal braces.

1. Center punch rivet (1) securing nylon cable (2) to PE vertical support (3).
2. Use a 3/16 inch twist drill bit to drill out rivet (1).
3. Remove screw (4) securing nylon cable (2) to PE diagonal brace (5).
4. Remove quick release pin (6), and cut nylon cable (2) from quick release pin (6).



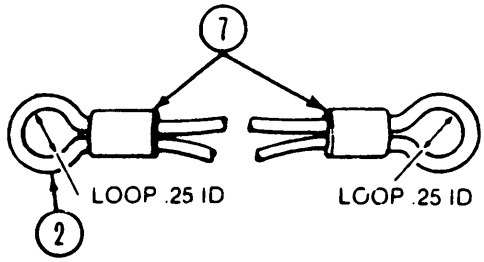



## 2-14. PROTECTIVE ENTRANCE (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REPAIR

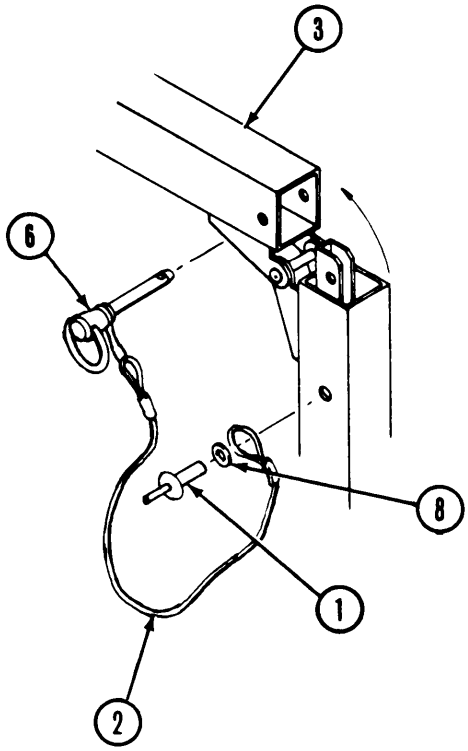
Nylon cable




1. Fabricate replacement nylon cable (2) (item 1, app C, bulk materials). Cut new cable to same length as old cable.
2. Crimp wire rope ferrules (7) on nylon cable (2).

### INSTALLATION

Protective Entrance — Quick release pin

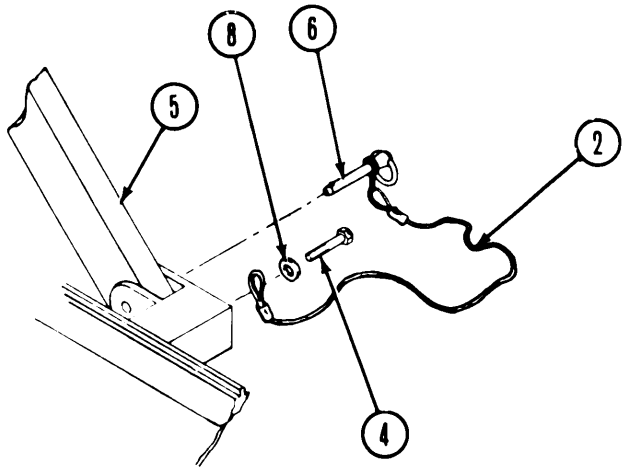



1. Install replacement quick release pin (6).

**NOTE**

When setting drive rivets, do not recess drive pin. It should be driven flush with drive rivet head.

2. Secure nylon cable (2) to diagonal brace (5) with washer (8) and screw (4), or use a hammer to set drive rivet (1) with washer (8) securing nylon cable (2) to vertical support (3).



# Section VIII MAINTENANCE PROCEDURES FOR M87 GAS-PARTICULATE FILTER UNIT

## 2-15. M87 GAS-PARTICULATE FILTER UNIT.

This task covers:



## INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26
Torque Wrench
0-500 inch-pounds

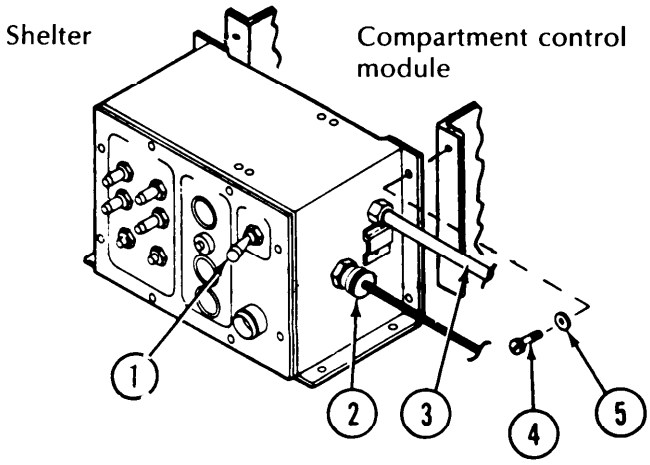
*References*
TM 43-0139

*Personnel Required*
Two persons are needed for filter replacement

*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)
Primer coating (item 5, app D)
Polyurethane coating (item 4, app D)
Adhesive (item 1, app D)

| LOCATION | ITEM | ACTION |
|---|---|---|

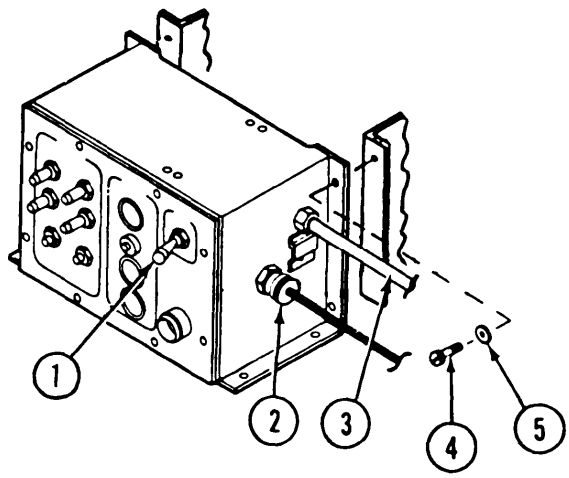
## REMOVAL




1. Set POWER switch (1) on compartment control module to OFF. Turn off power at source.
2. Disconnect electrical cable plug P1 (2) from compartment control module.
3. Pull off pressure hose (3).
4. Remove screws (4), washers (5), and compartment control module from mounting brackets.

**2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|
| **INSPECT/REPAIR** | | |
| Compartment Control Module | Hose | Fabricate replacement hose (fig E-3[B], app E). |
| **INSTALLATION** | | |
| Shelter | Compartment control module | 1. Place compartment control module against mounting brackets and align with screw holes.<br>2. Install washers (4) and screws (5). Tighten securely.<br>3. Install pressure hose (3).<br>4. Connect electrical cable plug P1 (2) to connector J1 on compartment control module. |



| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

**WARNING**

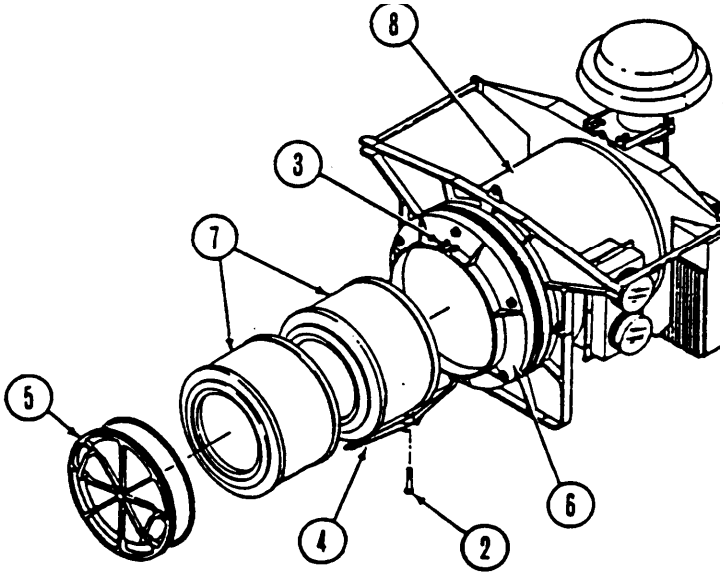
**DO NOT throw away damaged or unusable filters as ordinary trash.**

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

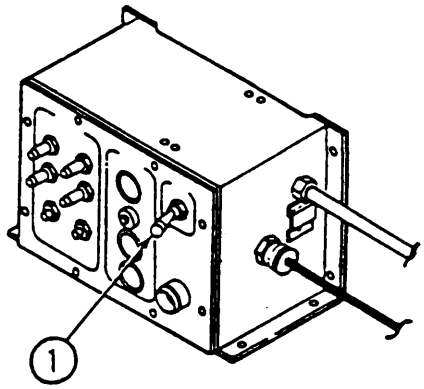
**The unit conmmander or senior officer in charge of maintenance personnel assigned to remove the contaminated gas and particulate filters must prescribe the necessary protective clothing (TM 10-277) to be worn during this operation He must also prescribe the necessary safety measures to be followed including the NBC decontamination (FM 3-5). This must be performed before the new filters are installed. Failure to wear protective clothing or follow safety measures may result in injury or death.**

Gas-Particulate Filter Unit

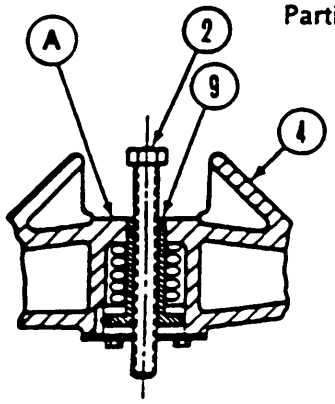
Particulate filters




1. Set POWER switch (1) on compartment control module to OFF.
2. Loosen screw (2).
3. Pull catch (3) outward and swing retaining bar (4) away from access cover (5)
4. Using handles, pull access cover (5) from access hole frame (6).
5. Pull two particulate filters (7) from housing unit (8).




## INSTALLATION




**Particulate filters**

1. Place the particulate filters (7) in housing unit (8), either end first.
2. Grasp access cover by the handles and place it in the access hole frame (6).
3. Swing retaining bar (4) up across access cover and engage end of bar with catch (3).

**WARNING**

Bodily injury may red if seals arc not properly seated to prevent bypass of contaminated air.

4. Tighten screw (2) until floating nut (9) is flush with top surface (A) of retaining bar (4).

## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

**REMOVAL**

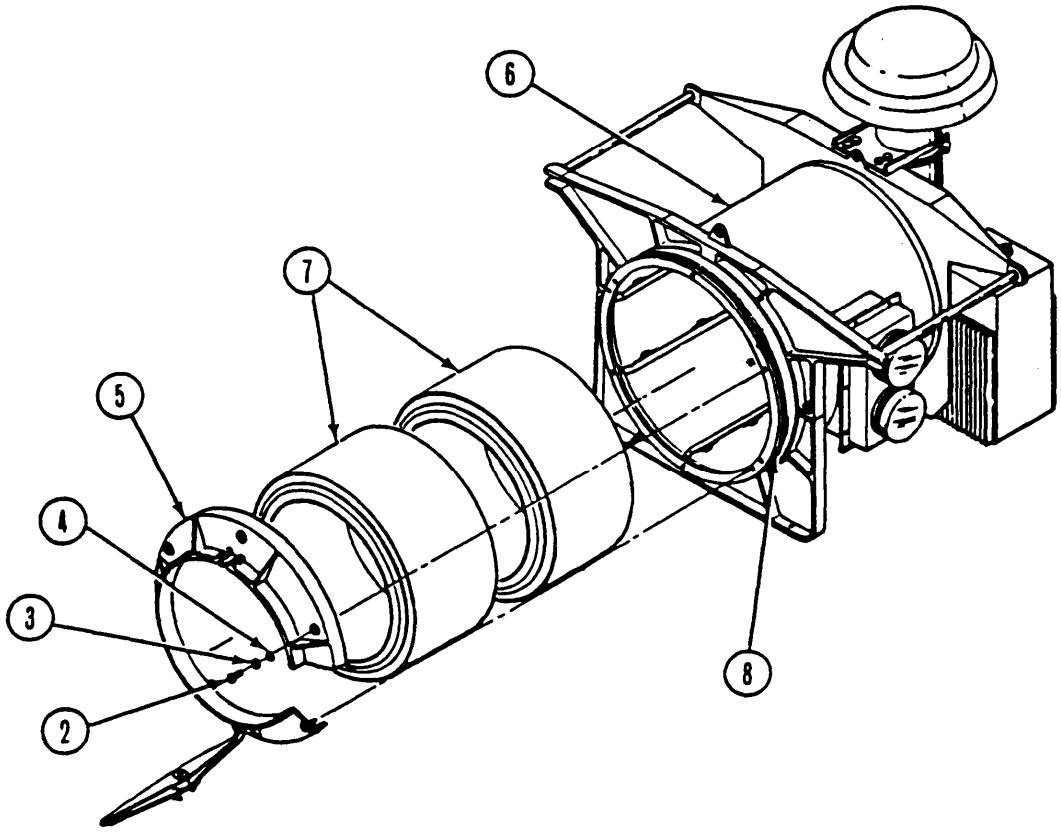
**WARNING**

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

**DO turn in damaged or unusable filters to your hazardous waste management office or Defense Reutilization and Marketing office (DWO).**

**The unit commander or senior officer in charge of maintenance personnel assigned to remove the contaminated gas and particulate filters must prescribe the necessary protective clothing (TM 10-277) to be worn during this operation. He must also prescribe he necessary safety measures to be followed including the NBC decontamination (FM 3-5). This must be performed before the new filters are installed. Failure to wear protective clothing or follow safety measures may result in injury or death.**

| | | |
|---|---|---|
| Gas-Particulate Filter Unit | Gas Filters | 1. Set POWER switch on the compartment control module to OFF.<br>2. Remove particulate filters (p. 2-91).<br>3. Remove screws (2), aluminum washer (3), and washer (4).<br>4. pull access hole frame (5) from housing unit (6).<br>5. Pull two gas filters (7) from housing unit (6). |

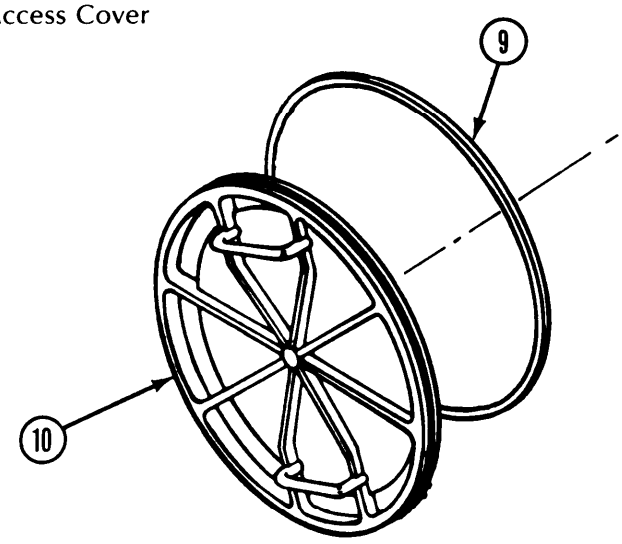


| LOCATION | ITEM | ACTION |
|---|---|---|

## REPAIR

Housing Unit/ Access Cover

Seals



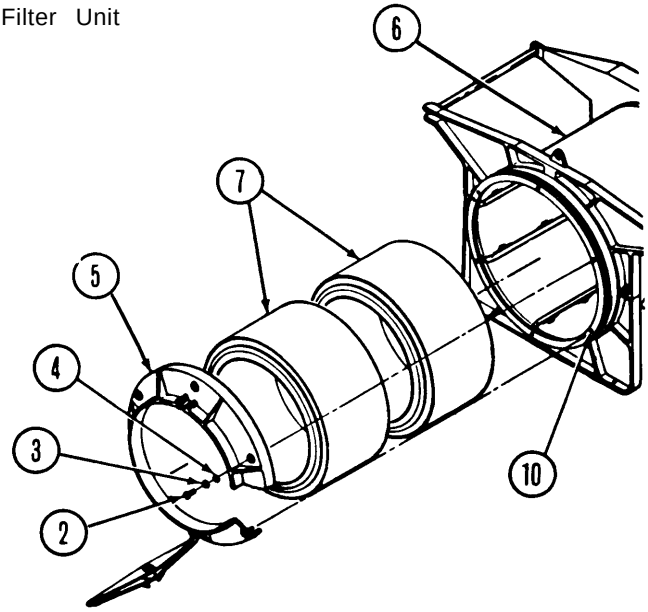

Replace access hole frame seal (8) on housing unit or seal (9) on access cover (10) if unserviceable.

1. Remove seal from groove.
2. Clean groove using dry cleaning solvent (item 3, app D).
3. Install seal in groove and butt ends using adhesive (item 1, app D).

## INSTALLATION

Gas-Particulate Filter Unit

Gas filters




1. Place the two gas filters (7) in housing unit (8), either end first.
2. Position access hole frame (5) on housing unit. Align guide pin with guide hole (10). Push access hole frame (5) into place.

**NOTE**

To prevent binding of access hole frame against housing unit rim, screws must be tightened alternately in a crisscross pattern.

3. Install washers (4), aluminum washers (3), and screws (2) finger tight.

**WARNING**

Bodily injury may result if seals are not properly seated to prevent bypass of contaminated air.

**CAUTION**

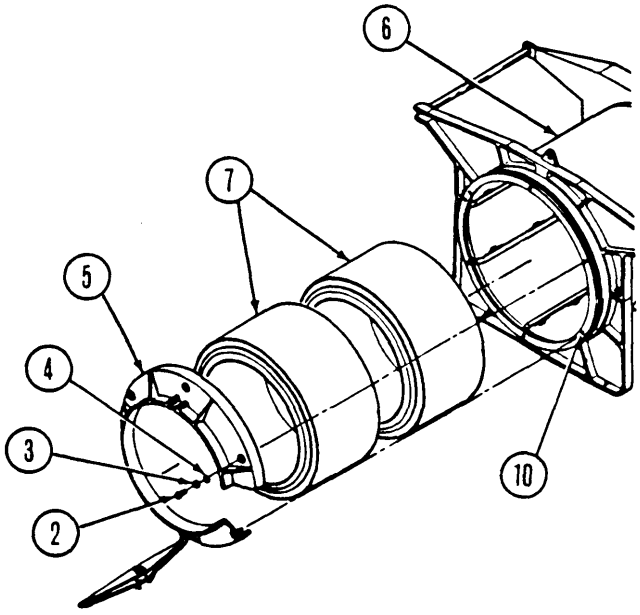
To prevent damage, be sure to observe torque valves for the torque wrench being used.

## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

**INSTALLATION (CONT)**

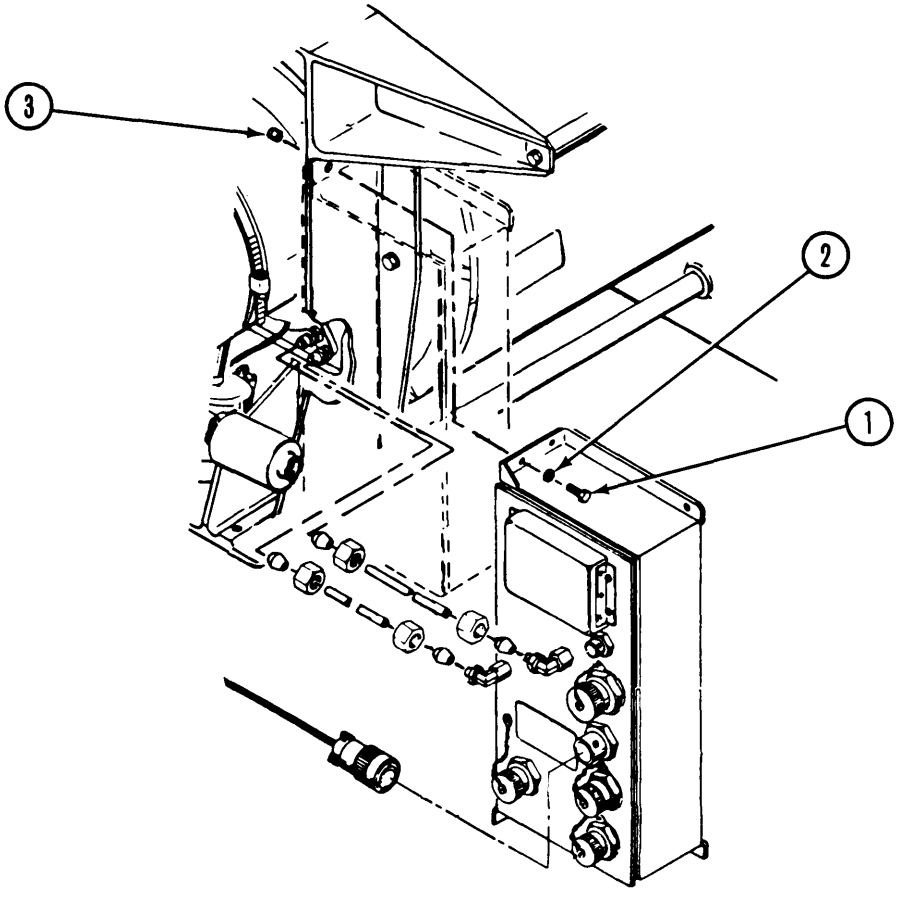
| | | |
|---|---|---|
| Gas-Particulate Filter Unit | Gas Filters | 4. Preliminary torque. In a crisscross pattern, torque screws to 8 to 10 foot-pounds (100 to 125 inch-pounds).<br>5. Final torque. In a crisscross pattern, torque screws to 15 to 16 foot-pounds (180 to 200 inch-pounds).<br>6. Install particulate filters (p. 2-91). |



| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Housing Unit | Power distribution unit | 1. Turn off power source.<br>2. Disconnect cables from power distribution unit.<br>3. Remove bolts (1), washers (2), and nuts (3). |




## INSTALLATION

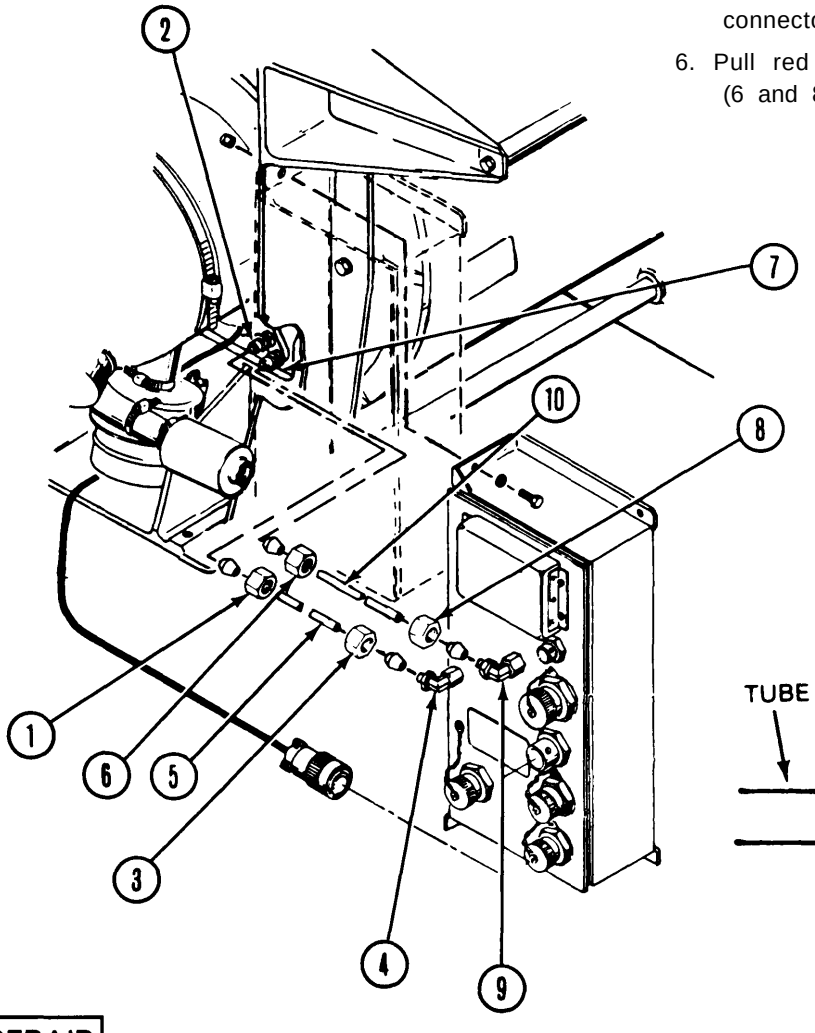
1. Install power distribution unit using bolts (1), washers (2), and nuts (3).
2. Connect cables to power distribution unit.
3. Turn power source on.

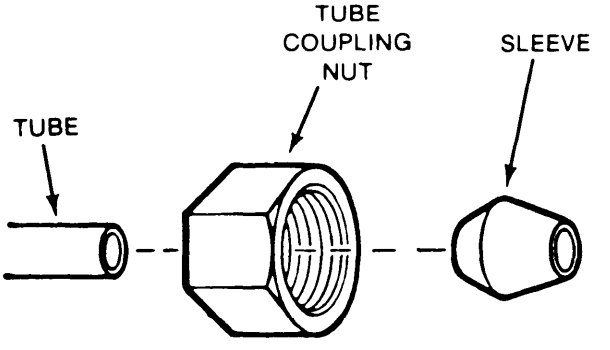
## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

| | | |
|---|---|---|
| Housing Unit/Power Distribution Unit | Green tubing (nonmetallic) | 1. Unscrew green tube coupling nut (1) from connector (2).<br>2. Unscrew green tube coupling nut (3) from connector (4).<br>3. Pull green tube coupling nuts with sleeves (1 and 3) off tube (5). See detail A. |
| | Red tubing (nonmetallic) | 4. Unscrew red tube coupling nut (6) from connector (7).<br>5. Unscrew red tube coupling nut (8) from connector (9).<br>6. Pull red tube coupling nuts with sleeves (6 and 8) off tube (10). |




DETAIL A

### REPAIR

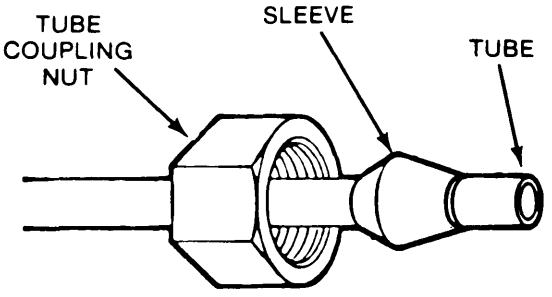
| | | |
|---|---|---|
| | Tubing (nonmetallic) | Fabricate tubing. Refer to fig E-1, app E. |

| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

Housing Unit/Power Distribution Unit

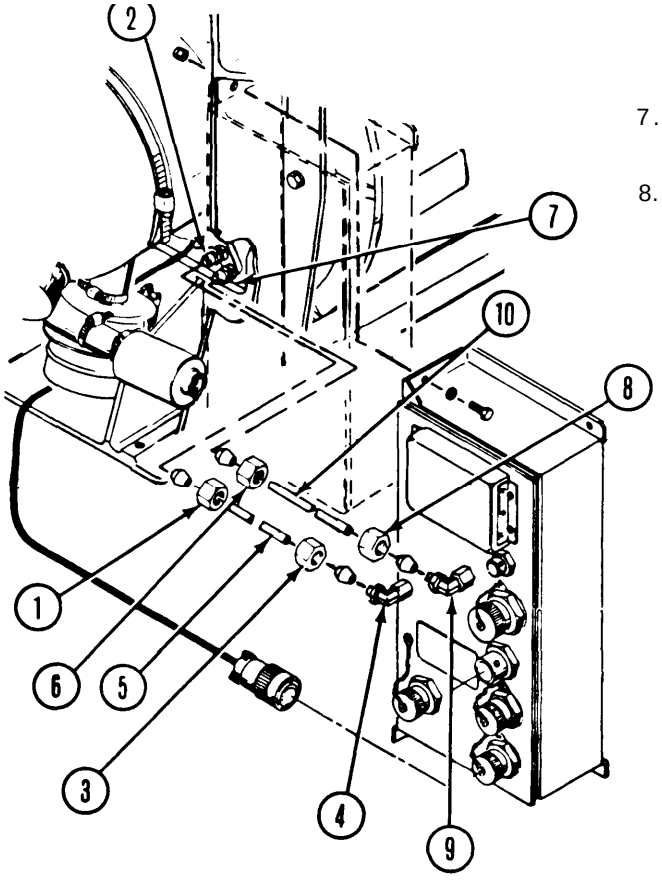
Red tubing (nonmetallic)




DETAIL A

1. Push red tube coupling nuts (6 and 8) with sleeves on red tube (10). See detail A.
2. Push one end of tube (10) into connector (7) and one end into connector (9). RED dot on power distribution unit indicates connector (9).
3. Push red tube coupling nut (6) with sleeve onto connector (7) and hand tighten.
4. Push red tube coupling nut (8) with sleeve onto connector (9) and hand tighten.

Green tubing (nonmetallic)




5. Push green tube coupling nuts (1 and 3) with sleeves on green tube (5). See detail A.
6. Push one end of green tube (5) into connector (2) and one end into connector (4). GREEN dot on power distribution unit indicates connector (4).
7. Push green tube coupling nut (1) with sleeve onto connector (2) and hand tighten.
8. Push green tube coupling nut (3) with sleeve onto connector (4) and hand tighten.

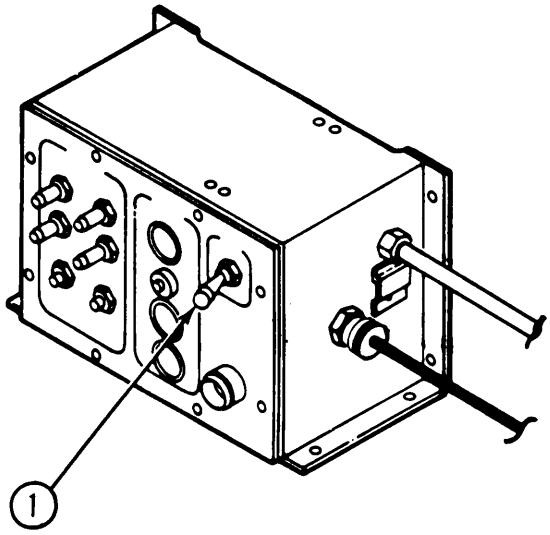
## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

Gas-Particulate Filter Unit

Filter unit stand



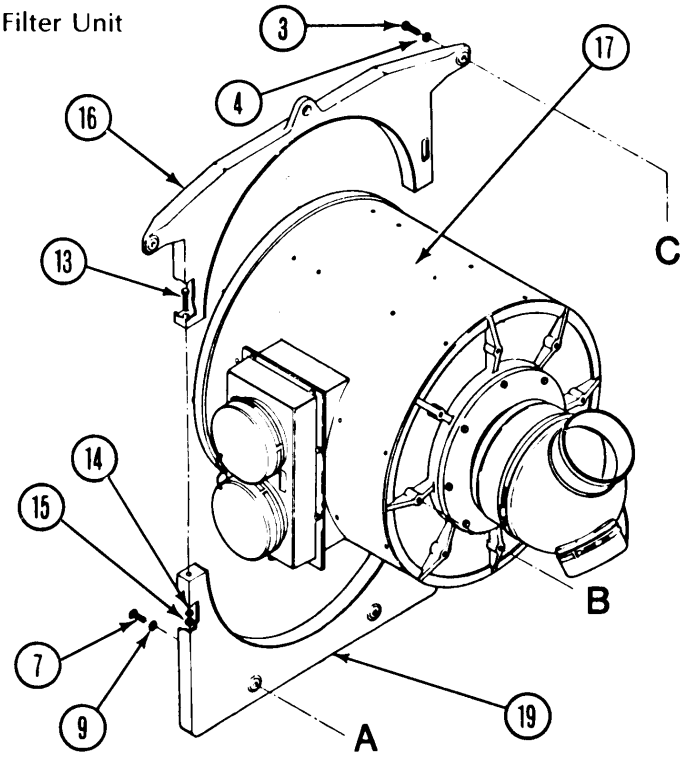

1. Set POWER switch (1) on compartment control module to OFF.
2. Shut off power source.
3. Remove power distribution unit (p. 2-95).
4. Remove M5 static frequency converter (p. 2-104).
5. Remove exhaust sleeve (p. 2-101).
6. Remove inlet cap (p. 2-103).
7. Remove inlet airduct hose (p. 2-105).
8. Remove inlet collar (p. 2-100).
9. Remove screws (1 and 3) and washers (2 and 4), and remove reinforcing rod (5). Repeat for reinforcing rod on other side.
10. Remove screws (6 and 7) and washers (8 and 9), and remove reinforcing rod (10). Repeat on other side.
11. Remove eight screws (11) and eight washers (12).
12. Remove two screws (13), washers (14), and nuts (15) on sides of upper half of rear filter unit stand (16).
13. Lift upper half of rear filter unit stand (16) off of housing unit (17).
14. Remove front filter unit stand (18).
15. Remove lower half of rear filter unit stand (19).

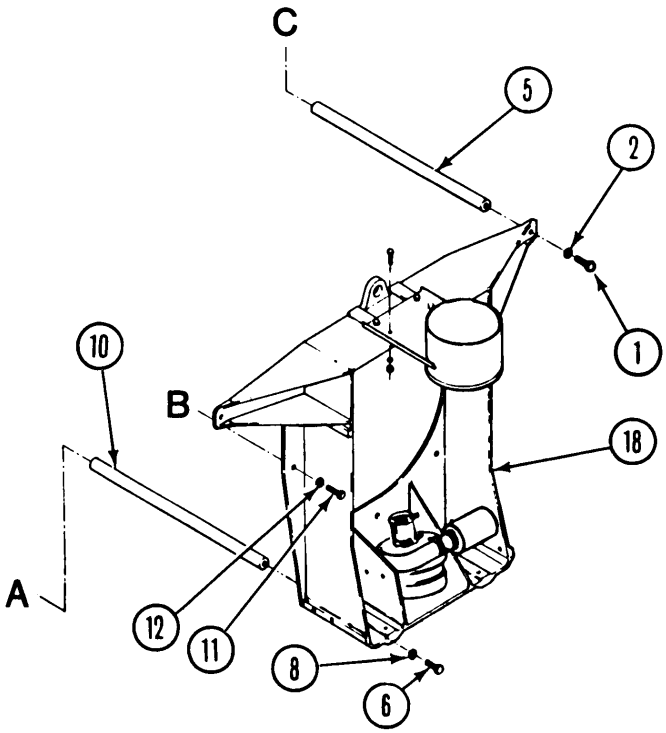
| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

Gas-Particulate Filter Unit

Filter unit stand




1. Place housing unit (17) in lower half of rear filter unit stand (19).
2. Place upper half of rear filter unit stand (16) over housing unit (17), and install and tighten two screws (13), washer (14), and nuts (15).
3. Place front filter unit stand (18) against housing unit (17), and install but do not tighten eight screws (11) and washers (12) through front filter unit stand (18) into housing unit (17).
4. Install but do not tighten screws (6 and 7) and washers (8 and 9) in two lower reinforcing rods (10).
5. Install and tighten screws (1 and 3) and washers (2 and 4) on upper reinforcing rods (5). Tighten screws (11, 7, and 6).
6. Install inlet collar (p. 2-100).
7. Install inlet airduct hose (p. 2-105).
8. Install inlet cap (p. 2-103).
9. Install exhaust sleeve (p. 2-102).
10. Install power distribution unit (p. 2-95).
11. Install M5 static frequency converter (p. 2-104).
12. Turn on power source.
13. Set POWER switch (1) on compartment control module to ON.
14. Perform functional check (p. 2-3).

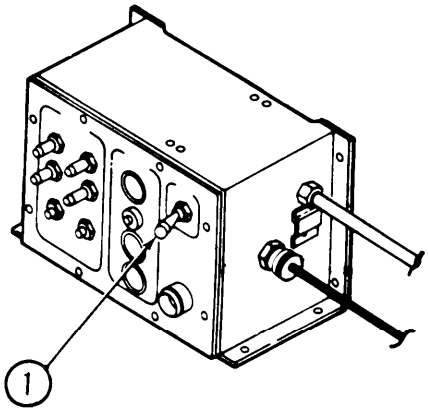
## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

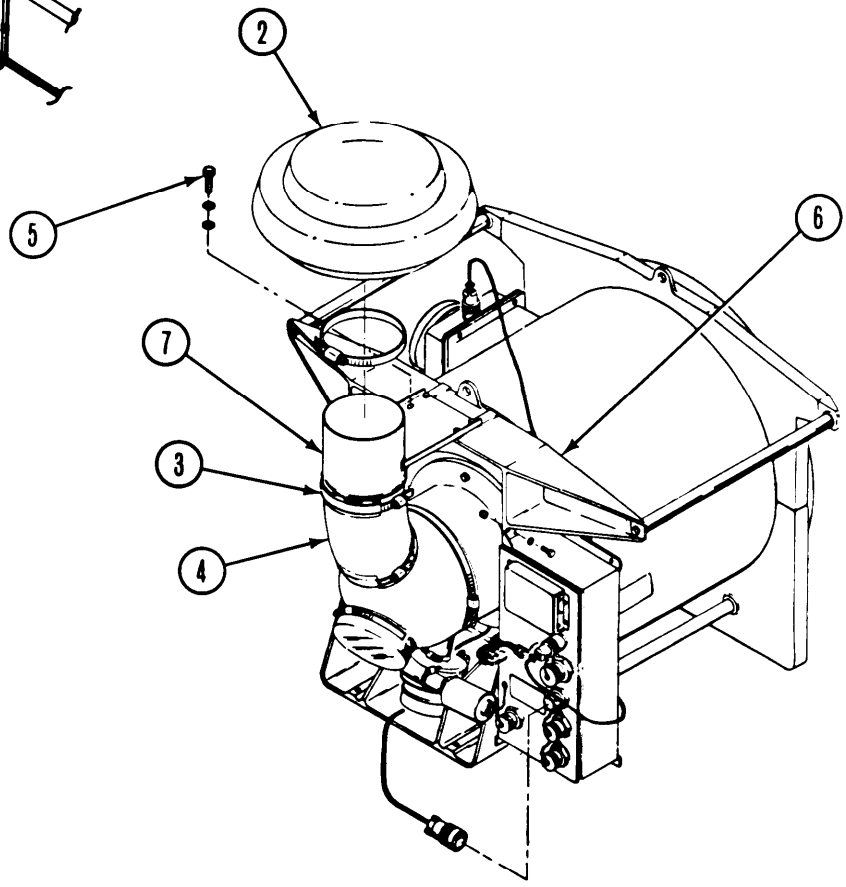
### REMOVAL

Gas-Particulate Filter Unit

Inlet collar




1. Set POWER switch (1) on compartment control module to OFF.
2. Remove inlet cap (2) (p. 2-103).
3. Loosen hose clamp (3) on top of airduct hose (4).
4. Remove four screws (5) from front filter unit stand (6) and inlet collar (7), and pull inlet collar (7) from airduct hose (4).




### INSTALLATION

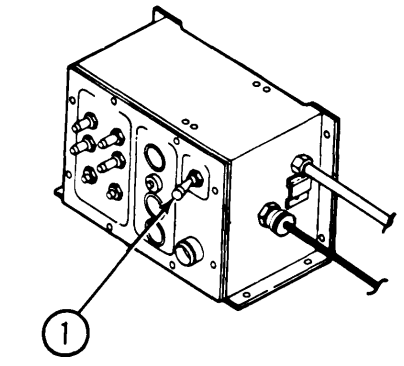
1. Slip inlet collar (7) into airduct hose (4).
2. Install and tighten four screws (5) through inlet collar (7) and into front filter unit stand (6).
3. Tighten airduct hose clamp (3).
4. Install inlet cap (2) (p. 2-103).

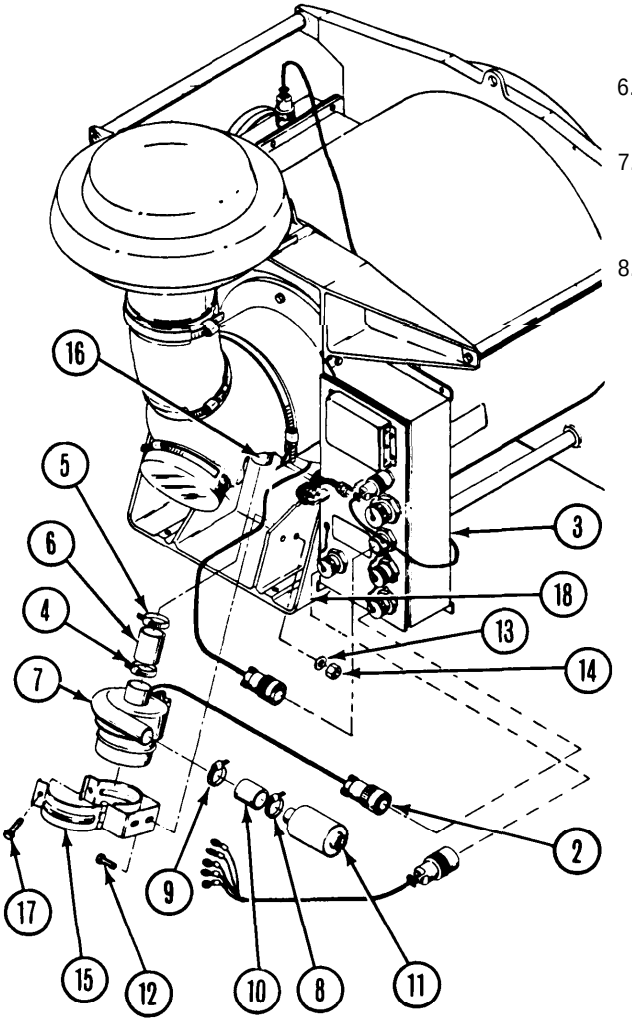
| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Gas-Particulate Filter Unit

Dust exhaust blower




1. Set POWER switch (1) on compartment control module to OFF.
2. Disconnect plug P6 (2) at power distribution unit (3).
3. Loosen two hose clamps (4 and 5) on exhaust sleeve (6) at dust exhaust blower (7) inlet.
4. Loosen two hose clamps (8 and 9) on exhaust sleeve (10) at exhaust muffler (11). Remove exhaust muffler (11), exhaust sleeve (10), and two hose clamps (8 and 9) from dust exhaust blower (7).
5. Remove two screws (12), washers (13), and nuts (14) from bracket assembly (15). Pull dust exhaust blower (1) free from dust collector outlet (16).
6. Remove exaust sleeve (6) and hose clamps (4 and 5) from dust collector outlet (16).
7. Remove screw (17) from bracket assembly (15), and slip dust exhaust blower (7) out of bracket assembly (15).
8. Retain screw (17) and bracket assembly (15) for installation of new dust exhaust blower.

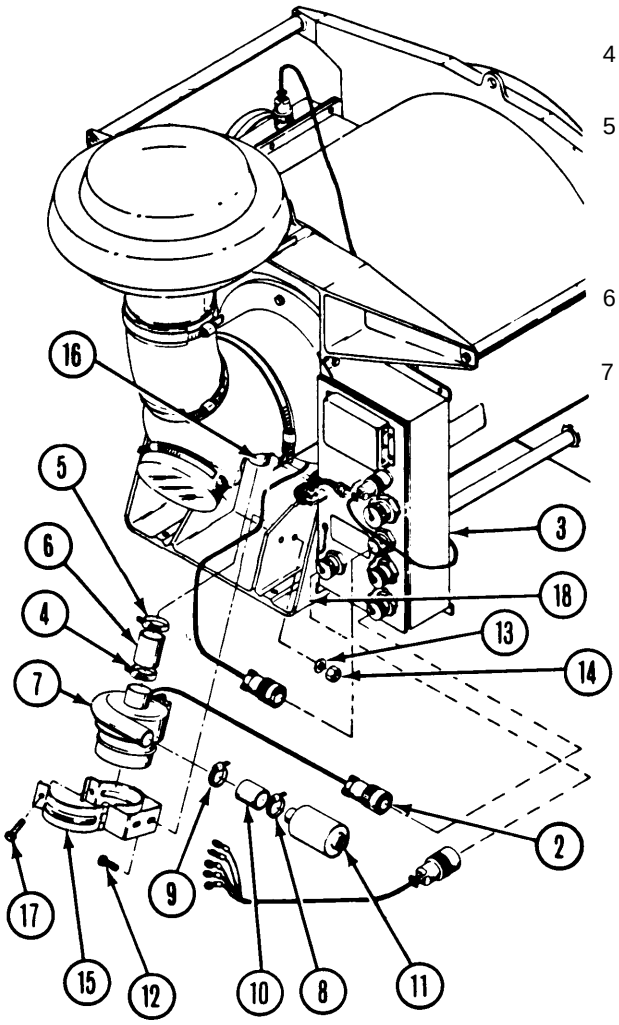
## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

Gas-Particulate Filter Unit

Dust exhaust blower




1. Slip new dust exhaust blower (7) into bracket assembly *(15),* and install screw (17).

**NOTE**

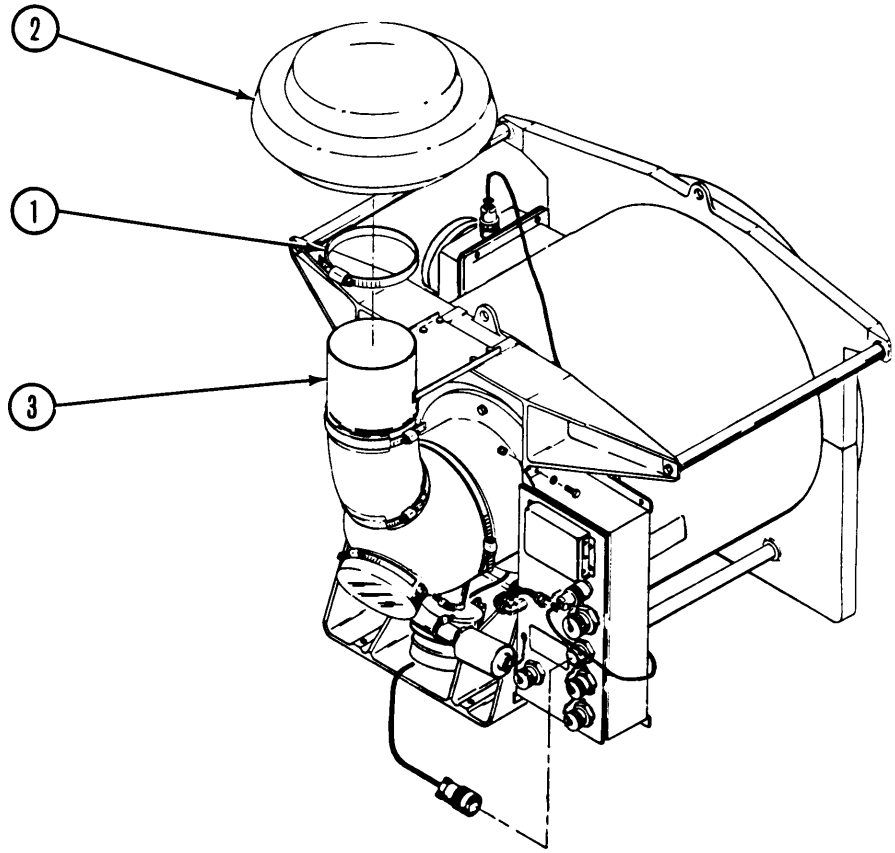
Be sure dust collector outlet (16) points toward bracket assembly mounting foot before tightening screw (17).

2. Slip exhaust sleeve (6) and hose clamps (4 and 5) onto dust exhaust blower (7) inlet. Do not tighten hose clamps.
3. Slip exhaust sleeve (10), hose clamps (8 and 9), and exhaust muffler (11) onto dust collector outlet (16). Tighten hose clamps.
4. Slip exaust sleeve (6) and dust exaust blower (7) onto dust collector outlet (16).
5. Install and tighten screws (12), washers (13), and nuts (14) through bracket assembly (15) foot and front filter unit stand (18). Tighten hose clamps (4 and 5) on dust exaust blower (7) inlet.
6. Connect plug P6 (2) to power distribution unit (3).
7. Set POWER switch (1) on compartment control module to ON.

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Housing Unit | Inlet cap | 1. Loosen hose clamp (1) on inlet cap (2), and pull inlet cap (2) off inlet collar (3).<br>2. Remove hose inlet clamp (1) from inlet cap (2), and retain to use with new inlet cap. |




## INSTALLATION

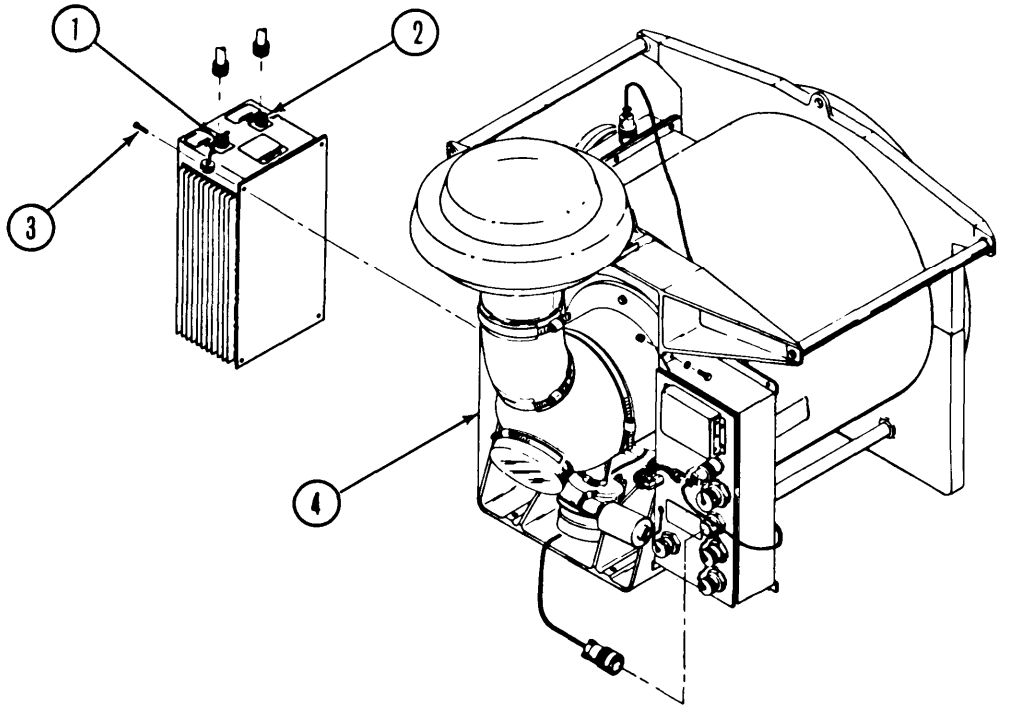
1. Install hose clamp (1) on inlet cap (2).
2. Push inlet cap (2) onto inlet collar (3), and tighten hose clamp (1) on inlet cap (2).

## 2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

| | | |
|---|---|---|
| Gas-Particulate Filter Unit | MS static frequency converter | 1. Turn off input power to static frequency converter (SFC).<br>2. Disconnect cables from J7 (1) and J8 (2).<br>3. Remove four bolts (3) securing static frequency converter to mounting plate (4). |




### INSTALLATION

1. Secure static frequency converter to mounting plate (4) using four bolts (3).
2. Make sure power source is off.
3. Connect cables to J7 (1) and J8 (2).

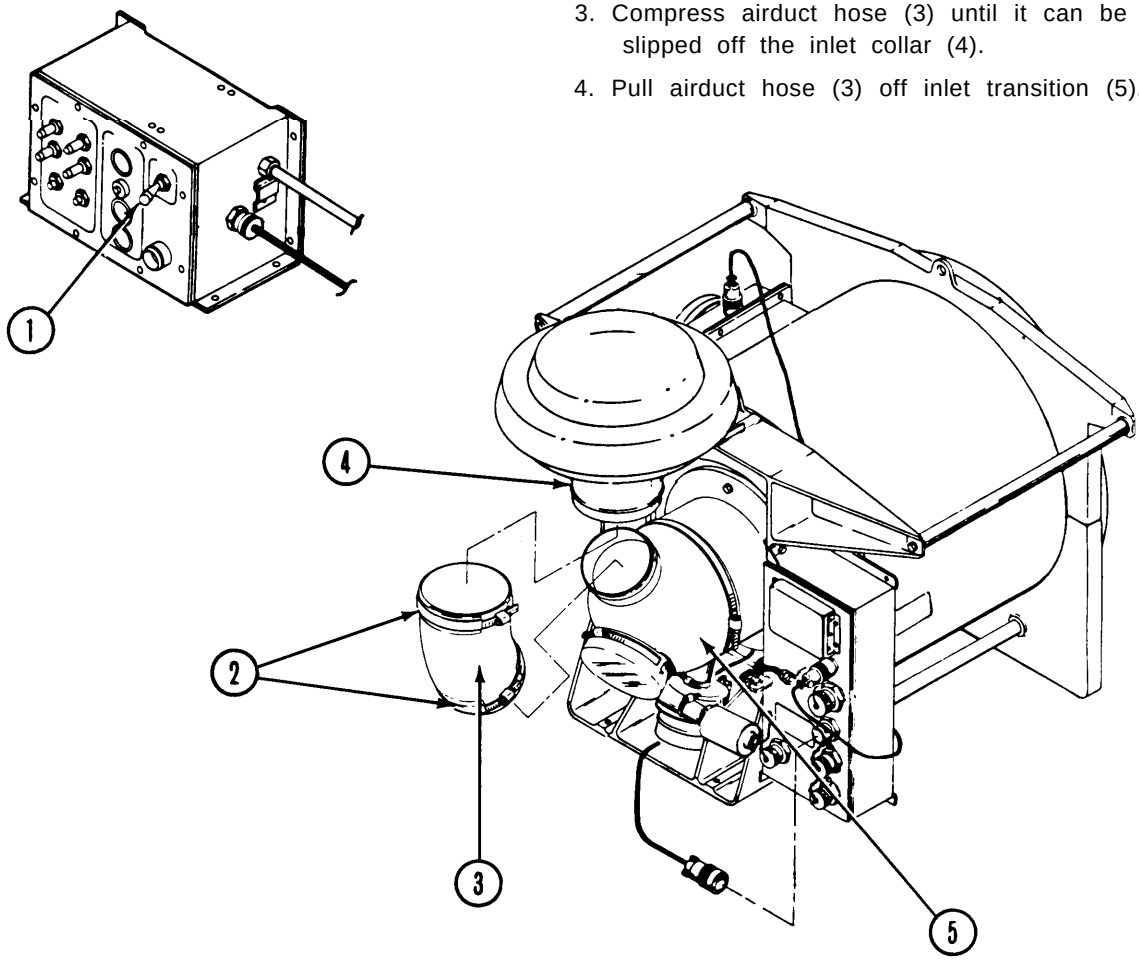
| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Gas-Particulate Filter Unit

Inlet airduct hose

1. Set POWER switch on compartment control module (1) to OFF.
2. Loosen two hose clamps (2) at top and bottom of airduct hose (3).
3. Compress airduct hose (3) until it can be slipped off the inlet collar (4).
4. Pull airduct hose (3) off inlet transition (5).




## INSTALLATION

1. Push airduct hose (3) onto inlet transition (5).
2. Compress airduct hose (3) until it can be slipped onto inlet collar (4).
3. Tighten two hose clamps (2) on airduct hose (3).
4. Set POWER switch on compartment control module (1) to ON.

**2-15. M87 GAS-PARTICULATE FILTER UNIT (CONT).**

| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|
| INSTALLATION | | |
| | Housing inlet and compartment control module | 1. Thoroughly clean the surfaces to be repainted. Use rags (item 6, app D) and dry cleaning solvent (item 3, app D).<br>**NOTE**<br>Refer to TM 43-0139 for painting instructions for field use.<br>2. Paint surfaces with one coat of primer (item 5, app D).<br>3. Paint primed surfaces with polyurethane coating (item 4, app D). |

## 2-16. HOUSING UNIT

This task covers replacement of:

a. Instruction plates (p. 2-107)
b. Seals (p. 2-108)
c. Protective cap (p. 2-109)
d. Nylon cable (p. 2-110)
e. Main fan dust collector (p. 2-111)
f. Inlet transition (p. 2-114)

## INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

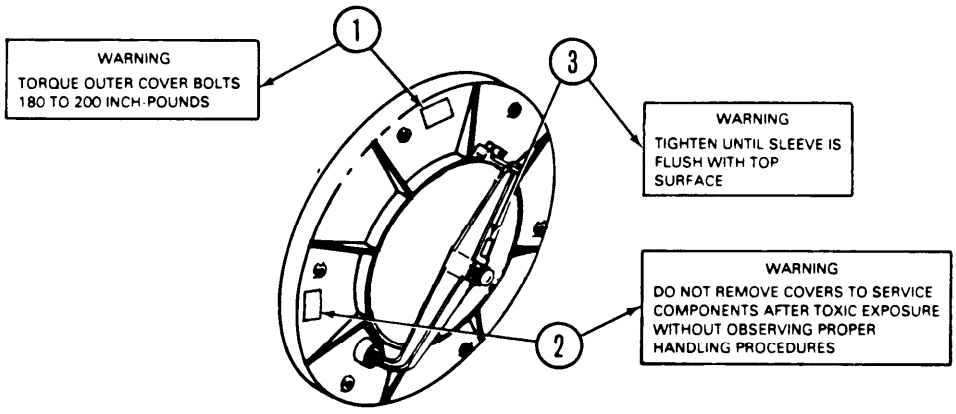
*References*
TM 9-4935-393-14-2
TM 9-1425-391-14

*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)
Adhesive (item 1, app D)
Brush (item 2, app D)

| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Access Hole Frame | Instruction plates | Lift edge of plates (1, 2, or 3) with a sharp tool. Pull plates completely off the mounting surface. |




## INSTALLATION

1. Thoroughly clean mounting surface with rags (item 6, app D) and dry cleaning solvent (item 4, app D). Surface must be free of oil, grease, dirt, or any foreign matter.
2. peel paper from adhesive backing on plates (1, 2, or 3).
3. Mount the plates (1, 2, or 3) and apply pressure to plate surface.

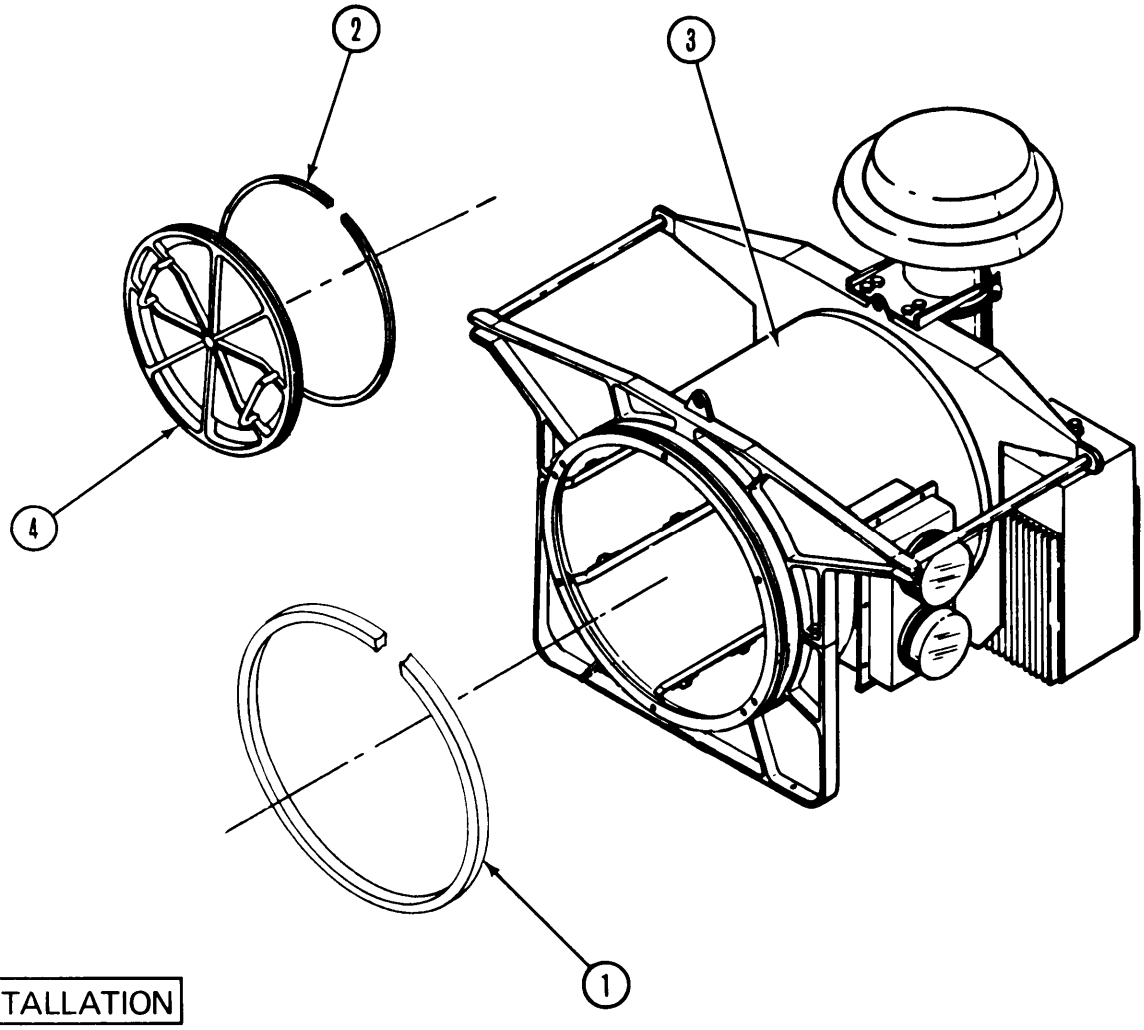
## 2-16. HOUSING UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

Housing Unit/ Access Cover — Seals

1. Remove particulate and gas filters (p. 2-91 and 2-92).
2. Remove seal (1 or 2) from groove on housing unit (3) or access cover (4).




### INSTALLATION

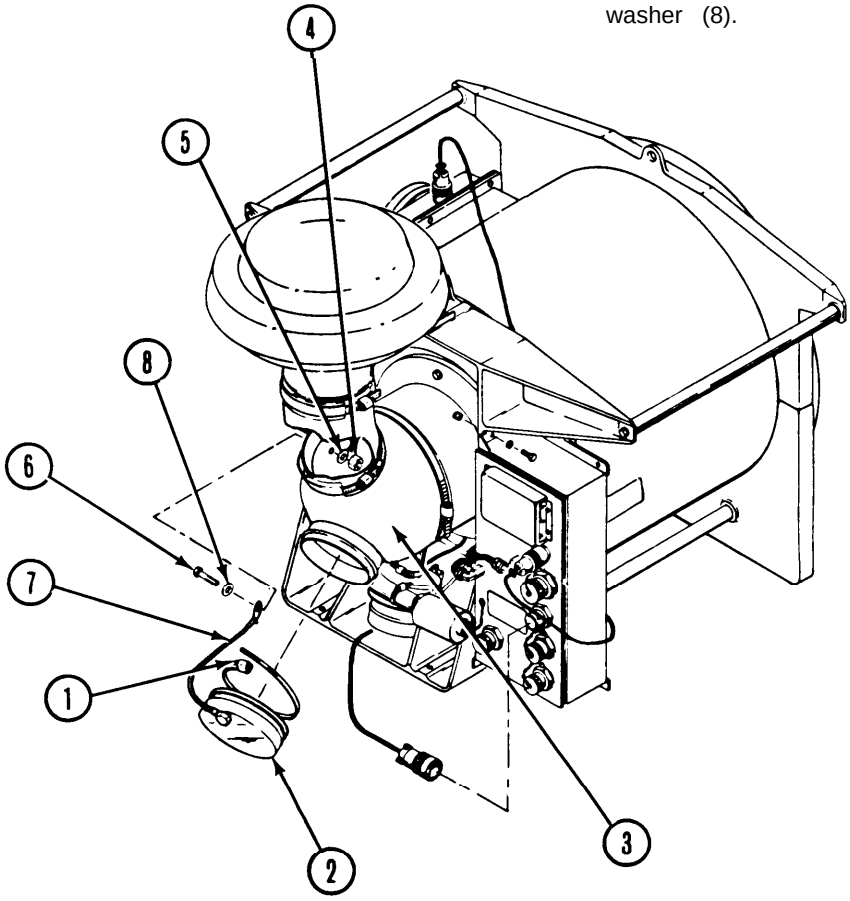
1. Clean groove with dry cleaning solvent (item 3, app D) and rags (item 6, app D).
2. Install seal in groove and butt ends using adhesive (item 1, app D).
3. Install gas and particulate filters (p. 2-91 and 2-93).

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Housing Unit — Protective cap

1. Loosen protective cap adjusting screw (1) and remove protective cap (2) from inlet transition (3).
2. Remove nut (4) and washer (5) from screw (6).
3. Remove screw (6) from inlet transition (3), loop of nylon cable (7) with protective cap (2), and washer (8).




## INSTALLATION

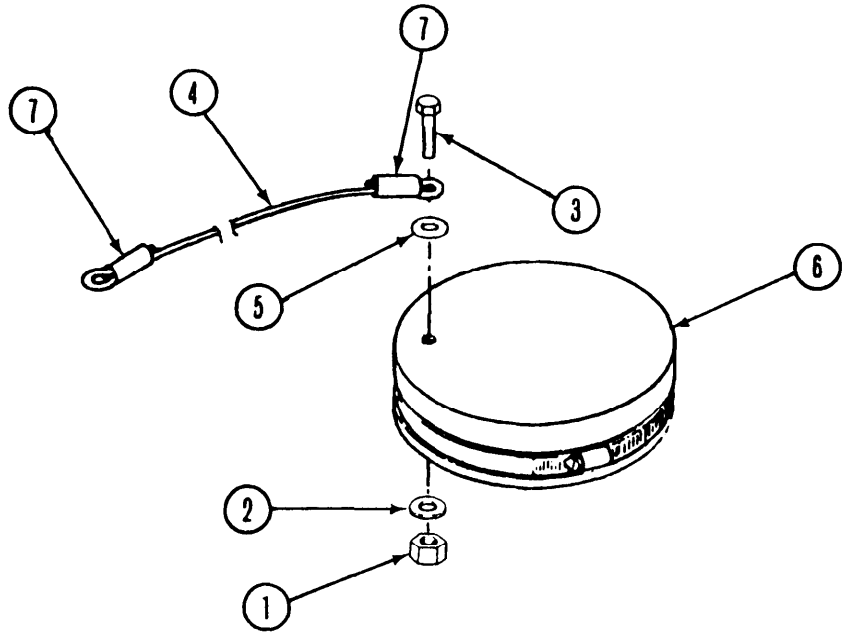
1. Insert screw (6) in washer (8), loop of nylon cable (7), and hole in inlet transition (3).
2. Install washer (5) and nut (4). Tighten securely.
3. Place protective cap (2) on inlet transition (3). Tighten adjusting screw (1).

**2-16. HOUSING UNIT (CONT).**

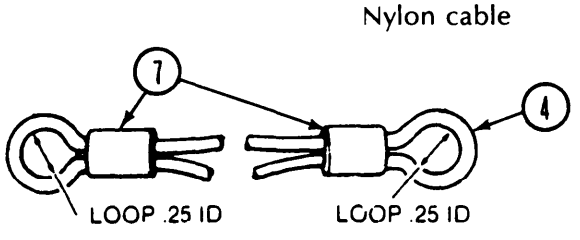
| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Protective Cap | Nylon cable | Unscrew nut (1). Remove washer (2), screw (3), nylon cable (4), and washer (5) from protective cap (6). |




## REPAIR




1. Fabricate replacement cable (4) (item 1, app C, bulk materials). Cut new cable to same length as old cable.
2. Crimp wire rope ferrules (7) on nylon cable (4).

## INSTALLATION

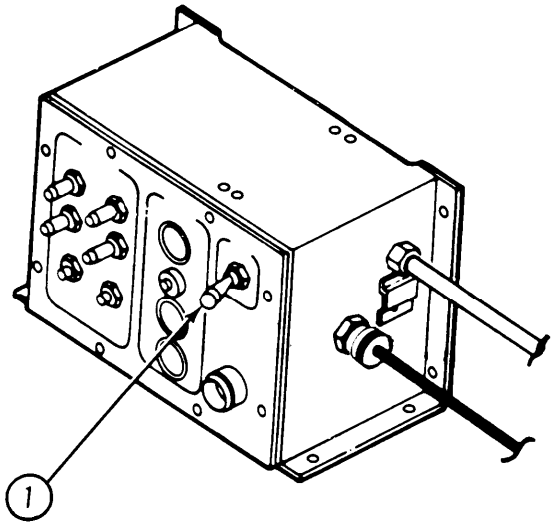
Secure nylon cable (4) to protective cap (6) with screw (3), washer (5), washer (2), and nut (1).

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

Housing Unit

Main fan/
dust collector



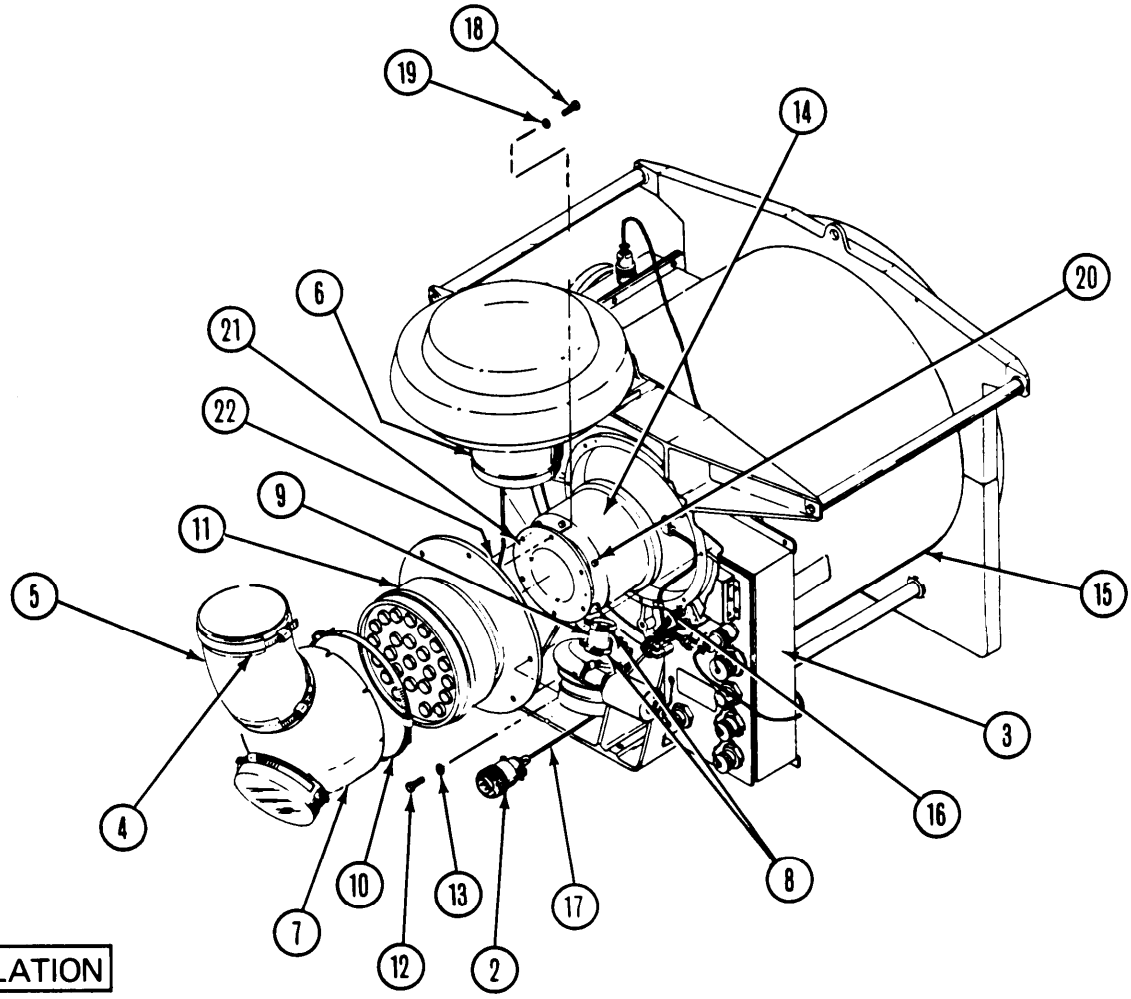

1. Set POWER switch (1) on compartment control module to OFF. Turn off power at source.
2. Disconnect electrical cable plug P4 (2) from power distribution unit (3).
3. Loosen hose clamps (4) on airduct hose (5).
4. Compress the airduct hose (5) until it can be removed from inlet collar (6) and inlet transition (7).
5. Loosen hose clamps (8) on exhaust sleeve (9).
6. Loosen hose clamp (10) on inlet transition (7), and carefully pull inlet transition (7), off of dust collector (11).
7. Remove eight screws (12) and washers (13), and pull dust collector (11) attached to main fan (14) from housing unit (15).
8. Remove main fan rubber bushing (16) from housing unit (15), and remove rubber bushing (16) from electrical cable (17).

## 2-16. HOUSING UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL (CONT)

| | | |
|---|---|---|
| Dust Collector | Main fan/ dust collector | 9. Remove screws (18) and washers (19).<br>10. Separate main fan (14) from dust collector (11). |




### INSTALLATION

| | | |
|---|---|---|
| Dust Collector | Main fan | 1. Position main fan (14) up to dust collector (11). Aline guide pins (20) on dust collector with guide pin holes in main fan. Push main fan against dust collector.<br>2. Install washers (19) and screws (18).<br>3. Install rubber bushing (16) on electrical cable (17) about 10 inches from motor.<br>4. Position dust collector (11) up to housing unit (15). |

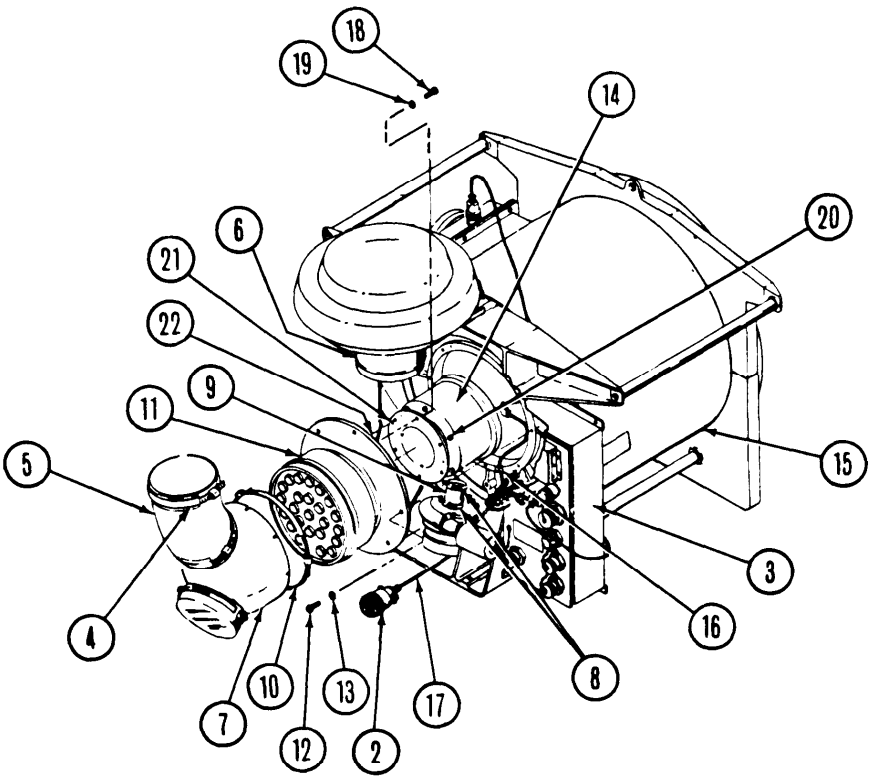
| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION (CONT)

Housing Unit

Main fan/
dust collector

5. Install rubber bushing (21) in slot in face of housing unit (15) with slit away from housing.
6. Aline guide pin hole (21) with guide pin (22). Push dust collector against housing unit.
7. Install washers (13) and screws (12).



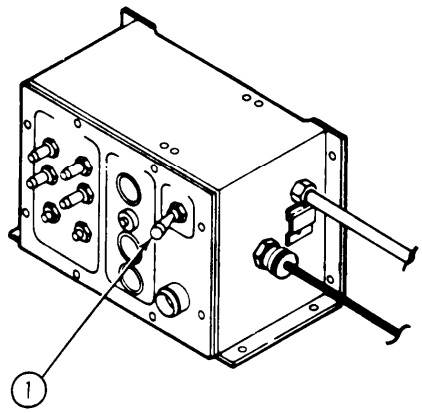

8. Install inlet transition (7) onto dust collector (11).
9. Tighten hose clamps (8) on exhaust sleeve (9).
10. Tighten hose clamp (10) on inlet transition (7).
11. Compress airduct hose (5) until it can be inserted between inlet collar (6) and inlet transition (7).
12. Slip airduct hose (5) over inlet collar (6) and inlet transition (7), and tighten hose clamps (4).
13. Connect electrical cable plug P4 (2) to power distribution unit (3).

## 2-16. HOUSING UNIT (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

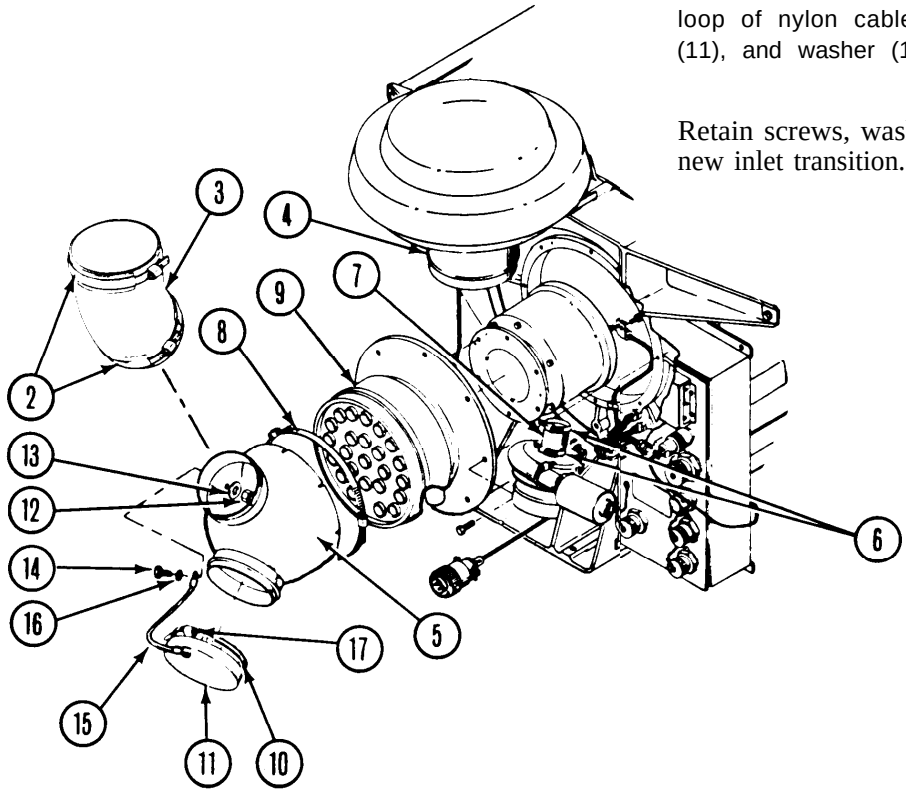
Housing Unit — Inlet transition




1. Set POWER switch on compartment control module to OFF.
2. Loosen hose clamps (2) on airduct hose (3).
3. Compress the airduct hose (3) until it can be removed from inlet collar (4) and inlet transition (5).
4. Loosen hose clamp (6) on exhaust sleeve (7).
5. Loosen hose clamp (8) on inlet transition (5), and carefully pull inlet transition (5) off of dust collector (9).
6. Loosen protective cap hose clamp (10) and remove protective cap (11) from inlet transition (5).
7. Remove nut (12) and washer (13) from screw (14).
8. Remove screw (14) from inlet transition (5), loop of nylon cable (15) with protective cap (11), and washer (16).

**NOTE**

Retain screws, washers, and nts to use with new inlet transition.



| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

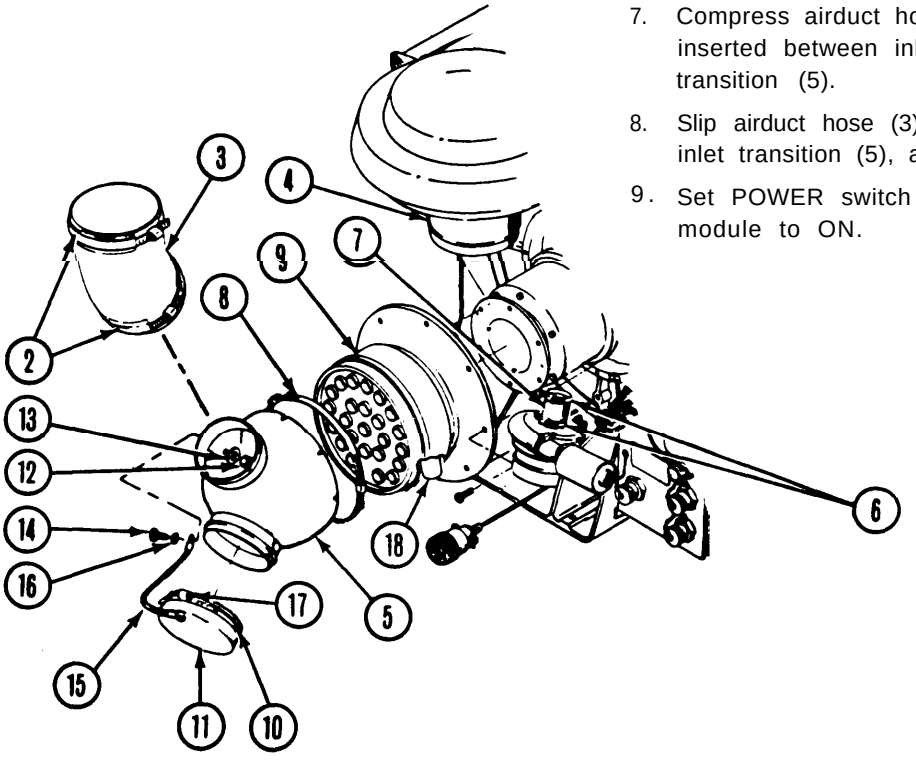
Housing Unit — Inlet transition

1. Insert screw (14) in washer (16), loop of nylon cable (15), and hole in inlet transition (5).
2. Install washer (13) and nut (12).
3. Place protective cap (11) on inlet transition (5). Tighten adjusting screw (17) on hose clamp (10).
4. Install inlet transition (5) onto dust collector (9).

**NOTE**

Be sure dust collector outlet ( 18) is inserted into exhaust sleeve (7).

5. Tighten band clamps (6) on exhaust sleeve (7).
6. Tighten band clamp (8) on inlet transition (5).
7. Compress airduct hose (3) until it can be inserted between inlet collar (4) and inlet transition (5).
8. Slip airduct hose (3) over inlet collar (4) and inlet transition (5), and tighten hose clamps (2).
9. Set POWER switch (1) on compartment control module to ON.



## 2-17. COMPARTMENT CONTROL MODULE.

This task covers replacement of incandescent lamps (p. 2-116).

### INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

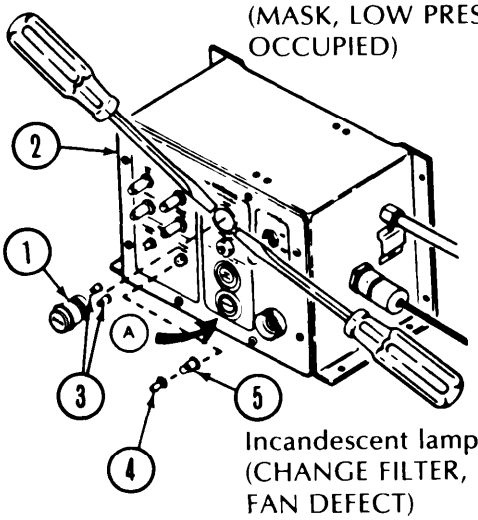
*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

Compartment Control Module

Incandescent lamps (MASK, LOW PRESSURE, OCCUPIED)




Incandescent lamps (CHANGE FILTER, DUST FAN DEFECT)

1. Using two screwdrivers, gently pry lens (1) from lettered panel (2).

**NOTE**

Observe the location of lamps in the lens. Lamps must be reinstalled in the same sockets.

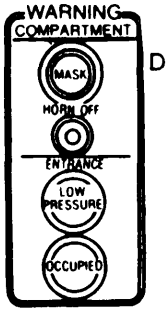
2. Pull lamps (3) from lens (1).

Unscrew lens (4), and remove lamp (5).

### INSTALLATION

Compartment Control Module

Incandescent lamps (MASK, LOW PRESSURE, OCCUPIED)




DETAIL (A)

1. Insert lamps (3) into lens (1). Use the same lamp sockets that lamps were removed from.
2. Insert lens (1) into lettered panel (2), as shown in detail A. Press lens into lettered panel until it snaps into place.

Incandescent lamps (CHANGE FILTER, DUST FAN DEFECT)

Insert lamp (5) into lens (4), and screw lens (4) into lettered panel (2).

## 2-18. POWER DISTRIBUTION UNIT PANEL.

This task covers:

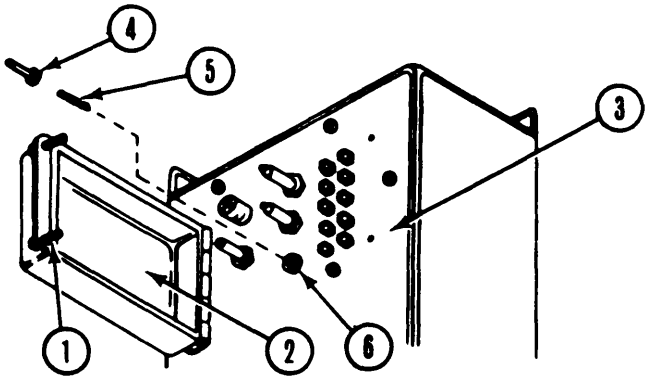
a. Replacement of glow lamp (p. 2-117).
b. Replacement of electrical connector covers (J3, J5 and J6) (p. 2-118)
c. Replacement of electrical connector cover (J7) (p. 2-118)

## INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app D)

| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|
| Power Distribution Unit Panel | Glow lamp | 1. Loosen screws (l).<br>2. Open access cover (2) on power distribution unit panel (3).<br>3. Unscrew indicator light lens (4).<br>**WARNING**<br>To prevent electrical hazard to personnel, ensure power source is disconnected before continuing procedure.<br>4. Remove glow lamp (5) from indicator light socket (6). |




## INSTALLATION

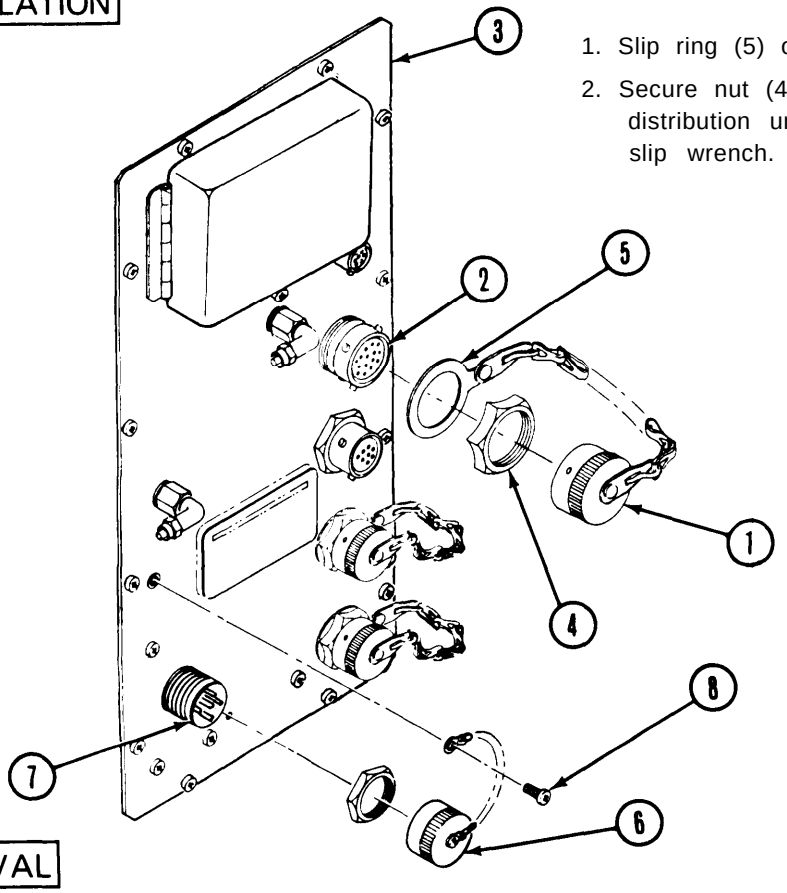
1. Insert glow lamp (5) in indicator light lens (4).
2. Screw indicator light lens (4) into light socket (6).
3. Close access cover (2) against power distribution unit panel (3) and secure with screws (1).

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Power Distribution Unit Panel | Electrical connector cover (J3, J5, J6) | 1. Unscrew cover (1) from connector (2) on power distribution unit panel (3).<br>2. Remove nut (4) securing cover (1) to connector (2) using lock pliers.<br>3. Remove ring (5) from connector (2). |

## INSTALLATION




1. Slip ring (5) over connector (2).
2. Secure nut (4) to connector (2) on power distribution unit panel (3) to connector (2) with slip wrench.

## REMOVAL

| | | |
|---|---|---|
| Power Distribution Unit Panel | Electrical connector cover (J7) | 1. Unscrew cover (6) from connector (7).<br>2. Remove screw (8) securing cover (6) to power distribution unit panel (3). |

## INSTALLATION

1. Install cover (6) on power distribution unit panel (3) using screw (8).
2. Screw cover (6) onto connector (7), and secure finger tight.

## 2-19. AIRFLOW VALVE.

This task covers the following:

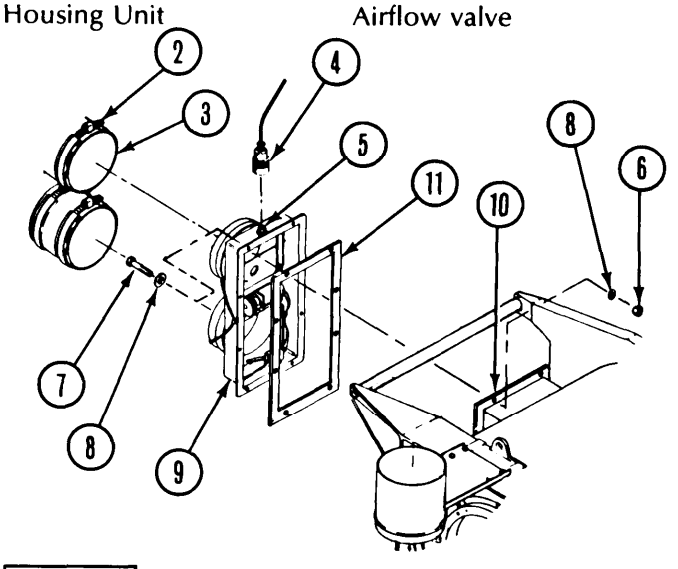
a. Removal
b. Disassembly
c. Repair
d. Reassembly
e. Installation

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

*Materials/Parts*
Rags (item 6, app D)
Dry cleaning solvent (item 3, app E)

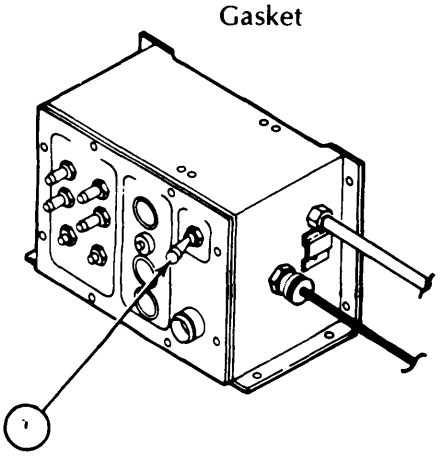
| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL




1. Set POWER switch (1) on compartment control module to OFF. Turn off power source.
2. Loosen two hose clamp adjusting screws (2) and remove two adapter mounting hoses (3).
3. Disconnect electrical plug P15 (4) from airflow valve connector J15 (5).
4. Remove eight nuts (6), screws (7), and washers (8).
5. Separate airflow valuve (9) from housing unit (10).

### REPAIR




Replace gasket (11) if unserviceable.

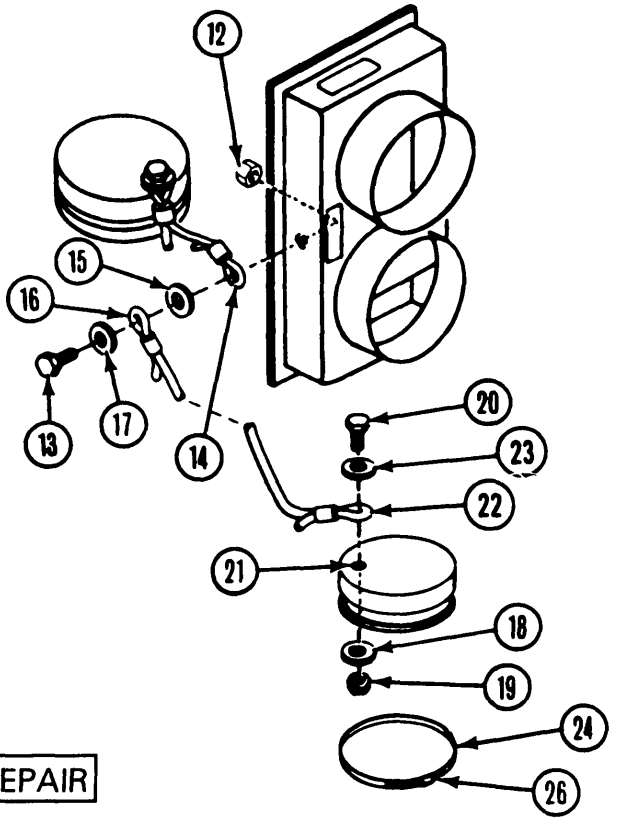
1. Remove gasket from flange on airflow valve.
2. Clean flange using dry cleaning solvent (item 3, app D),
3. Peel back paper from adhesive back.
4. Install gasket.

**2-19. AIRFLOW VALVE (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|

## DISASSEMBLY

Airflow Valve Protective cap

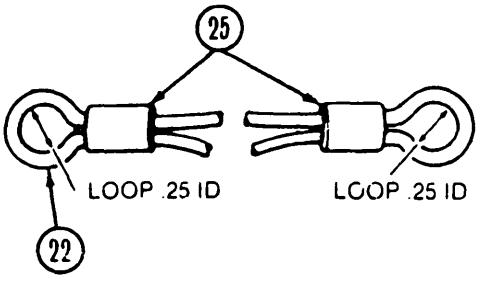



1. Remove nut (12) from screw (13). Remove screw (13), nylon cable loop (14), washer (15), nylon cable loop (16), and washer (17).
2. Remove nut (19) and washer (18) from screw (20).
3. Remove screw (20) from rubber cap (21), nylon cable loop (22), and washer (23).
4. Loosen adjusting screw (26), and remove hose clamp (24) from rubber cap (21). Remove cap.

## REPAIR

Nylon cable

Support cable




1. Fabricate replacement cable (22) (item 1, app C, bulk materials). Cut new to same length as old cable.
2. Crimp wire rope ferrules (25) on nylon cable (22) as shown.

## REASSEMBLY

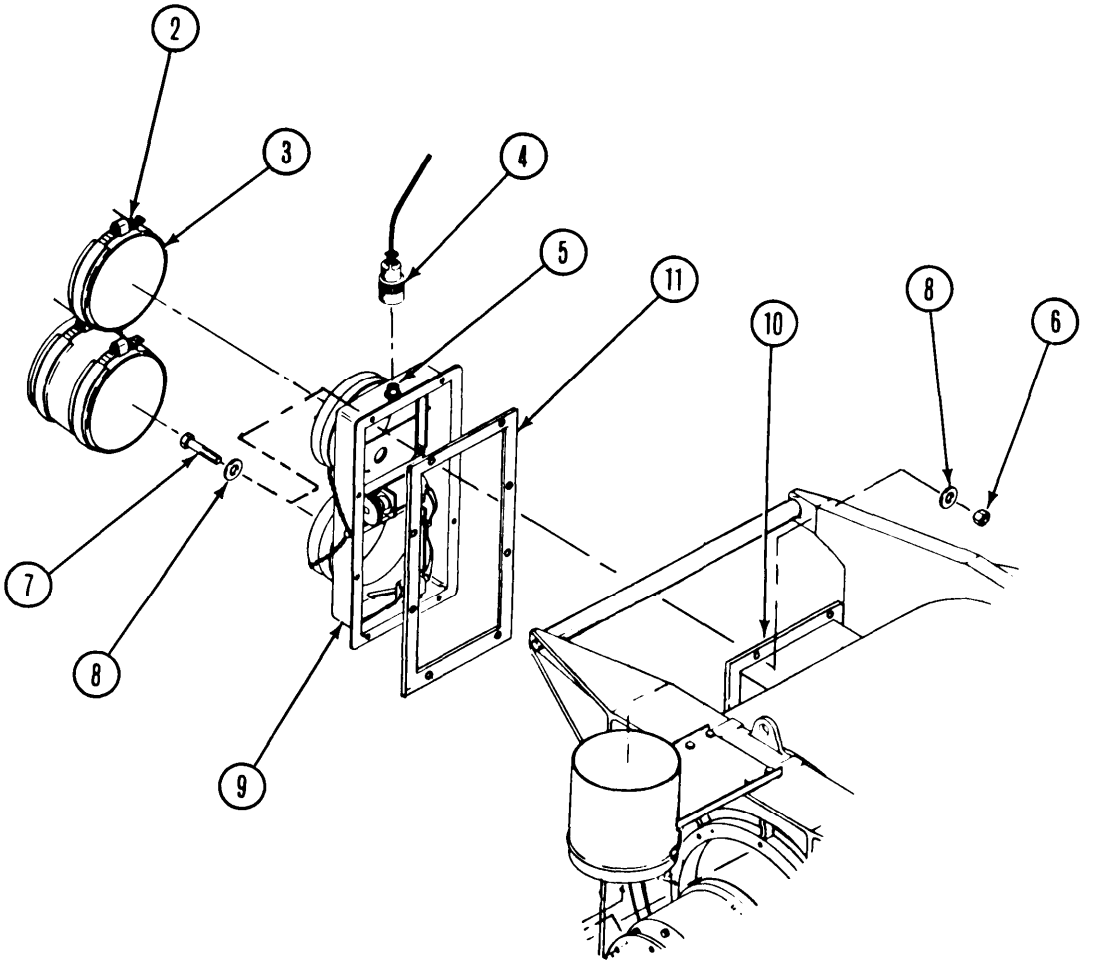
Airflow Valve Protective cap

1. Install screw (20) in washer (23), loop of nylon cable (22), hole in rubber cap (21), washer (18), and nut (19).
2. Install hose clamp (24) in groove in rubber cap (21). Tighten adjusting screw (26) slightly.
3. Install screw (13) in washer (17), loop of nylon cable (16), washer (15), loop of nylon cable (14), hole in airflow valve, and nut (12).

| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION

| | | |
|---|---|---|
| Housing Unit | Airflow valuve | 1. Place airflow valve (9) against housing unit (10). Align screw holes.<br>2. Install eight washers (8), screws (7), and nuts (6). Tighten securely.<br>3. Connect electrical plug P15 (4) to airflow valve connector J15 (5).<br>4. Install two adapter hoses (3) with hose clamps, Tighten hose clamp adjusting screws (2). |

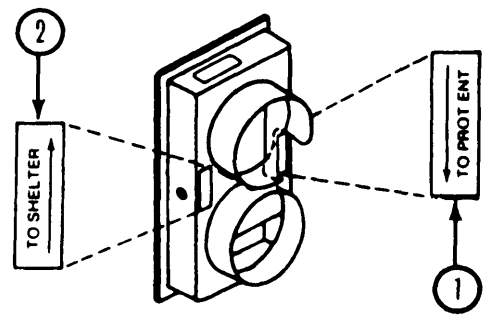


**2-19. AIRFLOW VALVE (CONT).**

| LOCATION | ITEM | ACTION |
|---|---|---|

## REMOVAL

| | | |
|---|---|---|
| Airflow Valve | Instruction plates | 1. Lift edge of plate (1 and 2) with a sharp tool.<br>2. Pull plate completely off the mounting surface. |




## INSTALLATION

1. Thoroughly clean mounting surface with dry cleaning solvent (item 3, app D). Mounting surface must be free of all contamination such as oil, grease, dirt, or any foreign matter.
2. Peel back paper from adhesive backing on plate.
3. Mount plate and apply pressure to plate surface.

## 2-20. AIRFLOW VALVE AND SILENCER ASSEMBLY.

This task covers:

a. Removal
b. Repair
c. Installation

## INITIAL SETUP

*Tools*
General Mechanics Tool Kit
SC 5180-90-CL-N26

*References*
TM 3-4240-307-30&P

*Materials/Parts*
Rags (item 6, app D)
Dry Cleaning Solvent (item 3, app D)

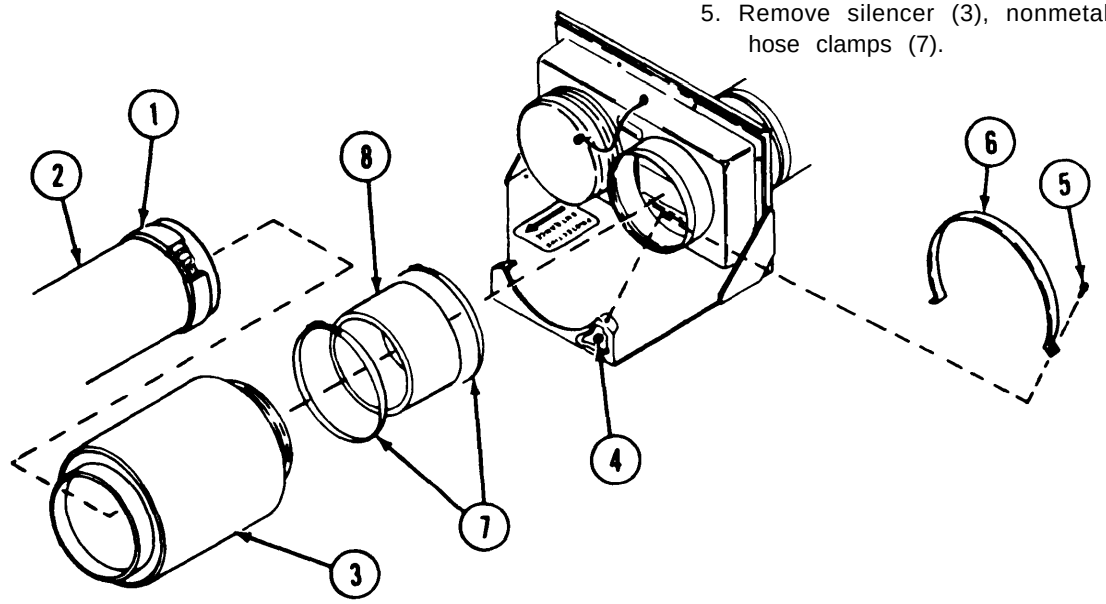
| *LOCATION* | *ITEM* | *ACTION* |
|---|---|---|

## INSTALLATION

| | | |
|---|---|---|
| GUARDRAIL | Airflow valve and silencer assembly | Refer to TM 3-4240-302-30&P-6 for airflow valve and silencer installation instructions. |

## REMOVAL

| | | |
|---|---|---|
| Airflow Valve and Silencer | Silencer | 1. Loosen hose clamp adjusting screw (1), and remove airduct hose (2) from silencer (3).<br>2. Remove nuts (4) and screws (5).<br>3. Remove retaining strap (6).<br>4. Loosen adjusting screws on hose clamps (7).<br>5. Remove silencer (3), nonmetallic hose (8), and hose clamps (7). |



## 2-20. AIRFLOW VALVE AND SILENCER ASSEMBLY (CONT).

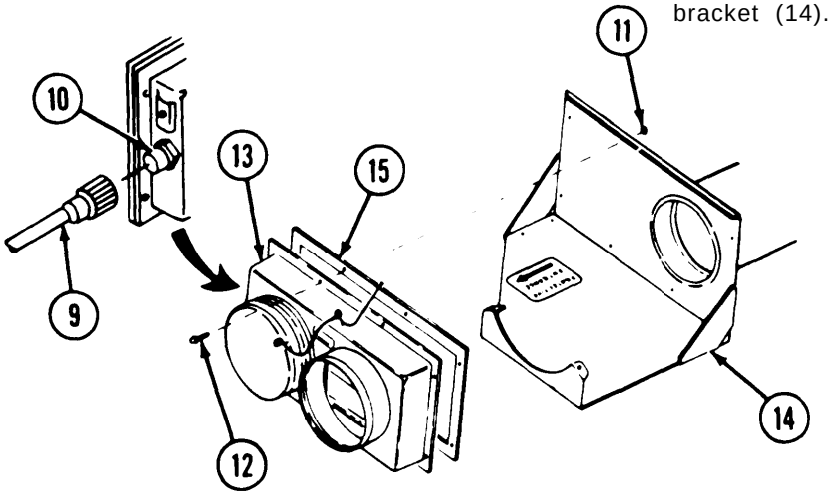
| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL (CONT)

Airflow Valve and Silencer

Airflow valve

1. Disconnect electrical cable plug P15 (9) from airflow valve connector J15 (10).
2. Remove nuts (11) and screw (12).
3. Remove airflow valve (13) from mounting bracket (14).




### REPAIR

Nonmetallic hose

Fabricate replacement nonmetallic hose (fig E-2, app E).

Gasket

Replace airflow valve gasket (15) if unserviceable.

1. Remove gasket from flange.
2. Clean flange using dry cleaning solvent (item 3, app D).
3. Apply adhesive (item 1, app D) to flange. install gasket.

### INSTALLATION

Airflow Valve and Silencer

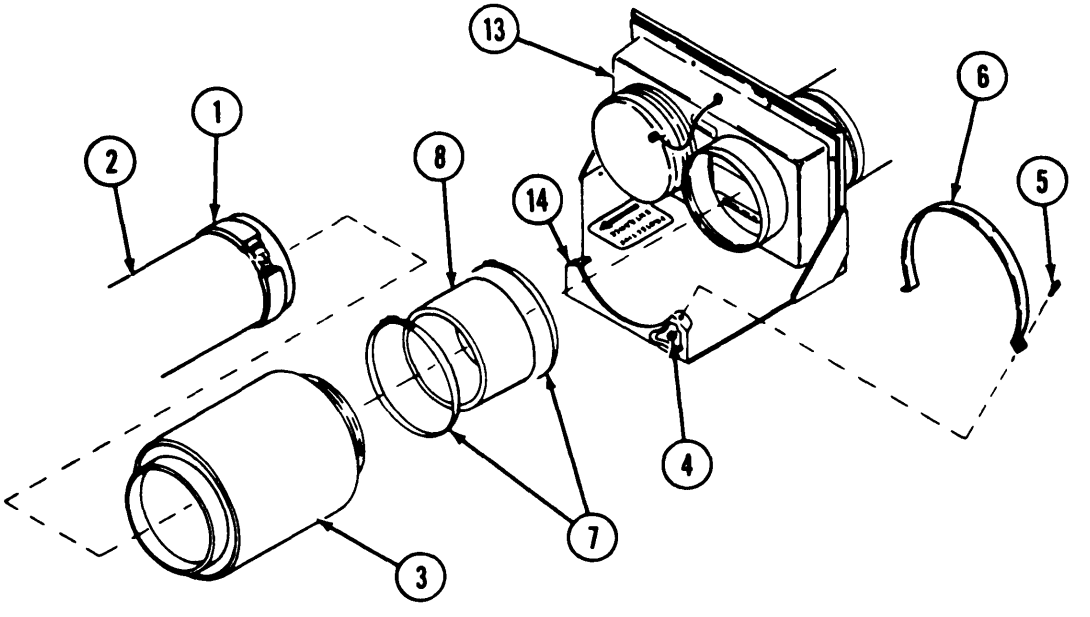
Airflow valve

1. Position airflow valve (13) against bracket (14), and align screw holes.
2. Install screws (12) and nuts (11).
3. Connect electrical cable plug P15 (9) to airflow valve connector J15 (10).

| LOCATION | ITEM | ACTION |
|---|---|---|

## INSTALLATION (CONT)

| | | |
|---|---|---|
| Airflow Valve and Silencer | Silencer | 1. Place hose clamps (7) on nonmetallic hose (8), and install on airflow valve (13). |



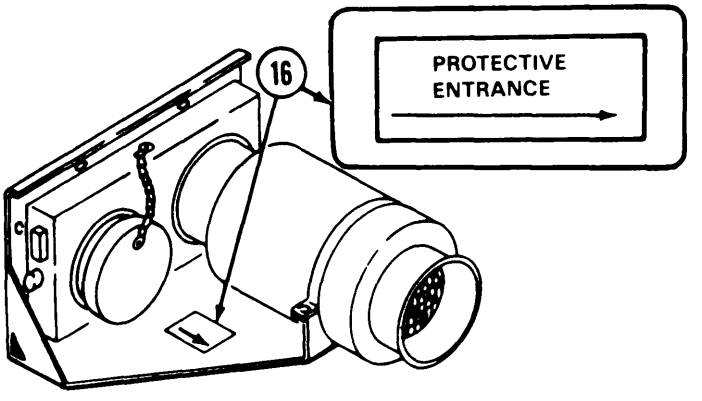

2. Install silencer (3) in nonmetallic hose (8), and tighten adjusting screw on hose clamps (7).
3. Place retaining strap (6) over silencer (3), and aline screw holes in strap and mounting bracket (14).
4. Install screws (s) and nuts (4).
5. Install airduct hose (2) on silencer (3), and tighten hose clamp adjusting screw (1).

## 2-20. AIRFLOW VALVE AND SILENCER ASSEMBLY (CONT).

| LOCATION | ITEM | ACTION |
|---|---|---|

### REMOVAL

| | | |
|---|---|---|
| Airflow Valve and Silencer | Instruction plate | 1. Lift edge of plate (16) with a sharp tool.<br>2. Pull plate completely off the mounting surface. |

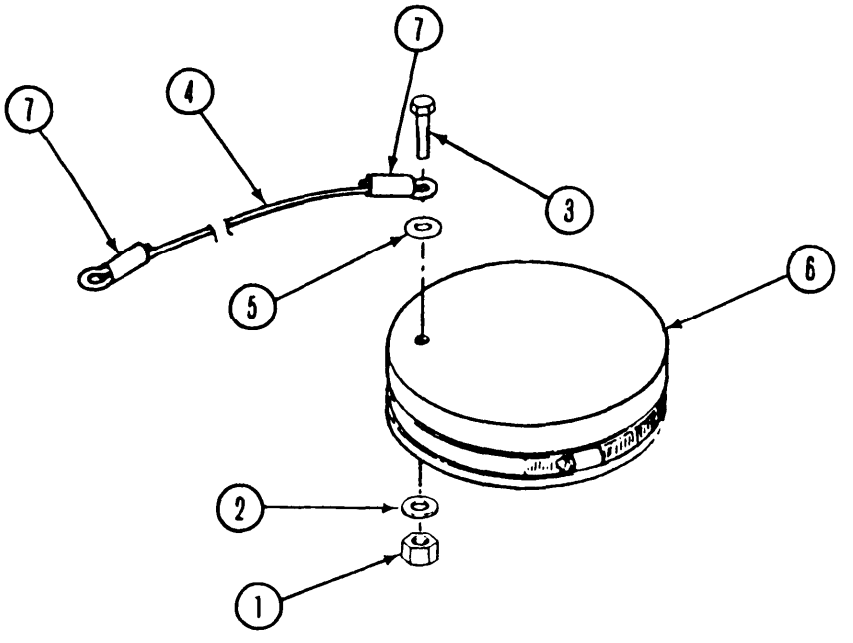



1. Thoroughly clean mounting surface with dry cleaning solvent (item 3, app D). Mounting surface must be free of all contamination such as oil, grease, dirt or any foreign matter.
2. Activate the back of the plate with dry cleaning solvent (item 3, app D).
3. Mount the plate and apply pressure to the plate surface.
4. Spray or brush plate with polyurethane coating (item 4, app D).

| LOCATION | ITEM | ACTION |
|---|---|---|

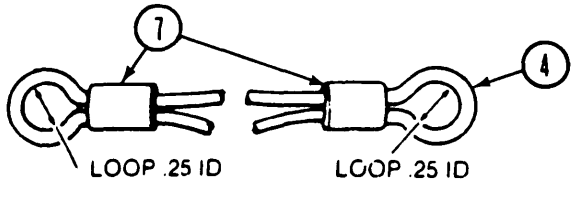
## REMOVAL

| | | |
|---|---|---|
| Protective Cap | Nylon cable | Unscrew nut (1). Remove washer (2), screw (3), nylon cable (4), and washer (5) from rubber cap (6). |




## REPAIR

Nylon cable




1. Fabricate replacement cable (4) (item 1, app C, bulk materials). Cut new to same length as old cable.
2. Crimp wire rope ferrules (7) on nylon cable (4) as shown.

## INSTALLATION

Secure nylon cable (4) to rubber cap (6) with screw (3), washer (5), washer (2), and nut (1).

# APPENDIX A
# REFERENCES

The following publications are related to information contained in this manual.

## A-1. TECHNICAL MANUALS.

| | |
|---|---|
| TM 9-4935-393-14-1, -2 | Operator, Organizational, Direct Support/General Support Maintenance Manual, Test Station, Guided Missile . System - System Components, Semitrailer Mounted; AN/TSM-l50 (X0-1) |
| TM 9-1425-391-14 | Operator. Organizational, Direct Support/General Support Maintenance Manual, Shelter, Electrical Equipment, Facilitized |
| TM 3-4240-299-23&P. | Organizational, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Static Frequency Converter: MS Modular Collective Protection Equipment |
| TM 11-5865-234-23&P | Surveillance Information Processing Center, AN/TSQ-105 NSN 5895-01-177-6015 |
| TM 10-277 | Chemical, Toxicological and Missile Fuel Handlers Protective Clothing |
| TM 43-0002 -31 | Destruction of Chemical Weapons and Defense Equipment to Prevent Enemy Use |
| TM 43-0139 | Painting Instructions for Field Use |
| TM 740-90-1 | Administrative Storage of Equipment |

**A-2. COMMON TABLE OF ALLOWANCES.**

CTA 50-970 . . . . . Expendable/Durable Items (Except: Medical Class V Repair Parts and Heraldic Items)

CTA 8-l00 . . . . . Army Medical Department Expendables/Durable Items

**A-3. SUPPLY BULLETIN.**

SB 708-41/42 . . . . . Federal Supply Code for Manufacturers: United States and Canada - Code to Name and Name to Code

**A-4. SUPPLY CATALOG.**

SC5 180-91-CL-R07 . . . . . Tool Kit, Electronic Equipment TK-105/G

SC5 180-90-CL-N26 . . . . . Tool Kit, General Mechanics

**A-5. FIELD MANUAL.**

FM 21-11 . . . . . First Aid for Soldiers

FM 3-5 . . . . . NBC Decontamination

**A-6. DA PAMPHLET.**

DA Pam 738-750 . . . . . The Army Maintenance Management System (TAMMS) as Contained in Maintenance Management Update



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# APPENDIX B
# MAINTENANCE ALLOCATION CHART

## Section I INTRODUCTION

### B-1. General.

a. This section provides a general explanation of all maintenance and repair functions authorized at various maintenance categories.

b. The maintenance allocation chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be consistent with the capacities and capabilities of the designated maintenance categories.

c. Section III lists the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from section II.

d. Section IV contains supplemental instructions and explanatory notes for a particular maintenance function.

**B-2. Maintenance Functions.** Maintenance functions will be limited to and defined as follows:

a. *Inspect.* To determine serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel).

b. *Test.* To verify serviceability by measuring the mechanical pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. *Service.* Operations required periodically to keep an item in proper operating condition, i.e., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids. or gases.

d. *Adjust.* To maintain or regulate, within prescribed limits. by bringing into proper or exact position, or by setting the operating characteristics to specified parameters.

e. *Align.* To adjust specified variable elements of an item to bring about optimum or desired performance.

f. *Calibrate.* To determine and cause corrections to be made or to be adjusted on instruments or test, measuring, and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. *Remove/Install.* To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

h. *Replace.* To remove an unserviceable item and install a serviceable counterpart in its place. Replace is authorized by the MAC and is shown as the third position code of the SMR code.

i. *Repair.* The application of maintenance services, including fault location/troubleshooting, removal/ installation, and disassembly/assembly procedures, and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. *Overhaul.* That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications (i.e., DMWR). Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. *Rebuild.* Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours/miles, etc) considered in classifying Army equipments/components.

### B-3. Explanation of Columns in the MAC, Section II.

a. *Column (1) - Group Number.* Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly. End item group number shall be "00".

b. *Column (2) - Component/Assembly.* Column 2 contains the names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. *Column (3) - Maintenance function.* Column 3 lists the functions to be performed on the item listed in column 2. (For detailed explanation of these functions, see paragraph B-2.)

d. *Column (4) - Maintenance Category.* Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the category of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate work time figures will be shown for each category. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. The symbol designations for the various maintenance categories are as follows:

C Operator or crew
O Organizational maintenance
F Direct support maintenance
H General support maintenance
D Depot maintenance

e. *Column (5) - Tools and Equipment.* Column 5 specifies, by code, those common tool sets (not individual tools) and special tools, TMDE, and support equipment required to perform the designated function.

f. *Column (6) - Remarks.* This column shall, when applicable, contain a letter code, in alphabetic order, which shall be keyed to the remarks contained in section IV.

### B-4. Explanation of Columns in Tool and Test Equipment Requirements, Section III.

a. *Column (1) - Reference Code.* The tool and test equipment reference code correlates with a code used in the MAC, section II, column 5.

b. *Column (2) - Maintenance Category.* The lowest category of maintenance authorized to use the tool or test equipment.

*c. Column (3) - Nomenclature.* Name or identification of the tool or test equipment.

d. *Column (4) - National Stock Number.* National stock number of the tool or test equipment.

*e. Column (5) - Tool Number.* The manufacturer's part number.

### B-5. Explanation of Columns in Remarks, Section IV.

a. *Column 1 - Reference Code.* The code recorded in column 6, section II.

b. *Column 2 - Remarks.* This column lists information pertinent to the maintenance function being performed as indicated in the MAC, section II.

## Section II MAINTENANCE ALLOCATION CHART FOR COLLECTIVE PROTECTION EQUIPMENT FOR GUARDRAIL CONSISTING OF M10 PROTECTIVE ENTRANCE, M87 GAS-PARTICULATE FILTER UNIT, AND M5 STATIC FREQUENCY CONVERTER

| (1) | (2) | (3) | (4) MAINTENANCE CATEGORY | | | | | (5) | (6) |
|---|---|---|---|---|---|---|---|---|---|
| GROUP NUMBER | COMPONENT ASSEMBLY | MAINTENANCE FUNCTION | C | O | F | H | D | TOOLS AND EQPT | REMARKS |
| 01 | M10 | Inspect | | 0.2 | | | | | |
| | PROTECTIVE | Test | | 0.2 | | | | 4 | |
| | ENTRANCE | Repair | | 0.3 | | | | 1 | |
| 0101 | PROTECTIVE | Test | | | 0.5 | | | 2, 3, 4, 5, | |
| | ENTRANCE | | | | | | | 6, 7, 8, 9, | |
| | CONTROL | | | | | | | 10, 11, | |
| | MODULE | Replace | | 0.4 | | | | 1 | |
| | | Repair | | 0.1 | 4.0 | | | 2 | |
| 010101 | DOME LIGHT | Replace | | | 0.2 | | | 2 | |
| | | Repair | | 0.1 | | | | 1 | |
| 0102 | PROTECTIVE | Replace | | 0.4 | | | | | |
| | ENTRANCE | Repair | | 0.2 | | | | 1 | |
| 010201 | PROTECTIVE | Replace | | 0.2 | | | | 1 | |
| | CAP | Repair | | 0.3 | | | | 1 | |
| 02 | M87 GAS- | Inspect | | 0.2 | | | | | |
| | PARTICULATE | Test | | 0.2 | | | | 4 | |
| | FILTER UNIT | Repair | | 0,2 | | | | 1, 3 | |
| 0201 | HOUSING UNIT | Repair | | 0.5 | | | | 1 | |
| 020101 | PROTECTIVE | Replace | | 0.1 | | | | 1 | |
| | CAP | Repair | | 0.2 | | | | 1 | |
| 020102 | MAIN FAN | Replace | | 0.8 | | | | 1 | |
| | | Repair | | | | | 4.0 | | A |
| 020103 | AIRFLOW VALVE | Test | | | 0.3 | | | 4 | |
| | | Replace | | 0.3 | | | | 1 | |
| | | Repair | | 0.5 | 2.0 | | | 2 | |
| 02010301 | PROTECTIVE | Replace | | 0.1 | | | | 1 | |
| | CAP | Repair | | 0.2 | | | | 1 | |

## Section II MAINTENANCE ALLOCATION CHART FOR COLLECTIVE PROTECTION EQUIPMENT FOR GUARDRAIL CONSISTING OF M10 PROTECTIVE ENTRANCE, M87 GAS-PARTICULATE FILTER UNIT, AND M5 STATIC FREQUENCY CONVERTER (CONTINUED)

| (1) | (2) | (3) | (4) MAINTENANCE CATEGORY | | | | | (5) | (6) |
|---|---|---|---|---|---|---|---|---|---|
| GROUP NUMBER | COMPONENT/ ASSEMBLY | MAINTENANCE FUNCTION | C | O | F | H | D | TOOLS AND EQPT | REMARKS |
| 0202 | POWER DISTRIBUTION UNIT | Replace | | 0.2 | | | | 1 | |
| | | Repair | | | 0.1 | | | 2 | |
| 020201 | POWER DISTRIBUTION PANEL | Test | | | 0.5 | | | 4, 5, 6, 7, 9, 10, 11, 2 | |
| | | Repair | | 0.1 | 2.0 | | | | |
| 0203 | COMPARTMENT CONTROL MODULE | Test | | | 1.0 | | | 2, 4, 5, 6, 7, 8, 9, 10, 11, | |
| | | Replace | | 0.2 | | | | 1 | |
| | | Repair | | 0.1 | 0.3 | | | 1, 2 | |
| 03 | AIRFLOW VALVE AND SILENCER | Test | | 0.2 | | | | 4 | |
| | | Repair | | 1.0 | | | | 1 | |
| 0301 | AIRFLOW VALVE | Test | | | 0.3 | | | 4, 5 | B |
| | | Replace | | 0.3 | | | | 1 | |
| | | Repair | | 0.5 | 2,0 | | | 1, 2 | |
| 030101 | PROTECTIVE CAP | Replace | | 0.1 | | | | 1 | |
| | | Repair | | 0,2 | | | | 1 | |
| 04 | M5 STATIC FREQUENCY CONVERTER | Inspect | | 0.1 | | | | | C |
| | | Test | | 0.2 | 2.1 | | | 4 | |
| | | Replace | | 0.3 | | | | 1 | |

## Section III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR COLLECTIVE PROTECTION EQUIPMENT FOR GUARDRAIL

| *(1)* *TOOL OR TEST EQUIPMENT REF CODE* | *(2)* *MAINTENANCE CATEGORY* | (3) *NOMENCLATURE* | *(4)* *NATIONAL/NATO STOCK NUMBER* | *(5)* *TOOL NUMBER* |
|---|---|---|---|---|
| 1 | O | TOOL KIT, GENERAL MECHANICS'S | 5180-00-177-7033 | SC 5180-90-CL-N26 |
| 2 | F | TOOL KIT, ELECTRONIC EQUIPMENT | 5180-00-610-8177 | TK-l05/G |
| 3 | O | WRENCH, TORQUE | 5120-00-247-2536 | |
| 4 | O | MULTIMETER | 6625-01-139-2512 | AN/PSM-45 |
| 5 | F | POWER SUPPLY, DIRECT CURRENT | 6130-00-408-4962 (or equivalent) | |
| 6 | F | GAGE, DIFFERENTIAL, DIAL INDICATING | 6685-00-087-6331 | |
| 7 | F | RESISTOR, 680 OHM ± 5%, 2 WATT | 5905-00-256-0390 | |
| 8 | F | RESISTOR, 100 OHM ± 10%, 10 WATT | 5905-00-752-6460 | |
| 9 | F | SYRINGE, HYPODERMIC | 6515-00-754-0412 | |
| 10 | F | TEE, HOSE | 4730-00-082-5402 | |
| 11 | F | TUBING, NONMETALLIC | 4720-00-059-5819 | |

## Section IV REMARKS

| *Reference Code* | *Remarks* |
|---|---|
| A | Depot to accumulate for future repair/disposition. |
| B | Airflow valve on both filter unit and airflow valve and silencer assembly are the same. |
| C | Refer to *TM 3-4240-299-23&P. |

*To be published.

# APPENDIX C
# REPAIR PARTS AND SPECIAL TOOLS LIST

## Section I INTRODUCTION

**C-1. SCOPE.** This RPSTL lists and authorizes spares and repair parts, special tools, special test, measurement, and diagnostic equipment (TMDE), and other special support equipment required for performance of organizational maintenance of the GUARDRAIL collective protection equipment. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by the source, maintenance, and recoverability (SMR) codes.

**C-2. GENERAL.** In addition to Section I, Introduction, this Repair Parts and Special Tools List is divided into the following sections:

a. *Section II. Repair Parts List.* A list of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. The list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed by item name in FIG BULK at the end of the section.

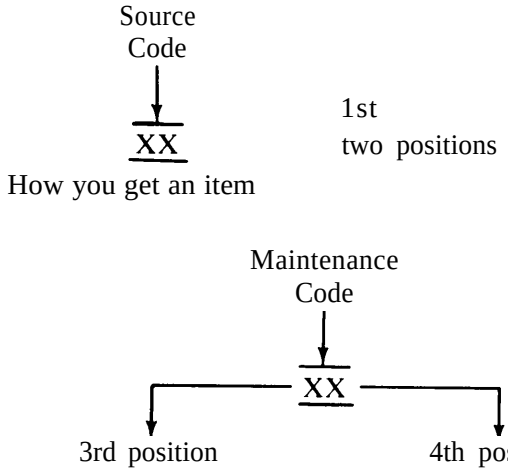
b. *Section III. Special Tools List.* Not applicable.

c. *Section IV. National Stock Number and Part Number Index.* A list, in National item identification number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the listing. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance,

**C-3. EXPLANATION OF COLUMNS (SECTION II).**

a. *ITEM NO. [Column (1)].* Indicates the number used to identify items called out in the illustration.

b. *SMR CODE [Column (2)].* The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:




*Complete Repair: Maintenance capacity, capability, and authority to perform all the corrective maintenance tasks of the "Repair" function in a use/user environment in order to restore serviceability to a failed item.

## C-3. EXPLANATION OF COLUMNS (SECTION II) (CONT).

(1) *Source Code.* The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

| *Code* | *Explanation* |
|---|---|
| PA<br>PB<br>PC**<br>PD<br>PE<br>PF<br>PG | Stocked items; use the applicable NSN to request/requisition items with these source codes. They are authorized to the category indicated by the code entered in the 3d position of the SMR code.<br>****NOTE**<br>Items coded PC are subject to deterioration. |
| KD<br>KF<br>KB | Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3d position of the SMR code. The complete kit must be requisitioned and applied. |
| MO - (Made at Org/AVUM Level)<br>MF - (Made at DS/AVUM Level)<br>MH - (Made at GS Level)<br>ML - (Made at Specialize Repair Ac1 (SRA)<br>MD - (Made at Depot) | Items with these codes are not to be requested/requisitioned individually. They must be made from bulk material which is identified by the part number in the DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the Bulk Material group of the repair parts list in this RPSTL. If the item is authorized to you by the 3d position code of the SMR code. but the source code indicates it is made at a higher level, order the item from the higher level of maintenance. |

| *Code* | *Explanation* |
|---|---|
| AO - (Assembled by Org/ AVUM Level)<br>AF - (Assembled by DS/AVIM Level)<br>AH - (Assembled by GS Category)<br>AL - (Assembled by SRA)<br>AD - (Assembled by Depot) | Items with these codes are not to be requested/requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 3d position code of the SMR code authorizes you to replace the item, but the source code indicates the item is assembled at a higher level, order the item from the higher level of maintenance. |

| *Code* | *Explanation* |
|---|---|
| XA | Do not requisition an "XA''-coded item. Order its next higher assembly. (Also, refer to the NOTE below.) |
| XB | If an "XB" item is not available from salvage, order it using the FSCM and part number given. |
| XC | Installation drawing, diagram, instruction sheet, field service drawings, that is identified by manufacturer's part number. |
| XD | Item is not stocked. Order an "XD''-coded item through normal supply channels using the FSCM and part number given, if no NSN is available. |

**NOTE**

Cannibalization or controlled exchange, when authorized, may be used as a source of supply for items with the above source codes, except for those source coded XA.

## C-3. EXPLANATION OF COLUMNS (SECTION II)

(2) *Maintenance Code.* Maintenance codes tells you the level(s) of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the SMR code as follows:

(a) The maintenance code entered in the third position tells you the lowest maintenance level authorized to remove, replace, and use an item. The maintenance code entered in the third position will indicate authorization to one of the following levels of maintenance:

| *Code* | *Application/Explanation* |
|---|---|
| C | Crew or operator maintenance done within organizational or maintenance. |
| O | Organizational category can remove, replace, and use the item. |
| F | Direct support level can remove, replace, and use the item. |
| H | General support level can remove, replace, and use the item. |
| L | Specialized repair activity can remove, replace, and use the item. |
| D | Depot level can remove, replace, and use the item. |

(b) The maintenance code entered in the fourth position tells whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (i.e., perform all authorized repair functions). [NOTE: Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.] This position will contain one of the following maintenance codes.

| *Code* | *Application/Explanation* |
|---|---|
| O | Organizational is the lowest level that can do complete repair of the item. |
| F | Direct support is the lowest level that can do complete repair of the item. |
| H | General support is the lowest level that can do complete repair of the item. |
| L | Specialized repair activity (designate the specialized repair activity) is the lowest level that can do complete repair of the item. |
| D | Depot is the lowest level that can do complete repair of the item. |
| Z | Nonreparable, no repair is authorized. |
| B | No repair is authorized. (No parts or special tools are authorized for the maintenance of a "B" coded item.) However, the item may be reconditioned by adjusting, lubricating, etc., at the user level. |

(3) *Recoverability Code.* Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is entered in the fifth position of the SMR code as follows:

| *Recoverability Codes* | *Application/Explanation* |
|---|---|
| Z | Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR code, |
| O | Reparable item. When uneconomically reparable, condemn and dispose of the item at organizational level. |
| F | Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level. |
| H | Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level. |
| D | Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level. |

## C-3. EXPLANATION OF COLUMNS (SECTION II) (CONT).

| *Recoverability Codes* | *Application/Explanation* |
|---|---|
| L | Reparable item. Condemnation and disposal not authorized below specialized repair activity (SRA). |
| A | Item requires special handling or condemnation procedures because of specific reasons (e.g., precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions. |

c. *FSCM [Column (3)].* The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

d. *PART NUMBER [Column (4)].* Indicates the primary number used by the manufacturer (individual, company, firm. corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

**NOTE**

When you use a NSN to requisition an item, the item you receive may have a different part number from the part ordered.

e. *DESCRIPTION AND USABLE ON CODE (UOC) [Column (5)].* This column includes the following information:

(1) The Federal item name and, when required, a minimum description to identify the item.

(2) Part numbers for bulk materials are referenced in this column in the line item entry for the item to be manufactured/fabricated.

(3) The statement "END OF FIGURE" appears just below the last item description in column (5) for a given figure in section II.

f. *QTY [Column (6)].* The QTY (quantity per figure column) indicates the quantity of the item used in the breakout shown on the illustration figure, which is prepared for a functional group, subfunctional group, or an assembly. A "V" appearing in this column in lieu of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

## C-4. EXPLANATION OF COLUMNS (SECTION IV).

a. *NATIONAL STOCK NUMBER (NSN) INDEX.*

(1) *STOCK NUMBER Column.* This column lists the NSN by National item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN

$$\text{(i.e., } 5305\ \underbrace{\text{-01-674-1467}}_{\text{NIIN}}\text{).}$$
$$\overline{\text{NSN}}$$

When using this column to locate an item, ignore the first 4 digits of the NSN. However, the complete NSN should be used when ordering items by stock number.

(2) *FIG. Column.* This column lists the number of the figure where the item is identified/located. The figures are in numerical order in section II.

(3) *ITEM Column.* The item number identifies the item associated with the figure listed in the adjacent FIG. column. This item is also identified by the NSN listed on the same line.

b. *PART NUMBER INDEX.* Part numbers in this index are listed by part number in ascending alphanumeric sequence (i.e., vertical arrangement of letter and number combination which places the first letter or digit of each group in order A through Z, followed by the numbers O through 9 and each following letter or digit in like order).

(1) *FSCM Column.* The Federal Supply Code for Manufacturer (FSCM) is a 5-digit numeric code used to identify the manufacturer. distributor, or Government agency, etc, that supplies the item.

(2) *PART NUMBER Column.* Indicates the primary number used by the manufacturer (individual, firm, corporation, or Government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications standards. and inspection requirements to identify an item or range of items.

## C-4. EXPLANATION OF COLUMNS (SECTION IV)

(3) *STOCK NUMBER Column.* This column lists the NSN for the associated part number and manufacturer identified in the PART NUMBER and FSCM columns to the left.

(4) *FIG. Column.* This column lists the number of the figure where the item is identified/located in section II.

(5) *ITEM Column.* The item number is that number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

## C-5. SPECIAL INFORMATION.

a. *Fabrication Instructions.* Bulk materials required to manufacture items are listed in the Bulk Material Functional Group of this RPSTL. Part numbers for bulk materials are also referenced in the description column of the line item entry for the item to be manufactured/fabricated.

b. *Index Numbers.* items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the National Stock Number/Part Number Index and the bulk material list in section II.

## C-6. HOW TO LOCATE REPAIR PARTS

b. *When National Stock Number or Part Number is Not Known.*

(1) *First.* Using the table of contents, determine the assembly group or subassembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and listings are divided into the same groups.

(2) *Second.* Find the figure covering the assembly group or subassembly group to which the item belongs.

(3) *Third.* Identify the item on the figure and note the item number.

(4) *Fourth.* Refer to the Repair Parts List for the figure to find the part number for the item number noted on the figure.

(5) *Fifth.* Refer to the Part Number Index to find the NSN, if assigned.

b. *When National Stock Number or Part Number is Known.*

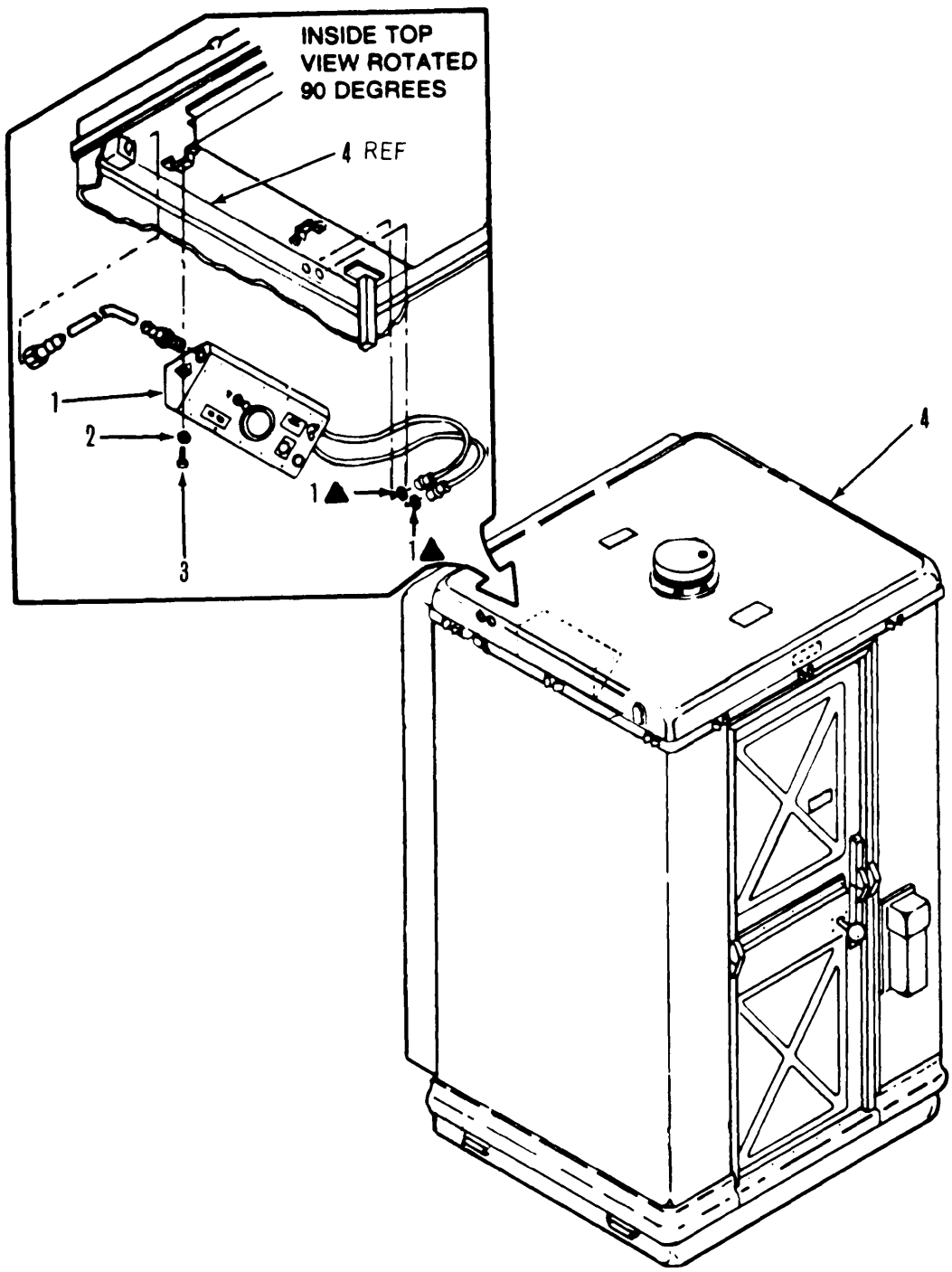
(1) *First.* Using the Index of National Stock Numbers and Part Numbers, find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence [see B-4.a.(1)]. The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see B-4.b.). Both indexes cross-reference you to the illustration figure and item number of the item you are looking for.

(2) *Second.* After finding the figure and item number, verify that the item is the one you are looking for, then locate the item number in the repair parts list for the figure.

## C-7. ABBREVIATIONS.

(Not Applicable)

## Section II REPAIR PARTS LIST

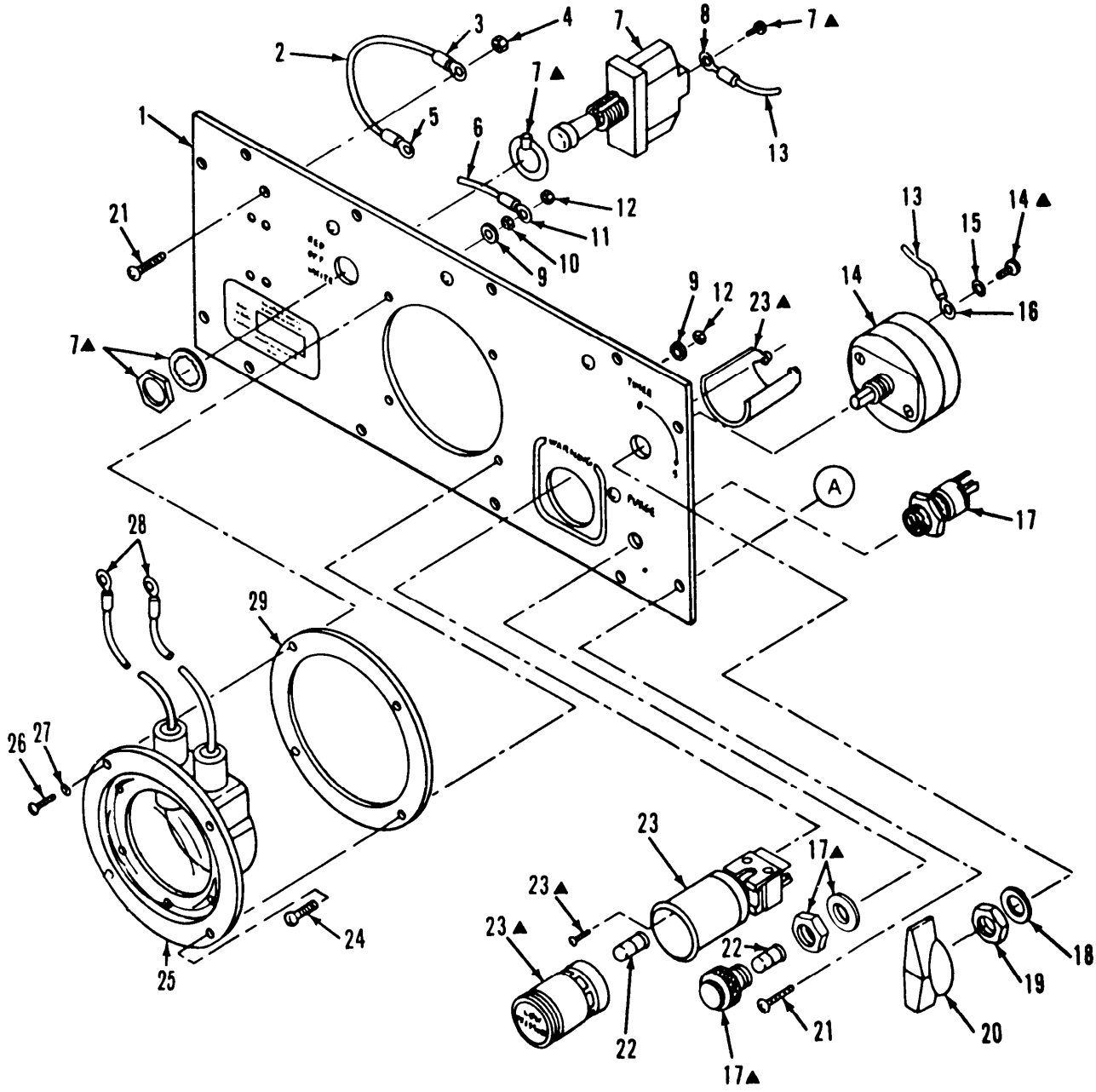



▲FURNISHED WITH BASIC ITEM

*Figure C-1. M10 Protective Entrance*

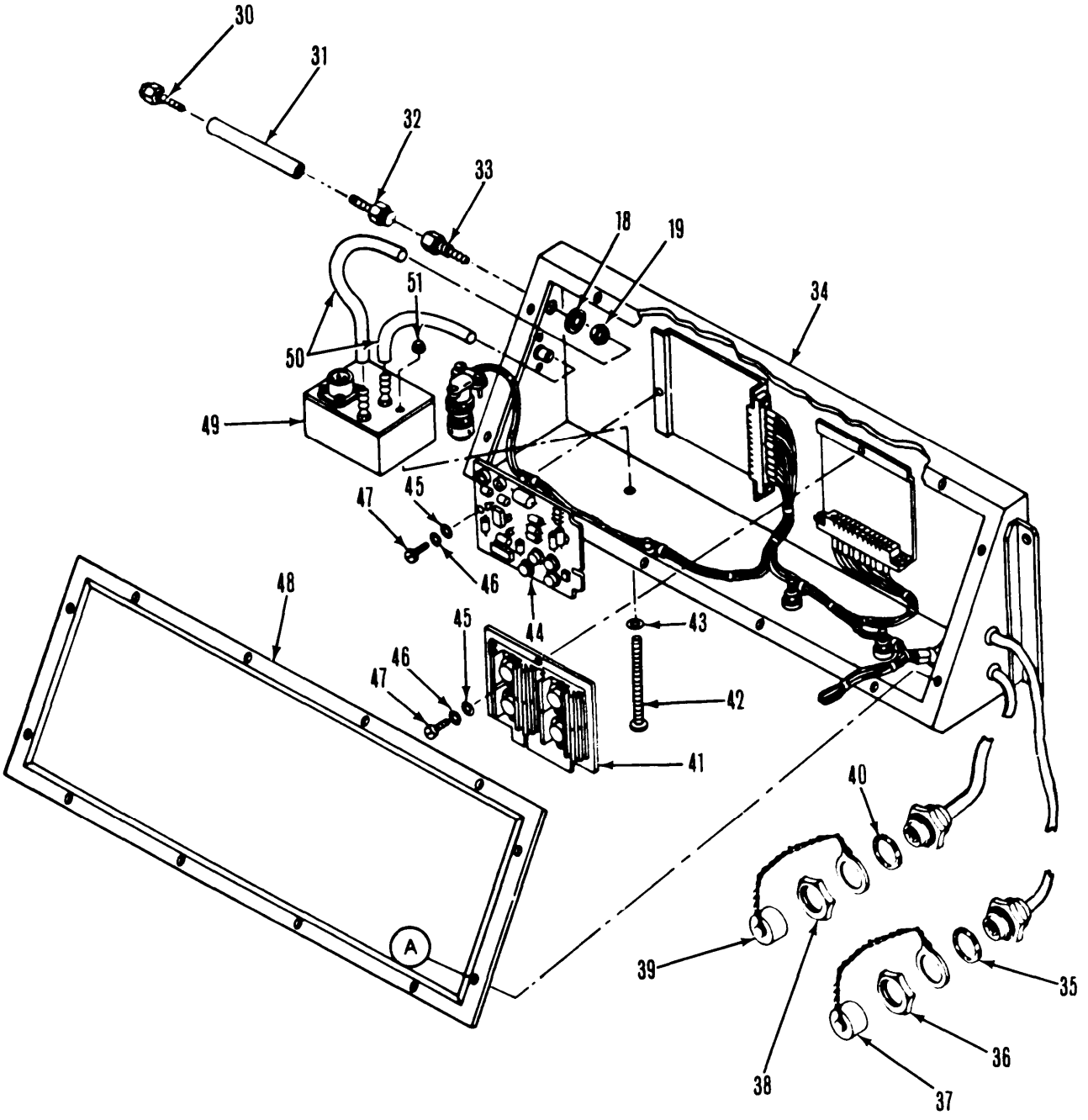
| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES(UOC) | (6) CITY |
|---|---|---|---|---|---|
| | | | | GROUP 01 M10 PROTECTIVE ENTRANCE | |
| | | | | E5-19-6201-40 | |
| | | | | FIG. C-1 M10 PROTECTIVE ENTRANCE | |
| 1 | PAOFF | 81361 | ES-19-6357 | CONTROL MODULE, PROTECTIVE ENTRANCE | 1 |
| 2 | PAOZZ | 96906 | MS35338-43 | WASHER, LOCK. . . . . | 3 |
| 3 | PAOZZ | 96906 | MS51849-6G | SCREW, MACHINE. . . . . | 3 |
| 4 | PAOOO | 81361 | E5-19-6201-60 | ENTRANCE, PROTECTIVE. . . . . | 1 |

END OF FIGURE




▲ FURNISHED WITH BASIC ITEM

*Figure C-2. Protective Entrance Control Module (Sheet 1 of 2)*




▲FURNISHED WITH BASIC ITEM

*Figure C-2. Protective Entrance Control Module (Sheet 2 of 2)*

| (1) ITEM NO | (2) SNR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 0101 PROTECTIVE ENTRANCE CONTROL MODULE E5-19-6357 | |
| | | | | FIG. C-2 PROTECTIVE ENTRANCE CONTROL MODULE | |
| 20 | PAOZZ | 79919 | K35B1 | KNOB. . . . . | 1 |
| 22 | PAOZZ | 81348 | W-L-C0111/7 | LAMP, INCANDESCENT. . . . . | 3 |
| 30 | PAOZZ | 30327 | KF03-04RV | ADAPTER, STRAIGHT, PIPE TO HOSE. . . . . | 1 |
| 31 | MOOZZ | 81361 | E5-19-6357-111 | HOSE, NONMETALLIC MAKE FROM HOSE, P/N C403. . . . . | 1 |
| 32 | PAOZZ | 30327 | KF03-021PS | ADAPTER, STRAIGHT, PIPE TO HOSE. . . . . | 1 |
| 35 | PAOZZ | 96906 | MS29513-024 | PACKING, PREFORMED. . . . . | 1 |
| 36 | PAOZZ | 96906 | MS3186-43 | NUT, PLAIN, HEXAGON. . . . . | 1 |
| 37 | PAOZZ | 96906 | MS3181-14N | COVER, ELECTRICAL CONNECTOR. . . . . | 1 |
| 36 | PAOZZ | 96906 | MS3186-34 | NUT, PLAIN, HEXAGON. . . . . | 1 |
| 39 | PAOZZ | 96906 | MS3181-10N | COVER, ELECTRICAL CONNECTOR. . . . . | 1 |
| 40 | PAOZZ | 96506 | MS29513-019 | PACKING, PREFORMED. . . . . | 1 |

END OF FIGURE

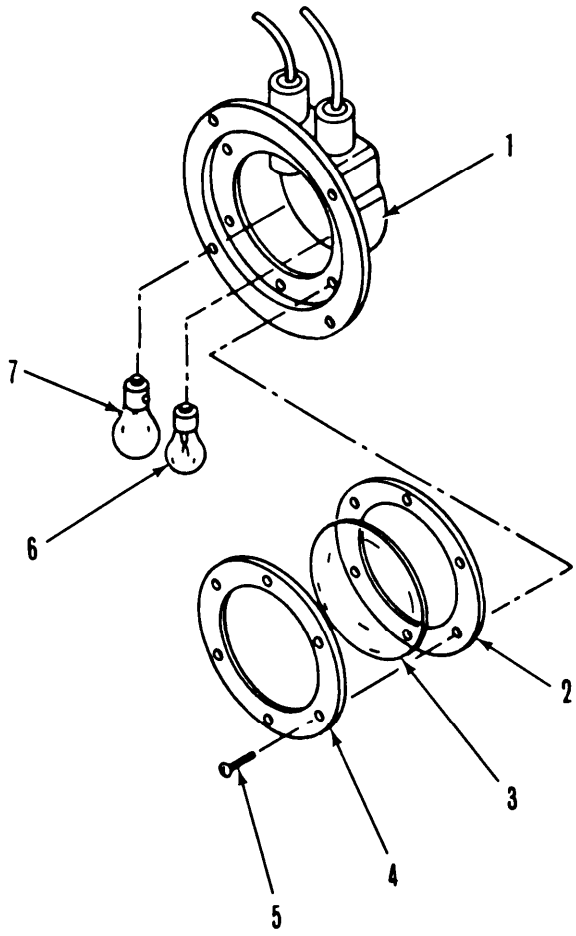
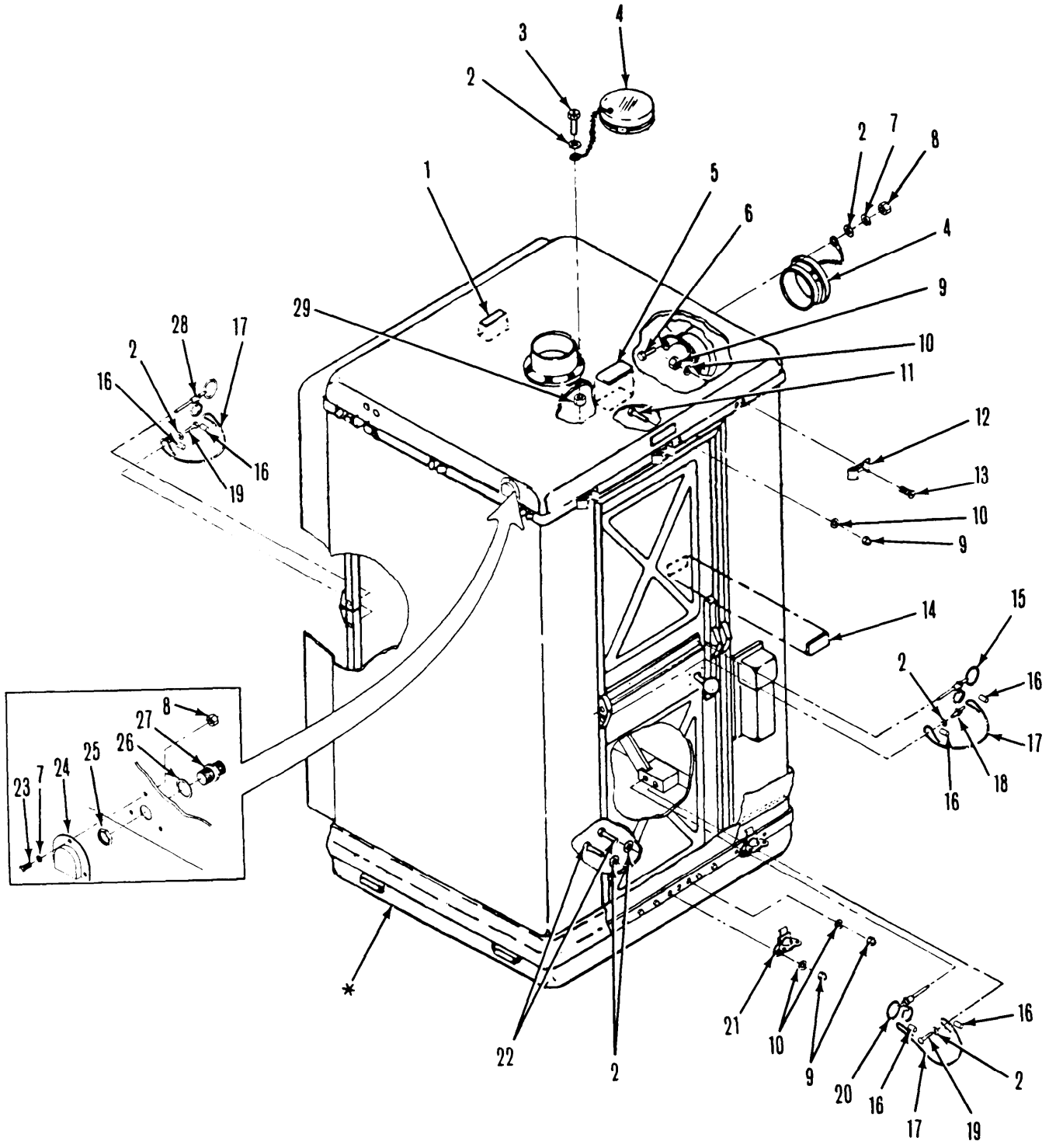



*Figure C-3. Dome Light*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 010101 DOME LIGHT MS25358-8<br>FIG. C-3 DOME LIGHT | |
| 2 | PAOZZ | 96906 | MS25358-6 | GASKET. . . . . | 1 |
| 3 | PAOZZ | 96906 | MS25358-4 | LENS, LIGHT. . . . . | 1 |
| 4 | XAOZZ | 96906 | MS25358-5 | RETAINER, LIGHT. . . . . | 1 |
| 5 | PAOZZ | 96906 | MS35206-217 | SCREW, MACHINE. . . . . | 6 |
| 5 | PAOZZ | 96906 | MS35478-307 | LAMP, INCANDESCENT. . . . . | 1 |
| 7 | PAOZZ | 96906 | MS25235R311 | LAMP, INCANDESCENT. . . . . | 1 |

END OF FIGURE




* NO FURTHER DISASSEMBLY AUTHORIZED

*Figure C-4. Protective Entrance*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 0102 PROTECTIVE ENTRANCE | |
| | | | | E5-19-6201-60 | |
| | | | | FIG. C-4 PROTECTIVE ENTRANCE | |
| 1 | PAOZZ | 81361 | 5-19-6657 | PLATE, INSTRUCTION. . . . . | 1 |
| 2 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 32 |
| 3 | PAOZZ | 96906 | MS51849-56 | SCREW, MACHINE. . . . . | 1 |
| 4 | PAOOO | 81361 | C5-19-6145 | CAP, PROTECTIVE, DUST AND MOISTURE SEAL. . . . . | 2 |
| 5 | PAOZZ | 81361 | C5-19-6175 | PLATE, INSTRUCTION. . . . . | 1 |
| 6 | PAOZZ | 96906 | MS51849-54 | SCREW, MACHINE. . . . . | 1 |
| 7 | PAO7Z | 96906 | MS35338-42 | WASHER, LOCK. . . . . | 5 |
| 8 | PAOZZ | 96906 | MS24679-2 | NUT, PLAIN, CAP. . . . . | 5 |
| 9 | PAOZZ | 96906 | MS24679-63 | NUT, PLAIN, CAP. . . . . | 56 |
| 10 | PAOZZ | 96906 | M35338-43 | WASHER, LOCK. . . . . | 56 |
| 11 | PAOZZ | 96906 | MS51849-66 | SCREW, MACHINE. . . . . | 8 |
| 12 | PAOZZ | 81361 | C5-19-6191 | KEEPER PLATE. . . . . | 12 |
| 13 | PAOZZ | 96906 | MS24693S275 | SCREW, MACHING.. . . . . | 24 |
| 14 | PAOZZ | 81361 | B5-19-6238 | PLATE, INSTRUCTION. . . . . | 1 |
| 15 | PAOzz | 96306 | MS17990C413 | PIN, QUICK RELEASE. . . . . | 2 |
| 16 | PAOZZ | 99862 | CL2F | FERRULE, WIRE ROPE. . . . . | 12 |
| 17 | MOOZZ | 99862 | CL-2-C-8.0 | CABLE, NYLON MAKE FROM CABLE, P/N CL2C. . . . . | 6 |
| 18 | PAOZZ | 96906 | MS24662-152 | RIVET, BLIND. . . . . | 4 |
| 19 | PAOZZ | 96906 | MS51849-55 | SCREW, MACHINE. . . . . | 2 |
| 20 | PAOZZ | 96906 | MS17990C406 | PIN, QUICK RELEASE. . . . . | 2 |
| 21 | PAOZZ | 81361 | C5-19-6190 | CATCH, CLAMPING. . . . . | 12 |
| 22 | PAOZZ | 96906 | MS51849-67 | SCREW, MACHINE. . . . . | 24 |
| 23 | PAOZZ | 96906 | MS51849-53 | SCREW, MACHINE. . . . . | 3 |
| 24 | PAOZZ | 81361 | C5-19-6236 | COVER, PROTECTIVE, TUBING CONNECTION | 1 |
| 25 | PAOzz | 96966 | MS35691-32 | NUT, PLAIN, HEXAGON. . . . . | 1 |
| 26 | PAOZZ | 88044 | AN960KD716L | WASHER, FLAT. . . . . | 1 |
| 27 | PAOZZ | 81361 | C5-19-6654 | ADAPTER, STRAIGHT, PIPE TO TUBE. . . . . | 1 |
| 28 | PAOZZ | 96906 | MS17990C416 | PIN, QUICK RELEASE. . . . . | 2 |
| 29 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 2 |

END OF FIGURE

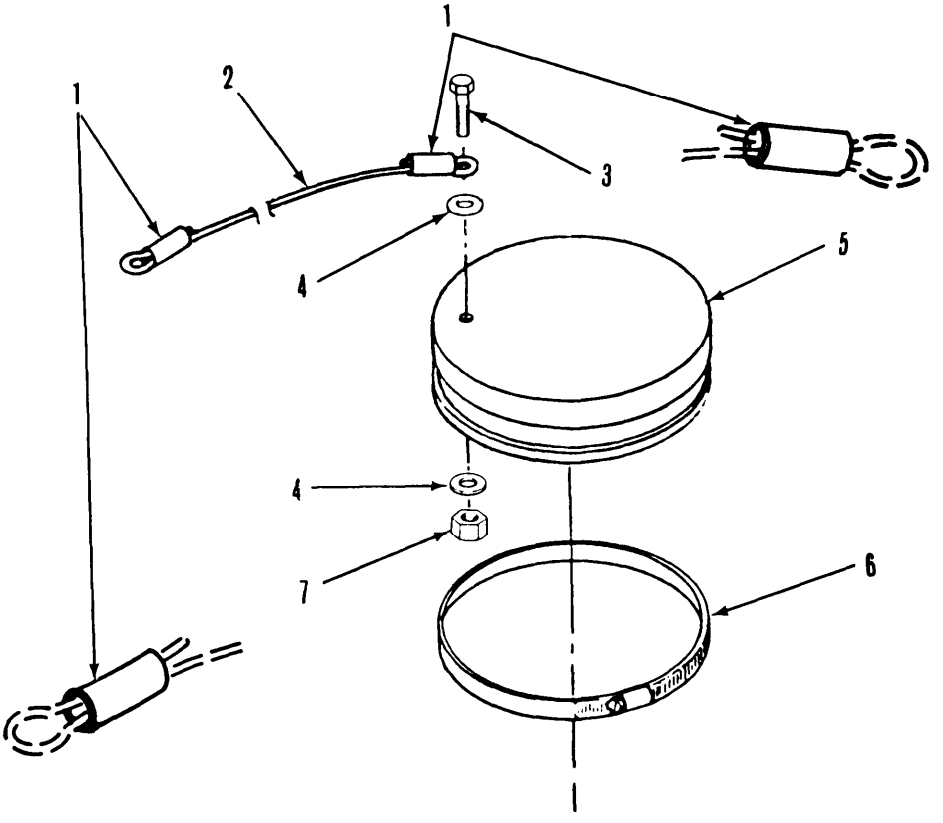



*Figure C-5. Protective Cap*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 010201 PROTECTIVE CAP | |
| | | | | C5-19-6145 | |
| | | | | FIG. C-5 PROTECTIVE CAP | |
| 1 | PAOZZ | 99862 | CL2F | FERRULE, WIRE ROPE. . . . . | 2 |
| 2 | MOOZZ | 99862 | CL-2-C-8.0 | CABLE, MAKE FROM CABLE, P/N CL2C. . . | 1 |
| 3 | PAOZZ | 96906 | MS51849-55 | SCREW, MACHINE. . . . . | 1 |
| 4 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 2 |
| 5 | XAOZZ | 81361 | C5-19-6309 | CAP, RUBBER. . . . . | 1 |
| 6 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 1 |
| 7 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 1 |

END OF FIGURE

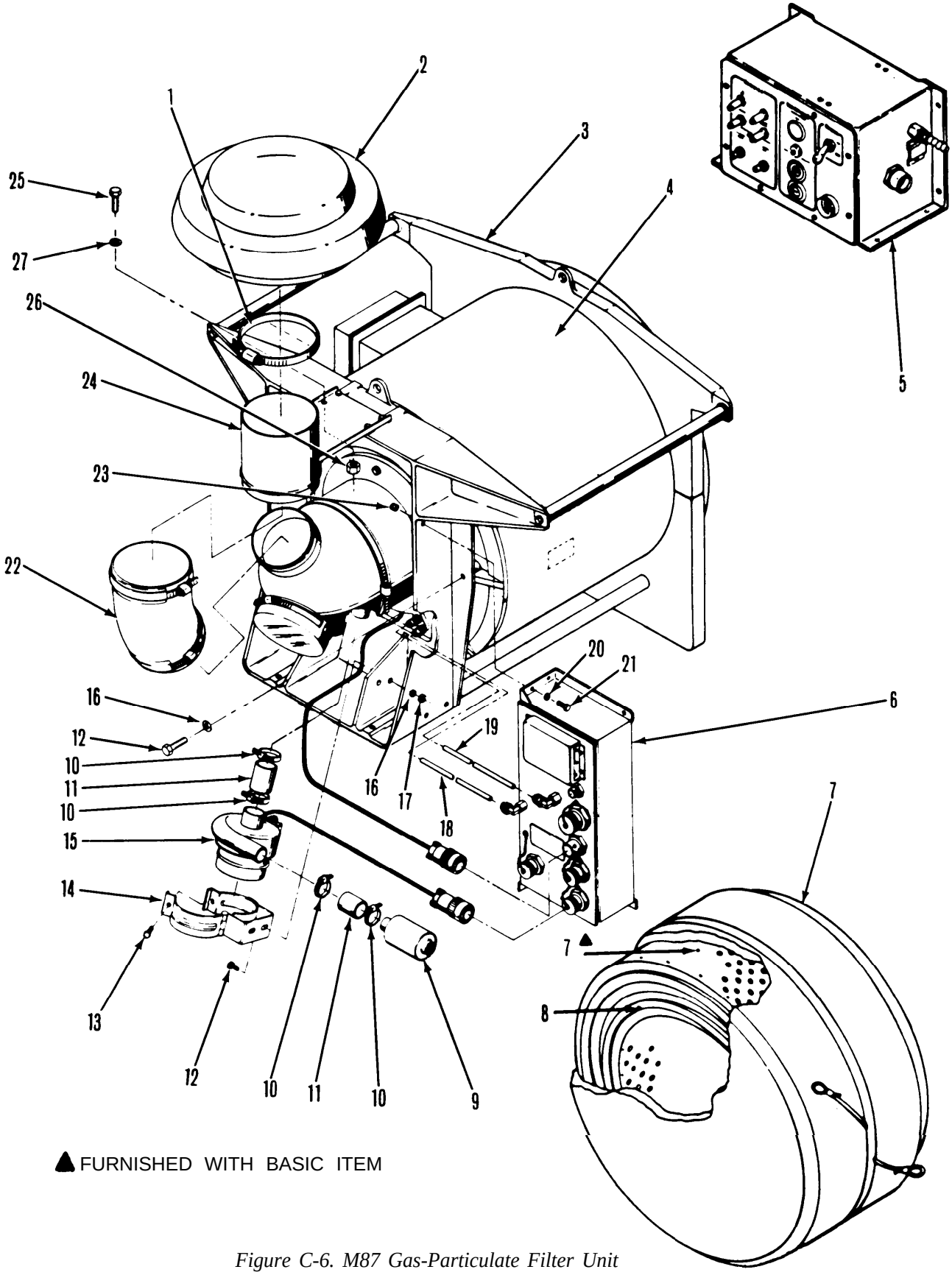



*Figure C-6. M87 Gas-Particulate Filter Unit*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 02 M87 GAS PARTICULATE FILTER UNIT E5-19-8908 | |
| | | | | FIG. C-6 M87 GAS PARTICULATE FILTER UNIT | |
| 1 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 1 |
| 2 | PBOZZ | 81361 | C5-19-6356 | CAP, HOUSING AIR CLEANER. . . . . | 1 |
| 3 | PAOZZ | 81361 | D5-19-6290-20 | STAND. FILTER UNIT . . . . . | 1 |
| 4 | XDOOO | 81361 | E5-19-6308-10 | HOUSING UNIT, FAN-VALVE-COLLECTOR. . | 1 |
| 5 | PAOFF | 81361 | E5-19-6376 | CONTROL MODULE UNIT. . . . . | 1 |
| 6 | PAOFF | 81361 | E5-19-6387 | POWER DISTRIBUTION UNIT . . . . . | 1 |
| 7 | PAOZA | 81361 | 5-19-6718 | FILTER SET, GAS PARTICULATE. . . . . | 2 |
| 8 | PAOZA | 81361 | D5-19-6262 | FILTER, PARTICULATE. . . . . | 2 |
| 9 | PAOZZ | 81361 | C5-19-6345 | MUFFLER, EXHAUST. . . . . | 1 |
| 10 | PAOZZ | 96906 | MS35842-12 | CLAMP, HOSE. . . . . | 4 |
| 11 | MOOZZ | 81361 | B5-19-6346 | SLEEVE, EXHAUST MAKE FROM HOSE, P/N MILH6000/NSN 4720-00-278-1111 . . . . . | 2 |
| 12 | PAOZZ | 96906 | MS35308-360 | SCREW, CAP, HEXAGON HEAD. . . . . | 10 |
| 13 | PAOZZ | 96906 | MS35307-336 | BOLT, MACHINE. . . . . | 1 |
| 14 | XDOZZ | 81361 | C5-191-6350 | BRACKET ASSEMBLY. . . . . | 1 |
| 15 | PAOZZ | 81351 | E5-19-6354 | BLOWER, DUST EXHAUST. . . . . | 1 |
| 16 | PAOZZ | 96906 | MS27183-14 | WASHER, FLAT. . . . . | 10 |
| 17 | PAOZZ | 96906 | MS21044N6 | NUT. SELF-LOCKING, HEXAGON. . . . . | 2 |
| 18 | MOOZZ | 81361 | PL5-19-8908-29 | TUBING, NONMETALLIC MAKE FROM TUBING, P/N 44P GREEN. . . . . | 1 |
| 19 | MOOZZ | 81361 | PL5-19-8908-28 | TUBING, NONMETALLIC MAKE FROM TUBING, P/N 44P RED. . . . . | 1 |
| 20 | PAOZZ | 96906 | MS27183-12 | WASHER, FLAT. . . . . | 4 |
| 21 | PAOZZ | 96906 | MS35308-337 | BOLT, MACHINE. . . . . | 4 |
| 22 | PAOZZ | 81361 | C5-19-6386 | HOSE, AIRDUCT. . . . . | 1 |
| 23 | PAOZZ | 96906 | MS21044N5 | NUT, SELF-LOCKING, HEXAGON. . . . . | 4 |
| 24 | PDOZZ | 81361 | C5-19-G294 | COLLAR, SHAFT. . . . . | 1 |
| 25 | PAOZZ | 96906 | MS9122-11 | SCREW, MACHINE. . . . . | 4 |
| 26 | PAOZZ | 96906 | MS21044N3 | NUT, SELF-LOCKING, HEXAGON. . . . . | 4 |
| 27 | PAOZZ | 96206 | MS27163-8 | WASHER, FLAT. . . . . | 4 |

END OF FIGURE

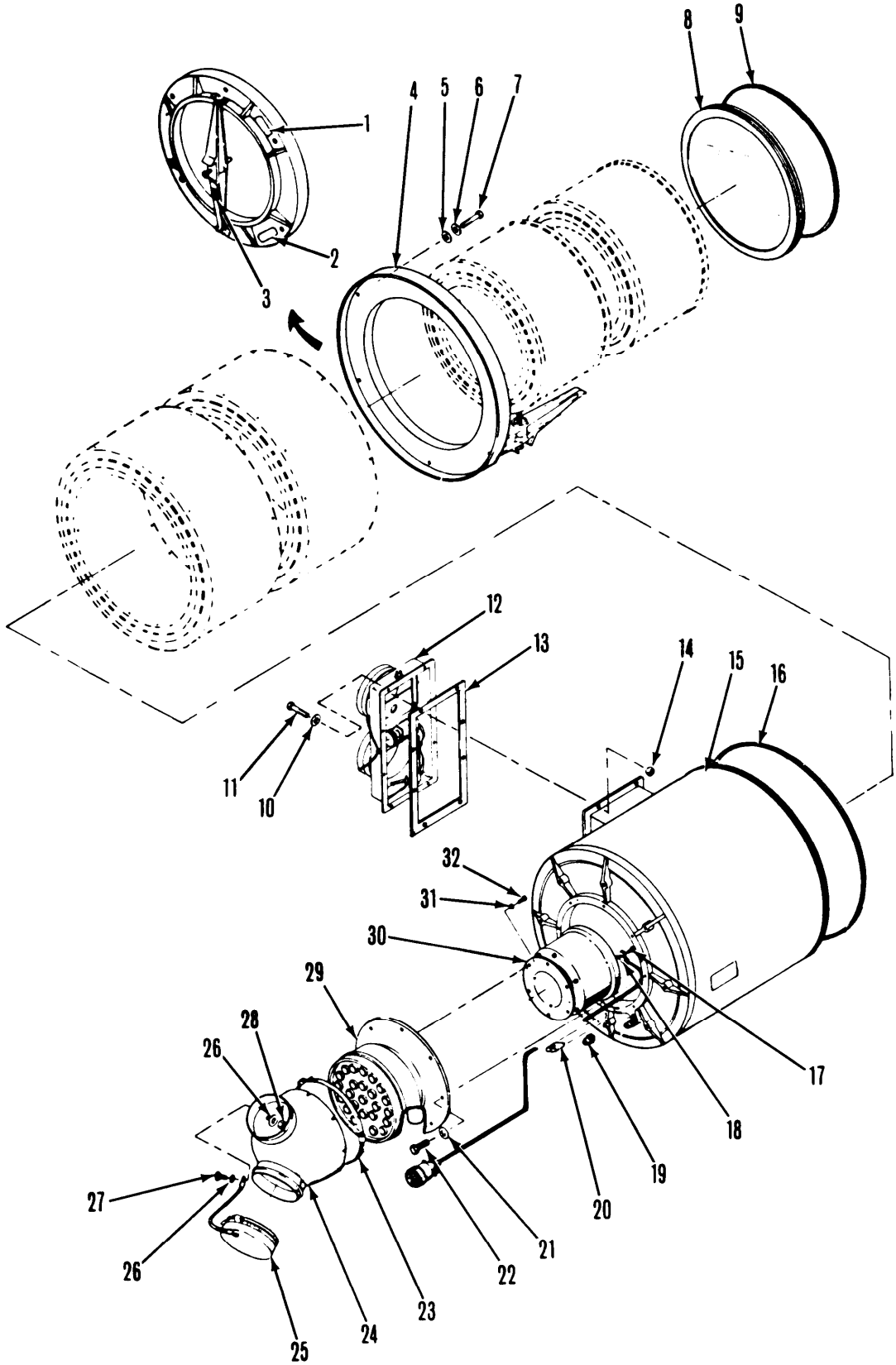



*Figure C-7. Housing Unit*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UUC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 0201 HOUSING UNIT | |
| | | | | D5-19-6308-10 | |
| | | | | FIG. C-7 HOUSING UNIT | |
| 1 | PAOZZ | 81361 | 85-19-6134 | PLATE, INSTRUCTION. . . . . | 1 |
| 2 | PAOZZ | 81361 | C5-19-6135 | PLATE, INSTRUCTION. . . . . | 1 |
| 3 | PAOZZ | 81361 | B5-19-6133 | PLATE, INSTRUCTION. . . . . | 1 |
| 4 | PBOZZ | 81361 | E5-19-6128 | FRAME, ACCESS HOLE. . . . . | 1 |
| 5 | PAOZZ | 96906 | MS27183-14 | WASHER, FLAT. . . . . | 6 |
| 6 | PAOZZ | 88044 | AN960PD616 | WASHER, FLAT. . . . . | 6 |
| 7 | PAOZZ | 96906 | MS90727-64 | SCREW, CAP, HEXAGON HEAD. . . . . | 6 |
| 8 | PBOZZ | 81361 | D5-19-6260 | COVER, ACCESS. . . . . | 1 |
| 9 | PAOZZ | 81361 | C5-19-5687-1 | SEAL, NONMETALLIC SPECIAL SHAPED SECTION. . . . . | 1 |
| 10 | PAOZZ | 96906 | MS27183-42 | WASHER, FLAT. . . . . | 8 |
| 11 | PAOZZ | 80205 | NAS1096-3-12 | SCREW, MACHINE . . . . . | 8 |
| 12 | PAOFF | 81361 | E5-19-6136 | VALVE, AIRFLOW . . . . . | 1 |
| 13 | PAOZZ | 81361 | 5-19-6348 | GASKET. . . . . | 1 |
| 14 | PAOZZ | 96906 | MS21044N3 | NUT, SELF-LOCKING . . . . . | 8 |
| 15 | XDOZZ | 81361 | E5-19-6121 | HOUSING, GAS-PARTICULATE. . . . . | 1 |
| 16 | PAOZZ | 81361 | C5-19-5687-2 | SEAL, NONMETALLIC SPECIAL SHAPED SECTION. . . . . | 1 |
| 17 | PAOZZ | 96906 | MS51849-85 | SCREW, MACHINE. . . . . | 1 |
| 18 | PAOZZ | 96906 | MS9352-06 | CLAMP, LOOP. . . . . | 1 |
| 19 | PAOZZ | 30327 | 261P1-4 | NUT, TUBE COUPLING. . . . . | 2 |
| 20 | PAOZZ | 81361 | B5-19-6347 | BUSHING, RUBBER. . . . . | 1 |
| 21 | PAOZZ | 96906 | MS27183-12 | WASHER, FLAT. . . . . | 8 |
| 22 | PAOZZ | 95906 | MS90727-33 | SCREW, CAP, HEXAGON HEAD. . . . . | 8 |
| 23 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 1 |
| 24 | XDOZZ | 81361 | D5-19-6351 | TRANSITION, INLET. . . . . | 1 |
| 25 | PAOOO | 81361 | C5-19-6145 | CAP, PROTECTIVE, DUST AND MOISTURE SEAL. . . . . | 1 |
| 26 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 2 |
| 27 | PAOZZ | 96906 | MS51849-55 | SCREW, MACHINE. . . . . | 1 |
| 2$ | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 1 |
| 29 | XDOZZ | 81361 | E5-19-6153 | DUST COLLECTOR . . . . . | 1 |
| 30 | PAODD | 81361 | E5-19-6317-10 | FAN, VANEAXIAL. . . . . | 1 |
| 31 | PAOZZ | 96906 | MS27183-10 | WASHER, FLAT. . . . . | 6 |
| 32 | PAOZZ | 96906 | MS90727-6 | SCREW, CAP, HEXAGON HEAD. . . . . | 6 |

END OF FIGURE

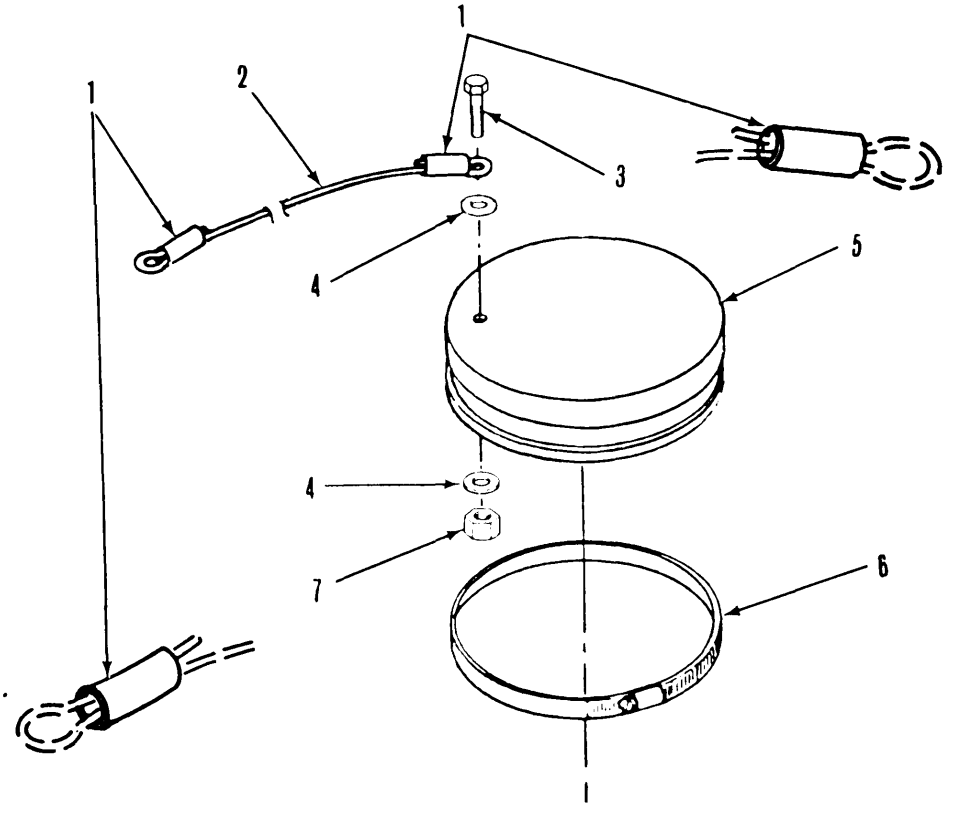



*Figure C-8. Protective Cap*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 020101 PROTECTIVE CAP | |
| | | | | C5-19-6145 | |
| | | | | FIG, C-8 PROTECTIVE CAP | |
| 1 | PAOZZ | 99862 | CL2F | FERRULE, WIRE ROPE. . . . . | 2 |
| 2 | MOOZZ | 99862 | CL-2-C-8.0 | CABLE, NYLON, MAKE FROM CABLE, P/N CL2C. . . . . | 1 |
| 3 | PAOZZ | 96906 | MS51843-55 | SCREW, MACHINE. . . . . | 1 |
| 4 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 2 |
| 5 | XAOZZ | 81361 | C5-19-6309 | CAP, RUBBER. . . . . | 1 |
| 6 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 1 |
| 7 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 1 |

END OF FIGURE

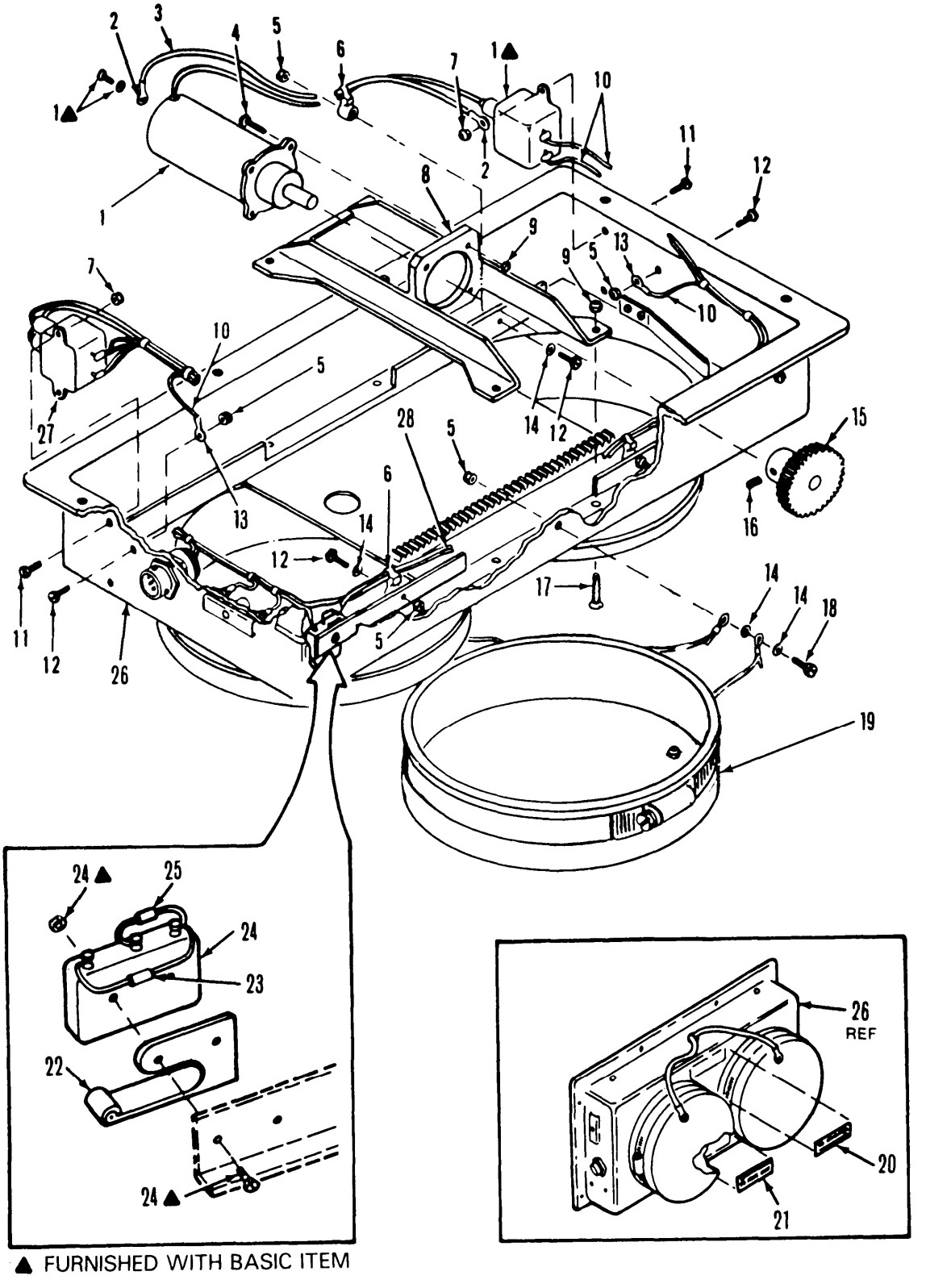



*Figure C-9. Airflow Valve*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 020103 AIRFLOW VALVE<br>E5-19-6136<br>FIG, C-9 AIRFLOW VALVE | |
| 5 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 6 |
| 12 | PAOZZ | 96906 | MS51849-55 | SCREW, MACHINE. . . . . | 5 |
| 14 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 5 |
| 18 | PAOZZ | 96906 | MS51849-56 | SCREW, MACHINE. . . . . | 1 |
| 19 | PAOOO | 81361 | C5-19-6145 | CAP, PROTECTIVE, DUST AND MOISTURE SEAL. . . . . | 2 |
| 20 | PAOZZ | 81361 | B5-19-6147 | PLATE, INSTRUCTION. . . . . | 1 |
| 21 | PAOZZ | 81361 | B5-19-6148 | PLATE, INSTRUCTION. . . . . | 1 |

END OF FIGURE

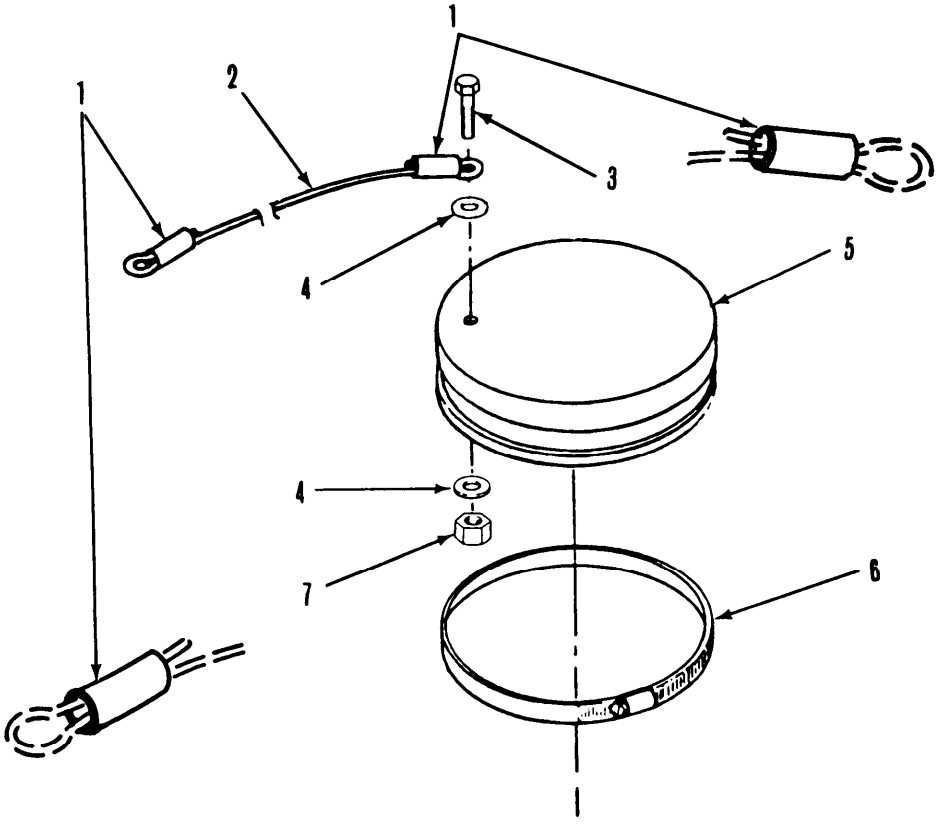



*Figure C-10. Protective Cap*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 02010301 PROTECTIVE CAP<br>C5-19-6145<br>FIG, C-10 PROTECTIVE CAP | |
| 1 | PAOZZ | 99862 | CL2F | FERRULE, WIRE ROPE. . . . . | 2 |
| 2 | MOOZZ | 99862 | CL-2-C-8.0 | CABLE, NYLON, MAKE FROM CABLE, P/N CL2C. . . . . | 1 |
| 3 | PAOZZ | 96906 | MS51849-55 | SCREW, MACHINE. . . . . | 1 |
| 4 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 2 |
| 5 | XAOZZ | 81361 | C5-19-6309 | CAP, RUBBER. . . . . | 1 |
| 6 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 1 |
| 7 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 1 |

END OF FIGURE

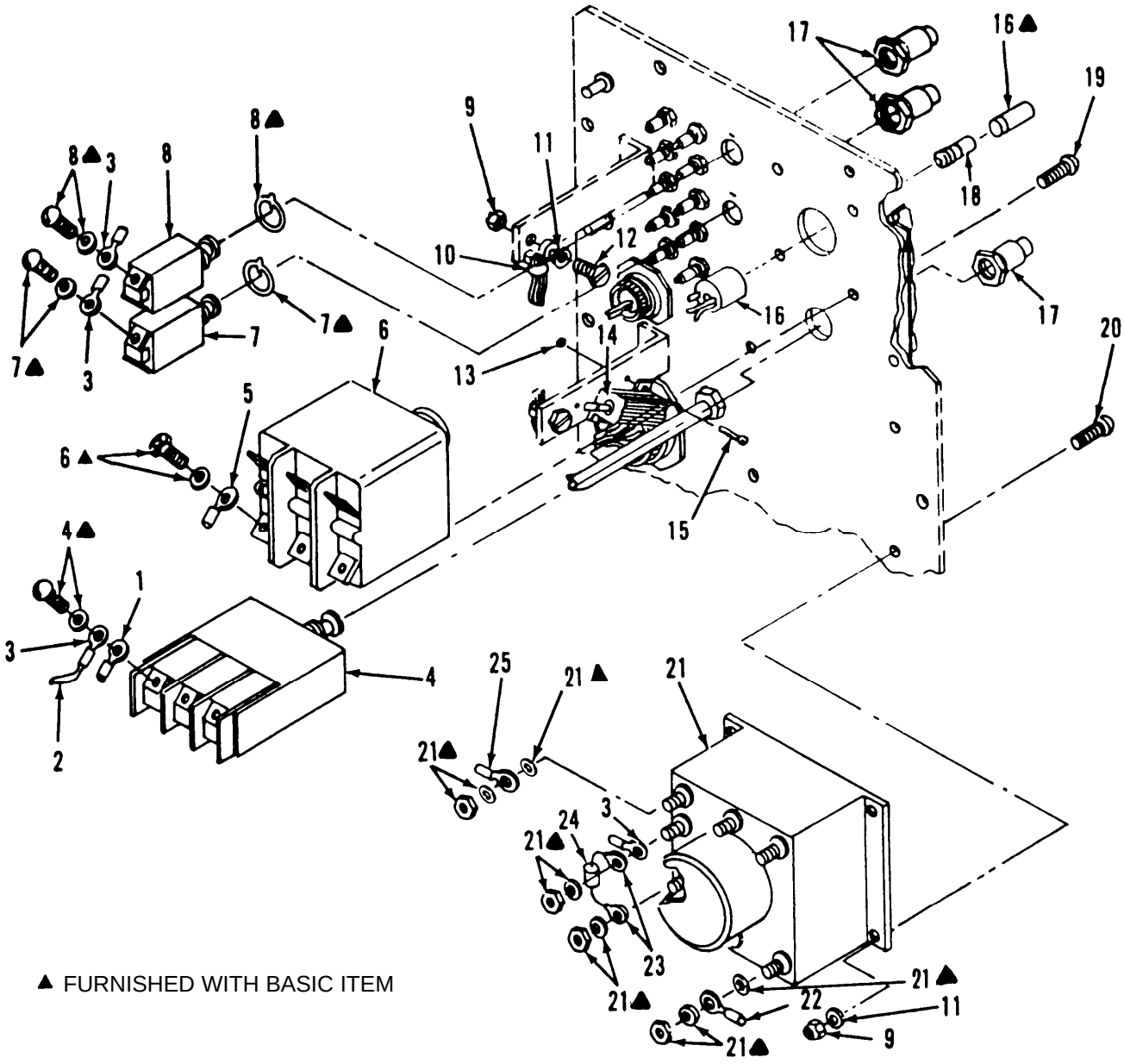



*Figure C-11. Power Distribution Panel (Sheet 1 of 3)*

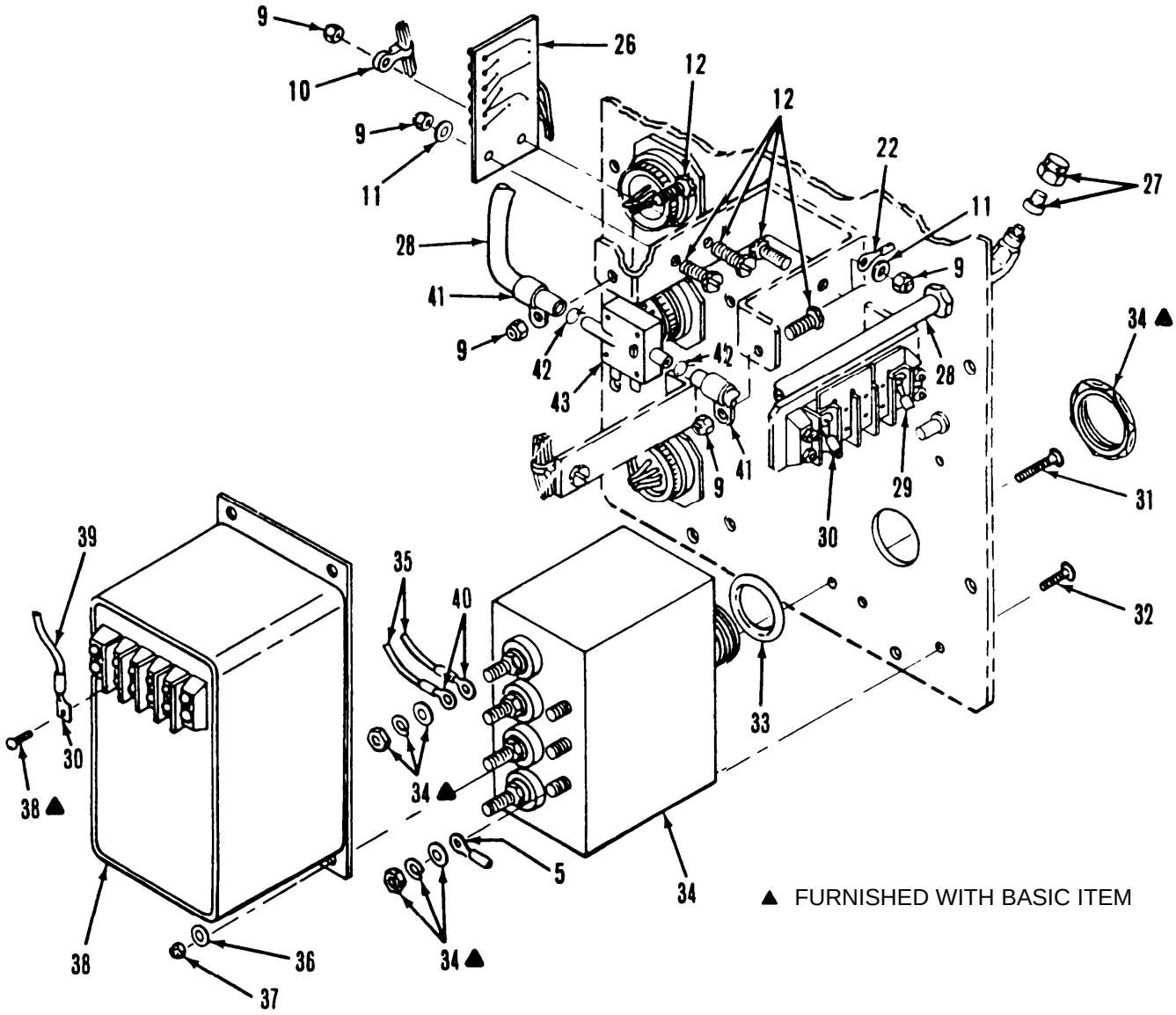



*Figure C-11. Power Distribution Panel (Sheet 2 of 3)*

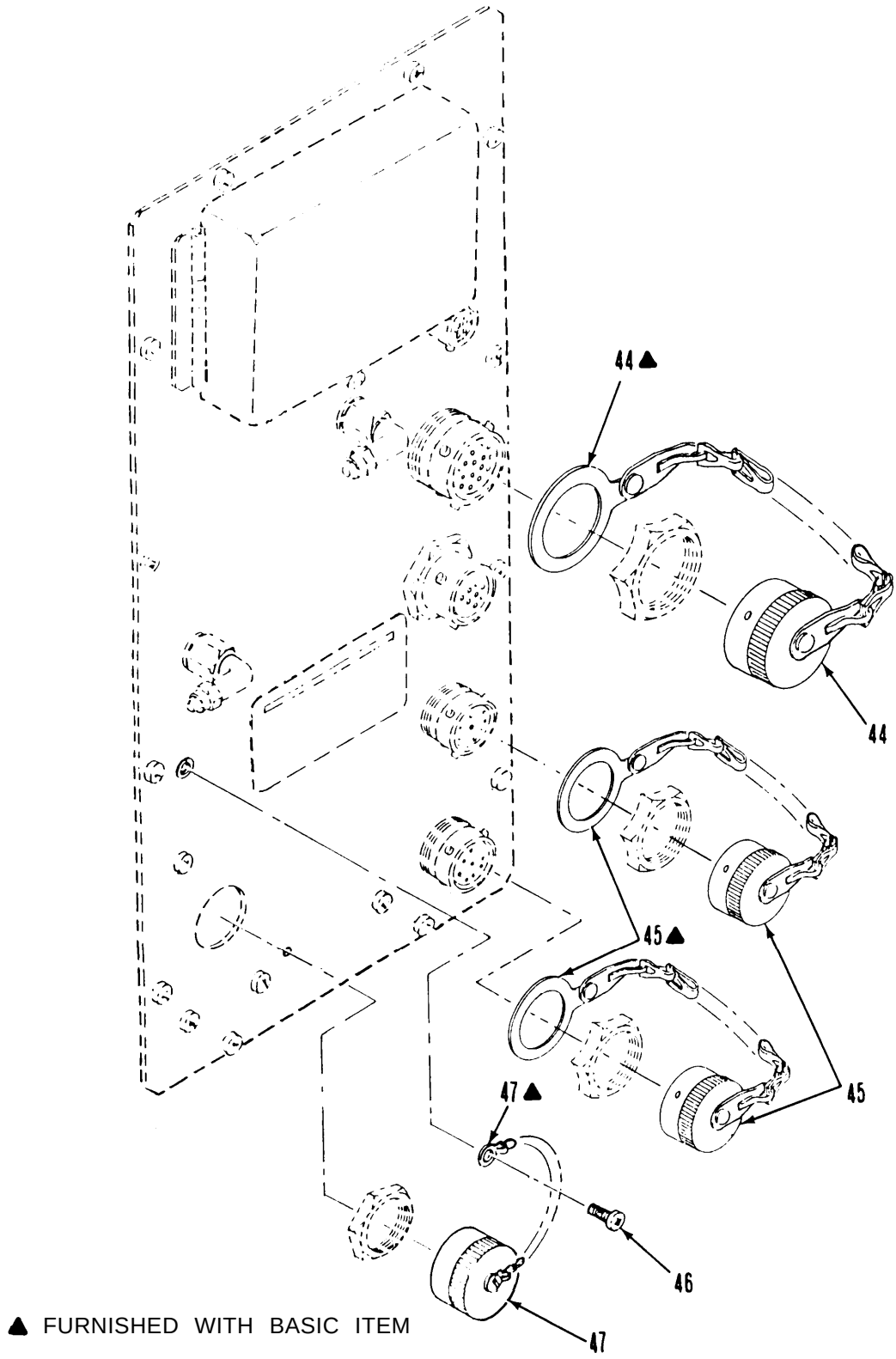



*Figure C-11. Power Distribution Panel (Sheet 3 of 3)*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 020201 POWER DISTRIBUTION PANEL E5-19-6391 FIG. C-11 POWER DISTRIBUTION PANEL | |
| 18 | PAOZZ | 81349 | M15098/11-001 | LAMP, GLOW. . . . . | 1 |
| 27 | PAOZZ | 30327 | 261P1-4 | NUT, TUBE COUPLING. . . . . | 2 |
| 44 | PAOZZ | 96906 | MS3181-20N | COVER, ELECTRICAL CONNECTOR. . . . . | 1 |
| 45 | PAOZZ | 96906 | MS3181-14N | COVER, ELECTRICAL CONNECTOR. . . . . | 2 |
| 46 | PAOZZ | 96906 | MS35206-229 | SCREW, MACHINE. . . . . | 1 |
| 47 | PAOZZ | 96906 | MS25043-18DA | COVER, ELECTRICAL CONNECTOR. . . . . | 1 |

END OF FIGURE

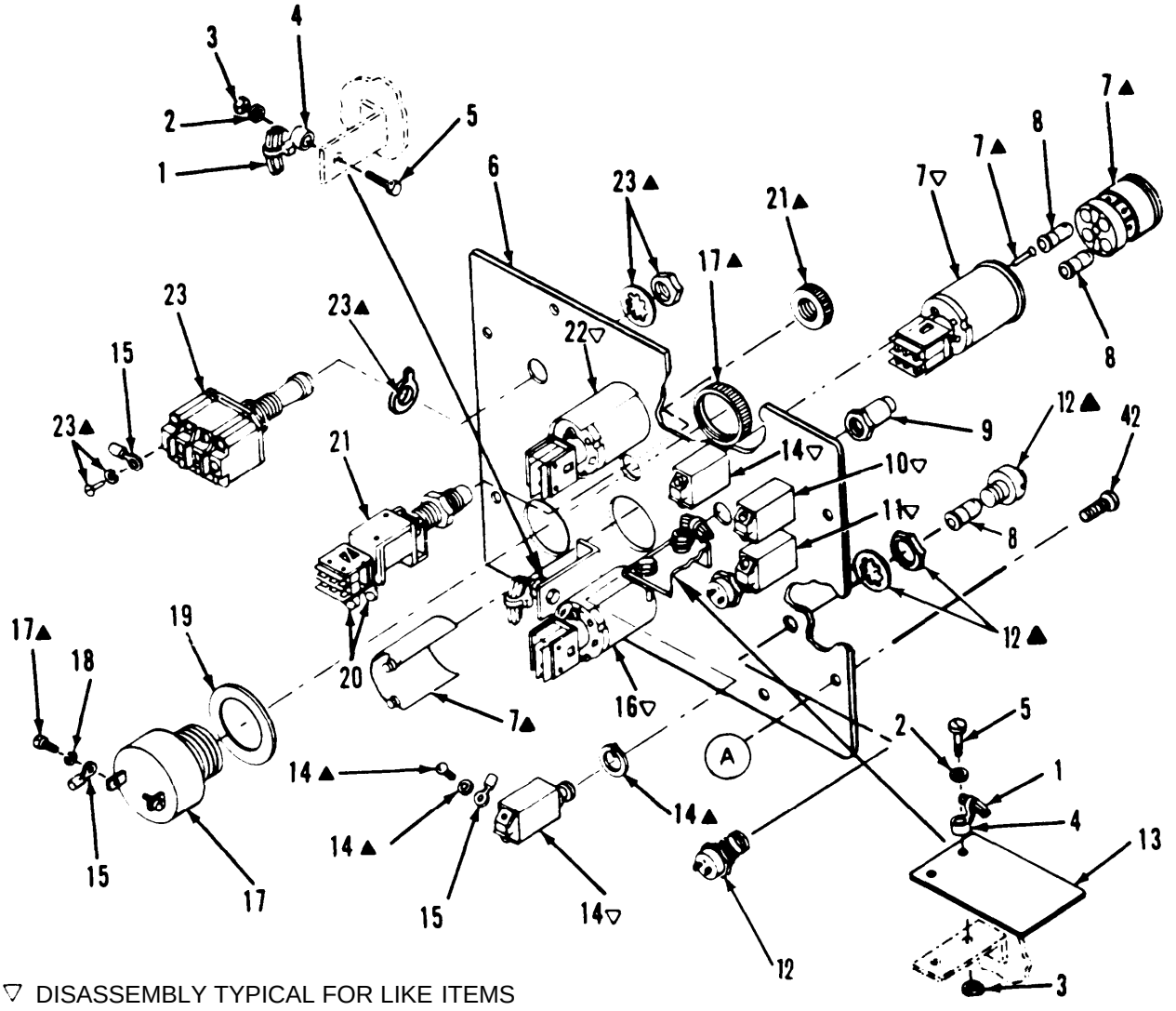
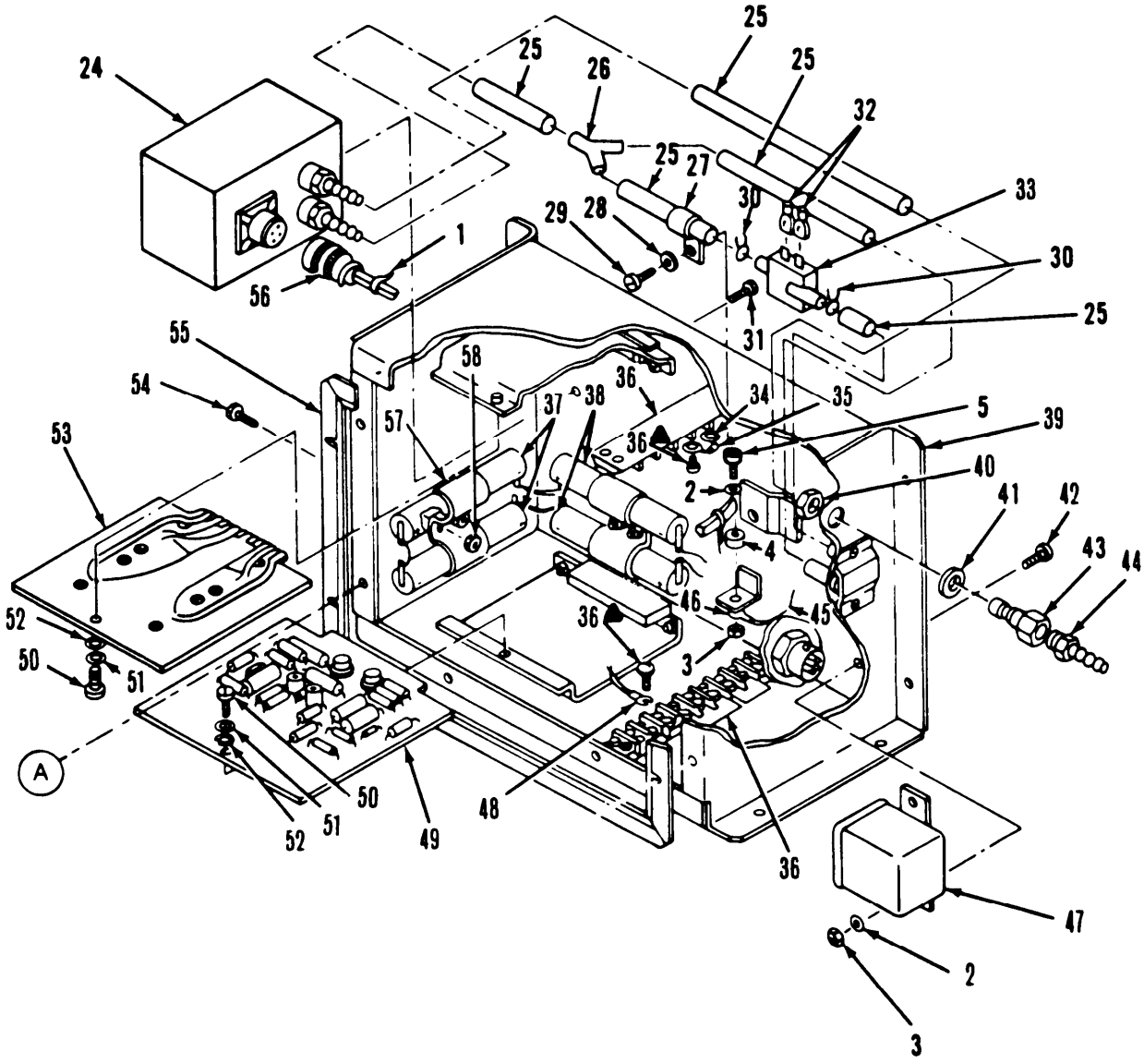



*Figure C-12. Compartment Control Module (Sheet 1 of 2)*




▲ FURNISHED WITH BASIC ITEM

*Figure C-12. Compartment Control Module (Sheet 2 of 2)*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 0203 COMPARTMENT CONTROL MODULE E5-19-6376 FIG. C-12 COMPARTMENT CONTROL MODULE | |
| 8 | PAOZZ | 81348 | W-L-00111/7 | LAMP, INCANDESCENT. . . . . | 8 |

END OF FIGURE

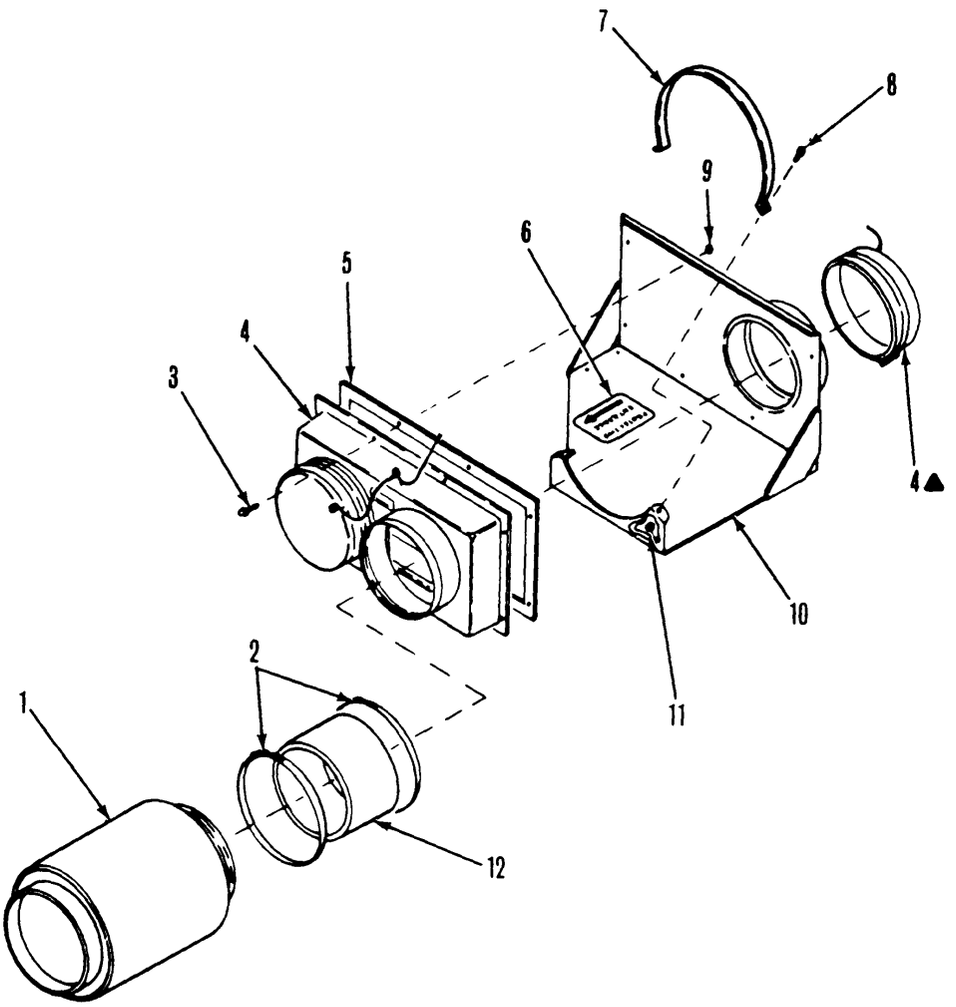



*Figure C-13. Airflow Valve and Silencer*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 03 AIRFLOW VALVE AND SILENCER | |
| | | | | D5-19-6628 | |
| | | | | FIG, C-13 AIRFLOW VALVE AND SILENCER | |
| 1 | PAOZZ | 81361 | C5-19-6627 | MUFFLER, INTAKE. . . . . | 1 |
| 2 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 2 |
| 3 | PAOZZ | 96906 | MS51849-66 | SCREW, MACHINE. . . . . | 8 |
| 4 | PAOFF | 81361 | E5-19-6136 | VALVE, AIRFLOW. . . . . | 1 |
| 5 | PAOZZ | 81361 | 5-19-6348 | GASKET. . . . . | 1 |
| 6 | PAOZZ | 81361 | B5-19-6656 | PLATE, INSTRUCTION. . . . . | 1 |
| 7 | XDOZZ | 81361 | C5-19-6626 | STRAP, RETAINING. . . . . | 1 |
| 8 | PAOZZ | 96906 | MS51849-56 | SCREW, MACHINE. . . . . | 2 |
| 9 | PAOZZ | 96906 | MS21044N3 | NUT, SELF-LOCKING, HEXAGON. . . . . | 8 |
| 10 | XDOZZ | 81361 | D5-19-6625 | BRACKET, MOUNTING. . . . . | 1 |
| 11 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 2 |
| 12 | PAOZZ | 81361 | B5-19-6716 | HOSE, NONMETALLIC. . . . . | 1 |

END OF FIGURE

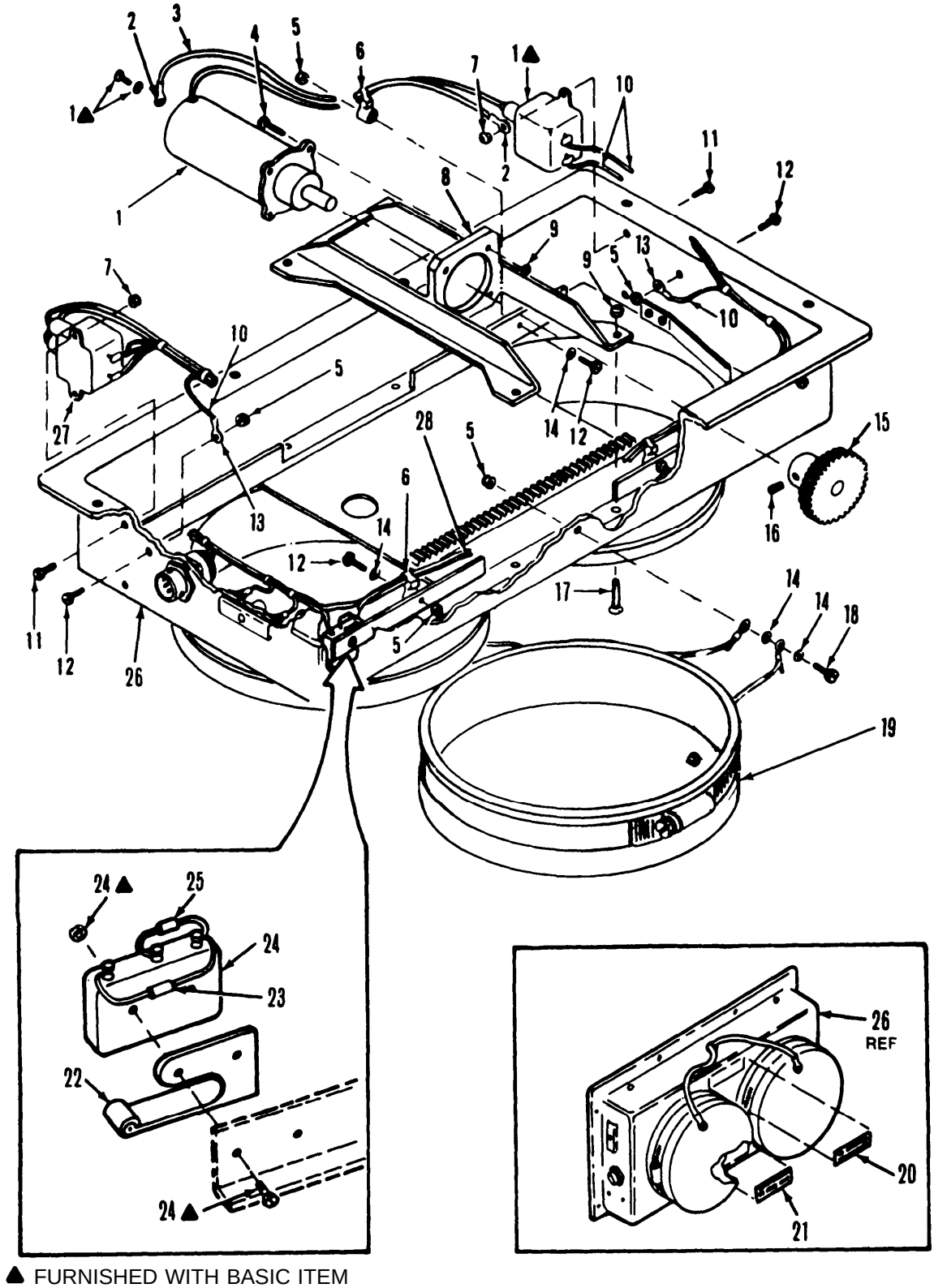



*Figure C-14. Airflow Valve*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | [5] DESCRIPTION AND USABLE UN CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 0301 AIRFLOW VALVE E5-19-6136 | |
| | | | | FIG. C-14 AIRFLOW VALVE | |
| 5 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 6 |
| 12 | PAOZZ | 96906 | MS51843-55 | SCREW, MACHINE. . . . . | 5 |
| 14 | PAOZZ | 96906 | MS27183-41 | WAHER, FLAT. . . . . | 5 |
| 18 | PAOZZ | 96906 | MS51849-56 | SCREW, MACHINE. . . . . | 1 |
| 19 | PAOOO | 81361 | C5-19-6145 | CAP, PROTECTIVE, DUST AND MOISTURE SEAL. . . . . | 2 |
| 20 | PAOZZ | 81361 | B5-19-6147 | PLATE, INSTRUCTION. . . . . | 1 |
| 21 | PAOZZ | 81361 | B5-19-6148 | PLATE, INSTRUCTION. . . . . | 1 |

END OF FIGURE

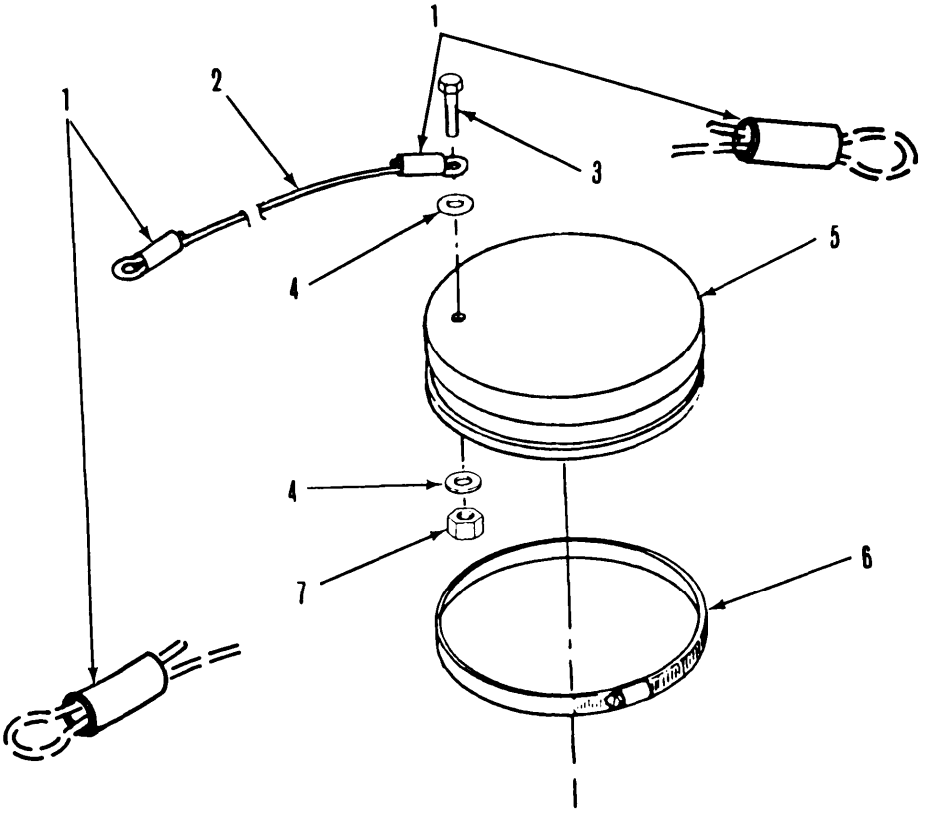



*Figure C-15. Protective Cup*

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) QTY |
|---|---|---|---|---|---|
| | | | | GROUP 030101 PROTECTIVE CAP | |
| | | | | C5-19-6145 | |
| | | | | FIG, C-15 PROTECTIVE CAP | |
| 1 | PAOZZ | 99862 | CL2F | FERRULE, WIRE ROPE. . . . . | 2 |
| 2 | MOOZZ | 99862 | CL-2-C-8.0 | CABLE, NYLON, MAKE FROM CABLE, P/N CL2C. . . . . | 1 |
| 3 | PAOZZ | 96906 | MS51849-55 | SCREW, MACHINE. . . . . | 1 |
| 4 | PAOZZ | 96906 | MS27183-41 | WASHER, FLAT. . . . . | 2 |
| 5 | XAOZZ | 81361 | C5-19-6309 | CAP, RUBBER. . . . . | 1 |
| 6 | PAOZZ | 96906 | MS35842-16 | CLAMP, HOSE. . . . . | 1 |
| 7 | PAOZZ | 96906 | MS21044N08 | NUT, SELF-LOCKING, HEXAGON. . . . . | 1 |

END OF FIGURE

| (1) ITEM NO | (2) SMR CODE | (3) FSCM | (4) PART NUMBER | (5) DESCRIPTION AND USABLE ON CODES (UOC) | (6) CITY |
|---|---|---|---|---|---|
| | | | | GROUP 99 BULK MATERIALS | |
| | | | | FIG. BULK | |
| 1 | PAOZZ | 99862 | CL2C | CABLE, NYLON COVERED. . . . . | 2 |
| 2 | PAOZZ | 81349 | MIL-H-6000 | HOSE, NONMETALLIC. . . . . | 5 |
| 3 | PAOZZ | 30327 | C403 | HOSE, NONMETALLIC. . . . . | 1 |
| 4 | PAOZZ | 30327 | 44PGREEN | TUBING, NONMETALLIC. . . . . | 5 |
| 5 | PAOZZ | 30327 | 44PRED | TUBING, NONMETALLIC. . . . . | 5 |

END OF FIGURE

## Section III SPECIAL TOOLS AND EQUIPMENT LIST

(Not Applicable)

## NATIONAL STOCK NUMBER AND PART NUMBER INDEX

### NATIONAL STOCK NUMBER INDEX

## NATIONAL STOCK NUMBER AND PART NUMBER INDEX

### NATIONAL STOCK NUMBER INDEX

| STOCK NUMBER | FIG. | ITEM |
|---|---|---|
| 4720-00-996-0381 | BULK | 5 |
| 5305-01-006-2050 | C-7 | 17 |
| 4730-01-017-5119 | C-2 | 32 |
| 2940-01-028-8648 | C-6 | 2 |
| 5340-01-032-6929 | C-7 | 18 |
| 9905-01-048-2790 | C-4 | 14 |
| 4240-01-048-2803 | C-1 | 1 |
| 5340-01-048-6327 | C-4 | 4 |
| | C-7 | 25 |
| | C-9 | 19 |
| | C-14 | 19 |
| 4240-01-049-0804 | C-4 | 24 |
| 9905-01-049-1385 | C-4 | 5 |
| 4730-01-050-7540 | C-2 | 30 |
| 9905-01-050-7556 | C-9 | 21 |
| | C-14 | 21 |
| 9905-01-050-7557 | C-7 | 3 |
| 9905-01-051-0186 | C-9 | 20 |
| | C-14 | 20 |
| 9905-01-051-0187 | C-13 | 6 |
| 4720-01-053-0316 | BULK | 4 |
| 5310-01-054-4643 | C-2 | 38 |
| 4240-01-055-1493 | C-7 | 12 |
| | C-13 | 4 |
| 4240-01-057-3378 | C-6 | 5 |
| 2990-01-057-3475 | C-13 | 1 |
| 5365-01-057-7379 | C-7 | 20 |
| 9905-01-066-3084 | C-7 | 2 |
| 4240-01-066-3266 | C-6 | 8 |
| 4240-01-067-5605 | C-6 | 7 |
| 9905-01-067-8634 | C-7 | 1 |
| 4730-01-067-9232 | C-4 | 27 |
| 5330-01-068-0515 | C-7 | 9 |
| 9905-01-068-2368 | C-4 | 1 |
| 4240-01-068-8645 | C-6 | 6 |
| 5330-01-069-9824 | C-7 | 16 |
| 5330-01-088-4442 | C-7 | 13 |
| | C-13 | 5 |
| 5340-01-098-3611 | C-4 | 21 |
| 4720-01-106-4602 | C-13 | 12 |
| 4140-01-107-2246 | C-7 | 30 |
| 5340-01-122-2600 | C-4 | 12 |
| 4240-01-129-0836 | C-6 | 3 |
| 5310-01-135-4163 | C-4 | 26 |
| 4240-01-147-1907 | C-1 | 4 |
| 5935-01-175-8419 | C-11 | 47 |
| 5340-01-194-7909 | C-7 | 8 |
| 5340-01-196-3590 | C-7 | 4 |
| 3040-01-220-8003 | C-6 | 24 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER INDEX

| FSCM | PART NUMBER | STOCK NUMBER | FIG. | ITEM |
|---|---|---|---|---|
| 88044 | AN960KD716L | 5310-01-135-4163 | C-4 | 26 |
| 88044 | AN960PD616 | 5310-00-187-2400 | C-7 | 6 |
| 81361 | B5-19-6133 | 9905-01-050-7557 | C-7 | 3 |
| 81361 | B5-19-6134 | 9905-01-067-8634 | C-7 | 1 |
| 81361 | B5-19-6147 | 9905-01-051-0186 | C-9 | 20 |
| | | | C-14 | 20 |
| 81361 | 65-19-6148 | 9905-01-050-7556 | C-9 | 21 |
| | | | C-14 | 21 |
| 81361 | B5-19-6238 | 9905-01-048-2790 | C-4 | 14 |
| 81361 | B5-19-6346 | | C-6 | 11 |
| 81361 | B5-19-6347 | 5365-01-057-7379 | C-7 | 20 |
| 81361 | 65-19-6656 | 9905-01-051-0187 | C-13 | 6 |
| 81361 | B5-19-6716 | 4720-01-106-4602 | C-13 | 12 |
| 99862 | CL-2-C-8.0 | | C-4 | 17 |
| | | | C-5 | 2 |
| | | | C-8 | 2 |
| | | | C-10 | 2 |
| | | | C-15 | 2 |
| 99862 | CL2C | 4010-00-069-5180 | BULK | 1 |
| 99862 | CL2F | 4030-00-878-8693 | C-4 | 16 |
| | | | C-5 | 1 |
| | | | C-8 | 1 |
| | | | C-10 | 1 |
| | | | C-15 | 1 |
| 30327 | C403 | 4720-00-065-8662 | BULK | 3 |
| 81361 | C5-19-5687-1 | 5330-01-068-9515 | C-7 | 9 |
| 81361 | C5-19-5687-2 | 5330-01-059-9824 | C-7 | 16 |
| 81361 | C5-19-6135 | 9905-01-066-3084 | C-7 | 2 |
| 81361 | C5-19-6145 | 5340-01-048-6327 | C-4 | 4 |
| | | | C-7 | 25 |
| | | | C-9 | 19 |
| | | | C-14 | 19 |
| 81361 | C5-19-6175 | 9905-01-049-1385 | C-4 | 5 |
| 81361 | C5-19-6190 | 5340-01-098-3611 | C-4 | 21 |
| 81361 | C5-19-6191 | 5340-01-122-2600 | C-4 | 12 |
| 81361 | C5-19-6236 | 4240-01-049-0804 | C-4 | 24 |
| 81361 | C5-19-6294 | 3040-01-220-8003 | C-6 | 24 |
| 81361 | C5-19-6309 | | C-5 | 5 |
| | | | C-8 | 5 |
| | | | C-10 | 5 |
| | | | C-15 | 5 |
| 81361 | C5-19-6345 | NSN Applied For | C-6 | 9 |
| 81361 | C5-19-6350 | | C-6 | 14 |
| 81361 | C5-19-6356 | 2940-01-028-8648 | C-6 | 2 |
| 81361 | C5-19-6386 | NSN Applied For | C-6 | 22 |
| 81361 | C5-19-6626 | | C-13 | 7 |
| 81361 | C5-19-6627 | 2990-01-057-3475 | C-13 | 1 |
| 81361 | C5-19-6654 | 4730-01-067-9232 | C-4 | 27 |
| 81361 | D5-19-6260 | 5340-01-194-7909 | C-7 | 8 |
| 81361 | D5-19-6262 | 4240-01-066-3266 | C-6 | 8 |
| 81361 | D5-19-6290-20 | 4240-01-129-0836 | C-6 | 3 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER INDEX

| FSCM | PART NUMBER | STOCK NUMBER | FIG. | ITEM |
|---|---|---|---|---|
| 81361 | D5-19-6351 | | C-7 | 24 |
| 81361 | D5-19-6625 | | C-13 | 10 |
| 81361 | E5-19-6121 | | C-7 | 15 |
| 81361 | E5-19-6128 | 5340-01-196-3590 | C-7 | 4 |
| 81361 | E5-19-6136 | 4240-01-055-1493 | C-7 | 12 |
| | | | C-13 | 4 |
| 81361 | E5-19-6153 | | C-7 | 29 |
| 81361 | E5-19-6201-60 | 4240-01-147-1907 | C-1 | 4 |
| 81361 | E5-19-6308-10 | | C-6 | 4 |
| 81361 | E5-19-6317-10 | 4140-01-107-2246 | C-7 | 30 |
| 81361 | E5-19-6354 | NSN Applied For | C-6 | 15 |
| 81361 | E5-19-6357 | 4240-01-048-2803 | C-1 | 1 |
| 81361 | E5-19-6357-111 | | C-2 | 31 |
| 81361 | E5-19-6376 | 4240-01-057-3378 | C-6 | 5 |
| 81361 | E5-19-6387 | 4240-01-068-8645 | C-6 | 6 |
| 30327 | KF03-02PS | 4730-01-017-5119 | C-2 | 32 |
| 30327 | KF03-04RV | 4730-01-050-7540 | C-2 | 30 |
| 79919 | K35B1 | 5355-00-821-5225 | C-2 | 20 |
| 81349 | MIL-H-6000 | 4720-00-278-1111 | BULK | 2 |
| 96906 | MS17990C406 | 5340-00-103-0622 | C-4 | 20 |
| 96906 | MS17990C413 | 5340-00-952-2617 | C-4 | 15 |
| 96906 | MS17990C41G | 5340-00-905-3063 | C-4 | 28 |
| 96906 | MS21044NC18 | 5310-00-811-3494 | C-4 | 29 |
| | | | C-5 | 7 |
| | | | C-7 | 28 |
| | | | C-8 | 7 |
| | | | C-9 | 5 |
| | | | C-10 | 7 |
| | | | C-13 | 11 |
| | | | C-14 | 5 |
| | | | C-15 | 7 |
| 96906 | MS21044N3 | 5310-00-877-5797 | C-6 | 26 |
| | | | C-7 | 14 |
| | | | C-13 | 9 |
| 96906 | MS21044N5 | 5310-00-088-0553 | C-6 | 23 |
| 96906 | MS21044N6 | 5310-00-950-0039 | C-6 | 17 |
| 96906 | MS24662-152 | 5320-00-973-7912 | C-4 | 18 |
| 96906 | MS24679-2 | 5310-00-928-9821 | C-4 | 8 |
| 96906 | MS24679-63 | 5310-00-013-1498 | C-4 | 9 |
| 96906 | MS24693S275 | 5305-00-965-5879 | C-4 | 13 |
| 96906 | MS25043-18DA | 5935-01-175-8419 | C-11 | 47 |
| 96906 | MS25235R311 | 6240-00-155-7932 | C-3 | 7 |
| 96906 | MS25358-4 | 6220-00-283-9732 | C-3 | 3 |
| 96906 | MS25358-5 | | C-3 | 4 |
| 96906 | MS25358-6 | 5330-00-143-8571 | C-3 | 2 |
| 96906 | MS27183-10 | 5310-00-809-4058 | C-7 | 31 |
| 96906 | MS27183-12 | 5310-00-081-4219 | C-6 | 20 |
| | | | C-7 | 21 |
| 96906 | MS27183-14 | 5310-00-080-6004 | C-6 | 16 |
| | | | C-7 | 5 |
| 96906 | MS27183-41 | 5310-00-765-3197 | C-4 | 2 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER INDEX

| FSCM | PART NUMBER | STOCK NUMBER | FIG. | ITEM |
|---|---|---|---|---|
| 96906 | MS27183-41 | 5310-00-765-3197 | C-5 | 4 |
| | | | C-7 | 26 |
| | | | C-8 | 4 |
| | | | C-9 | 14 |
| | | | C-10 | 4 |
| | | | C-14 | 14 |
| | | | C-15 | 4 |
| 96906 | MS27183-42 | 5310-00-014-5850 | C-7 | 10 |
| 96906 | MS27183-8 | 5310-00-809-8546 | C-6 | 27 |
| 96906 | MS29513-019 | 5330-00-248-3849 | C-2 | 40 |
| 96906 | MS29513-024 | 5330-00-250-0236 | C-2 | 35 |
| 96906 | MS3181-10N | 5935-00-912-9599 | C-2 | 39 |
| 96906 | MS3181-14N | 5935-00-990-5580 | C-2 | 37 |
| | | | C-11 | 45 |
| 96906 | MS3181-20N | 5935-00-990-5565 | C-11 | 44 |
| 96906 | MS3186-34 | 5310-01-054-4643 | C-2 | 38 |
| 96906 | MS318G-43 | 5310-00-435-8983 | C-2 | 36 |
| 96906 | MS35206-217 | 5305-00-889-2999 | C-3 | 5 |
| 96906 | MS35206-229 | 5305-00-984-4989 | C-11 | 46 |
| 96906 | MS35307-336 | 5306-00-637-9674 | C-6 | 13 |
| 96906 | MS35308-337 | 5306-00-543-4436 | C-6 | 21 |
| 96906 | MS35308-360 | 5305-00-680-4262 | C-6 | 12 |
| 96906 | MS35338-42 | 5310-00-045-3299 | C-4 | 7 |
| 96906 | MS35338-43 | 5310-00-045-3296 | C-1 | 2 |
| | | | C-4 | 10 |
| 96906 | MS35478-307 | 6240-00-155-7784 | C-3 | 6 |
| 96906 | MS35691-32 | 5310-00-897-6081 | C-4 | 25 |
| 96906 | MS35842-12 | 4730-00-908-3193 | C-6 | 10 |
| 96906 | MS35842-16 | 4730-00-908-6294 | C-5 | 6 |
| | | | C-6 | 1 |
| | | | C-7 | 23 |
| | | | C-8 | 6 |
| | | | C-10 | 6 |
| | | | C-13 | 2 |
| | | | C-15 | 6 |
| 96906 | MS51849-53 | 5305-00-115-9406 | C-4 | 23 |
| 96906 | MS51849-54 | 5305-00-211-8193 | C-4 | 6 |
| 96906 | MS51849-55 | 5305-00-115-9934 | C-4 | 19 |
| | | | C-5 | 3 |
| | | | C-7 | 27 |
| | | | C-8 | 3 |
| | | | C-9 | 12 |
| | | | C-10 | 3 |
| | | | C-14 | 12 |
| | | | C-15 | 3 |
| 96906 | MS51849-56 | 5305-00-157-5621 | C-4 | 3 |
| | | | C-9 | 18 |
| | | | C-13 | 8 |
| | | | C-14 | 18 |
| 96906 | MS51849-66 | 5305-00-179-8946 | C-1 | 3 |
| | | | C-4 | 11 |

NATIONAL STOCK NUMBER AND PART NUMBER INDEX

PART NUMBER INDEX

| FSCM | PART NUMBER | STOCK NUMBER | FIG. | ITEM |
|---|---|---|---|---|
| 96906 | MS51849-66 | 5305-00-179-8946 | C-13 | 3 |
| 96906 | MS51849-67 | 5305-00-174-4500 | C-4 | 22 |
| 96906 | MS51849-85 | 5305-01-006-2050 | C-7 | 17 |
| 96906 | MS90727-33 | 5305-00-051-4075 | C-7 | 22 |
| 96906 | MS90727-6 | 5305-00-068-0513 | C-7 | 32 |
| 96906 | MS90727-64 | 5305-00-269-3240 | C-7 | 7 |
| 96906 | MS9122-11 | 5305-00-850-2548 | C-6 | 25 |
| 96906 | MS9352-06 | 5340-01-032-6929 | C-7 | 18 |
| 81349 | M15098/11-001 | 6240-00-892-4420 | C-11 | 18 |
| 80205 | NAS1096-3-12 | 5305-00-824-7363 | C-7 | 11 |
| 81361 | PL5-19-8908-28 | | C-6 | 19 |
| 81361 | PL5-19-8908-29 | | C-6 | 18 |
| 81348 | W-L-00111/7 | 6240-00-763-7744 | C-2 | 22 |
| | | | C-12 | 8 |
| 30327 | 261P1-4 | 4730-00-817-1891 | C-7 | 19 |
| | | | C-11 | 27 |
| 30327 | 44PGREEN | 4720-01-053-0316 | BULK | 4 |
| 30327 | 44PRED | 4720-00-996-0381 | BULK | 5 |
| 81361 | 5-19-6348 | 5330-01-088-4442 | C-7 | 13 |
| | | | C-13 | 5 |
| 81361 | 5-19-6657 | 9905-01-068-2368 | C-4 | 1 |
| 81361 | 5-19-6718 | 4240-01-067-5605 | C-6 | 7 |

# APPENDIX D
# EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

## Section I INTRODUCTION

**D-1 . SCOPE.** This appendix lists expendable/durable supplies and materials you will need to maintain the collective protection equipment. This listing is for informational purposes 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 material (e.g., use dry cleaning solvent, item 3. app D).

b. *Column (2) - Level.* This column identifies the lowest level of maintenance that requires the listed item.

O - Organizational Maintenance

c. *Column (3) - National Stock Number.* This is the National stock number assigned to the item: use it to request or requisition the item.

d. *Column (4) - Desciption.* Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM ) in parentheses followed by the part number.

e. *Column (5) - Unit of Measure (U/M).* Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea. in., pr). 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/DURABLE SUPPLIES AND MATERIALS LIST

| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) DESCRIPTION | (5) U/M |
|---|---|---|---|---|
| 1 | O | 8040-00-165-8614 | ADHESIVE: bonding vulcanized<br>1 qt can<br>(81348) MMM-A-121 | QT |
| 2 | O | 7920-00-514-2417 | BRUSH, ACID SWABBING: horsehair bristle. 5.750 length<br>(81438) HB643 | EA |
| 3 | O | | DRY CLEANING SOLVENT: | |
| | | 6850-00-664-5685 | 1 qt cntnr | QT |
| | | 6850-00-281-1985 | 1 gal cntnr | GL |
| | | | (8 1348) P-D-680 | |

## Section II EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST (CONTINUED)

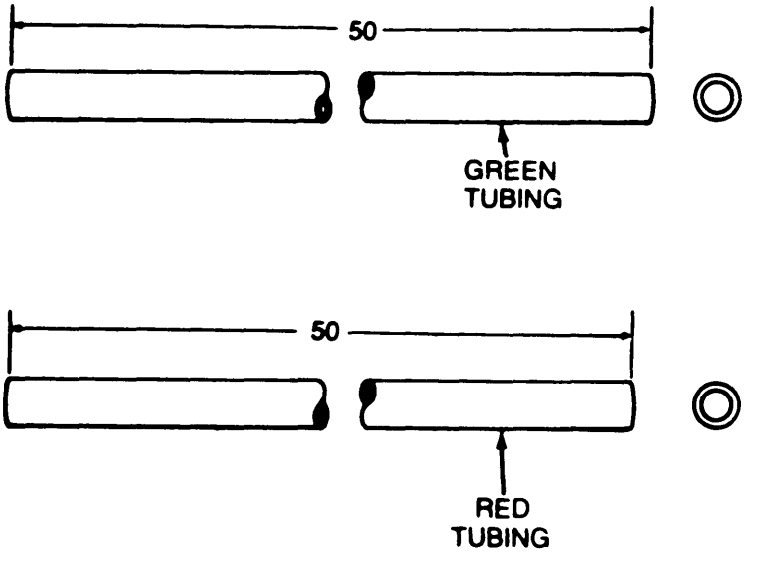
| (1) ITEM NUMBER | (2) LEVEL | (3) NATIONAL STOCK NUMBER | (4) DESCRIPTION | (5) U/M |
|---|---|---|---|---|
| 4 | O | 8010-01-055-2319 | POLYURETHANE COATING:<br>low reflective, chemical agent resistant<br>(81349) MIL-C-46168 | EA |
| 5 | O | 8010-00-142-9279 | PRIMER COATING: type II<br>kit<br>(81349) MIL-P-23377 | EA |
| 6 | O | 7920-00-205-1711 | RAG, WIPING: cotton designed for general purpose use<br>50 lb bale<br>(58536) A-A-531 | LB |
| 7 | O | 7510-00-890-9874 | TAPE, PRESSURE SENSITIVE:<br>class 1, 3 in. wide, type 4<br>60 yd roll<br>(99742) PERMACE 69 | YD |

# APPENDIX E
# ILLUSTRATED LIST OF MANUFACTURED ITEMS

## E-1. INTRODUCTION.

a. This appendix includes complete instructions for making items authorized to be manufactured or fabricated at organizational maintenance level.

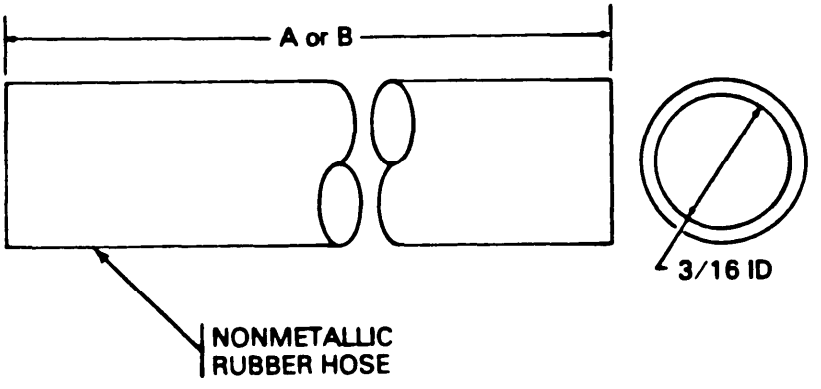
b. All bulk materials needed for manufacture of an item are listed by National stock number in a tabular list of the illustration.




**NOTES:**

1. FABRICATE GREEN NONMETALLIC TUBING FROM NSN 4720-01-053-0316 STOCK.
2. FABRICATE RED NONMETALLIC TUBING FROM NSN 4720-00-996-0381 STOCK.
3. ALL DIMENSIONS ARE IN INCHES.

*Figure E-1. Nonmetallic Tubing*




| | LENGTH |
|---|---|
| A | 12 |
| B | 22 |

**NOTES:**

1. FABRICATE FROM NSN 4720-00-065-8682 STOCK. 16 ID
2. ALL DIMENSIONS ARE IN INCHES.

*Figure E-2. Rubber Hose*

# ALPHABETICAL INDEX

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS


**SOMETHING WRONG** WITH THIS PUBLICATION?

FROM (PRINT YOUR UNIT'S COMPLETE ADDRESS)

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| PUBLICATION NUMBER | PUBLICATION DATE | PUBLICATION TITLE |
|---|---|---|
| TM 3-4240-309-20&P | | COLLECTIVE PROTECTION EQUIPMENT, GUARDRAIL |

BE EXACT PIN-POINT WHERE IT IS

| PAGE NO | PARAGRAPH | FIGURE NO | TABLE NO |
|---|---|---|---|
| 1-1 | 1-4 | | |
| 2-28 | 2-12 | | |
| 2-43 | 2-14 | | |

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

ITEM 1. LINE 12. Change "Rock Island, IL 61201" to read, "Aberdeen Proving Ground, MD 21010."
REASON: Wrong address.

ITEM 2. Test equipment. Add, "28V dc power supply capable of delivery 2 amps"
REASON: Incomplete information.

ITEM 3. Add callout "20" to the shaft slinger in the illustration.
REASON: Callout missing from illustration.

SAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER: JOHN SMITH, S.SGT. 793/XXXX

SIGN HERE: John Smith

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| PAGE NO | PARA-GRAPH | FIGURE NO | TABLE NO |
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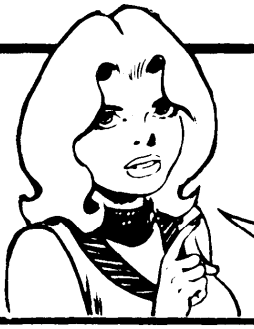


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| PAGE NO | PARA-GRAPH | FIGURE NO | TABLE NO |
|---|---|---|---|
| | | | |

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Aberdeen Proving Ground, MD 21010-5423

By: Order of the Secretary of the Army

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