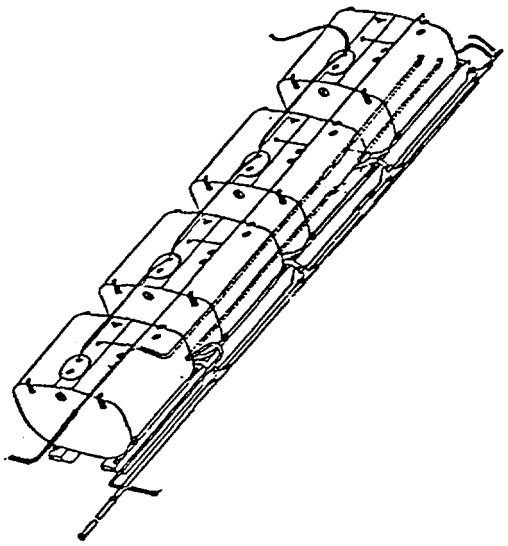
TECHNICAL MANUAL

OPERATOR, AVIATION UNIT, AND AVIATION

INTERMEDIATE MAINTENANCE MANUAL

WITH REPAIR PARTS AND SPECIAL TOOLS LIST

EXTENDED RANGE FUEL SYSTEM
ARMY MODEL CH-47 HELICOPTER



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Headquarters, Department of the Army

11 December 1990

WARNINGS AND FIRST AID DATA

For artificial respiration and other first aid data, refer to FM 21-11. Personnel performing instructions involving operations, procedures, and practices which are included in this technical manual shall observe the following instructions. Disregard of these warnings and precautionary information can cause serious injury, death, or an aborted mission.

WARNING

An operating or maintenance procedure, practice, etc., which, if not correctly followed, could result in personnel injury or loss of life.

CAUTION

An operating or maintenance procedure, practice, etc., which if not strictly observed, could result in damage to or destruction of equipment.

NOTE

An operating or maintenance procedure, condition, etc., which is essential to highlight.

WARNING

When using JP-4, JP-5, and JP-8 fuel, use the following precautions:

- **Aircraft overboard vent cap must be removed anytime ERFS is installed.**
- **Fuel is highly flammable. Do not use near welding areas, open flames, or on very hot surfaces.**
- **Use only with adequate ventilation.**
- **Avoid prolonged or repeated contact with skin. Prolonged contact may cause drying and irritation of skin.**
- **Remove saturated clothing immediately.**
- **Do not smoke when handling fuel.**
- **Do not take internally.**
- **Store in approved metal safety containers.**

WARNING

The Extended Range Fuel System is airworthy when installed, operated, and maintained as described in this manual. However, with this configuration, fuel leakage into the cabin is possible and a catastrophic incident is possible in the event of hard landing or accident. Even when properly installed, this system is not capable of satisfying the 8 "G" crashworthiness requirement (for occupied areas) of the helicopter taken as a whole.

CHANGE

NO. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 31 AUGUST 1993

OPERATOR, AVIATION UNIT, AND AVIATION
INTERMEDIATE MAINTENANCE MANUAL
WITH REPAIR PARTS AND SPECIAL TOOLS LIST

EXTENDED RANGE FUEL SYSTEM
ARMY MODEL CH-47 HELICOPTER
P/N 85SDSCC-D-0007-2 NSN 1560-01-221-7600

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OPERATOR, AVIATION UNIT AND AVIATION INTERMEDIATE MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST

EXTENDED RANGE FUEL SYSTEM ARMY MODEL CH-47 HELICOPTER

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TECHNICAL MANUAL

No. 55-1560-307-13&P

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DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 11 December 1990

OPERATOR, AVIATION UNIT, AND AVIATION INTERMEDIATE MAINTENANCE MANUAL WITH REPAIR PARTS AND SPECIAL TOOLS LIST

FOR

EXTENDED RANGE FUEL SYSTEM
600 GALLON TANKS
NSN 1560-01-221-7600

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistake or if you know of a way to improve the procedure, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, U.S. Army Aviation Systems Command, ATTN: AMSAV-MC, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE. This TM is to be used by operator and unit maintenance personnel in maintaining the extended range fuel system (ERFS), P/N 85SDSCC-D-0007-2, used on CH-47C/D aircraft. This system is used to supplement the aircraft standard fuel system for longer sustained flights and for refueling other aircraft.

1-2. PURPOSE. This ERFS manual provides instructions for installation, operation, maintenance, troubleshooting, and storage. It also includes a repair parts and special tools list.

1-3. FORMS, RECORDS, AND REPORTS. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-751, The Functional User's Manual for the Army Maintenance Management System Aviation (TAMMS-A). In accordance with provisions of DA PAM 738-751, an entry should be made on DA Form 2408-13 when the ERFS is installed or removed. This entry will make personnel aware of prescribed operational limits and aircraft center of gravity *(CG) for weight and balance purposes.

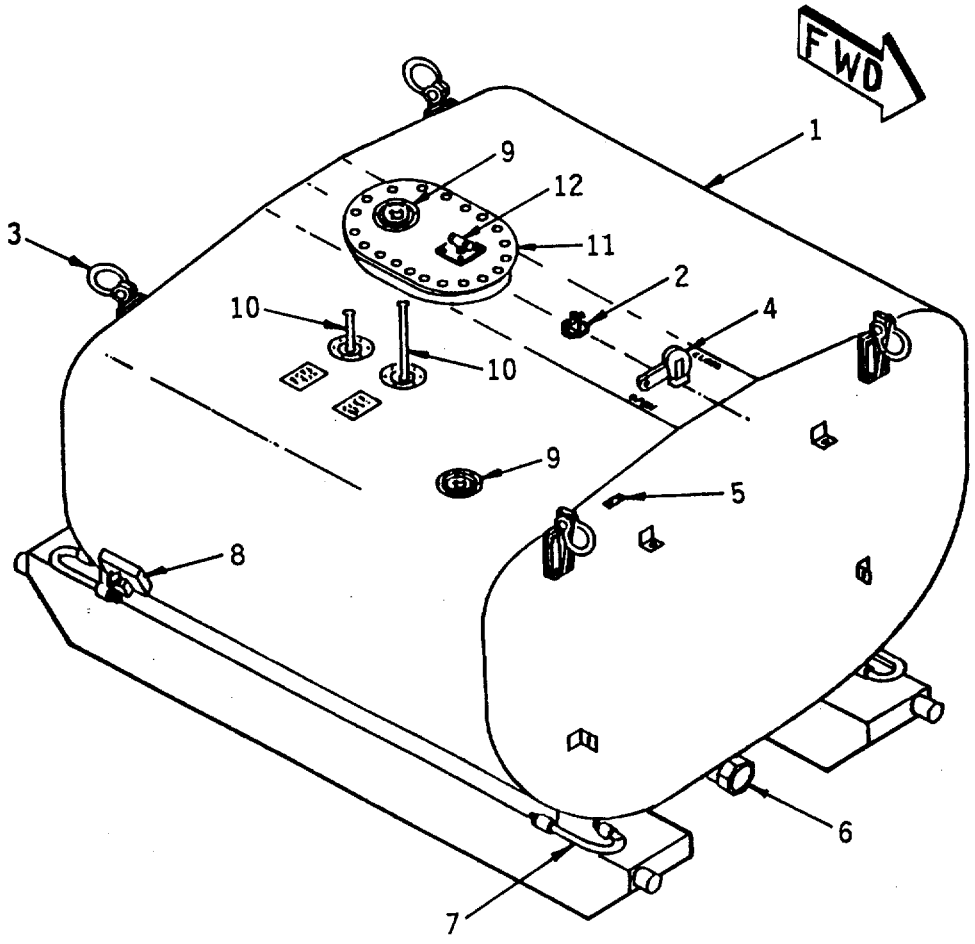
1-4. REPORTING EQUIPMENT IMPROVEMENT AND RECOMMENDATIONS (EIRs). EIRs will be prepared using SF Form 368, Quality Deficiency Report. Instructions for preparing EIRs are provided in DA PAM 738-751, Functional User's Manual for the Army Maintenance System Aviation (TAMMS-A). EIRs should be mailed to Commander, U.S. Army Aviation Systems Command, ATTN: AMSAV-QF 4300 Goodfellow Blvd., St. Louis MO 63120-1978. A reply will be furnished directly to you.

1-5. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE. For destruction of Army material to prevent enemy use, refer to TM 750-244-1-5, Procedures for the Destruction of Aircraft Associated Equipment to Prevent Enemy Use.

1-6. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC). Qualified personnel shall inspect completed work for full compliance with technical requirements of instructions. Inspection shall be in accordance with an approved prescribed inspection system to be determined at work site.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. PHYSICAL DESCRIPTION. The ERFS provides aircraft mission flexibility by extending aircraft range and by providing forward area refueling source. The ERFS is mounted on the left-hand side of the aircraft between stations 190 and 450, depending on aircraft CG requirements. The ERFS is a modular, interconnectable system composed of up to four 600 gallon NON-CRASHWORTHY metal tanks, four electrically operated fuel pumps, a vent system, associated wiring, plumbing, and mounting hardware, Figure 1-1. The tanks will be filled to 580 gallons when in use. The tanks are secured using 5K and 10K pound cargo strap assemblies. The fuel management control panel (FMCP) is housed in an aluminum constructed box, and is mounted on the most forward tank.

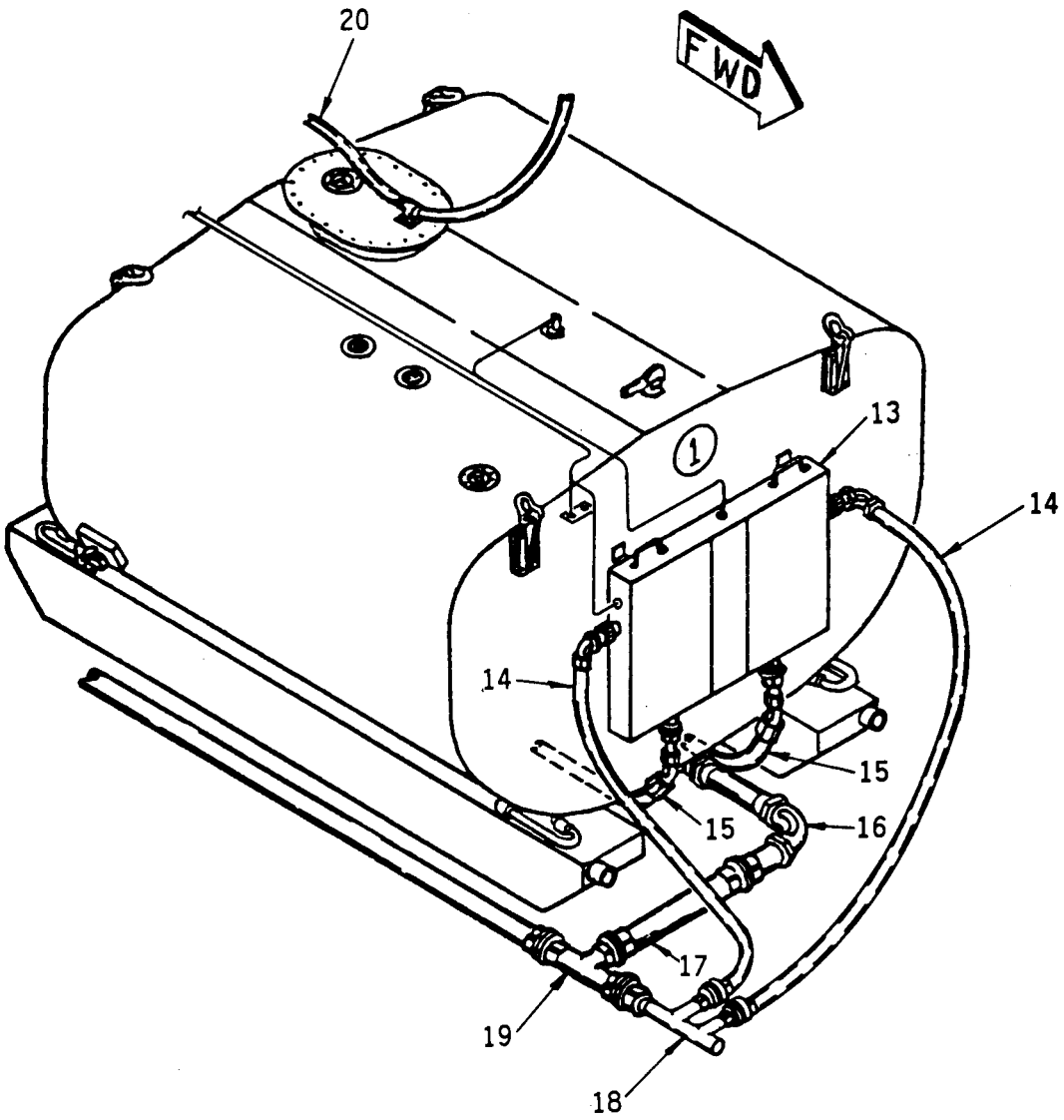


NOTE

TIEDOWN STRAPS OMITTED FOR CLARITY.

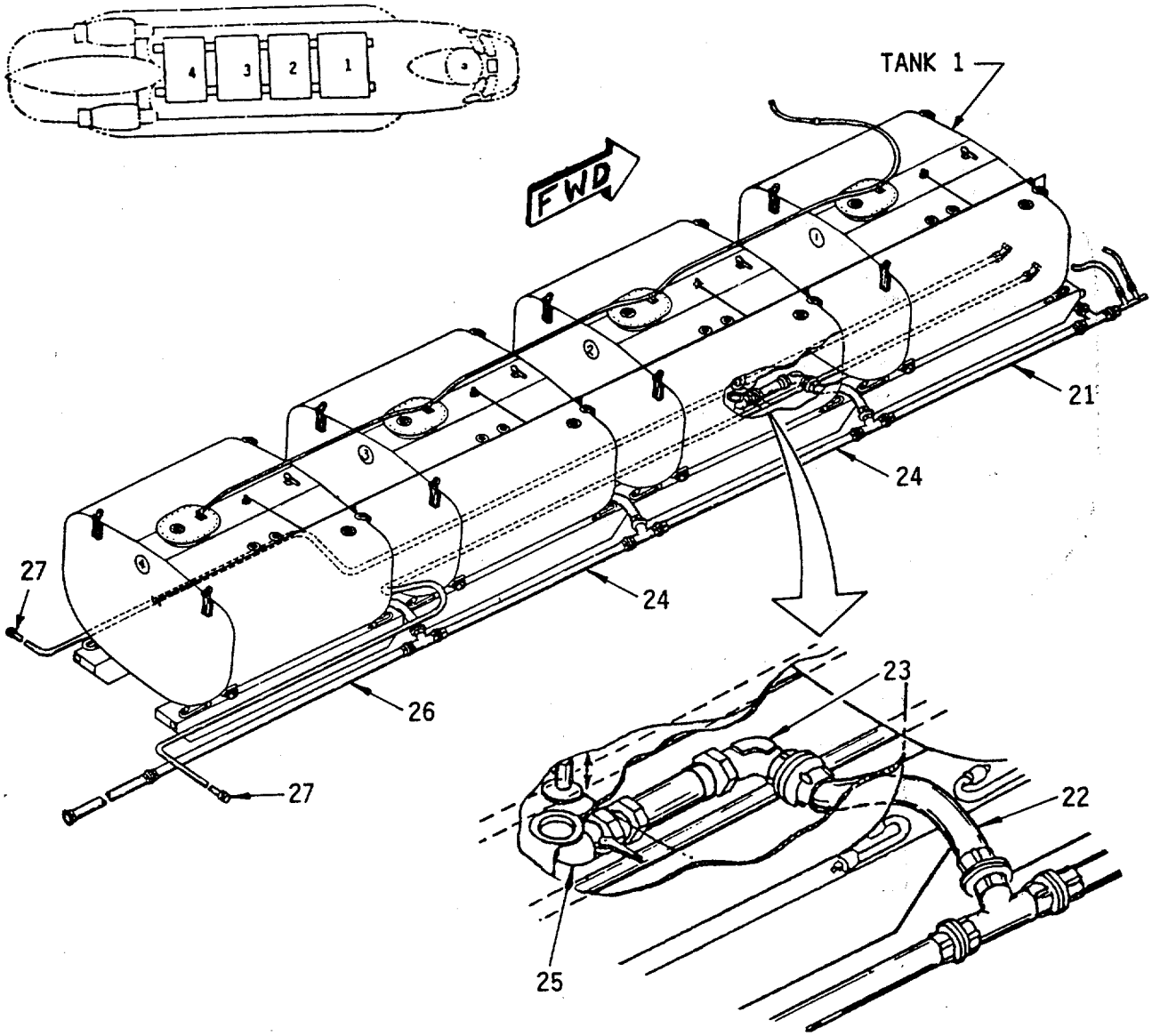
1. Tank, 600 Gallon
2. Float Assy
3. Hoisting Eyes
4. Cam Lever
5. Receptacle, Ground
6. Dump Valve Fitting
7. Tiedown Assy
8. Poppet Drain Cock
9. Fuel Filler Assy
10. Liquid Level Indicator
11. Cover, Access
12. Fitting, Vent

Figure 1-1. Extended Range Fuel System (Sheet 1 of 5)



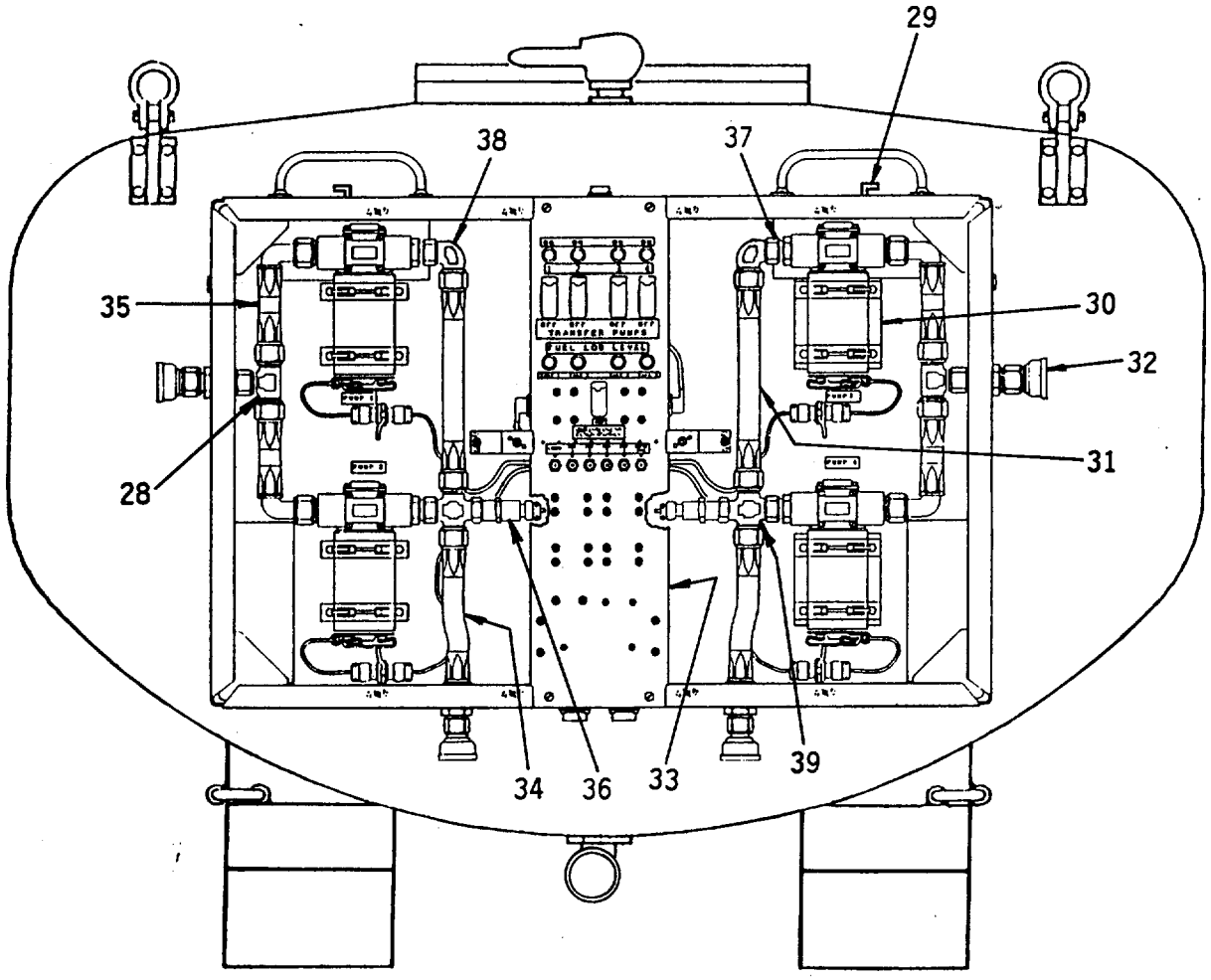
13. Panel Assy
14. Hose Assy (Suction)
15. Hose Assy (Discharge)
16. Coupling Half, Quick
17. Hose Assy
18. Coupling, Half Identical Tee
19. Tee Assy (4 required)
20. Hose Assy Vent

Figure 1-1. Extended Range Fuel System (Sheet 2 of 5)



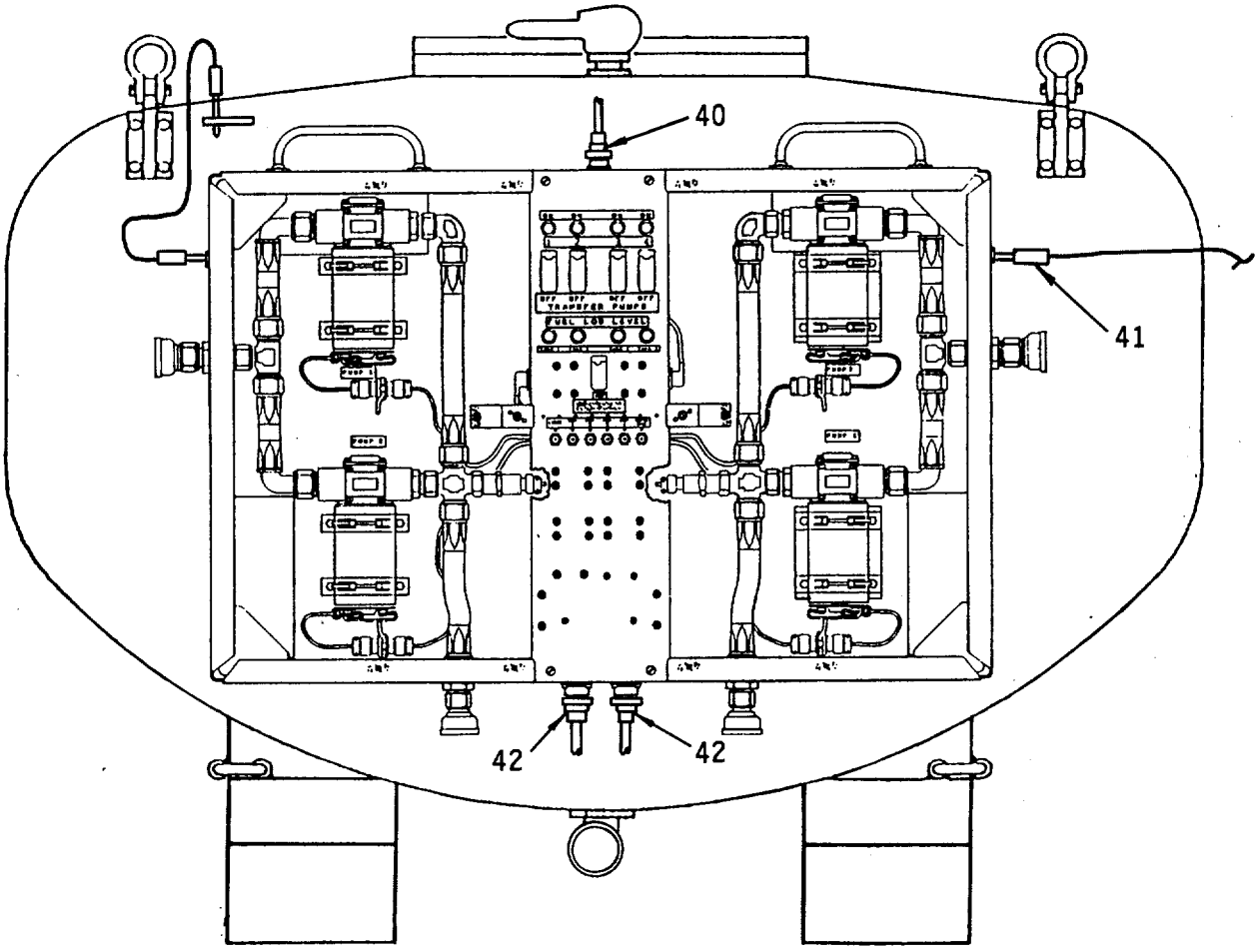
21. Hose Assy
22. Hose Assy (3 required)
23. Elbow Assy (3 required)
24. Hose Assy (2 required)
25. Adapter
26. Hose Assy
27. Coupling Half, Quick (2 required)

Figure 1-1. Extended Range Fuel System (Sheet 3-of 5)



28. Tee, Tube (2 required)
29. Pin, Quick Release (4 required)
30. Pump (4 required)
31. Hose (2 required)
32. Coupling, Half (4 required)
33. Electrical Control Panel
34. Hose (2 required)
35. Hose (4 required)
36. Sensor Level Electro Optical (2 required)
37. Nipple (4 required)
38. Elbow Tube (2 required)
39. Cross (2 required)

Figure 1-1. Extended Range Fuel System (Sheet 4 of 5)



40. Electrical Harness Assy (4 required)
41. Ground Harness Assy
42. Electrical Harness Assy (2 required)

Figure 1-1. Extended Range Fuel System (Sheet 5 of 5)

WARNING

Installing the non-crashworthy ERFS increases the potential for fires during a crash. The number of personnel on board the aircraft will be kept to the minimum required to perform the required mission. Additionally, all personnel are required to be seated with a lap belt during flight.

1-8. FUNCTIONAL DESCRIPTION. An over-all description of the ERFS is provided in the following paragraphs. A brief functional description of the ERFS components and information on operational status is also provided. The ERFS is illustrated in functional block diagram, Figure 1-2.

a. The operation of each tank is independent of the others when used in multiples greater than one. The ERFS system (combined with the FMCP) allows any one tank in a multiple installation to feed the aircraft's main fuel tanks without the need to manually disconnect or connect the feed lines.

b. After the ERFS tanks are installed on the aircraft, the system is treated as part of the aircraft.

1-9. FMCP FUNCTIONAL DESCRIPTION. The fuel management control panel houses the fuel pumps utilized in fuel transfer operations. Selective fuel management is incorporated to enable the operator to operate either single or multiple pumps and tanks at his discretion. Electrical power is furnished by the existing aircraft power receptacles located at station 260.

1-10. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES.

a. The ERFS transports with ease due to the design of the skid mounts and hoisting eye.

b. The ERFS provides 2320 gallons of usable fuel for extended range missions.

c. The ERFS can be installed, operated, removed, transported, handled, and stored in all climatic conditions compatible with the CH-47D and MH-47D helicopters.

d. The ERFS tanks are capable of being stored five years without deterioration, provided the tanks are sealed.

e. Fuel quantity can be accurately monitored in flight within four percent of the actual quantity using the liquid level indicators.

f. The system can also be defueled using standard equipment.

g. The ERFS has redundant fuel feed capability in all pump/tank combinations.

h. ERFS Servicing. The system tanks can be filled by gravity (splash fill). System is capable of accepting all types of aviation fuel to include JP-4, -5, and -8.

i. The ERFS can be used as a fare system, providing 2320 gallons of fuel for refueling other aircraft.

j. The ERFS can be installed and used in a one tank or multiple tank configuration as the mission requires.

k. Accessibility to fuel filler port, liquid level indicators, and fuel sample drain provide better means for servicing the system.

l. Mounting angle brackets provide easy installation of FMCP and interchangeability from tank to tank.

m. Tank access covers are fabricated with spillproof rollover vent valve.

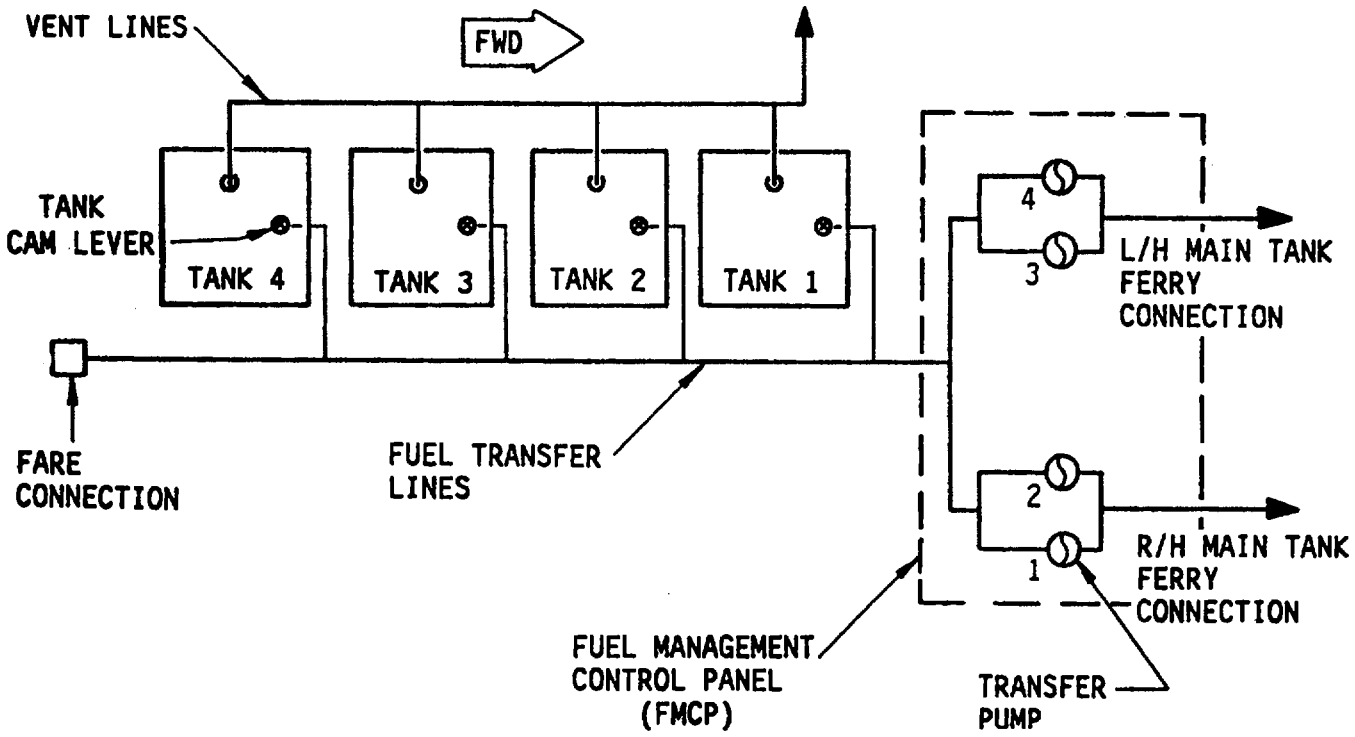


Figure 1-2. Extended Range Fuel System Block Diagram

n. Fuel manifold is equipped with unisex dry break couplings.

o. System is equipped with vent lines which will fit either CH-47D model aircraft.

p. Fuel transfer pump system can operate with an external APU generator, the aircraft's APU, or the aircraft's main generators (engines have to be running when using main generators).

q. Tanks may be configured with separate roller assemblies when internal cargo handling system (highs) is not installed on aircraft.

1-11. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS. Refer to Figure 1-1.

1-12. EQUIPMENT DATA. For equipment data, refer to Table 1-1.

Table 1-1. Equipment Data

System Nomenclature	Extended Range Fuel System (ERFS)
Part Number	85SDSCC-D-0007-2
Manufacturer	Corpus Christi Army Depot (CCAD)
Tank (four each)	
Weight, Empty	500 lbs
Weight, Full	3770 lbs
Capacity, Operational	580 gal
Length	60 inches
Width	73 inches
Height	52 inches
Control Panel Box FMCP	
Length	33 inches
Width	7 inches
Height	25 inches
Weight	59 lbs
Power Supply	28 ± 0.3 V dc
System Installation Data	
Time to Install System	4 men, 3 hours
Time to Remove System	4 men, 3 hours

Section III. TECHNICAL PRINCIPLES OF OPERATION

1-13. OPERATIONS.

a. Overall aircraft fuel management is the responsibility of the aircraft commander and is accomplished by utilizing the fuel management control panel and fuel quantity indicator in the cockpit.

b. The ERFS has capabilities which enable the aircraft commander to select single or multiple tanks at his discretion. The transfer of fuel from the 600 gallon tanks to replenish fuel in the aircraft's main fuel tanks is accomplished by the operator activating the FMCP switches. This is a self-contained pumping system which utilizes the aircraft's 28 V dc UH and R/H utility receptacles at station 260.

1-14. OPERATING INSTRUCTIONS. Operating instructions and use of operator controls and indicators can be found in Chapter 2.

1-15. PERFORMANCE DATA. Refer to Table 1-2.

1-16. SAFETY, CARE, AND HANDLING. Warnings and cautions are stated as applicable throughout this manual.

1-17. SAFETY HAZARDS. Installation of the ERFS increases the exposure of the aircraft and crew to fire hazards. However, if personnel use reasonable caution and safety practices as prescribed in this manual, the ERFS is an airworthy system.

Table 1-2. CH-47D Weight/Balance/Range/Endurance Performance Data

CONFIGURATION	WEIGHTS/ POUNDS	STATION	MOMENTS/ 1000	RANGE	ENDURANCE (HRS)
(CH-47D ERFS performance factors with zero wind factor and standard day.)					
Fuel Tank 1	511.3	230.0	117.6	584	4.3
Fuel Tank 2	511.3	290.0	148.3	763	5.6
Fuel Tank 3	511.3	350.0	178.9	920	6.7
Fuel Tank 4	511.3	410.0	209.6	1058	7.7
FMCP	48	190	9.1	-	-
Vent Lines	15	320	4.8	-	-
Pump Discharge Lines	20	290	5.8	-	-
Feed Lines/Manifold	70	290	20.3	-	-
FARE EQUIP (2 pumps, 2 filter, 2 fuel cans)	800	502	401.6	-	-
Helicopter Internal Cargo Handling System (HICHS)	878	379.9	333.5	-	-
3-463L Pallets (290 lbs ea)	870	323	281.0	-	-

CHAPTER 2

INSTALLATION AND OPERATING INSTRUCTIONS

2-1. SCOPE. Installation and operating instructions for the ERFS are provided in this chapter. A description on how to use operator controls and indicators is also provided. This chapter includes the preventive maintenance checks and services (PMCS) procedures, and instructions for operation of the system under usual and unusual conditions.

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-2. UNPACKING AND INSPECTION. The 600 gallon tanks will be delivered enclosed in suitable shipping crates/containers. FMCP, fittings, hoses, and other associated equipment required for complete assembly will be packaged separately.

a. Upon receipt, inspect the ERFS tanks for obvious damage incurred during shipment. Damage of tanks and other equipment should be reported on SF 361, Discrepancy in Shipment Report. Mail form to: Commander, AVSCOM, ATTN: AMSAV-QF, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798.

b. Check to ensure that each item listed in Table 2-1 has been received.

2-3. EQUIPMENT FURNISHED. Table 2-1 lists all major components and items furnished for the ERFS installation. Appendix C contains a parts list which will be helpful in identifying all components.

Table 2-1. ERFS Components

NOMENCLATURE	PART NUMBER	NSN	QTY
Adapter	AE25010-011	4730-01-214-2910	4
Coupling, Half	AE85893M	4730-01-276-7564	4
Coupling, Half	AE86844Z	4730-01-H76-9177	1
Coupling, Half Quick Disconnect	AE82568R	4730-01-214-0994	1
Coupling, Half, 90° Quick Disconnect	AE82567R	4730-01-214-2913	3
Coupling, Half Quick Disconnect	AE85861M	4730-01-214-4765	4
Coupling, Tee	AE82111R	4730-01-214-0996	4
Elec Harness Assy	85SDSCC-D-0007-112	. . .	1
Elec Harness Assy	85SDSCC-D-0007-113	. . .	1
Elec Harness Assy	85SDSCC-D-0007-114	. . .	1
ERFS Tank Assy	85SDSCC-D-0007-115	. . .	4
Ground Strap	85SDSCC-D-0007-192	. . .	1
Hose Assy	000-950192-16D-0960	. . .	1
Hose Assy	950234-16D-2300	. . .	2
Hose Assy	950004-16D-0720	. . .	4
Hose Assy	AE706285-1	4720-01-214-1002	1
Hose Assy	AE706285-2	4720-01-214-2914	3
Hose Assy	AE706285-3	4720-01-214-1003	2
Hose Assy	AE706285-5	4720-01-214-2915	1

Table 2-1. ERFS Components (Cont)

NOMENCLATURE	PART NUMBER	NSN	QTY
Hose Assy	AE706285-6	4720-01-214-1001	1
Hose Assy	MS28741-24D-0160	. . .	1
Hose Assy	390A-16D-0720	. . .	4
Identical Tee Hose Assy	180-950248-16D-0360	. . .	1
Panel Assy (FMCP)	85SDSCC-D-0007-100	. . .	1
Plywood Deck Shoring	85SDSCC-D-0007-187	. . .	8
Pump Assy	85SDSCC-D-0007-101	. . .	4
Quick Disconnect	114PS491-2	4730-01-140-6760	2
Reducer, Tube	MS24399D28	4730-01-262-8293	1
Strap, Webbing	SP4212-1	1670-00-725-1437	38
Strap, Webbing	B-D-10000 R/0-234-HH-24	5340-01-233-3063	8
Wrench	1232	5120-00-203-4812	1
Wrench	1248	5120-00-203-4804	1
Wrench	1244	5120-00-203-4806	1
Wrench	1240	5120-00-203-4808	1
Wrench	1252	5120-00-203-4802	1

Section II. INSPECTING THE EQUIPMENT

2-4. INSPECTION. Inspect the ERFS components as follows:

CAUTION

A daily visual inspection shall be made of the subject installation to ensure that no progressive structural deterioration is occurring, that there is no loss of security, and that no damage to the host helicopter, tank fittings, tiedown straps, etc., exist. Any occurrence of the preceding shall be corrected prior to further flight operations.

a. Initial Installation. The ERFS will be inspected after initial installation in the aircraft.

b. When system components have been out of service for a period of 7 days or more.

c. When maintenance has been preformed on any part or component of the system to correct a malfunction.

d. When the ERFS tank system has been purged in accordance with instructions provided in Chapter 3, Section V, para 3-25 of this manual.

e. Before each flight, check system in accordance with the PMCS, Table 2-6.

f. Immediately after fueling system, inspect for leaks.

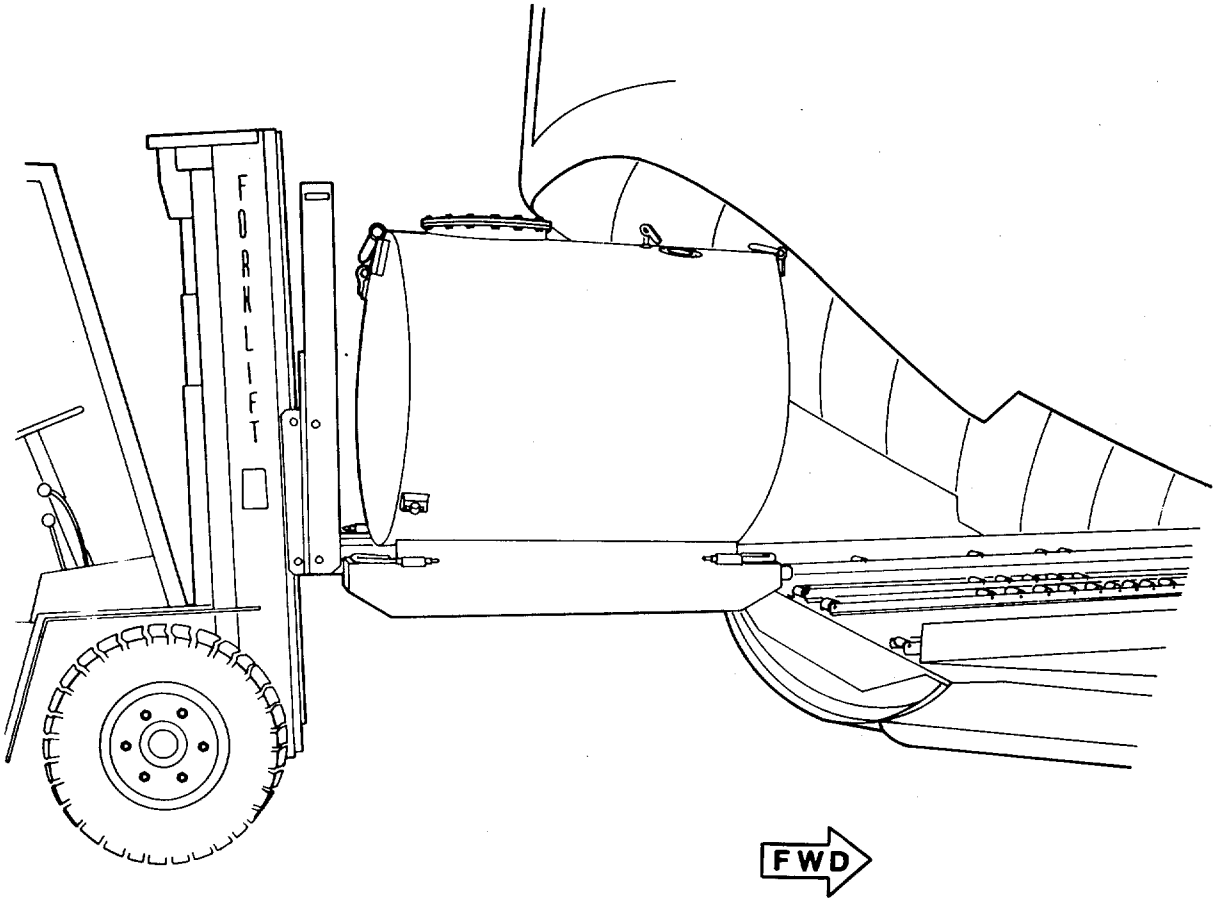


Figure 2-1. ERFS Tank Loading with Forklift

Section III. ERFS INSTALLATION

2-5. INSTALLATION. The ERFS will require four persons and approximately three hours for installation. The tanks can be installed on aircraft with or without the helicopter internal cargo handling system (HICHS) if aircraft has been modified. A standard tool kit (NSN 5180-00-323-4692) will be needed for installation of the system. System kit will include four bonney wrenches. For ERFS tiedown configurations, refer to Table 2-2.

2-6. ERFS INSTALLATION PROCEDURES. The following tiedown configurations are typical installation of one to four tanks installed. Depending on loading configurations, the tanks position can be moved forward or aft depending on mission needs; however, the helicopter CG must be maintained within limits and the number of tiedowns cannot be reduced. Refer to paragraph 2-8 for installation of system with pallets. Install the ERFS tanks and system components as follows:

WARNING

- **Use a one ton or larger forklift. Damage of equipment or injury of personnel may occur if a ground guide for forklift operations is not used. Refer to Figure 2-1.**
- **Tank must be loaded to be within the CG limits of the aircraft.**

NOTE

The installation sequence described covers a four tank installation. The helicopter may be operated with one to four tanks, depending on mission needs, provided tank installation and fuel transfer management are such that aircraft CG be maintained within limits. In addition, the tiedown configuration is depicted for a four tank installation when no other loads are being carried. If less than four tanks are being used, the tanks may be moved forward or aft depending on internal/external loads and maintaining CG. The number of tiedowns per tank as shown in Table 2-2 will not be reduced.

a. Ground aircraft.

b. Position No. I tank at station 190 butt-line eleven left. Tilt tank and position wood shoring under skids. Align groove of shoring to aircraft extrusion rail.

c. Tie down No. 1 tank as shown in Figures 2-2, 2-3, and 2-11. Use Table 2-2 to select the straps required.

WARNING

Chains will not be used to tie down the ERFS.

NOTE

- **No more than 1/2 twist allowed on tiedown strap.**
- **Minimum 1-1/2 wraps required on rachet drum of tiedown strap.**

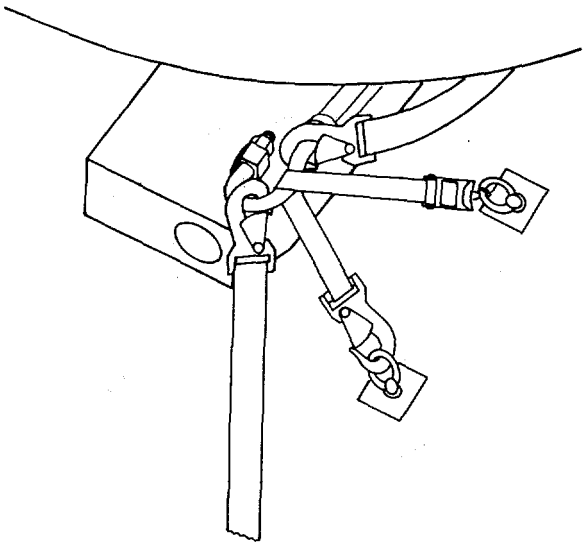


Figure 2-2. Installation and Tiedown Straps

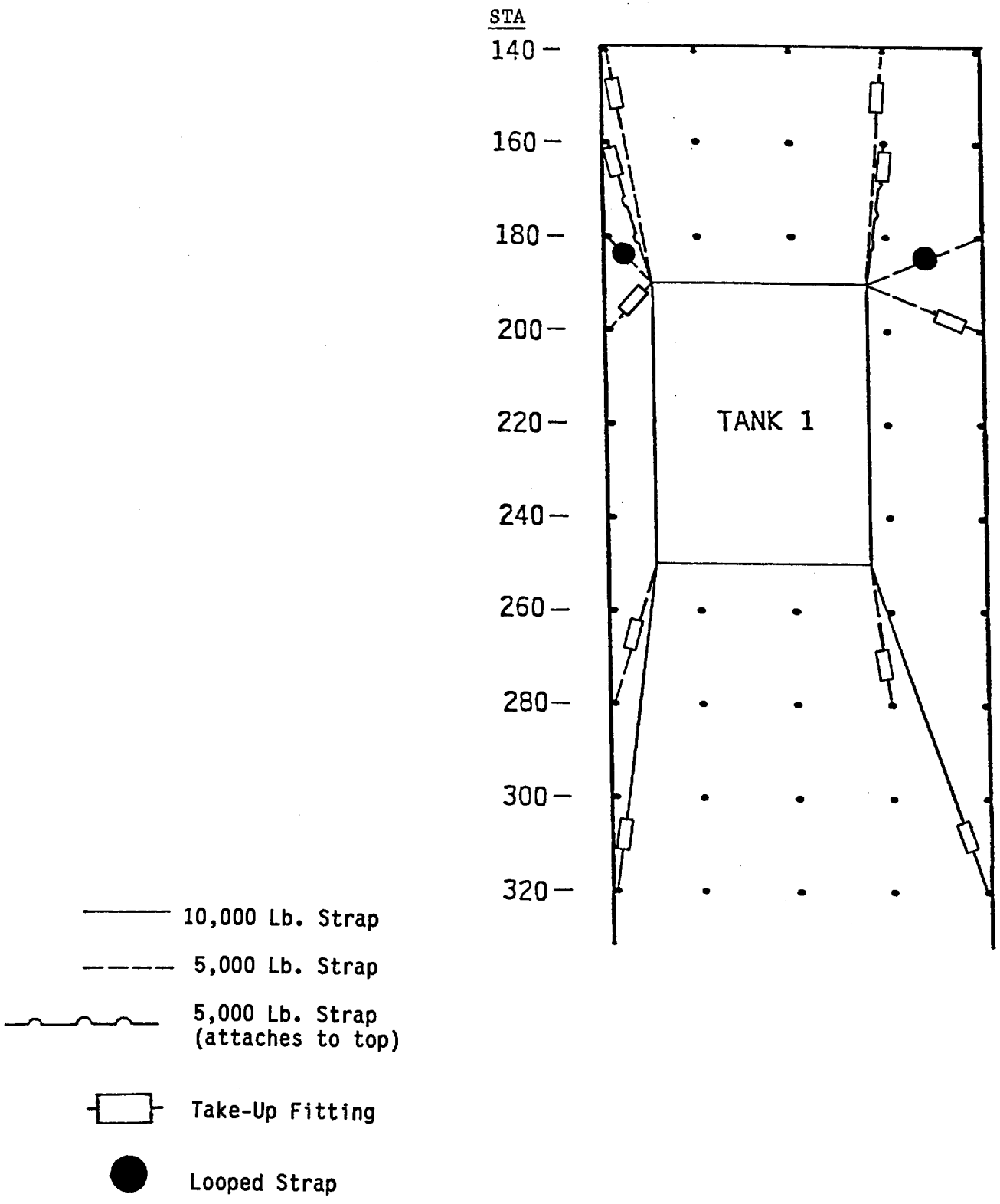


Figure 2-3. ERFS No. 1 Tank Installation and Tiedown

Table 2-2. ERFS Tiedown Configurations W/O 463L Pallet

TANK	FWD		AFT	
	5K	10K	5K	10K
1	6	0	2	2
2	6	0	4	2
3	4	0	4	2
4	4	0	8	0

STRAP QTY

5,000 Lb. - 38
10,000 Lb. - 6
44

TANK	FWD		AFT	
	5K	10K	5K	10K
1	6	0	2	2
2	6	0	4	2
3	4	0	6	2

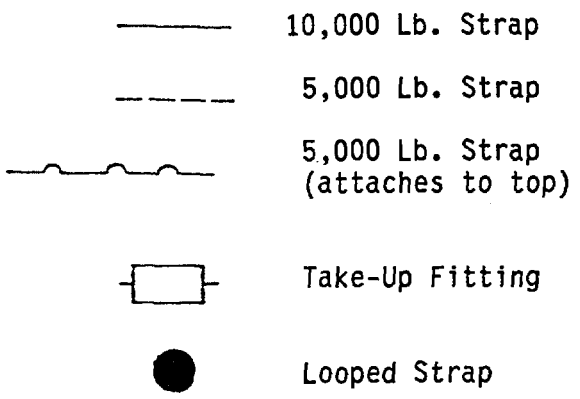
5,000 Lb. - 28
10,000 Lb. - 6
34

TANK	FWD		AFT	
	5K	10K	5K	10K
1	6	0	2	2
2	6	0	6	2

5,000 Lb. - 20
10,000 Lb. - 4
24

TANK	FWD		AFT	
	5K	10K	5K	10K
1	6	0	6	2

5,000 Lb. - 12
10,000 Lb. - 2
14



(1) Install FMCP to forward end of No. 1 tank at mounting brackets, Figure 2-4.

(2) Connect power cables to bottom receptacles of FMCP. Long power cable should connect to R/H side of aircraft receptacle. Route both cables under tanks 1 and 2, with long cable installed over fuel manifold. Connect cables to top 15 amp utility receptacles on L/H and R/H side at station 260.

NOTE

Install dust caps to each other after securing all tee and hose couplings.

d. Assemble fuel manifold (2 inch); position to R/H side of cabin floor.

(1) Fuel manifold assembly consists of attaching tee fitting (8) to coupling assembly (9) and hose assembly (10), Figure 2-5.

(2) Secure all four hoses to its respective manifold tee at each tank, Figure 2-5.

e. Install elbow fitting (3) to tank dump fitting, Figure 2-5. Ensure camlock latch handles are either tie wrapped or safety wired to prevent them from opening.

f. Connect No. 1 tank low level warning light harness to tank, Figure 2-4.

g. Route hoses (7) between tank skids towards aft tanks, Figure 2-5.

h. Connect hoses (7) to FMCP lower couplings (5), Figure 2-5.

i. Connect fuel hose (4) from fitting (3) to manifold tee (8), Figure 2-5.

NOTE

Connect all system hose couplings to tee couplings and fittings as shown in Figure 2-8.

j. Connect pump hoses (6) to coupling tee (9), Figure 2-5.

k. Using tiewraps (item 17, Appx D), secure 2 inch manifold to floor as close as possible to the R/H tank skid.

l. Position inboard straps for No. 2 tank prior to positioning No. 2 tank, Figure 2-6.

NOTE

As each tank is moved into position, tighten straps on L/H side of tank first. Preposition all outboard straps for all tanks prior to tanks being moved into position.

m. Position No. 2 tank behind No. 1, allowing space to connect hose from dump valve, Figure 2-7.

n. Connect No. 2 tank manifold hose assembly to dump valve and safety wire or tiewrap camlock handles, and move tank forward into place, Figure 2-7.

o. Position shoring under skids, paragraph 2-6.b.

p. Install grounding strap from No. 1 tank to No. 2 tank.

q. Connect No. 2 low level warning light harness to tank.

r. Install No. 2 tank tiedown straps, Figure 2-6.

s. Continue procedure until remaining tanks are installed and tied down per Figures 2-9, 2-10, and 2-11.

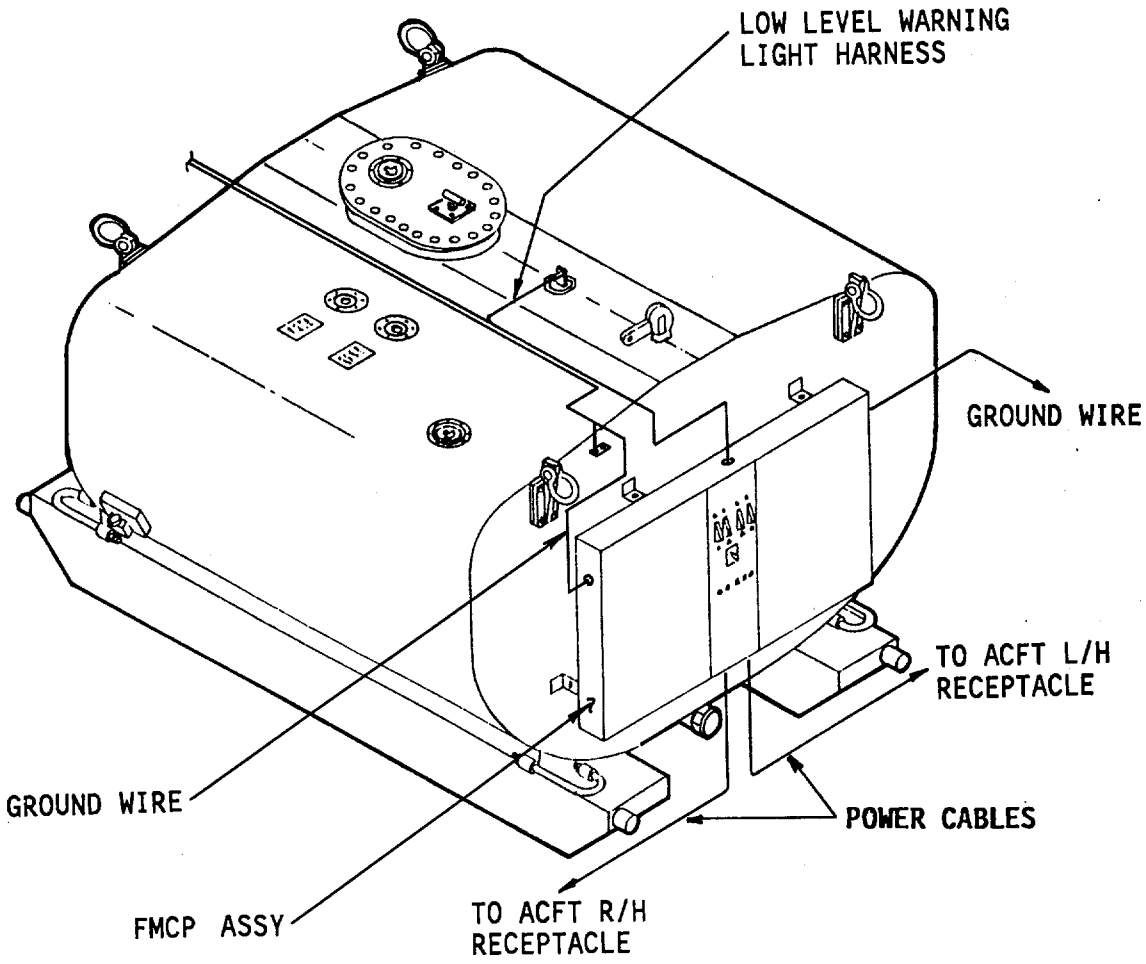
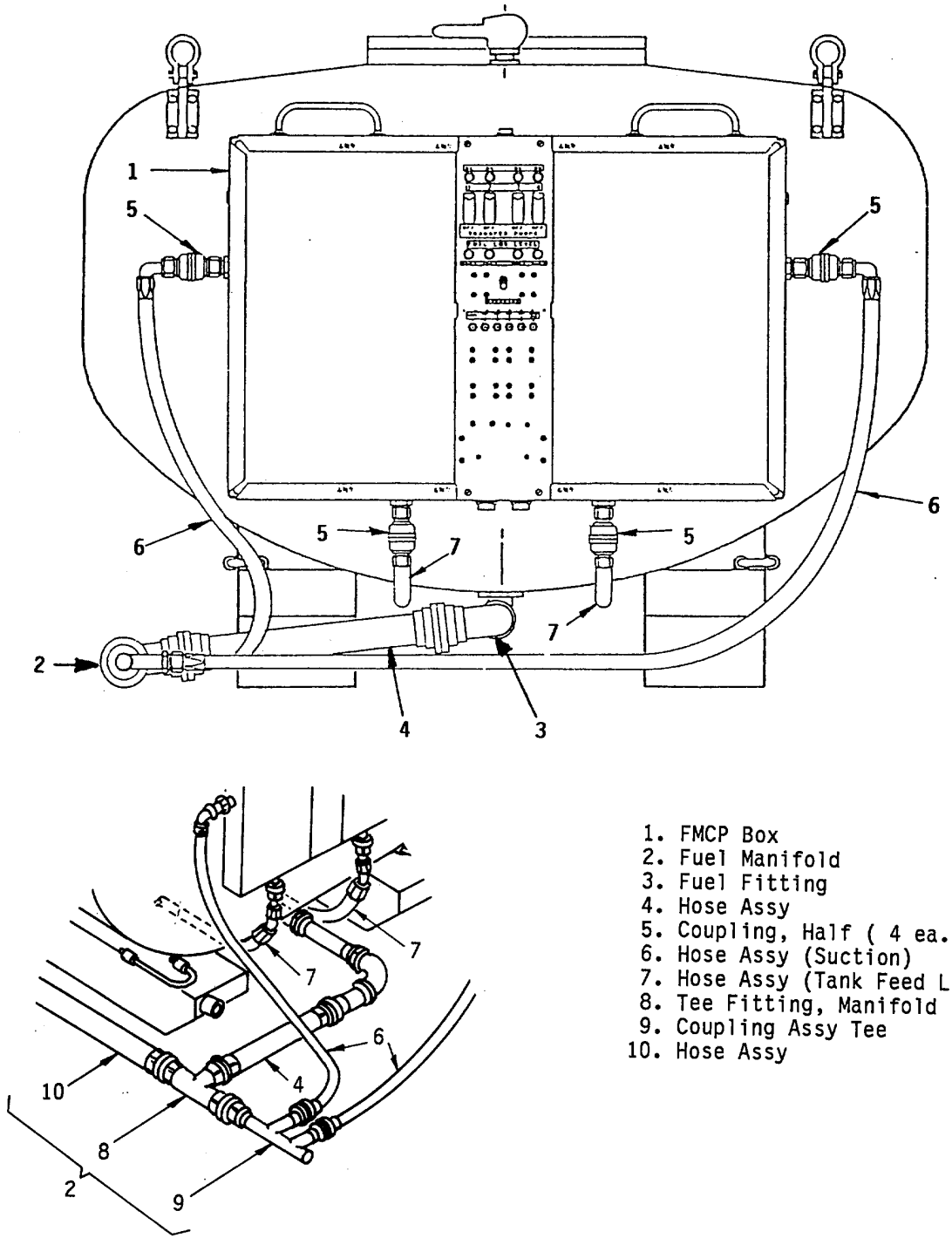


Figure 2-4. Fuel Management Control Panel Installation



1. FMCP Box
2. Fuel Manifold
3. Fuel Fitting
4. Hose Assy
5. Coupling, Half (4 ea.)
6. Hose Assy (Suction)
7. Hose Assy (Tank Feed Lines)
8. Tee Fitting, Manifold
9. Coupling Assy Tee
10. Hose Assy

Figure 2-5. Fuel Pumping System and Plumbing

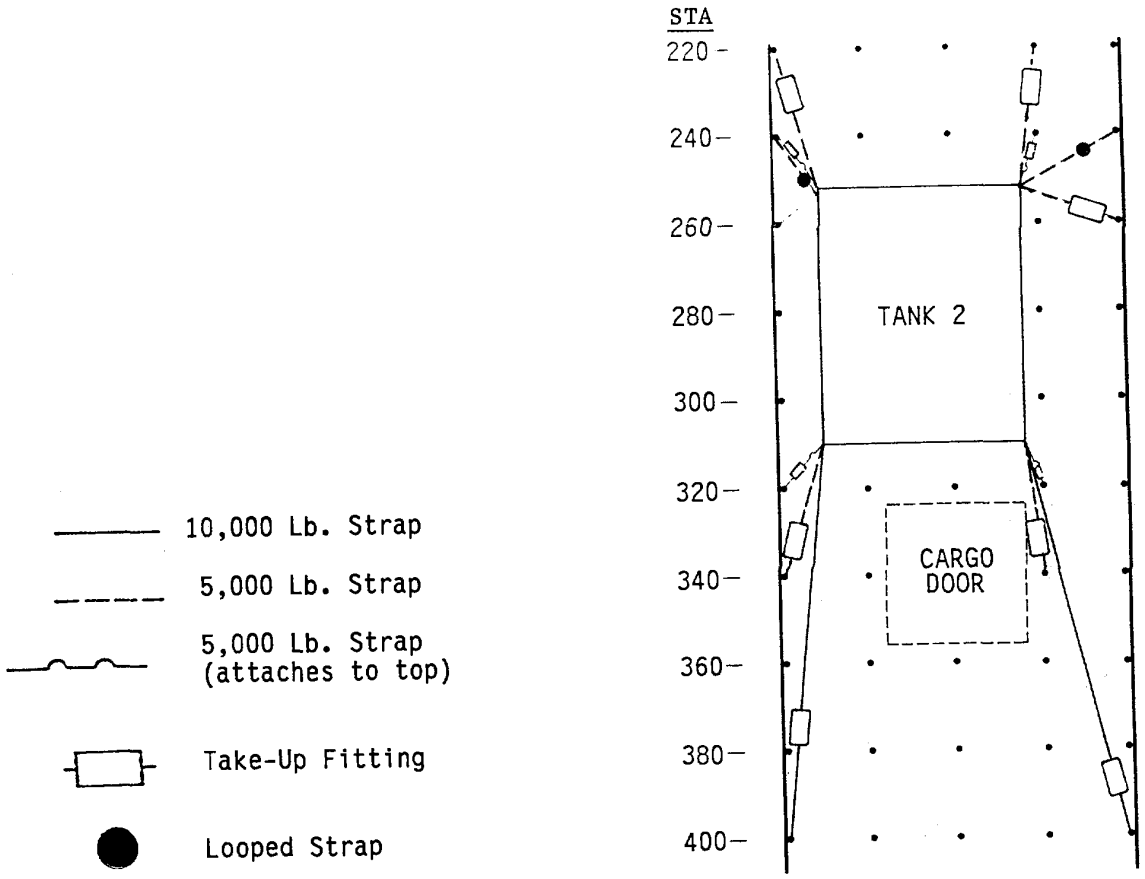


Figure 2-6. ERFS No. 2 Tank Installation and Tiedown

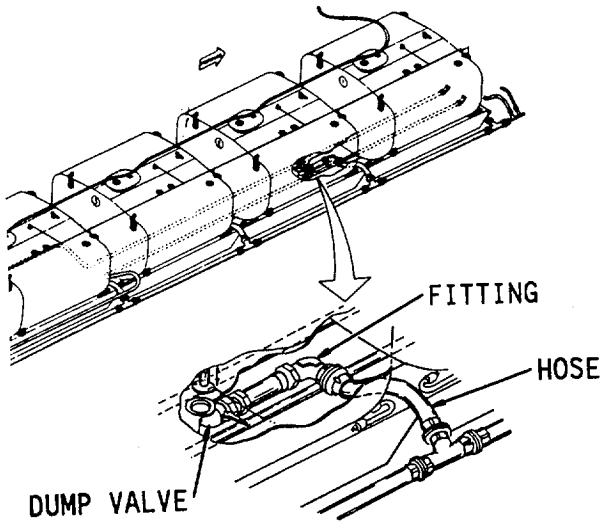


Figure 2-7. Manifold Hose and Fitting Installation

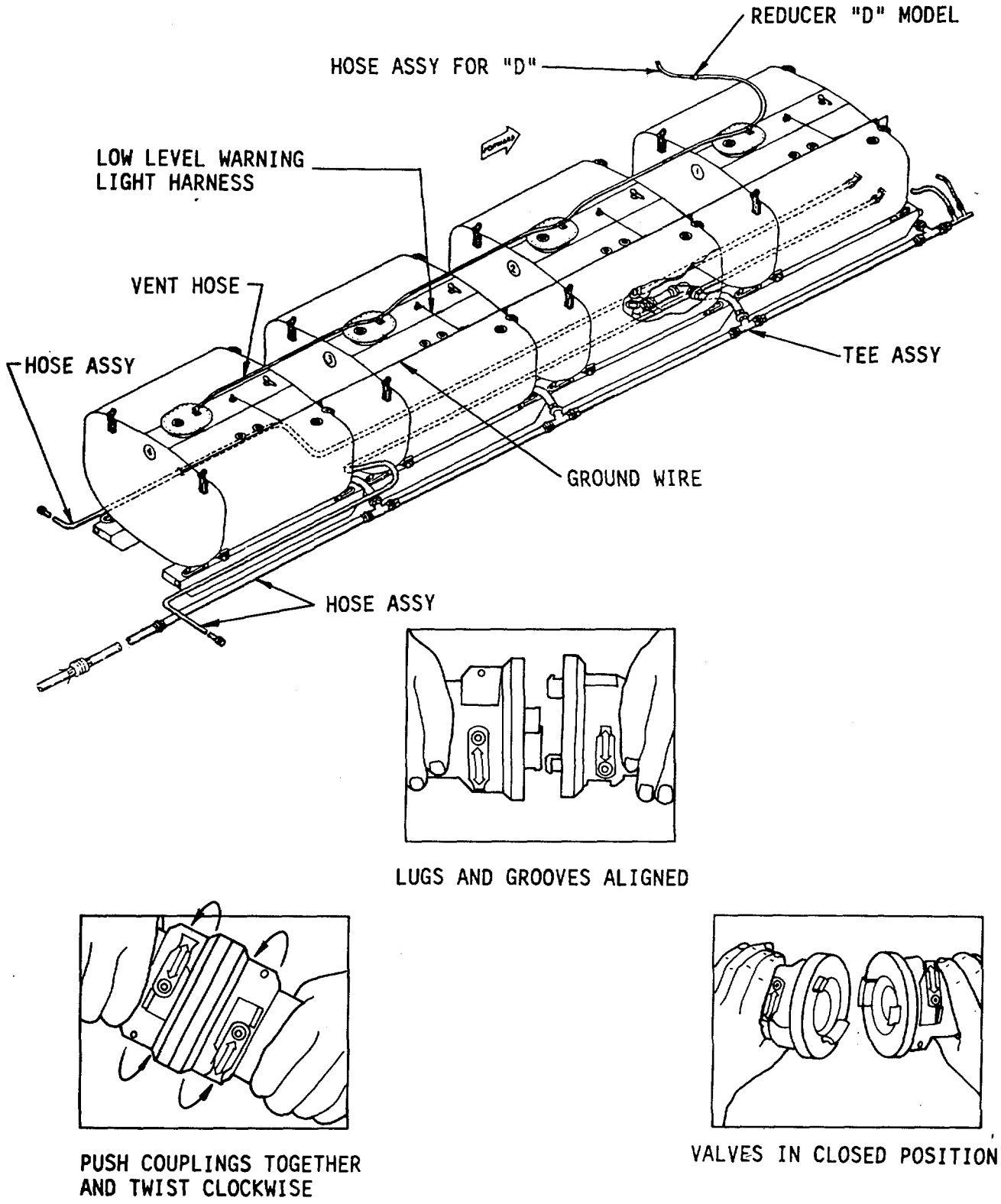


Figure 2-8. Manifold and Hose Couplings Installation

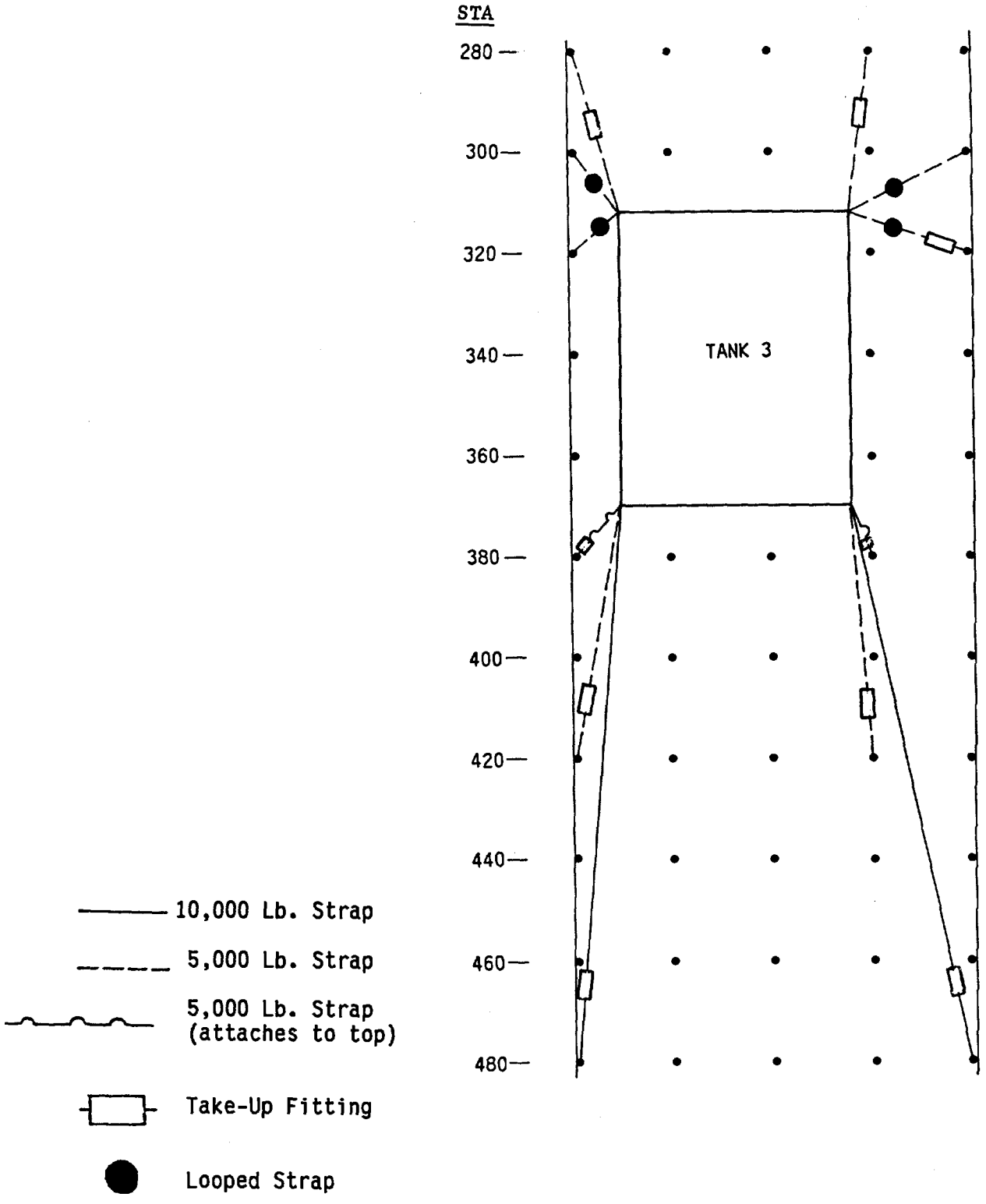


Figure 2-9. ERFS No. 3 Tank Installation and Tiedown

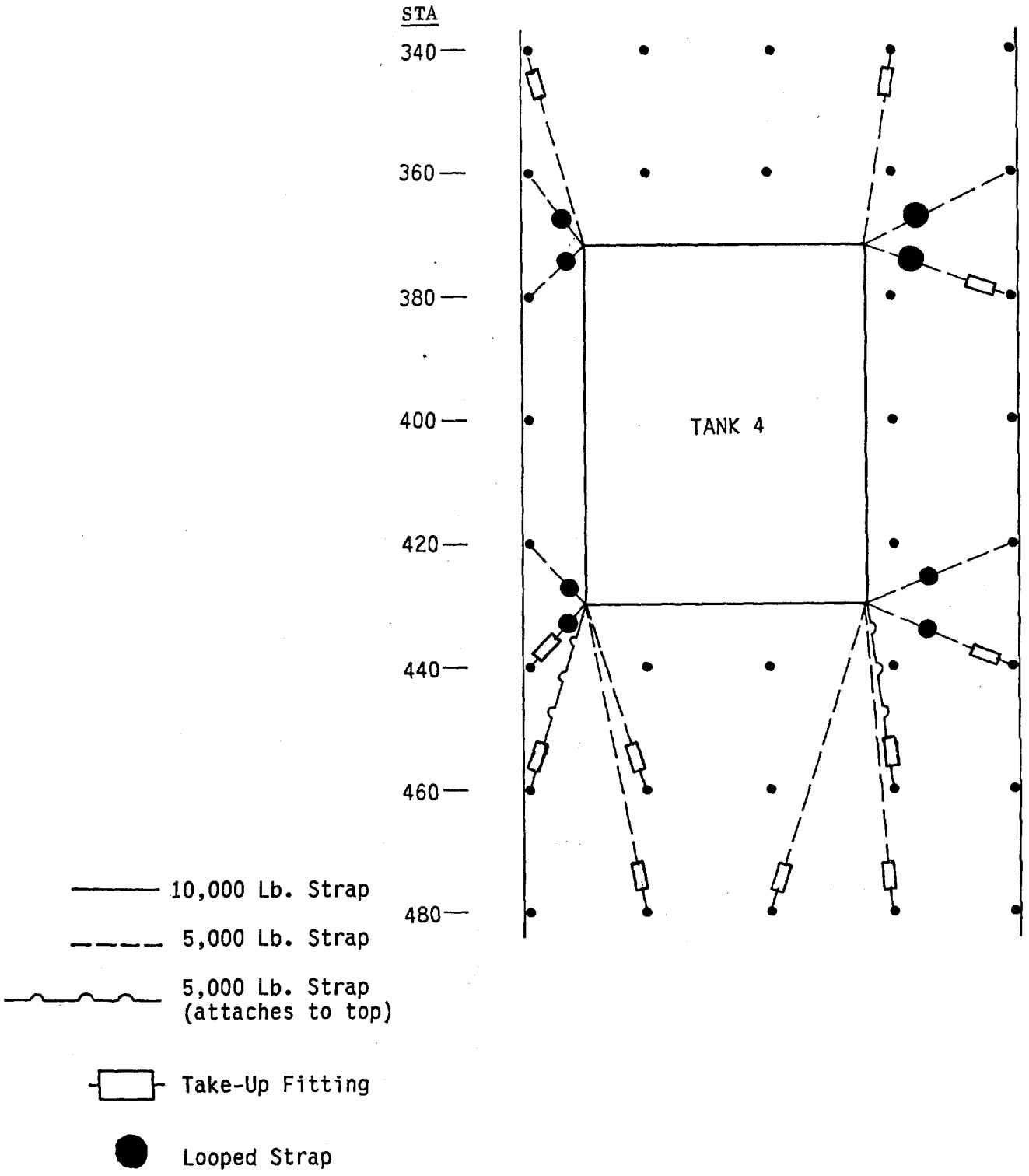


Figure 2-10. ERFS No. 4 Tank Installation and Tiedown

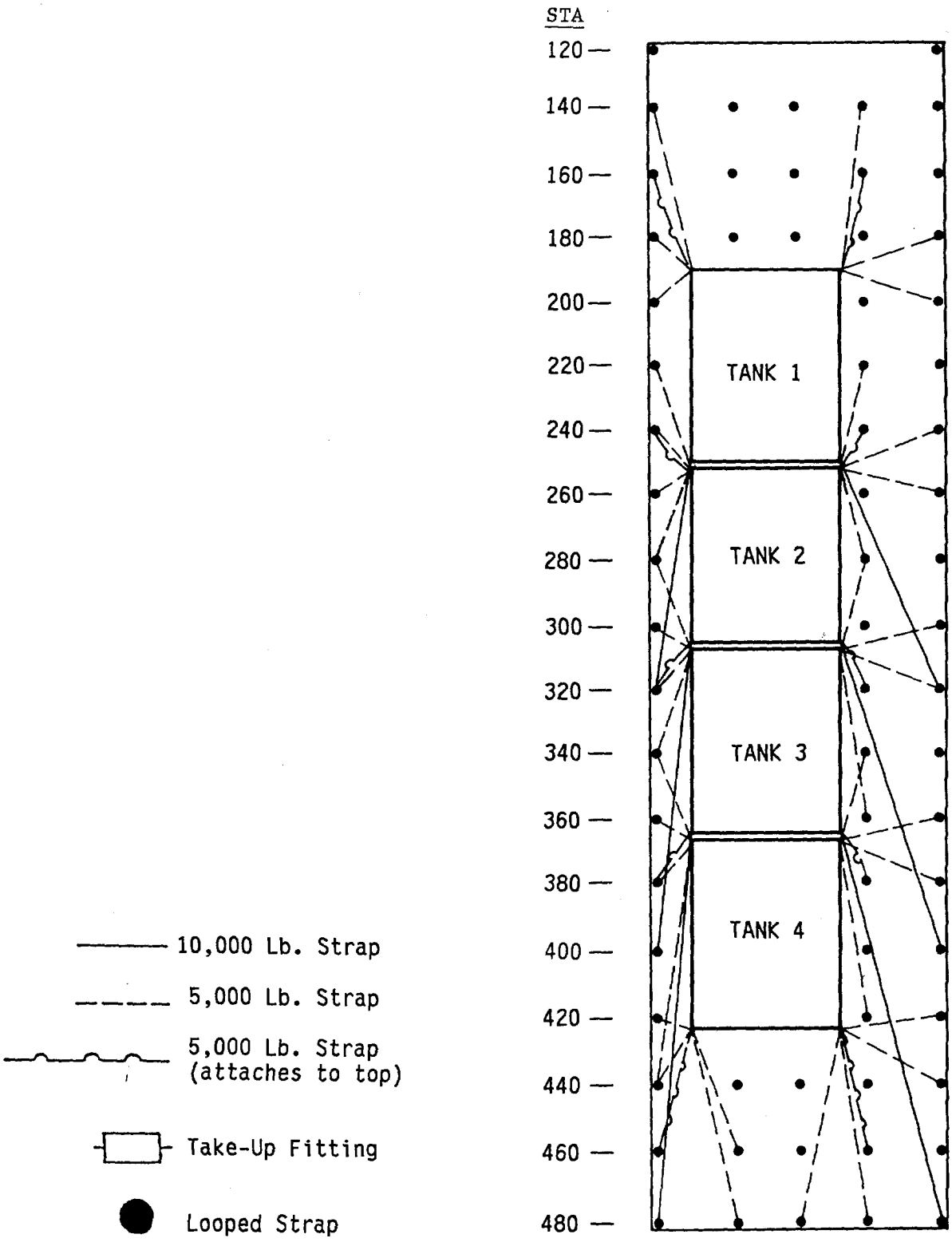


Figure 2-11. ERFS Tank Installation and Secured

t. Route hoses (7) between tank No. 3 and tank No. 4, and connect to the helicopter's respective fuel supply coupling.

u. Install grounding strap to existing aircraft grounding point.

v. Connect vent from tank to tank fitting and then to aircraft fitting, Figure 2-8.

WARNING

All vent lines must be connected from tank to tank and to aircraft overboard vent. Aircraft overboard vent cap must be removed anytime ERFS is installed.

w. Remove aircraft vent cap from top of fuselage.

x. Check all hoses and couplings for proper installation, Figure 2-12.

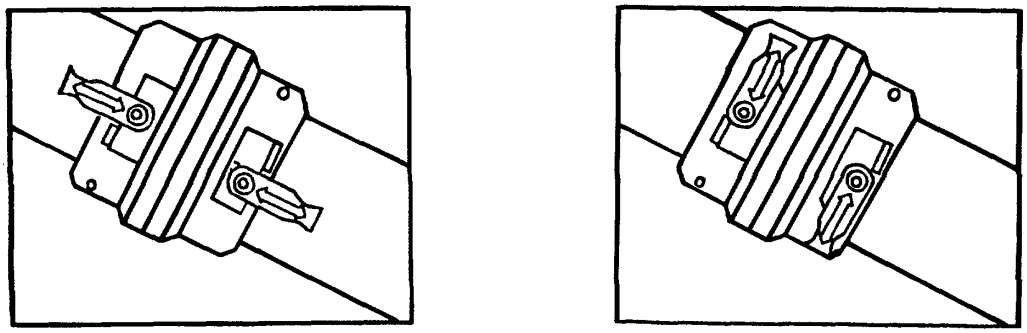


Figure 2-12. System Couplings Installation

2-7. SYSTEM INSTALLATION WITH HELICOPTER INTERNAL CARGO SYSTEM (HICHS), AND 463L PALLETS.

NOTE

- **Tanks cannot be loaded on aircraft while attached to 463L pallet.**
- **If HICHS is installed, the aircraft ferry fuel connection must have been raised above the heater buffer panel.**
- **Aircraft CG will vary with HICHS installed.**

a. Up to three 463L pallets are used for a four tank installation in accordance with TM 55-1680-358-12&P.

b. The No. 1 tank will be loaded on the most forward 463L pallet.

c. Installation sequence shall be the same as described in paragraph 2-6 except for use of tiedown configurations. For installation of tiedown strap assemblies, refer to Table 2-3. Installation sequence shall be as shown in the figures listed below.

- One tank of four w/pallet, Fig 2-13
- Two tanks of four w/pallets, Fig 2-14
- Three tanks of four w/pallets, Fig 2-15
- Four tanks w/pallets, Fig 2-16

- One tank w/one pallet, Fig 2-17
- Two tanks w/pallets, Fig 2-18
- Three tanks w/pallets, Fig 2-19
- Four tanks w/pallets, Fig 2-20

d. Place plywood shoring between pallet and tank skid, and position edge of right-hand skid 28.5 inches to the left of pallet, Figure 2-13. Front top leading edge of tank will be lined up with station 200.

Table 2-3. ERFS Tiedown Strap Quantity Configurations with 463L Pallets

Installing 4 Tanks

TANK	FWD		AFT	
	5K	10K	5K	10K
1	8	0	2	2
2	6	0	4	2
3	4	0	4	2
4	4	0	6	2

	STRAP QTY
5,000 Lb. -	38
10,000 Lb. -	8
	46

Installing 3 Tanks

TANK	FWD		AFT	
	5K	10K	5K	10K
1	6	0	2	2
2	6	0	4	2
3	4	0	6	2

5,000 Lb. -	28
10,000 Lb. -	6
	34

Installing 2 Tanks

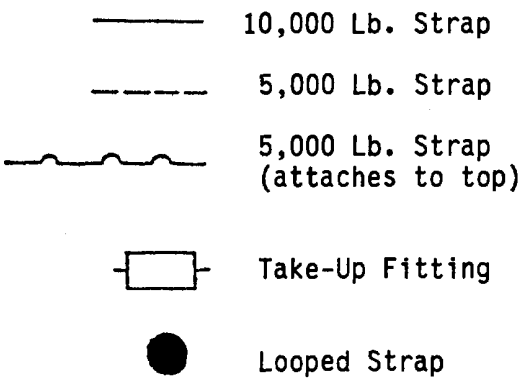
TANK	FWD		AFT	
	5K	10K	5K	10K
1	6	0	2	2
2	6	0	6	2

5,000 Lb. -	20
10,000 Lb. -	4
	24

Installing 1 Tank

TANK	FWD		AFT	
	5K	10K	5K	10K
1	8	0	8	2

5,000 Lb. -	16
10,000 Lb. -	2
	18



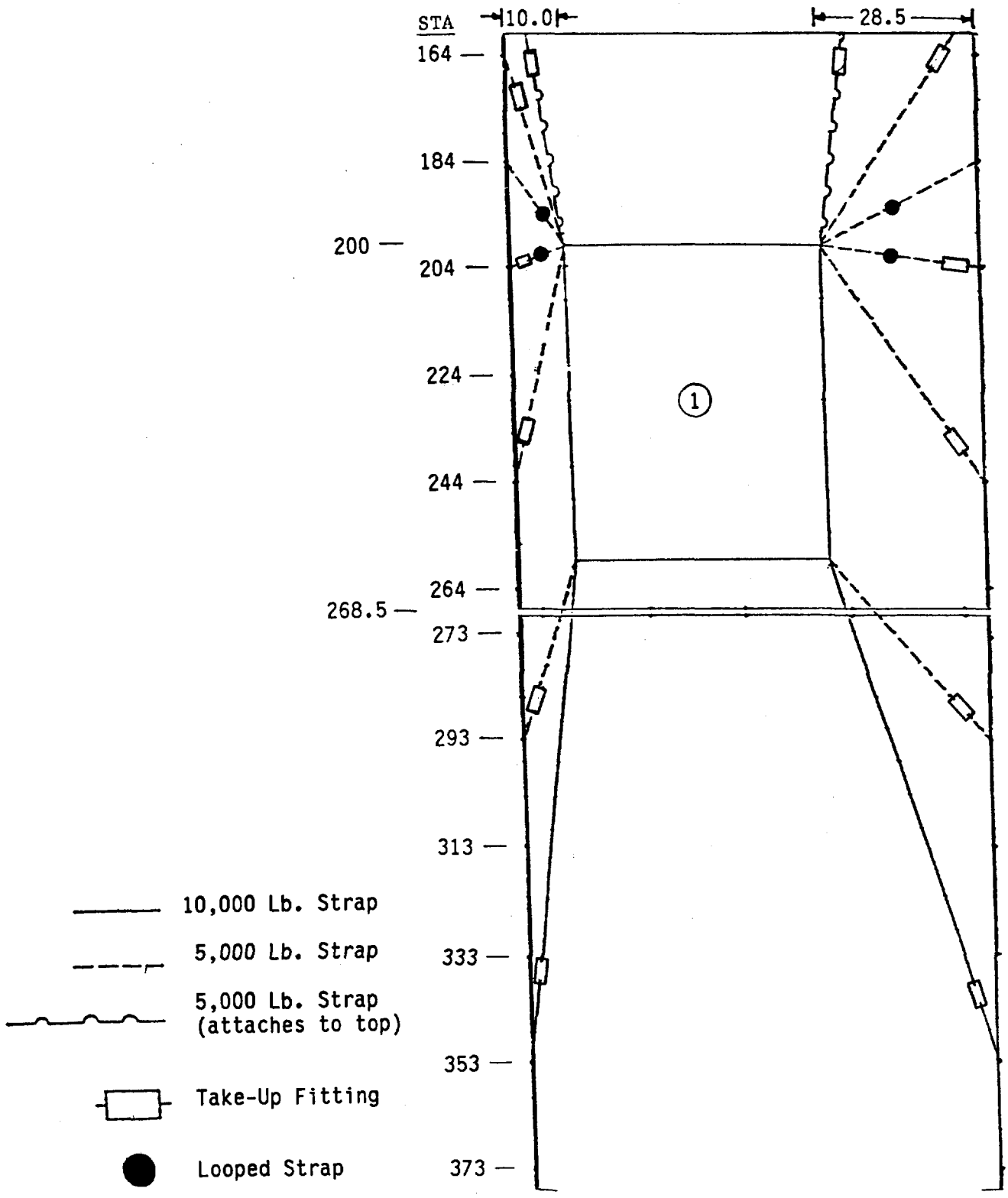


Figure 2-13. One Tank of Four with Pallet

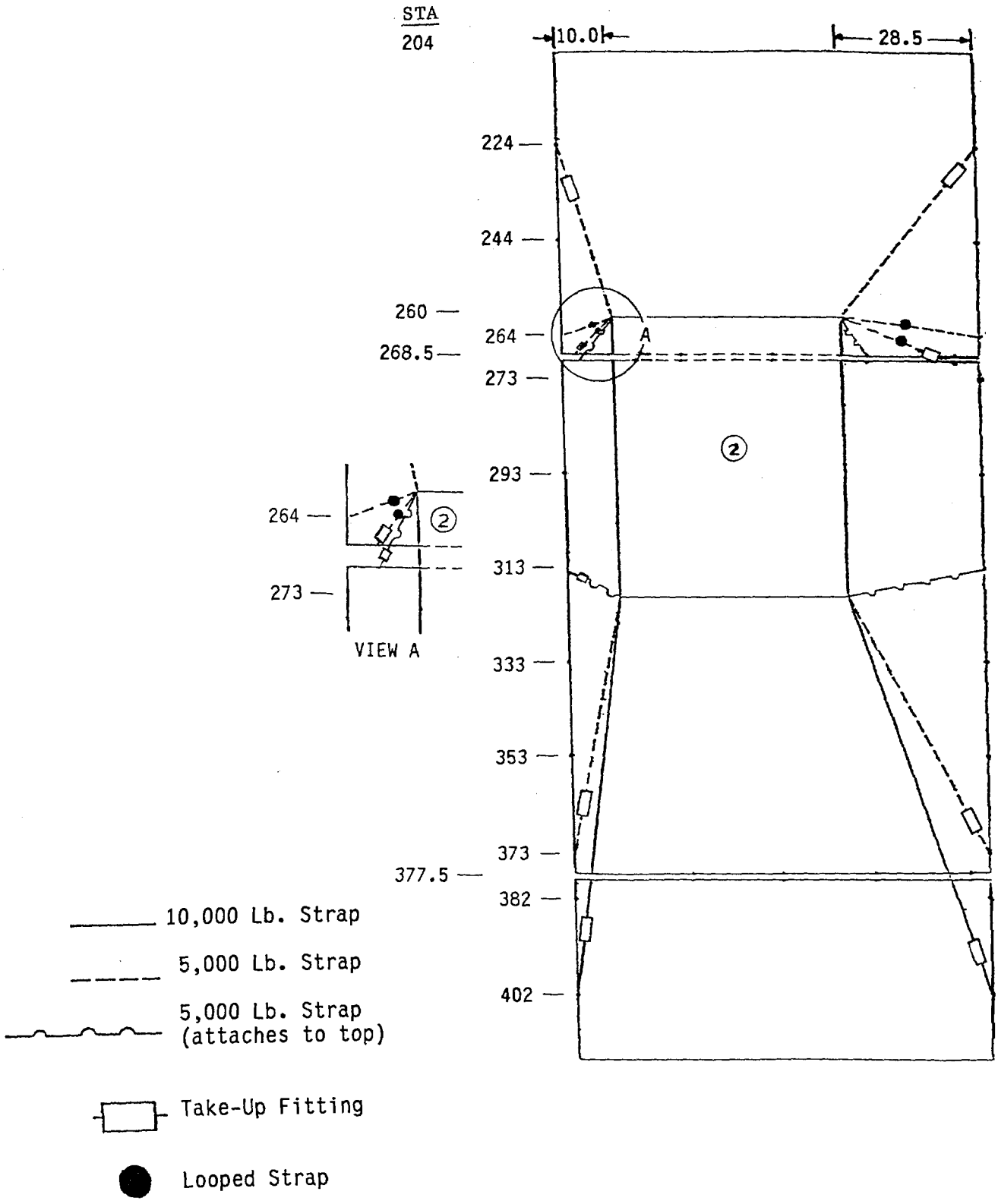


Figure 2-14. Two Tanks of Four with Pallets

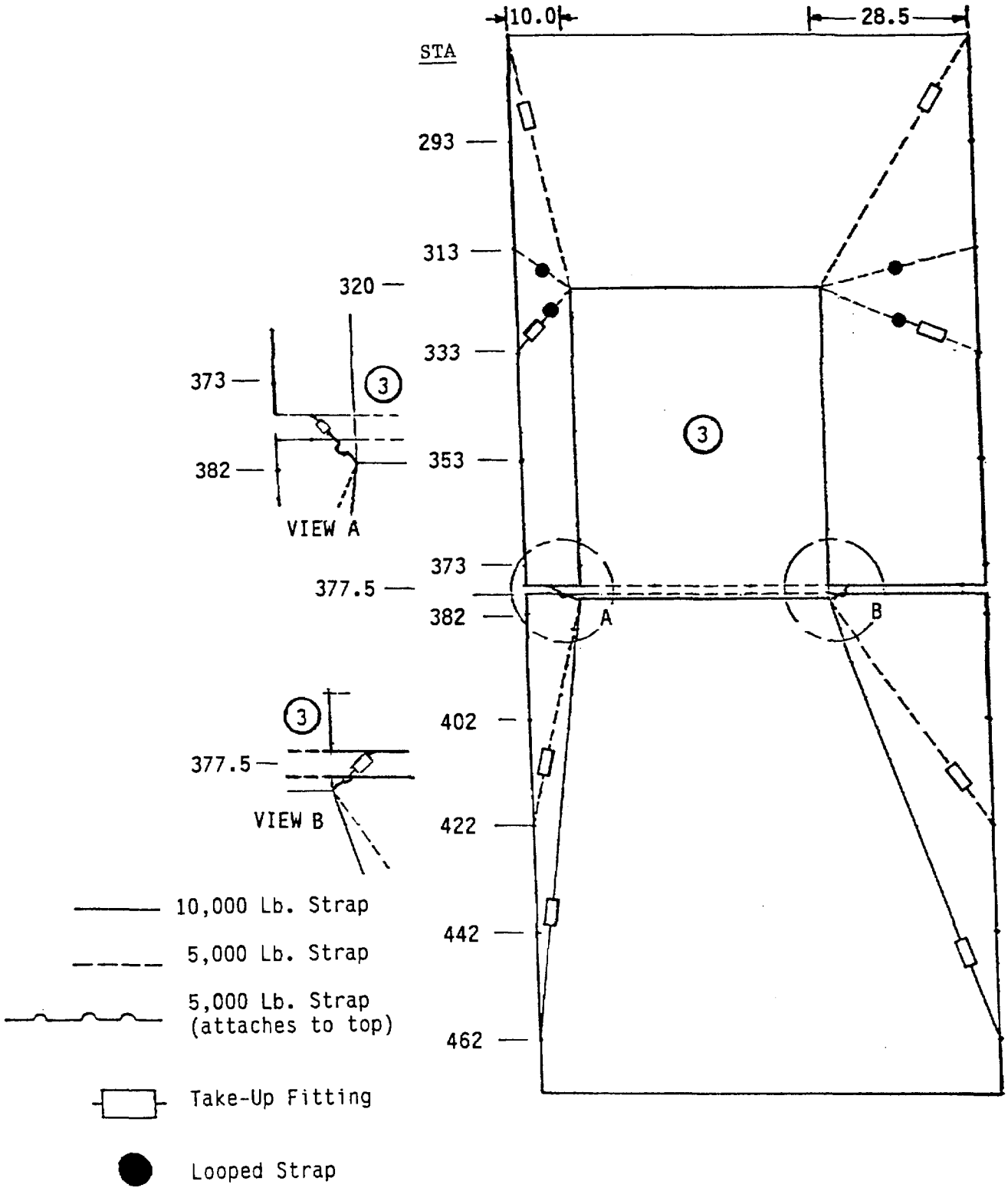


Figure 2-15. Three Tanks of Four with Pallets

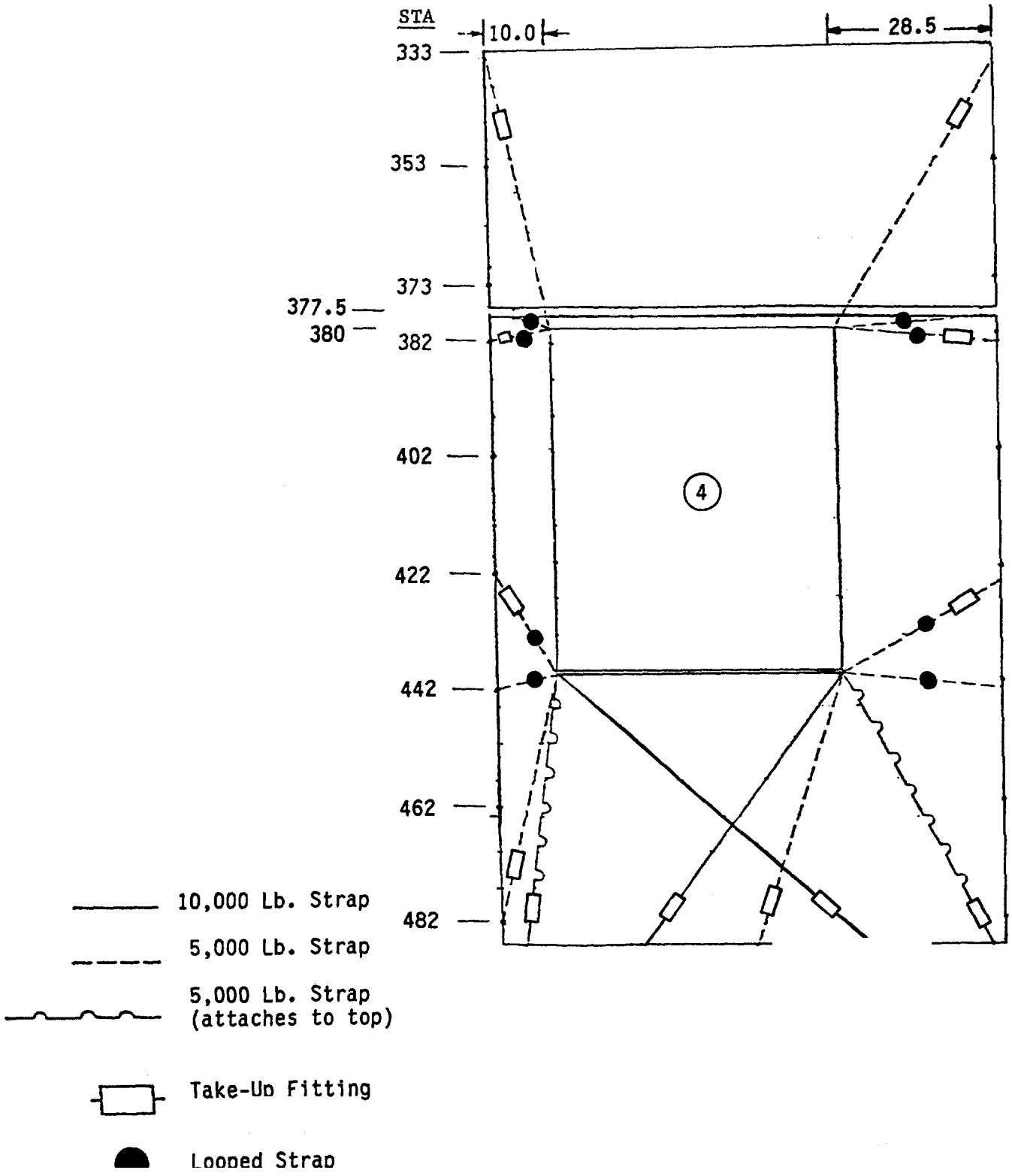


Figure 2-16. Four Tanks with Pallets

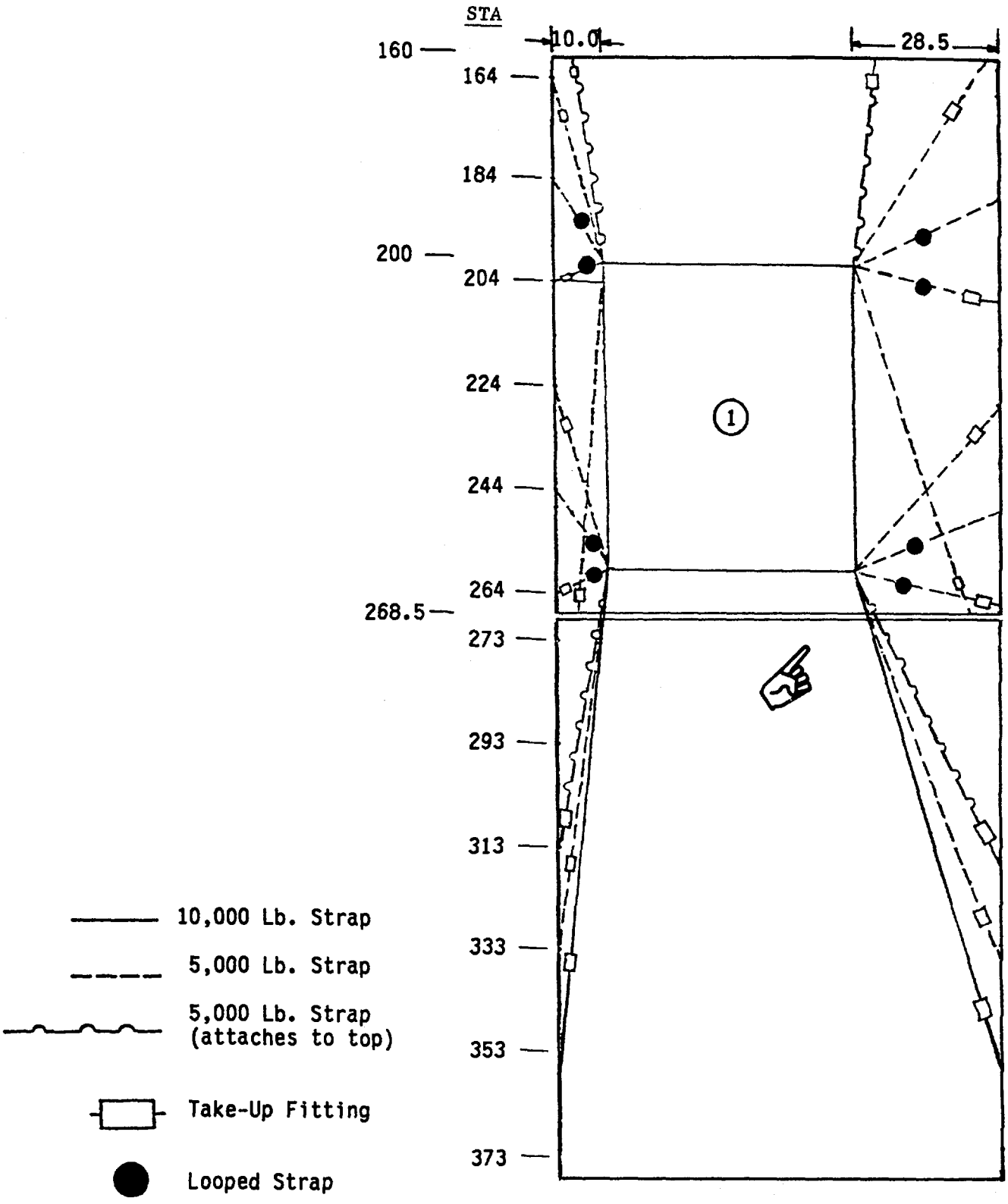


Figure 2-17. One Tank with One Pallet

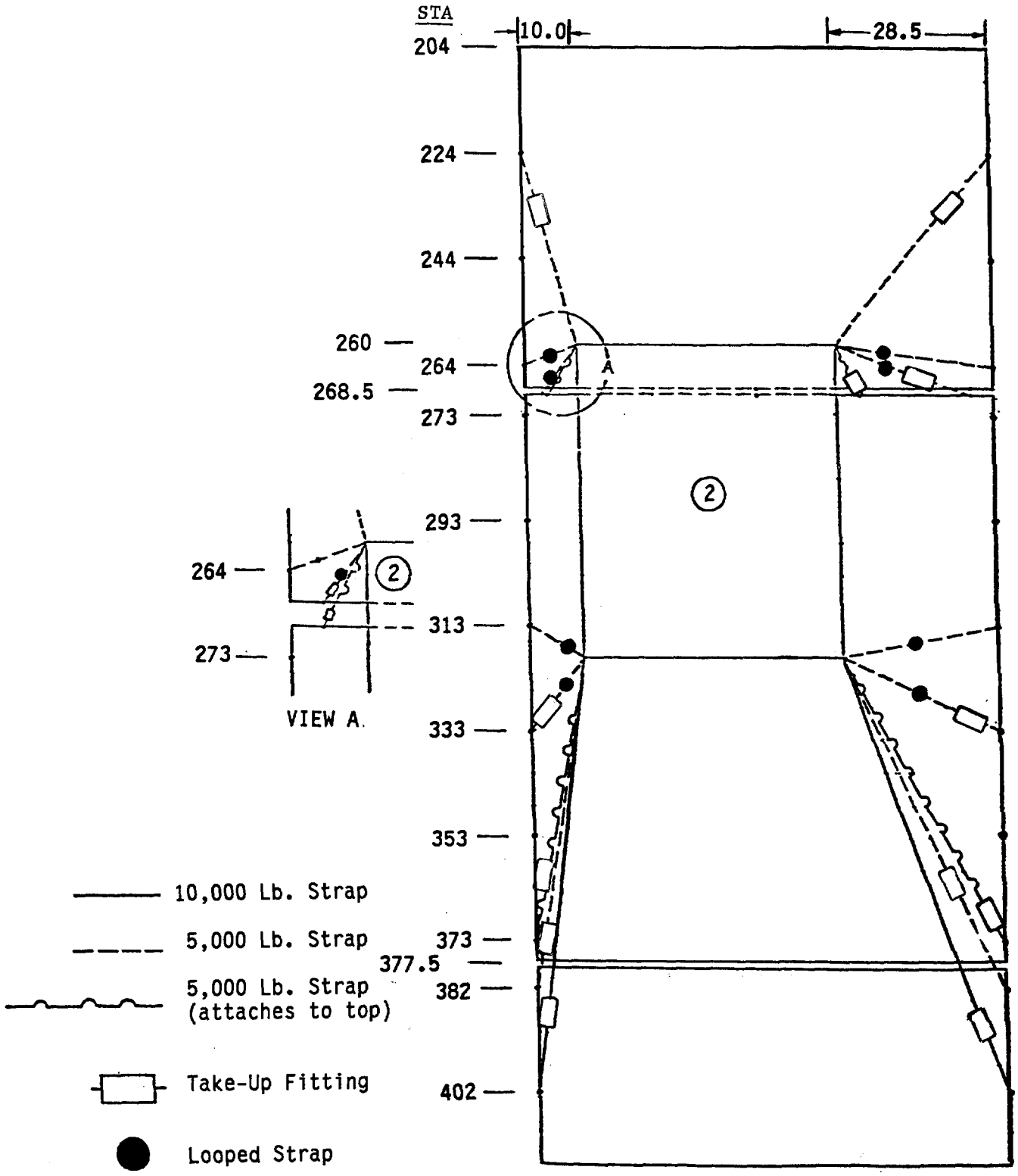


Figure 2-18. Two Tanks with Pallets

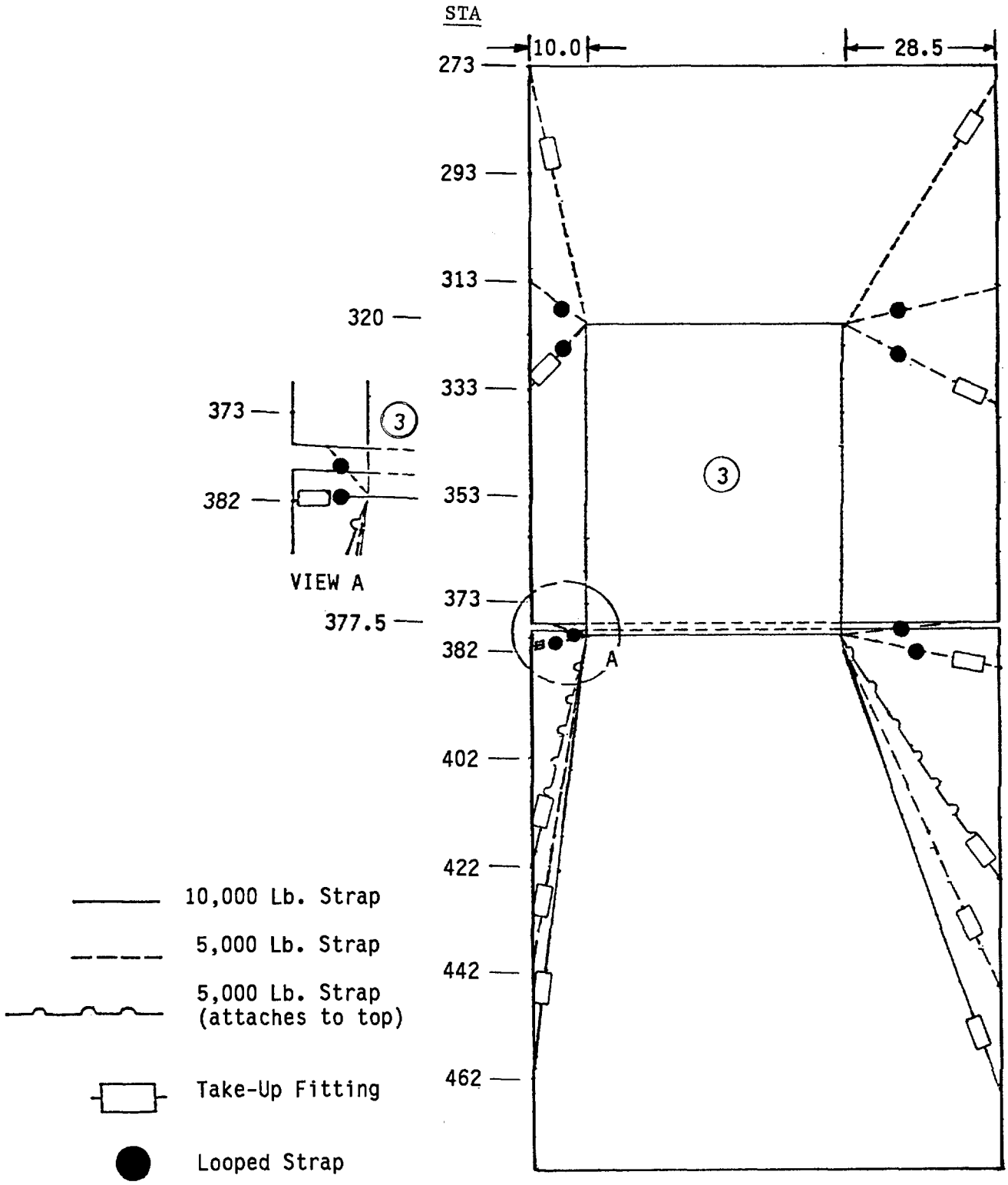


Figure 2-19. Three Tanks with Pallets

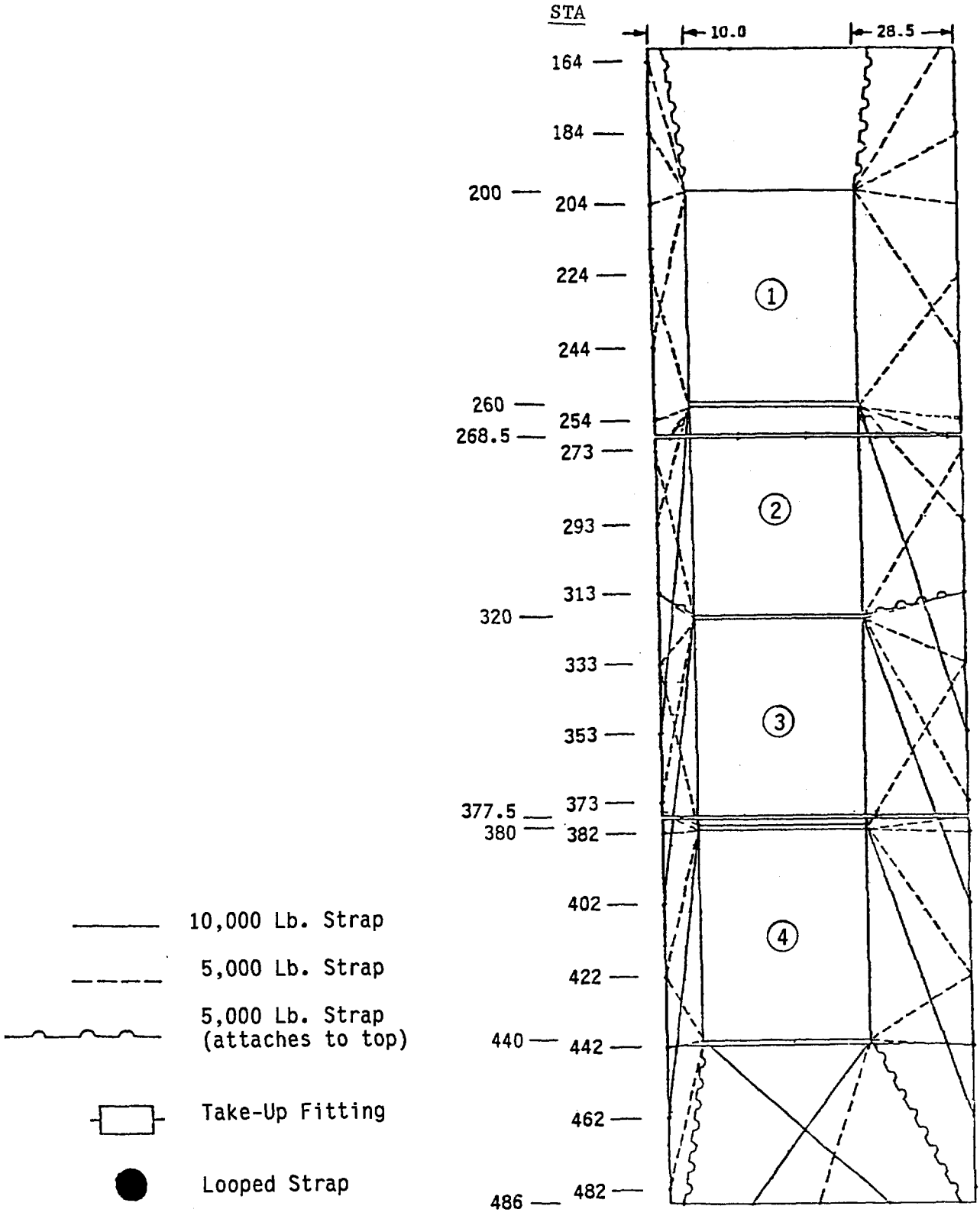


Figure 2-20. Four Tanks with Pallets

Section IV. OPERATING INSTRUCTIONS

WARNING

Smoking not permitted anytime on military aircraft.

CAUTION

FMCP pumping system will not be operated without fuel in the 600 gallon tanks, or with tank cam lever in the "CLOSED" position.

NOTE

System fuel pumps are self-priming.

2-8. SCOPE. Operating instructions are provided in this section for the ERFS and FMCP. A description on how to use operator controls and indicators is also provided. Included in this section are the preventive maintenance checks and services (PMCS) procedures, and instructions for operation of the ERFS under usual and unusual conditions.

2-9. CONTROLS AND INDICATORS. The controls and indicators for the ERFS and FMCP are illustrated and described in Figure 2-21, Table 2-4, and Figure 2-22, Table 2-5. Figure index numbers key each control and indicator to the pertinent information in the tables.

2-10. PREFLIGHT INSPECTION. In addition to the preflight inspection procedures defined in TM 55-1520-240-10, perform the applicable checks and services listed on the PMCS, Table 2-6, prior to applying electrical power for system operation.

CAUTION

A fuel sample is required before the first flight of the day and after each refueling.

NOTE

To avoid tripping system circuit breakers, do not turn on any two pump switches at once (2, Figure 2-23). Allow at least 10 second delay between each pump switch actuation.

a. Check all fuel manifold lines, electrical lines, grounding cables, and vent lines to ensure that they are properly secured and connected.

b. Check for chafing of fuel manifold lines and tiedown straps.

c. Ensure tank tiedown straps are secured.

d. Ensure ERFS tanks are properly fueled, 580 gallons maximum per tank.

e. Take fuel sample from each tank.

2-11. TURN-ON PROCEDURES. To turn system ON, use the following procedures:

a. To apply power to the ERFS, the APU or engines must be operating. The FMCP electrical power cords connect to electrical receptacles on the LH/RH side of the aircraft at station 260.

b. Open appropriate tank cam levers (dump valves).

c. Power ON. Perform power ON checks prior to system operation, Figure 2-23.

d. Ensure the indicator lights (1) are operative by press to test method. Lights should be ON when pumps are in operation, Figure 2-23.

e. Each toggle switch (2) activates its respective pump when in ON position, and shuts pumps off when in OFF position, Figure 2-23.

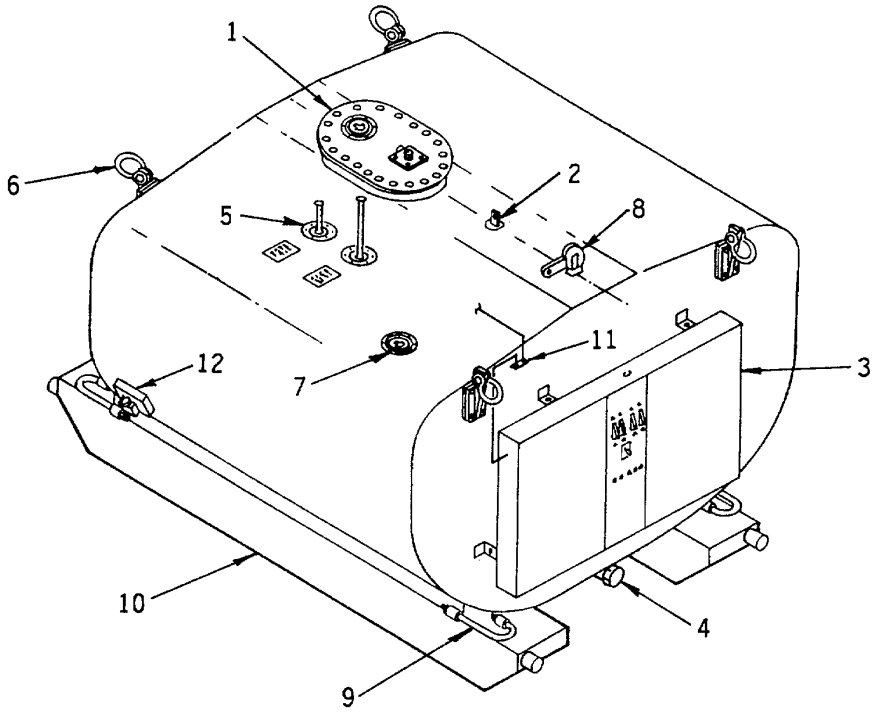


Figure 2-21. ERFS Controls and Indicators

Table 2-4. Controls and Indicators Function

KEY	CONTROL OR INDICATOR	FUNCTION
1	Access Cover	Can be removed to gain access to tank to make repairs.
2	Low Level Float Switch	Activates low level warning light.
3	Fuel Management Control Panel	Contains system pumps and operation switches and breakers.
4	Fuel Fitting	Dispenses fuel from tank for system use.
5	Liquid Level Indicators	Indicate fuel quantity in tank.
6	Hoisting Eyes	Used to hoist tank.
7	Fill Port	Used to service tank with fuel.
8	Tank Cam Lever(dump valve)	Opens and closes fuel dispensing valve.
9	Tiedown Assembly	Used to secure tank to cargo floor.
10	Skid Assembly	Supports used to mount tank.
11	Ground Receptacle	Used for grounding tank when refueling.
12	Drain	Drains fuel for sample check.

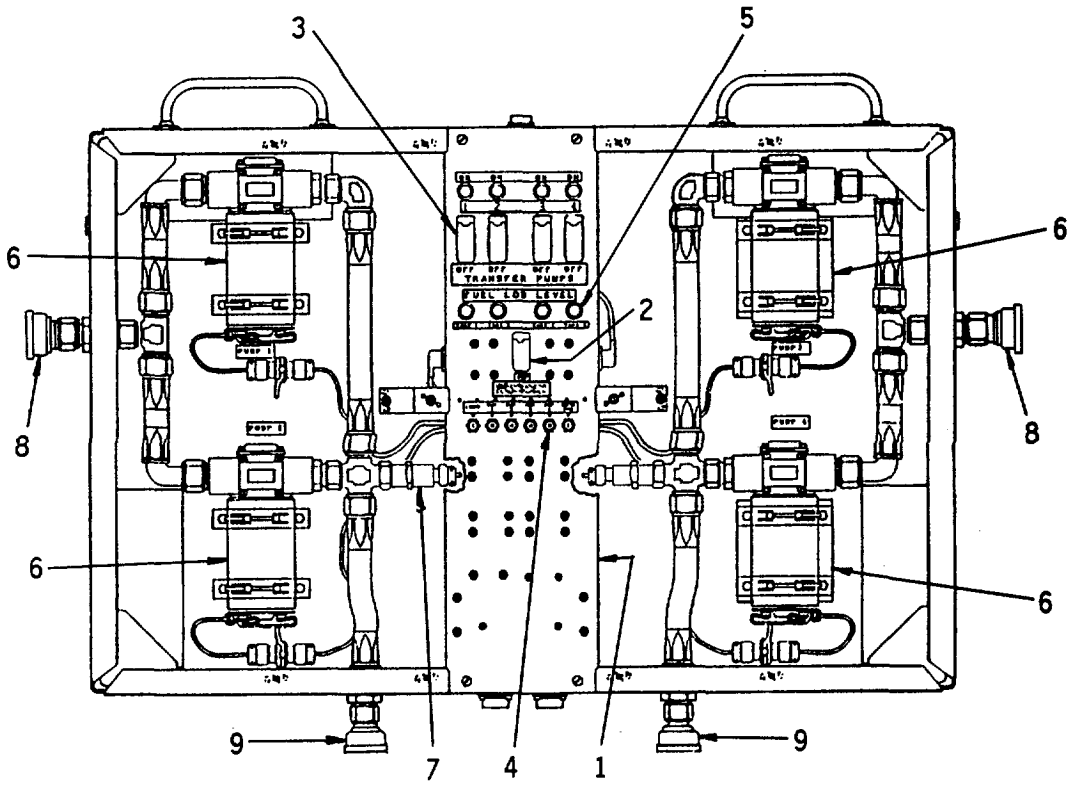


Figure 2-22. FMCP Controls and Indicators

KEY	CONTROL OR INDICATOR	FUNCTION
1	Electrical Control Panel (ECP)	Houses electrical operation switches, breakers, and pumps.
2	Auto Transfer Pump Override Switch	Overrides pressure switches if switches malfunction.
3	Pump Switches (4 each)	Activates or shuts pumps with switch on "on" or "off" position.
4	Circuit Breakers (6 each)	Controls low level lights, pump switches, and lights and override switch.
5	Low Level Warning Light	Illuminates when fuel quantity is low.
6	Fuel Pumps (4 each)	Transfer fuel from 600 gallon tanks.
7	Sensor Level Electro Optical	Shuts off pumps automatically when fuel pressure is below 1.5 pounds.
8	Fuel Inlet Coupling	Admits fuel into system.
9	Fuel Outlet Coupling	Discharges fuel to aircraft tanks.

Table 2-5. Controls or Indicators Function

f. Fuel low level light indicators (3). Check to test operation; press and test the four lights. Low level light will illuminate when fuel quantity in each tank is approximately one minute from being empty, Figure 2-23.

g. The override switch (4) overrides the fuel pressure switches, Figure 2-23.

h. System circuit breakers (5) will trip if indicator lights, pumps, or override switch malfunctions. All circuit breakers must be pushed in prior to system operation, Figure 2-23.

i. Turn pump switch (2) ON and hold until pump engages, Figure 2-23.

2-12. OPERATION. The ERFS system is an auxiliary fuel system designed to supplement the aircraft standard fuel system. Refer to Figure 2-24 and the following procedure for operating procedures.

NOTE

- **In order to maintain aircraft CG, suggested tank burn sequence is 4, 1, 3, 2.**

- **After aircraft ground checks but prior to flight, ensure positive fuel flow from ERFS to aircraft fuel system.**

a. Initiate fuel transfer when the aircraft's main fuel tanks have decreased 1000 pounds or sooner. The ERFS is designed as an automatic system. Once fuel transfer is initiated, the pumps can be turned on and simply monitored. One fuel pump per side is enough to meet the demands of the aircraft. Two pumps per side are installed for redundancy and for faster fuel transfer if desired.

b. Ensure tank cam lever for selected tank is open.

c. Turn all pump switches (3) (four each) ON, Figures 2-22, 2-23, and 2-24.

NOTE

Do not use liquid level indicator for continuous fuel quantity readings during flight. Use only as necessary. Lock in place after use.

d. Transfer fuel until low level warning lights (5) come on, Figure 2-22.

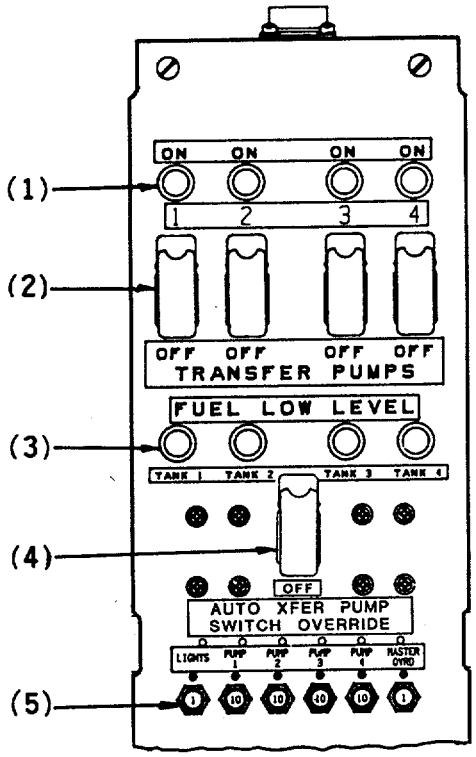
NOTE

Preferred method of operation is to turn all pumps ON during fuel transfer. Allow at least 10 second delay between each pump switch actuation.

2-13. TURN-OFF PROCEDURES. Turn-off system operation as follows:

a. Turn all pump switches (3) (four each) OFF, Figure 2-22.

b. Close cam lever (8), Figure 2-21.



1. Indicator Lights (press test).
2. Pump switches.
3. Low Level Warning Lights.
4. Auto Transfer Pump Override Switch.
5. Circuit Breakers.

Figure 2-23. ERFS Fuel Management Electrical Control Panel (ECP)

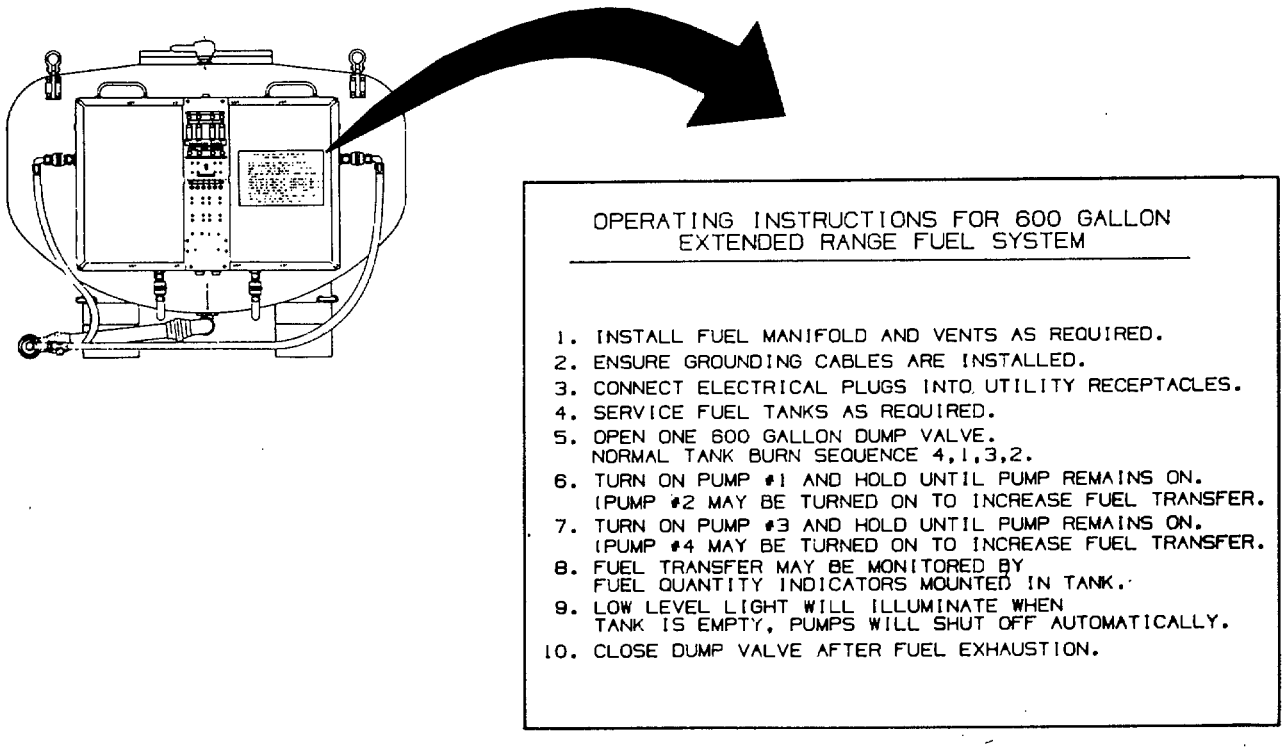


Figure 2-24. ERFS Operating Instructions

Section V. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-14. SCOPE. The ERFS requires some preventive maintenance checks and services. Once the system is installed on the aircraft, it will be treated as part of the aircraft. PMCS are normally visual inspections of the fuel tanks, fuel system hoses, fittings, and the FMCP. The FMCP checks consist of checking lights, switches, and pumps, Table 2-6.

WARNING

Installing the non-crashworthy ERFS increases the potential for thermal injuries during a crash sequence. Therefore, the number of personnel on board the aircraft will be kept to the minimum required to perform the required mission. Additionally, all personnel are required to be seated with a lap belt during flight.

2-15. PMCS PROCEDURES. Inspections and services required to be performed are listed on Table 2-6.

a. Before operations, perform your "before" (B) PMCS.

b. After operation, be sure to perform your "after" (A) PMCS.

c. If your equipment fails to operate, troubleshoot as per Chapter 3, Section III. Enter deficiencies or discrepancies on proper forms as per DA PAM 738-751, TAMMS-A.

Table 2-6. Operator/Crew Preventive Maintenance Checks and Services

ITEM NO.	B-BEFORE A-AFTER W-WEEKLY B	A	W	ITEMS TO BE INSPECTED	PROCEDURES: CHECK FOR AND HAVE REPAIRED OR CORRECTED AS NECESSARY	EQUIPMENT IS NOT READY AVAILABLE IF:
					NOTE Within designated interval, these checks are to be performed in the order listed.	
1	o			Fuel Filter	Ensure that fuel filter is installed. Inspect filter and clean thoroughly .	
2	o			600 Gallon Tanks	Filled to capacity of 580 gallons. Check capacity indicated by liquid level indicators. Check security of filler port cap, access door, and vent valve.	
3	o			Fuel Sample	Drain fuel sample from each tank to check for contaminants.	Fuel samples show any kind of contamination.
4	o			Hoses, Fittings	Inspect for security, leaks, damage. Check for antichaffing pads installation, security and condition.	Loose connections, fuel leaks are evident. Anti-chaffing pads need to be replaced or installed, or if chaffing of lines has occurred.
5	o			Tiedown	Ensure that straps are securing tanks to cabin floor as required.	
6			o	Bonding Jumpers & Electrical Harnesses	Inspect for security, proper installation to tanks and damage.	

Table 2-6. Operator/Crew Preventive Maintenance Checks and Services

ITEM NO.	B-BEFORE A-AFTER W-WEEKLY B	A	W	ITEMS TO BE INSPECTED	PROCEDURES: CHECK FOR AND HAVE REPAIRED OR CORRECTED AS NECESSARY	EQUIPMENT IS NOT READY AVAILABLE IF:
7	o	o		FMCP	Installed properly on No. 1 tank, all circuit breakers in pump and override switches OFF.	Breakers, switches, lamps are not operating properly.
8	o			Panel Power Cords	Plugged into proper utility receptacle.	
9	o			Panel Lamps	Aircraft electrical power turned ON, press to test lamps.	
10	o			Fuel Pumps	Turn No. 1 pump ON, ensure that the ON light illuminates and that pump is running.	
11	o	o		Pump Switches	Check that each pump switch remains engaged after pressure switch has verified pump operation on all pumps. Turn all pumps OFF.	Switches do not engage and remain engaged.
12	o			Override Switch Function	Turn override switch ON, momentarily turn on any one pump. Pump should be operative; if pump is not operative, override switch is defective.	Override switch is inoperative or will not hold on detent.
13	o			Vent Lines	Check for obvious damage and security to aircraft vent system.	
14	o			Cam Lever	Open valve on each tank (one tank individually).	

Table 2-6. Operator/Crew Preventive Maintenance Checks and Services

ITEM NO.	B-BEFORE A-AFTER W-WEEKLY B	A	W	ITEMS TO BE INSPECTED	PROCEDURES: CHECK FOR AND HAVE REPAIRED OR CORRECTED AS NECESSARY	EQUIPMENT IS NOT READY AVAILABLE IF:
15	o			ERFS	Check entire system for fuel leaks. Each line individually. Close all cam levers after leak check.	Any fuel leaks are evident.
16	o			Low Level Warning Light	Electrical connection. Press to test warning light.	
17	o			Circuit Breakers	All breakers in with power on.	

Section VI. OPERATION UNDER USUAL CONDITIONS

2-16. ASSEMBLY AND PREPARATION FOR USE.

a. Refer to Section I for unpack- aging.

b. Refer to Section III for assembly and installation instructions.

c. Refer to Section IV, Use of Controls and Indicators and Power ON-OFF Procedures, for electrical power application.

2-17. INITIAL ADJUSTMENTS, DAILY CHECKS, AND SELF-TEST. Refer to PMCS.

2-18. OPERATING PROCEDURE. Refer to Chapter 2, paragraph 2-12.

2-19. OPERATION OF AUXILIARY EQUIPMENT. The ERFS electrical power supply is provided by an external APU generator, the aircraft APU, or the aircraft's main generators with the engines running.

2-20. OPERATING INSTRUCTIONS ON DECALS AND INSTRUCTION PLATES. Refer to Section IV, Figure 2-24.

Section VII. OPERATION UNDER UNUSUAL CONDITIONS

2-21. OPERATION IN UNUSUAL WEATHER. The ERFS system can be installed and operated in climatic conditions that are acceptable to aircraft operations.

WARNING

Installing the non-crashworthy ERFS increases the potential for thermal injuries during a crash sequence. Therefore, the number of personnel on board the aircraft will be kept to the minimum required to perform the required mission. Additionally, all personnel are required to be seated with a lap belt during flight.

2-22. EMERGENCY PROCEDURES. The ERFS is a system designed with redundant capabilities to ensure system reliability in flight.

a. In the event of an inflight fuel leak due to a manifold seal malfunction the dust cover seal can be used to replace the manifold seal.

b. Leaks in the ERFS fuel manifold system can be isolated by using the coupling shutoff characteristics.

c. Failure of pumps. If both pumps feeding one side of the aircraft fail (pumps 1 and 2), use these procedures:

(1) Place the override switch in the ON position.

(2) If pumps 1 and 2 are still inoperative, turn them OFF. Continue pumping operations with pumps 3 and 4 until all ferry fuel is transferred. Since fuel is only being pumped to one side of the aircraft, fuel management via the cross-feed method will be required.

(3) Repeat procedure in same manner if pumps 3 and 4 were to fail.

d. If pump switch fails to stay ON in flight, check to see that the FMCP pump circuit breaker is in and turn the override switch on. If the pump switch still fails to stay ON, turn the effected pump OFF. If all pump switches fail, abort mission.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

3-1. COMMON TOOLS AND EQUIPMENT. For authorized common tools and equipment, refer to the modified table of organization and equipment (MTOE) applicable to your unit.

3-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

a. When special tools, TMDE, and/or support equipment are required, they will be listed in the repair parts and special tools list (RPSTL), Appx C.

b. Refer to Appx E for fabricated items.

3-3. REPAIR PARTS. Repair parts are listed and illustrated in Appx C.

NOTE

Order any decal you need using CAGE and P/N listed in TM 55-1560- 307-13&P. Order on a DD Form 1348-6 from RIC B16.

Section II. SERVICE UPON RECEIPT

3-4. UNPACKING. Refer to Chapter 2, paragraph 2-2.

3-5. CHECKING UNPACKED EQUIPMENT. Inspect the ERFS for obvious damage or shortages incurred during packing or shipment. Damage or shortages should be reported on a SF 361, Discrepancy in Shipment Report.

3-6. TOOLS, TEST EQUIPMENT, AND MATERIALS REQUIRED FOR INSTALLATION. Refer to maintenance allocation chart (MAC), Appx B.

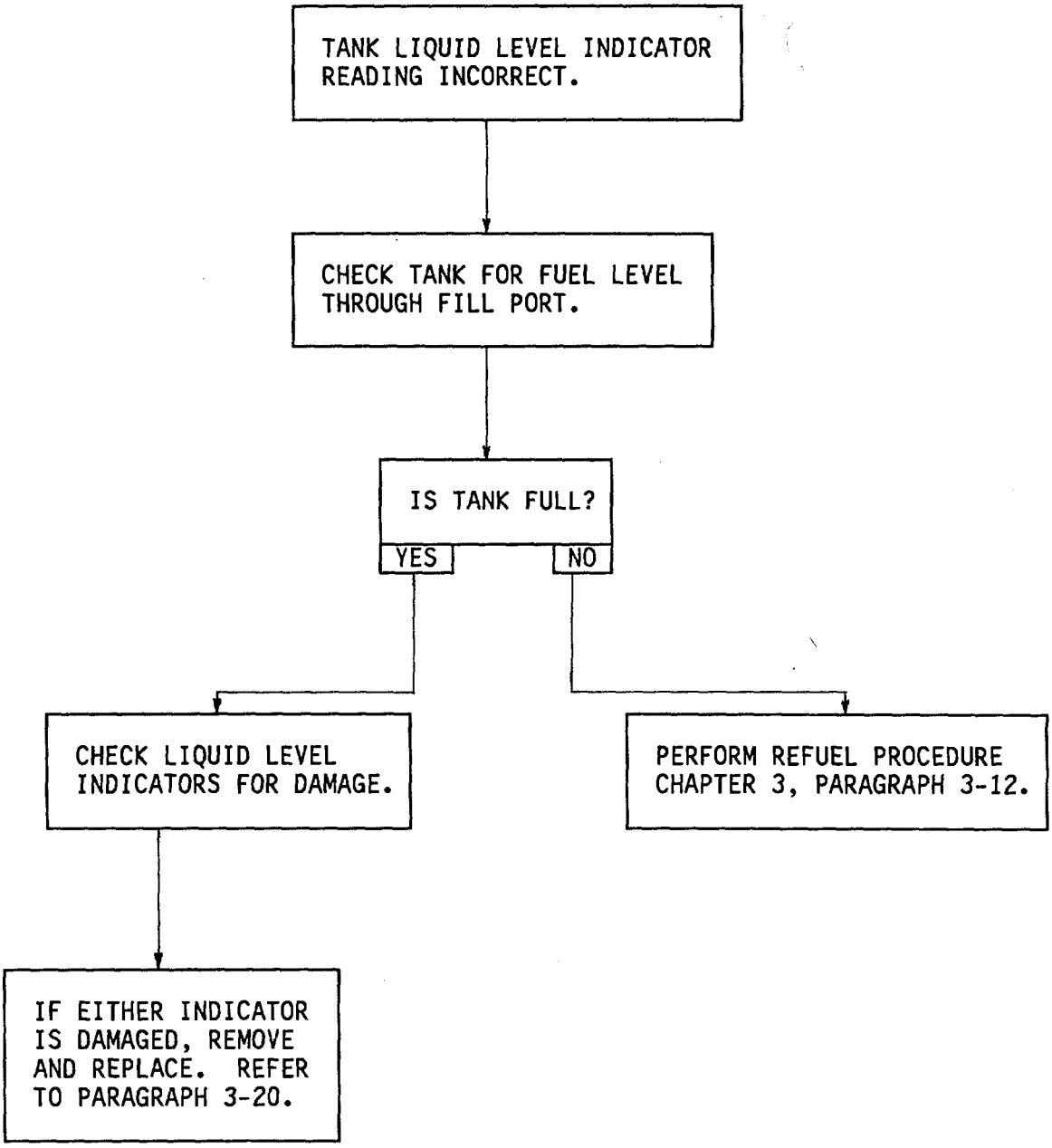
3-7. INSTALLATION INSTRUCTIONS. Refer to Chapter 2, Section III, for installation of the ERFS and system components.

Section III. TROUBLESHOOTING

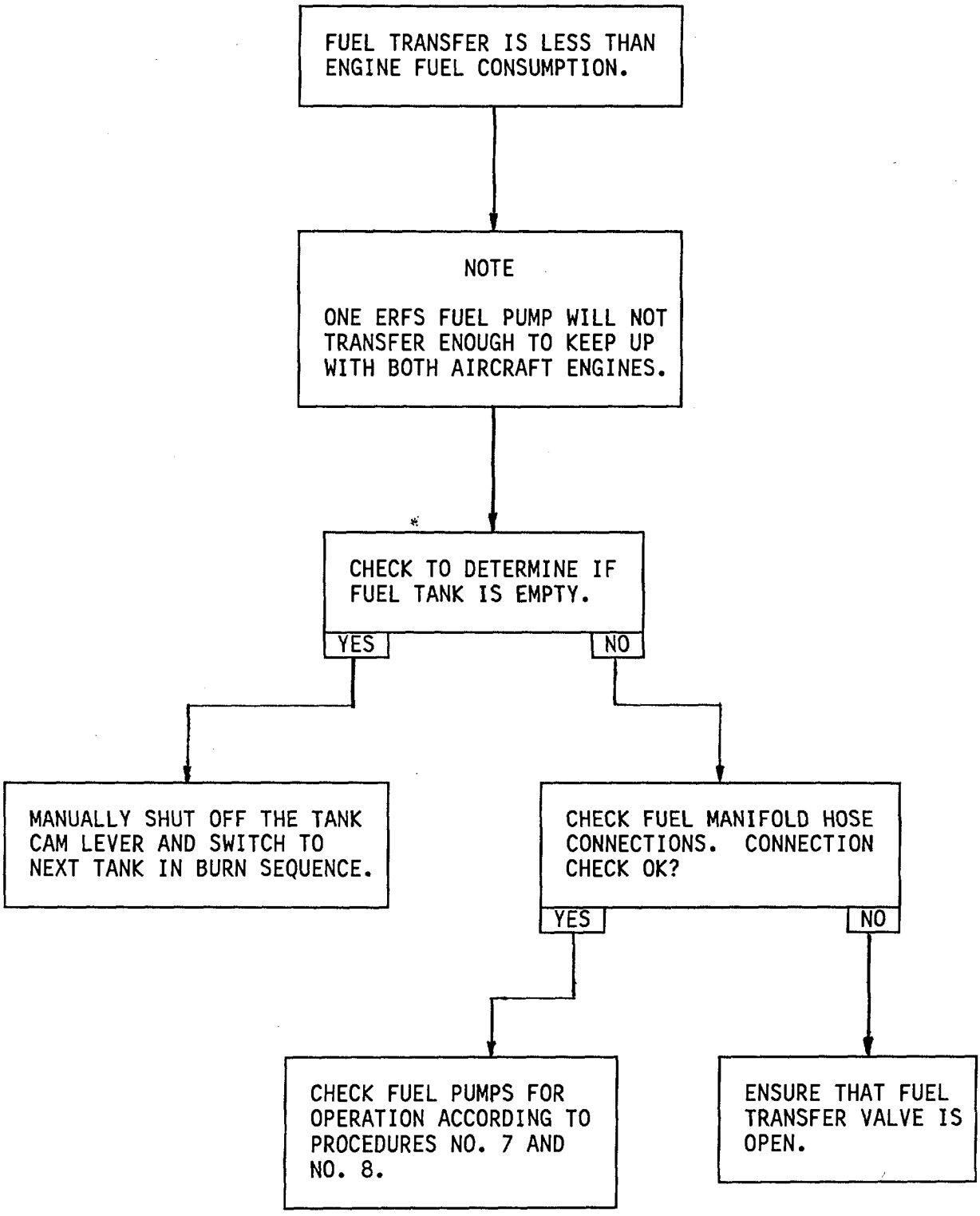
3-8. SCOPE. This section contains troubleshooting information for locating and correcting most malfunctions which may develop with the ERFS. Each malfunction is presented in logic tree format and the tests, inspections, and corrective actions should be performed in the order as listed. If a malfunction is not listed or cannot be corrected by the corrective actions listed, consult with next higher level of maintenance.

3-9. ERFS TROUBLESHOOTING. Perform operational procedures applicable to the fuel tanks in Chapter 2, Figure 2-20, to determine malfunction symptom prior to performing the troubleshooting procedure. Correct malfunctions using the troubleshooting procedures on the following pages. Refer to Figures FO-1 and FO-2 for wiring diagram and wire chart.

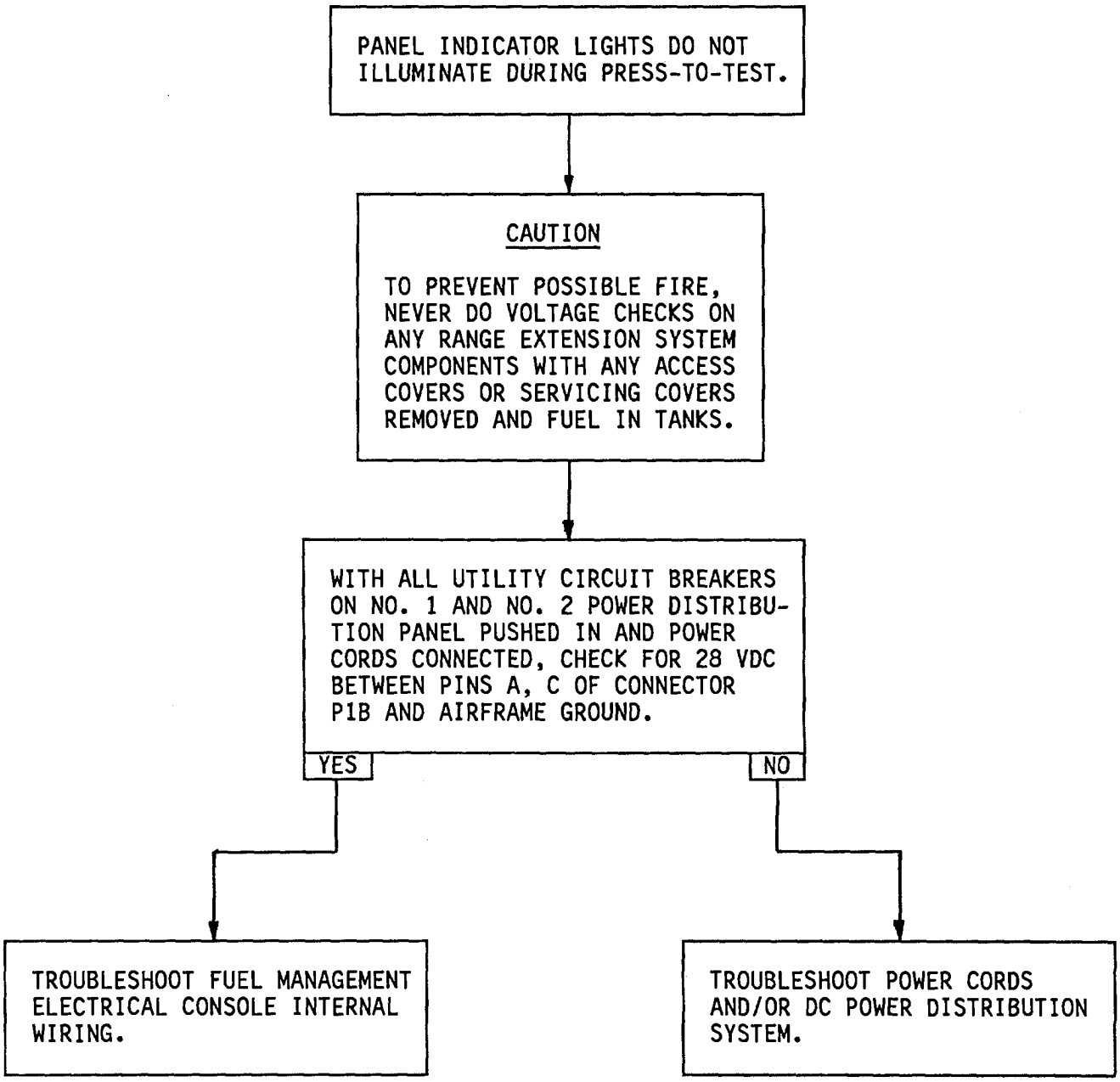
TROUBLESHOOTING PROCEDURE NO. 1



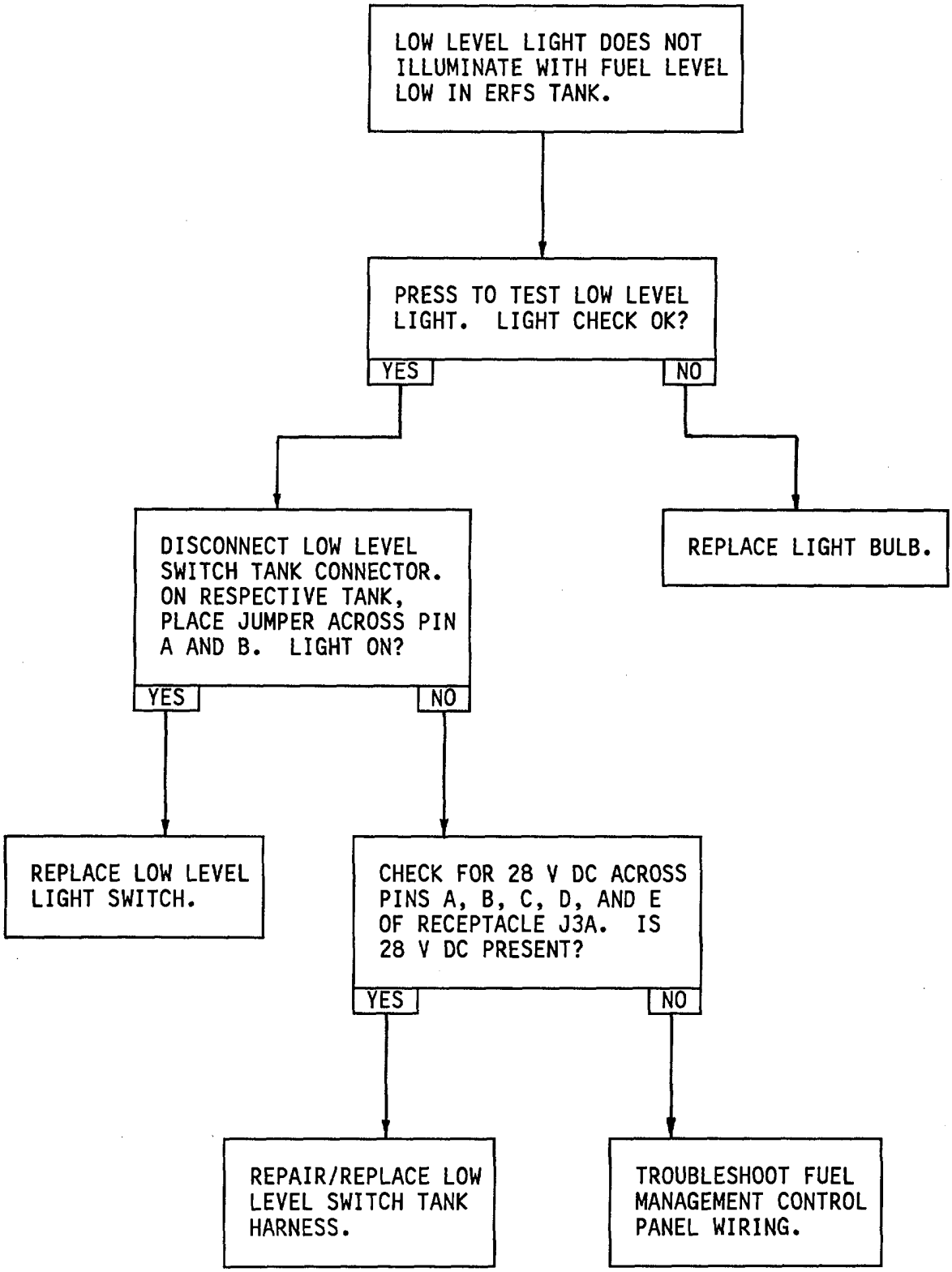
TROUBLESHOOTING PROCEDURE NO. 2



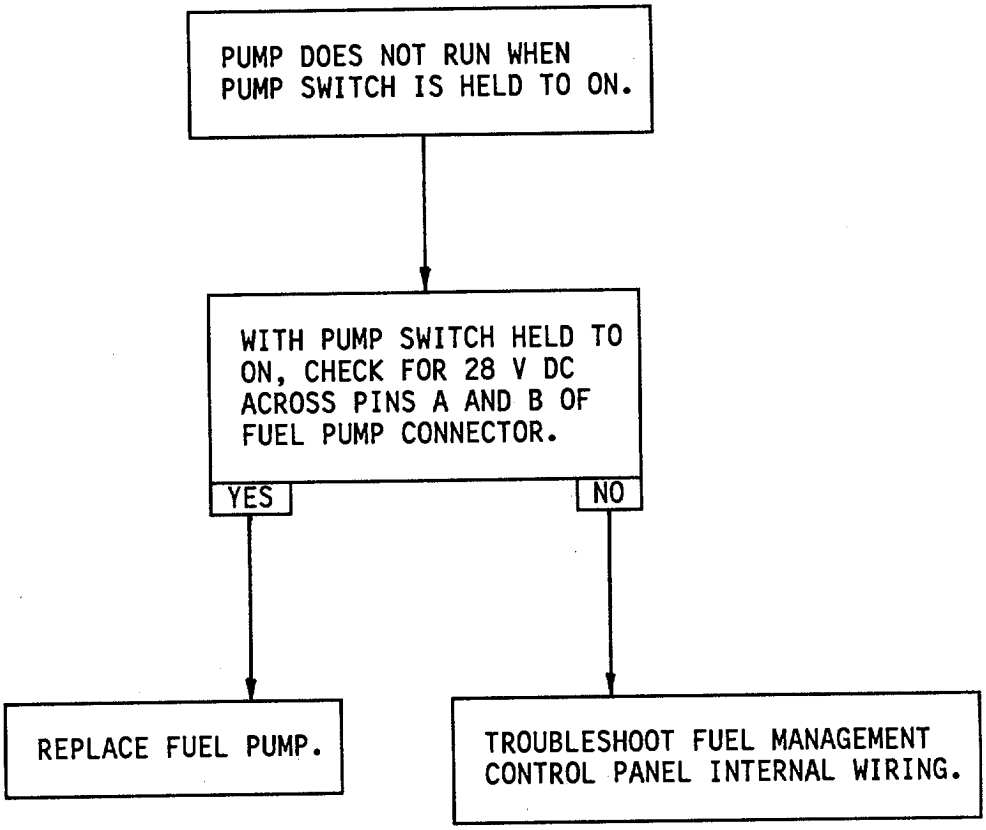
TROUBLESHOOTING PROCEDURE NO. 3



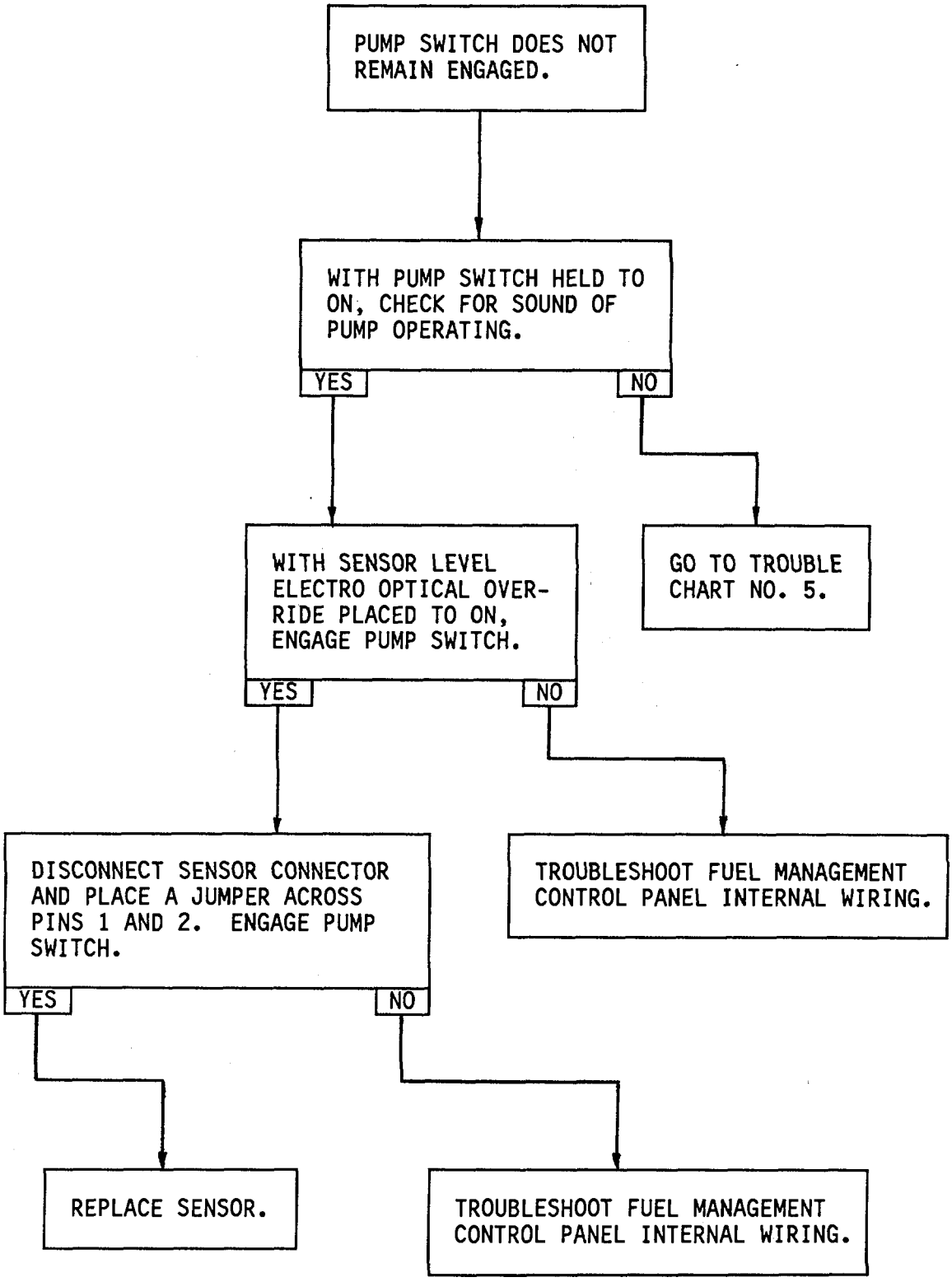
TROUBLESHOOTING PROCEDURE NO. 4



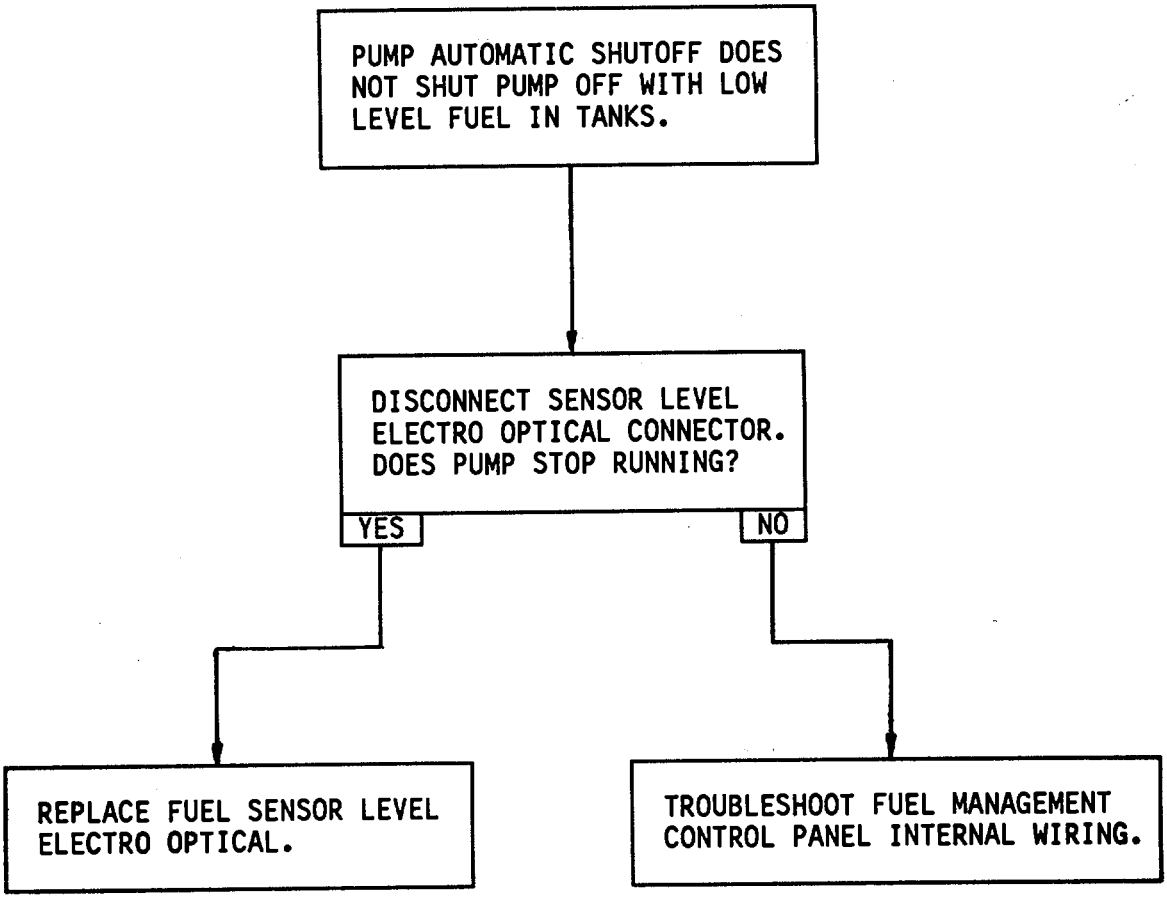
TROUBLESHOOTING PROCEDURE NO. 5



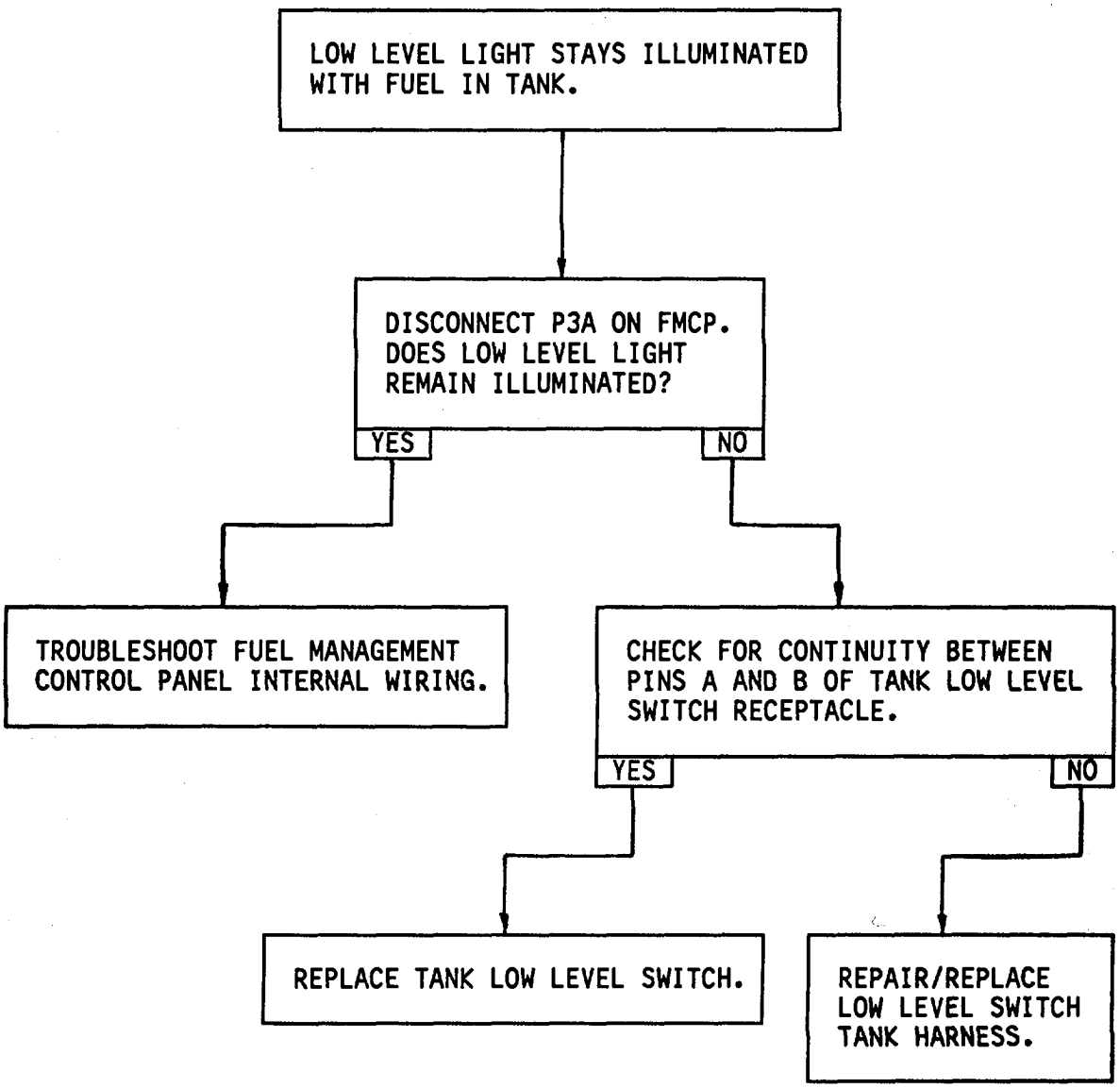
TROUBLESHOOTING PROCEDURE NO. 6



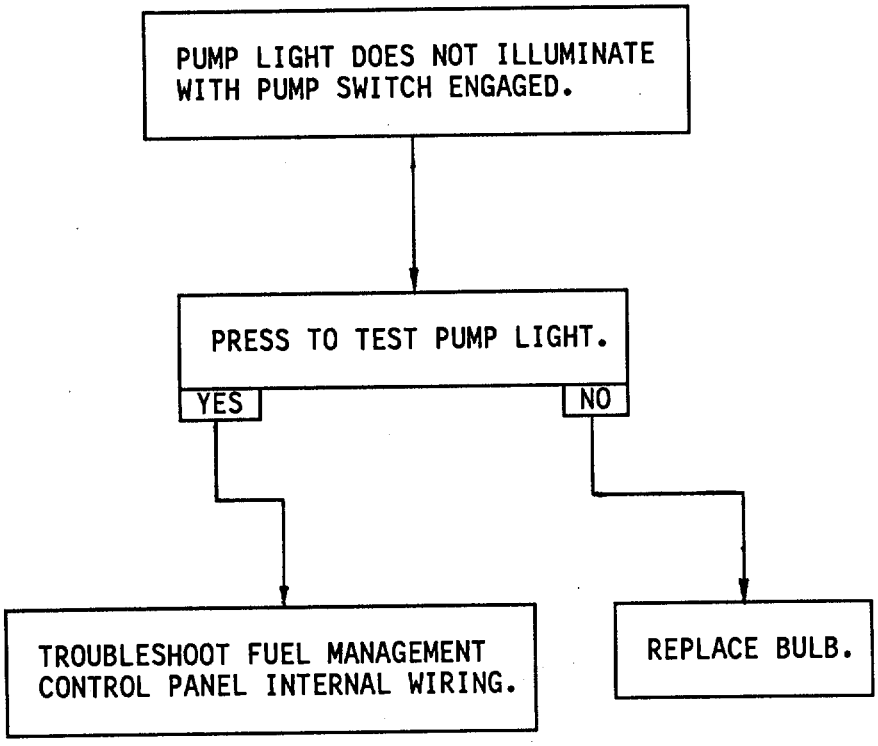
TROUBLESHOOTING PROCEDURE NO. 7



TROUBLESHOOTING PROCEDURE NO. 8



TROUBLESHOOTING PROCEDURE NO. 9



Section IV. SERVICE/MAINTENANCE PROCEDURES

3-10. MAINTENANCE PROCEDURES. The AVUM procedures include servicing, inspecting, and replacing the ERFS tanks, FMCP, ECP, hose assemblies, pressure switches, and fuel pumps.

3-11. SERVICE. The 600 gallon tanks will be serviced with JP-4, -5, -8 fuel as required. Utilize splash fill or pressure refueling techniques, Figures 3-1 and 3-2.

CAUTION

- **Assure tank filler caps are free of sand and any other foreign matter.**
- **Check each tank internally for foreign objects, sand and water, and remove as appropriate. Ensure the inspection includes the dump valve opening located at the bottom front of each tank.**
- **Hoses and pump board must be opened and inspected for foreign material or damage prior to being installed.**
- **Inspect fuel filter for foreign material, damage, and serviceability.**
- **Upon first fueling of each tank, use the splash fill method with 25 to 50 gallons of fuel in both the forward and aft fill caps and be sure to wash all sides of the tank.**
- **Obtain a fuel sample from each tank. If fuel is found contaminated, defuel tank, clean, and refill again as described above. Repeat until an acceptable fuel sample is obtained, then fill the tank to the desired level.**

3-12. MAINTENANCE OF ERFS TANK COMPONENTS.

GRAVITY REFUELING.

This task covers:

a. Grounding procedures.
b. Fuel servicing tanks.

INITIAL SETUP

Tools:

Flashlight (explosion proof)
Personnel required: (4/MOS 67U)

Materials/Parts:

Fuel JP-4, -5, -8,
(items 7, 8, 9, Appx D)

Equipment Conditions:

Refer to Figure 3-1.

Aircraft shutdown and all electrical power off.
Refueling vehicle parked minimum of 10 feet from helicopter.
Helicopter on level ground parked at least 50 feet from any structure.
Helicopter grounded.
Fuel vehicle grounded.
Fuel tank grounded to aircraft.

REFUELING

1. Connect hose grounding lead (1) to tank ground receptacle (2).

2. Remove filler port cap (3).

3. Ensure that the tank cam lever dump valve is closed.

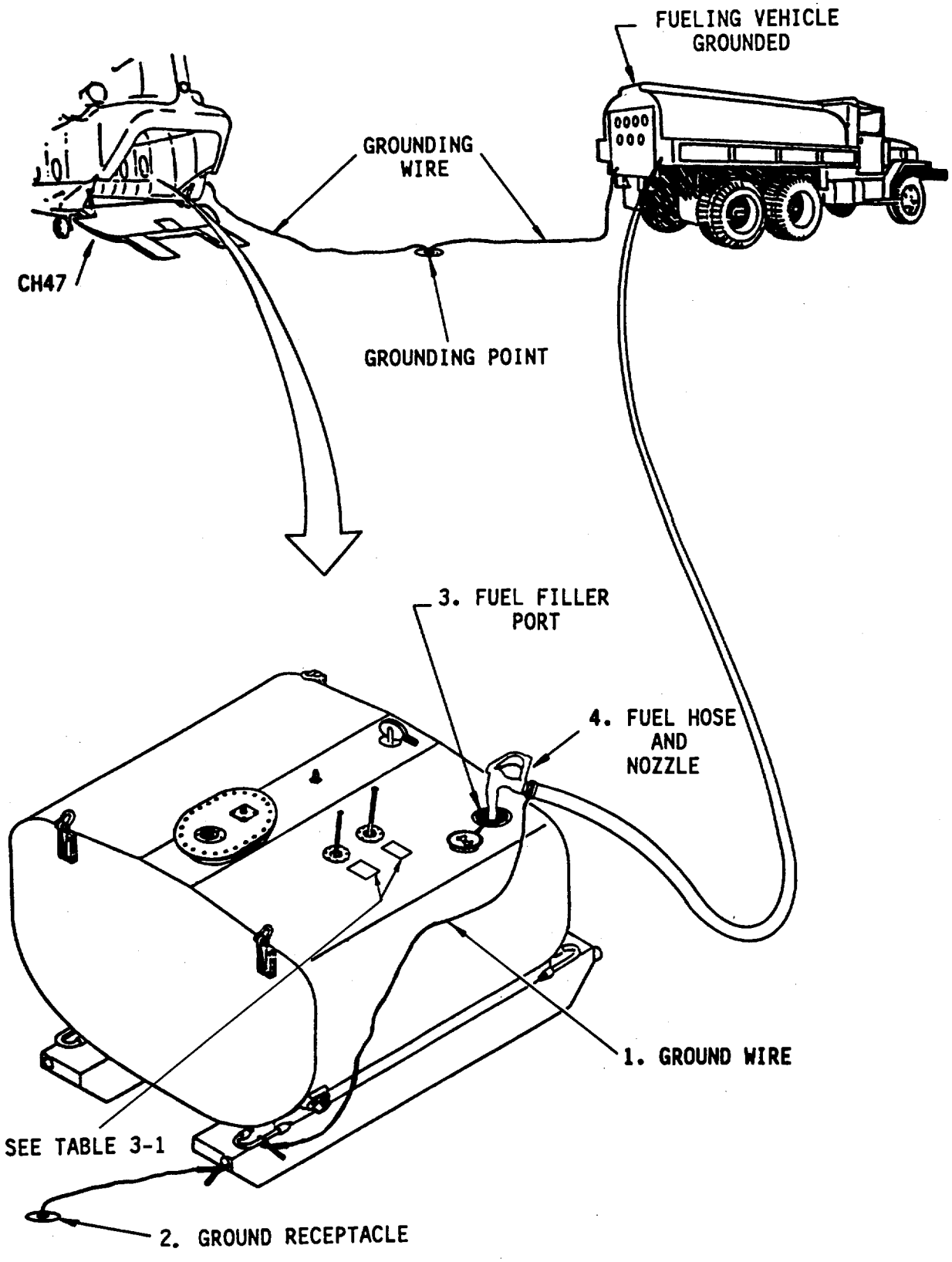


Figure 3-1. Gravity Refueling ERFS Tanks

4. Insert hose nozzle (4) into filler port. Fill tank to proper level.

NOTE

- **No aircraft electrical power required to fuel ERFS tanks.**
- **Fill tanks to 580 gallons and check fuel quantity level indicators. Refer to Table 3-1, fuel quantity, gallons, and pounds decals.**

5. Remove nozzle (4) from filler port.

6. Install filler port cap (3) and secure.

7. Disconnect ground lead (1) from tank receptacle (2).

WARNING

- **Observe all cautions and warnings posted on tanks when refueling the ERFS. Minimum personnel will be present during refueling operations. Ensure ERFS and aircraft vents, and cargo and troop doors are open before refueling starts. Adequate fire fighting equipment will be readily available per unit SOP.**
- **FUELING/DEFUELING. When refueling ERFS or operating a forward area refueling system (FARE), the vehicle used to service or is being serviced will be parked a minimum of 20 feet from the helicopter.**
- **Before refueling and defueling the ERFS, the fuel truck must be grounded to ground and aircraft. During defueling operations and/or fare operations, ensure all aircraft electrical switches are turned off. Refer to FM 10-68.**

Table 3-1. Fuel Quantity, Gallons, and Pounds Decals

Table 3-1. Fuel Quantity, Gallons, and Pounds Decals

IND LEVEL	US GAL	POUNDS JP-4	POUNDS JP-5	POUNDS JP-8
1	90	585	612	603
2	100	650	680	670
3	115	747	782	770
4	130	845	884	871
5	145	942	986	971
6	160	1040	1088	1072
7	175	1137	1190	1172
8	190	1235	1292	1273
9	205	1332	1394	1373
10	220	1430	1496	1474
11	235	1527	1598	1574
12	255	1657	1734	1708
13	270	1755	1836	1809
14	285	1852	1938	1909
15	300	1950	2040	2010
16	320	2080	2176	2144
17	330	2145	2244	2211
18	345	2242	2346	2311
19	335	2177	2278	2244
20	350	2275	2380	2345
21	365	2372	2482	2445
22	380	2470	2584	2546
23	400	2600	2720	2680
24	415	2697	2822	2780
25	430	2795	2924	2881
26	445	2892	3026	2981
27	460	2990	3128	3082
28	475	3087	3230	3182
29	490	3185	3332	3283
30	505	3282	3434	3383
31	520	3380	3536	3484
32	535	3477	3638	3584
33	550	3575	3740	3685
34	565	3672	3842	3785
35	575	3737	3910	3852
35.5	580	3770	3944	3886

WARNING

- **ELECTRICAL GROUNDING OF THE HELICOPTER.** Army regulations require the grounding of the helicopter when parked and during all fueling and defueling operations. No electrical switches shall be operated except those necessary for servicing during fueling and defueling.

- Fueler must exercise caution during fueling. If fuel is spilled inside the aircraft, removal of cabin floor panels may be required, aircraft purged with clean water, and allowed to air dry. All spilled fuel must be removed prior to continuing operation. See TM 55-1520-240-23 for additional instructions, para 2-204.

3-13. PRESSURE REFUELING.

This task covers:

a. Grounding procedures.
b. Refueling ERFS tanks.

INITIAL SETUP

Tools: Flashlight (explosion proof).

Materials/Parts:

JP-4,-5,-8 (items 7, 8, 9, Appx D)
Refueling Truck
Refueling Adapter Nozzle, P/N AE82605R

Equipment Conditions: Same as gravity refueling.

Refer to Figure 3-2.

1. Ground the helicopter as required.

CAUTION

No aircraft electrical power or auxiliary power unit is required when pressure fueling or defueling.

2. Connect fuel hose ground wire (1) to tank receptacle (2).

3. Remove dust cap from coupling assembly on hose (3).

WARNING

The ERFS vents must be open during refueling and defueling operations. The ERFS tanks cannot be exposed to internal pressure of over 5 psi, or failure will occur.

4. Remove fuel filler port (4) cap.

5. Install pressure refueling adapter (5) to manifold hose (3), and install fuel truck D-1 pressure hose (6) to adapter.

6. Refueling sequence. Tank 4, 3, 2, 1 rear to forward due to a 2 degree nose up attitude of the aircraft.

NOTE

After all tanks are filled, do not open all 4 tank cam levers at the same time. Fuel will seek its own level and could cause tanks 3 and 4 to overfill. This could cause a fuel spill.

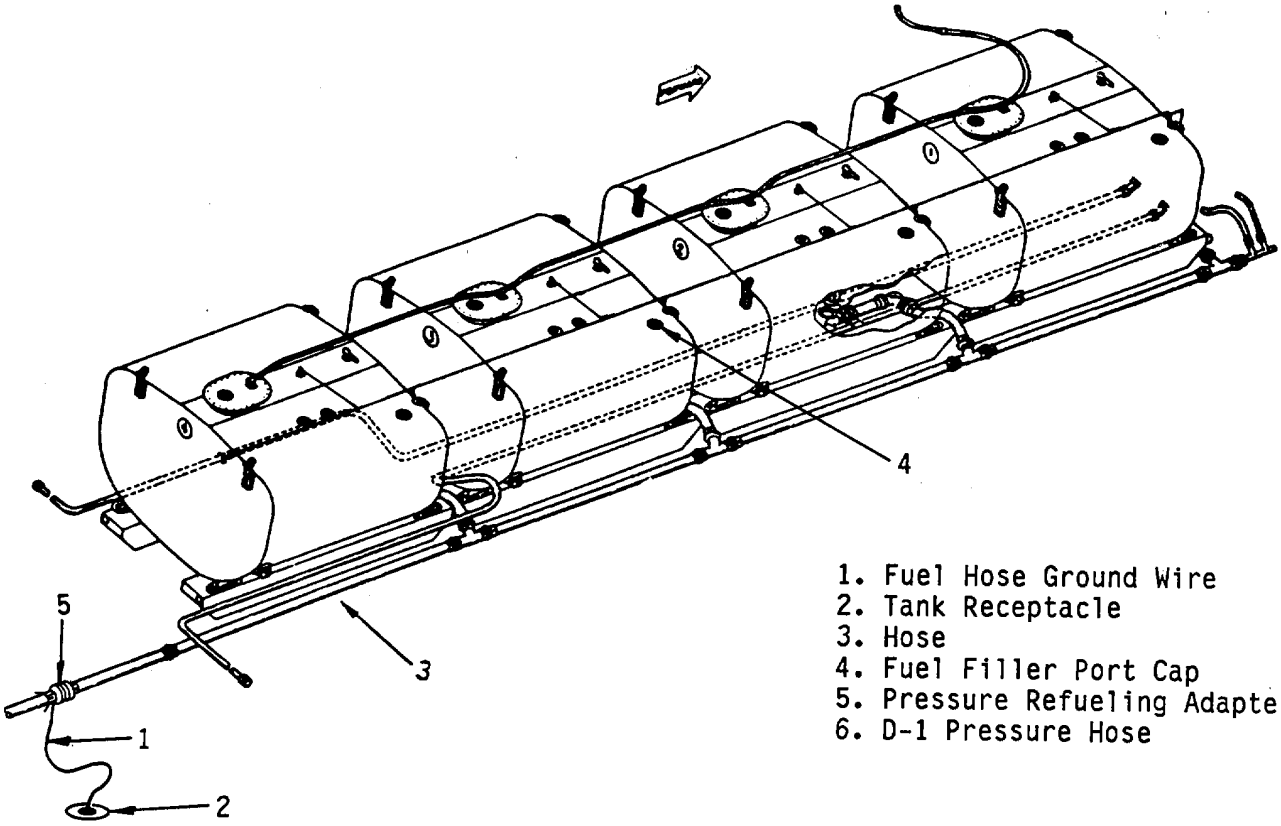
7. Ensure tank cam lever on tank to be filled is opened and closed on other tanks. Isolate other tanks by closing the quick disconnect coupling on hose connected from cam lever to manifold TEE.

8. Start pressure refueling at no greater than 35 psi truck delivery pressure and 150 gallons per minute maximum.

9. With an explosion proof flashlight, carefully watch fuel level and stop refueling when level is up to top of fuel filler port.

10. Close tank cam lever and proceed to the next tank to be filled.

11. Close either side of hose coupling to isolate filled tank before filling next tank.



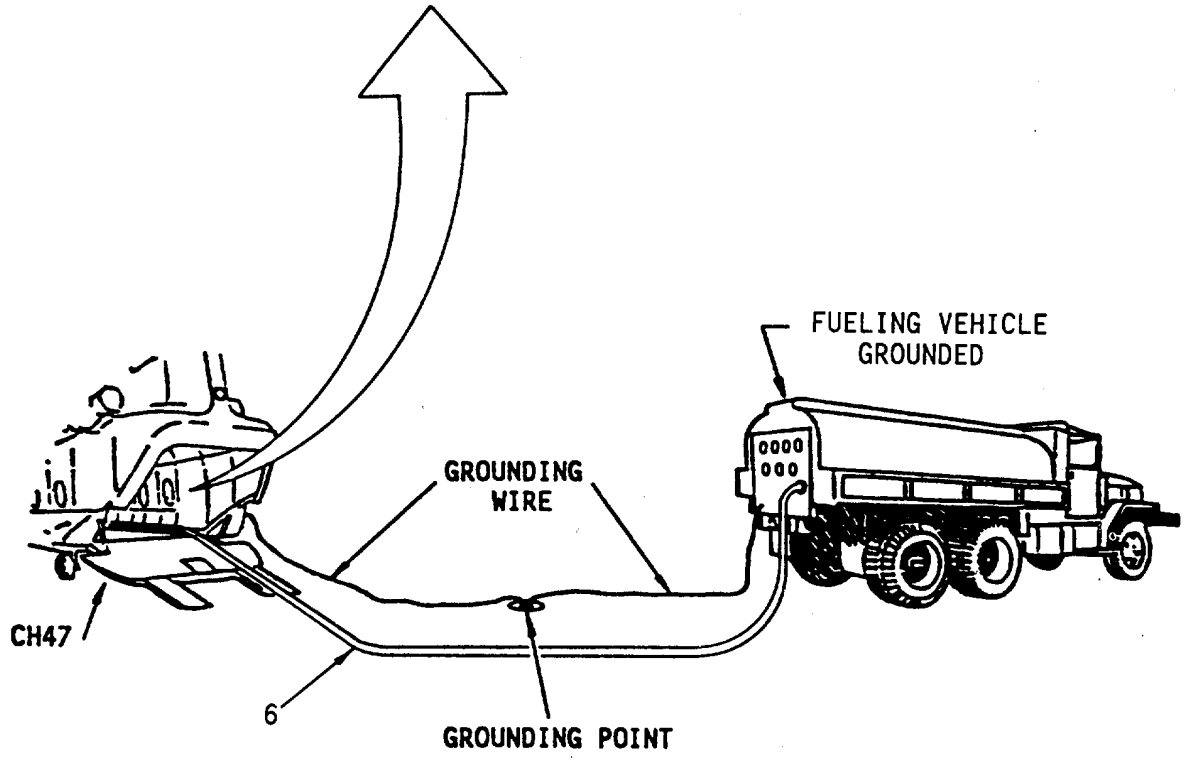


Figure 3-2. Pressure Refueling

12. Repeat steps 7 thru 12 for each tank.

13. Disconnect D-1 pressure refueling hose (6) from manifold hose (3), and wipe up any fuel that may have dripped.

14. Disconnect grounding wire (1) from tank receptacle (2).

15. Secure fuel truck and aircraft.

3-14. SUCTION DEFUELING.

This task covers:

a. Grounding procedures.
b. Defueling ERFS tanks.

INITIAL SETUP

Tools: Flashlight (explosion proof).

Materials/Parts:

Fuel JP-4,-5,-8 (items 7, 8, 9, Appx D)
Refueling Truck
Refueling Adapter Nozzle, P/N AE82605R

Equipment Conditions: Same as gravity refueling.

Refer to Figure 3-2.

DEFUELING

1. Ground helicopter as required.

2. Connect fuel hose ground wire (1) to tank ground receptacle (2).

3. Remove dust cap from coupling assembly on hose (3).

4. Remove fuel filler port (4) cap.

5. Install adapter (5) to manifold hose (3), and connect fuel truck hose (6) to adapter.

6. Open all tank and hose cam levers for tanks to be defueled.

7. With an explosion proof flashlight, monitor fuel level until tank is empty.

8. Secure tank and proceed to next tank as required.

9. After defueling all tanks, disconnect defueling hose (6) and ground wire (1).

10. Reinstall dust cap on manifold hose (3).

11. Secure fuel truck and helicopter.

3-15. MAINTENANCE OF ERFS COMPONENTS.

REPLACE ANY SYSTEM FUEL HOSE.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: None

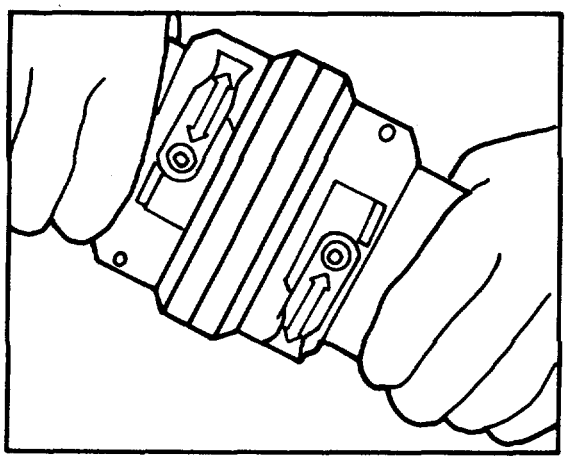
Materials/Parts:

Fuel Hose (6,7,8,15, Fig C-2), Appx C

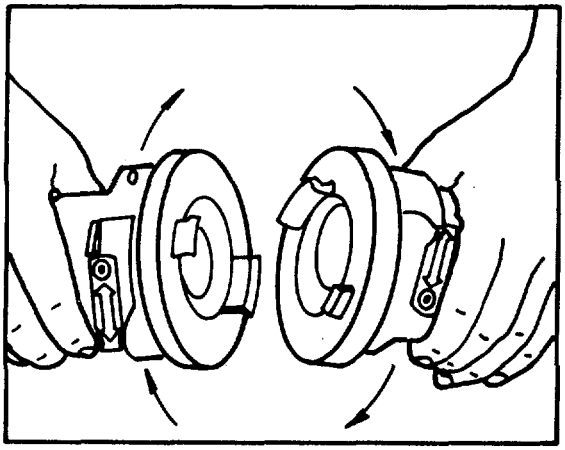
Equipment Conditions:

Refer to Figures 3-3 and 3-4.

ALL ERFS tank cam levers CLOSED.
All tee and system coupling valves CLOSED.

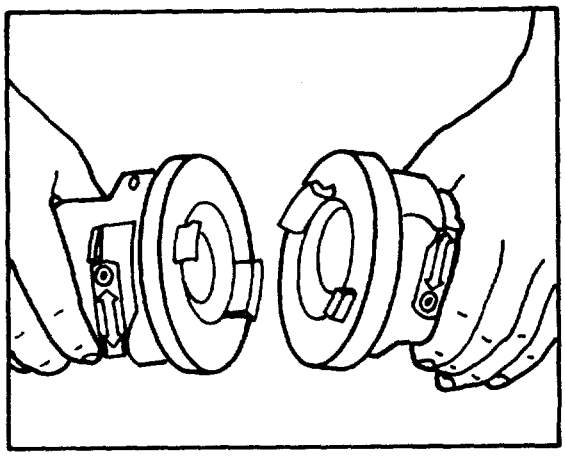


HOSE COUPLINGS IN UNLOCK POSITION

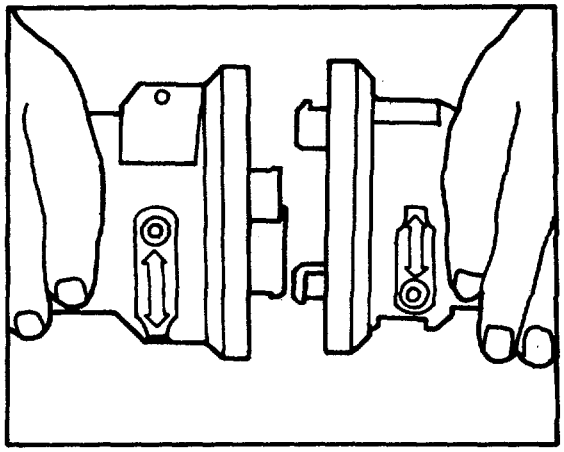


ROTATE COUPLINGS TO SEPARATE

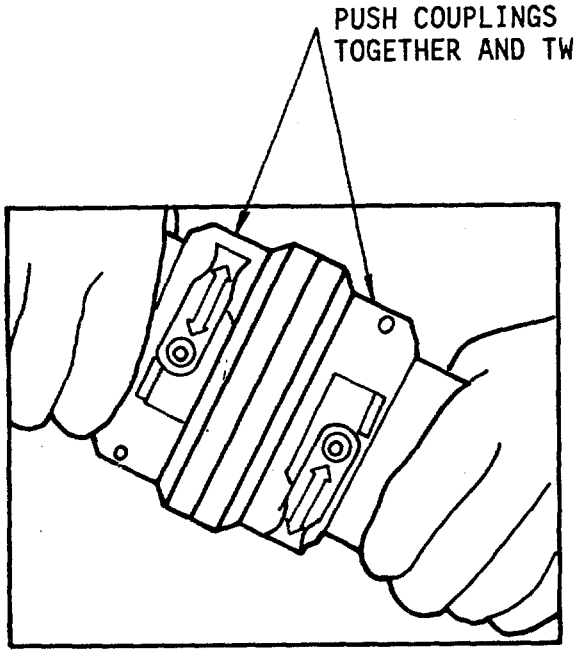
Figure 3-3. Removal of ERFS System Hoses



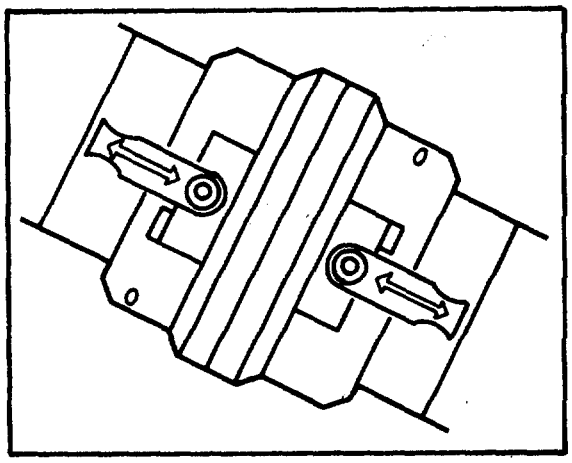
VALVES IN CLOSED POSITION



LUGS AND GROOVES ALIGNED



LEVER CLOSED POSITION



LEVER OPEN POSITION

Figure 3-4. Installing ERFS System Hoses

GENERAL SAFETY INSTRUCTIONS

WARNING

ELECTRICAL GROUNDING OF THE HELICOPTER. Army regulations require the grounding of the helicopter when parked and during all fueling and defueling operations. No electrical switches shall be operated except those necessary for servicing during fueling and defueling. No smoking or flame during all fueling and defueling operations.

CAUTION

Do not move coupling levers to open position with hose or tee couplings while couplings are disconnected.

NOTE

- Hose and tee coupling lock levers have to be in closed position when disconnected.
- Couplings will not unlock if levers are not moved from closed position.

REMOVAL

1. Place clean rags (item 3, Appx D) under hose connections.

2. Remove fuel hose.

   a. Unlock hose couplings.

   b. Twist hose couplings counterclockwise at both attaching ends. Remove hose.

INSPECTION

Refer to POL manual for hose inspection.

a. Visually inspect new hose for kinks, damaged couplings, and other obvious damage.

b. Replace fuel hose if above conditions are found.

INSTALLATION

NOTE

After hose is installed, ensure that coupling levers are open.

1. Unlock hose couplings by turning lock levers to closed position.

2. Align lugs with grooves.

3. Push hose couplings together and twist clockwise. Move levers to open position.

3-16. MAINTENANCE OF ERFS COMPONENTS.

REPLACE TEE COUPLING.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: None

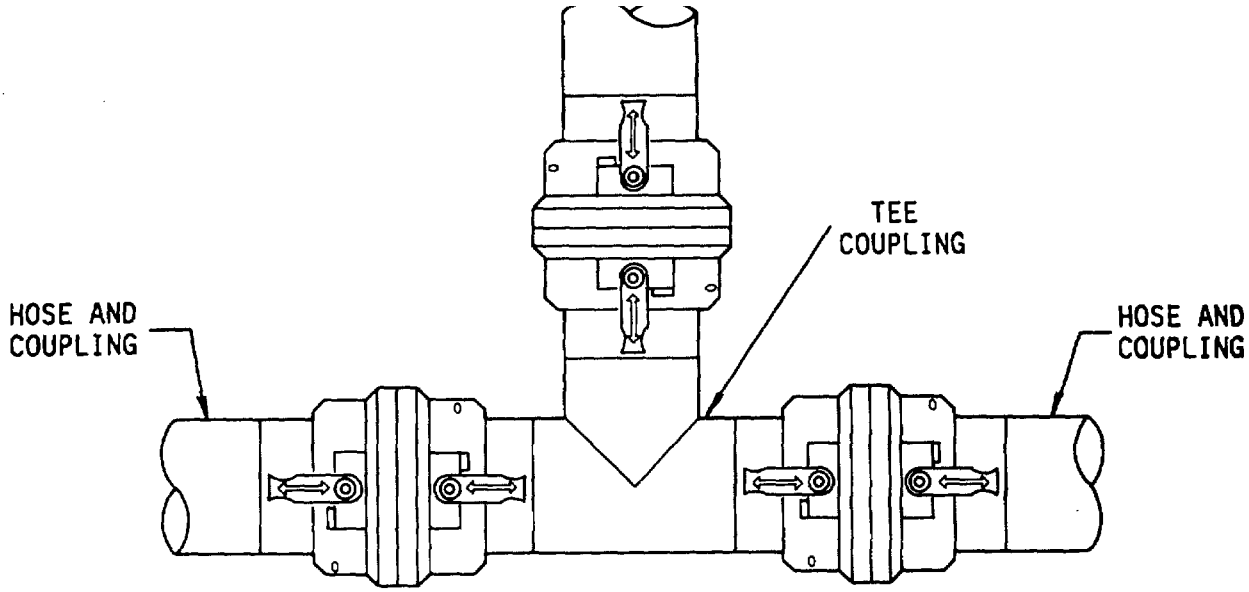
Materials/Parts:

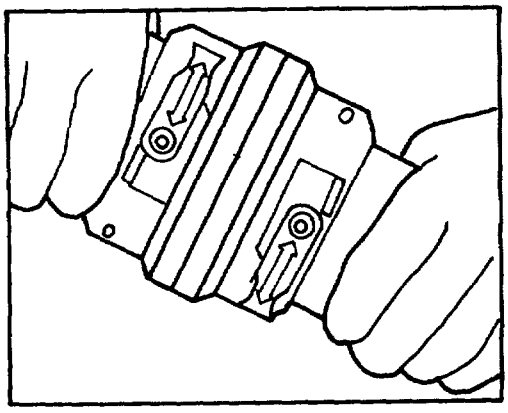
Tee Assembly (5, Fig C-2), Appx C

Equipment Conditions:

Refer to Figures 3-5 and 3-6.

All ERFS tank cam levers CLOSED.
All tee and system coupling valves CLOSED. Suction hose assembly (14) coupling closed. Refer to Figure 1-1.





HOSE COUPLINGS IN UNLOCK POSITION

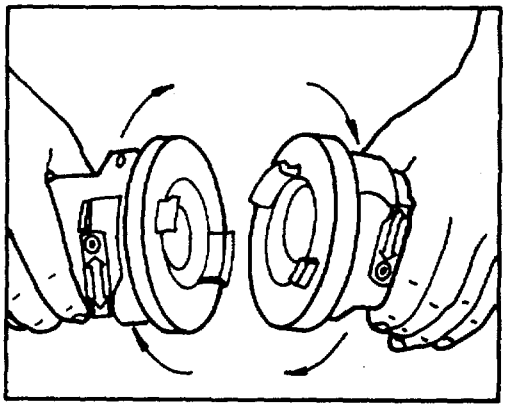


Figure 3-5. Tee Coupling Removal

NOTE

Adhesive (item 18, Appx D) may be used in lieu of sealant (item 15, Appx D) in the above application. Cure time of sealant (item 15, Appx D) is 72 hours. Cure time of adhesive (item 18, Appx D) is 24 hours. Due to cost, adhesive (item 18, Appx D) should only be used when circumstances dictate the need for a shorter cure time.

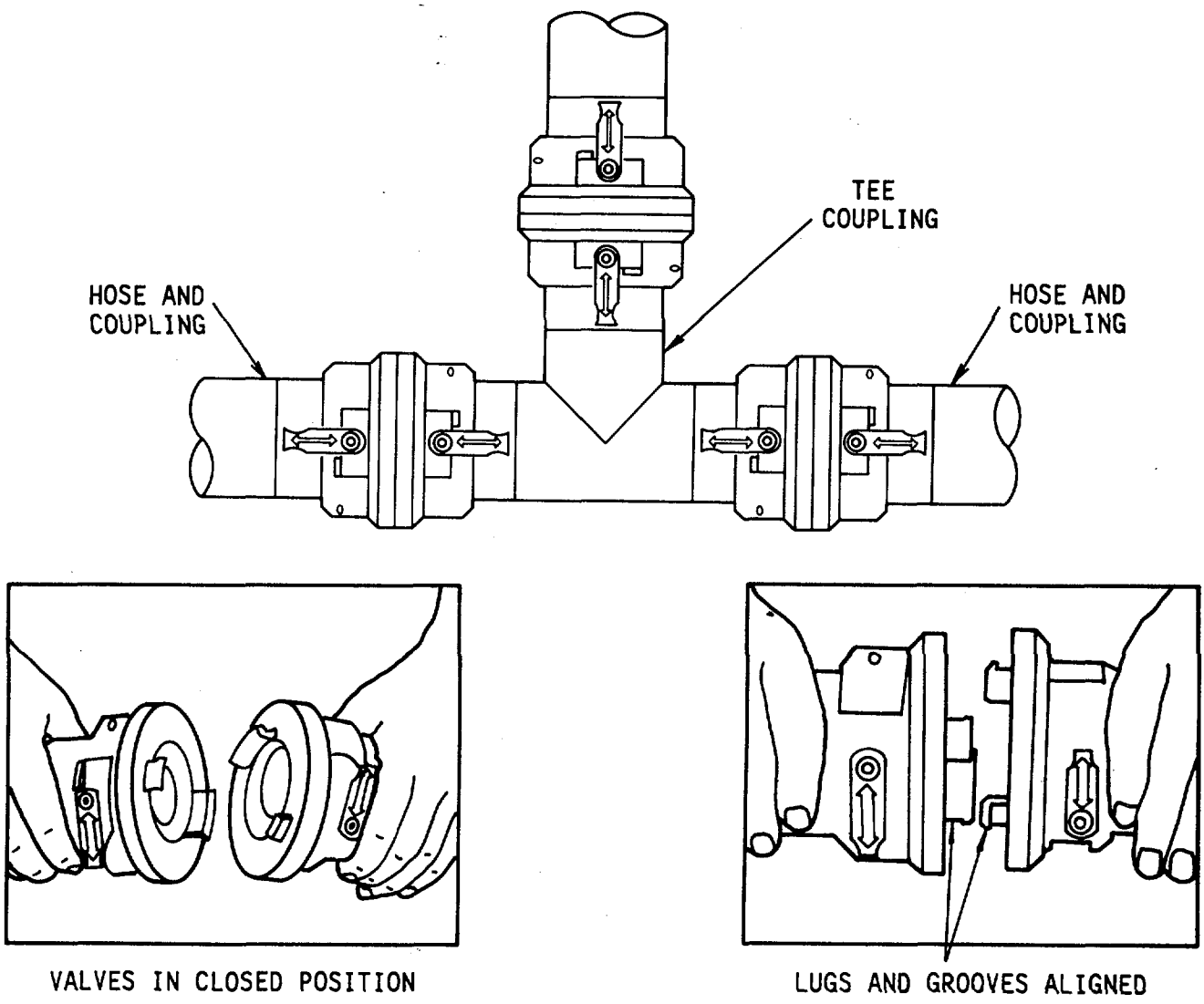


Figure 3-6. Tee Coupling Installation

GENERAL SAFETY INSTRUCTIONS

WARNING

ELECTRICAL GROUNDING OF THE HELICOPTER. Army regulations require the grounding of the helicopter when parked and during all fueling and defueling operations. No electrical switches shall be operated except those necessary for servicing during fueling and defueling. No smoking or flame during all fueling and defueling operations.

CAUTION

Do not move coupling levers to opened position with hose or tee couplings while couplings are disconnected.

NOTE

- **Hose and tee coupling lock levers have to be in closed position when disconnected.**
- **Couplings will not unlock if lock levers are not moved from closed position.**

REMOVAL

1. Place clean rags (item 3, Appx D) under hose to tee connections.

2. Remove tee coupling.
   a. Unlock hose couplings at hose to be disconnected first.

   b. Twist hose coupling counterclockwise to remove from tee coupling.

3. Remove all hoses attached to tee coupling in the same manner and remove tee fitting.

INSPECTION

1. Visually inspect new tee coupling for obvious damage.

2. Replace tee coupling if above conditions are found.

INSTALLATION

NOTE

After tee is installed, ensure that coupling levers are open.

1. Close hose couplings by turning levers to UNLOCK position to close valves.

2. Twist hose coupling clockwise on to tee coupling, and turn levers to open position.

3. Secure all hoses attached to tee.

3-17. MAINTENANCE OF FMCP COMPONENTS.

REPLACE FUEL SENSOR LEVEL ELECTRO OPTICAL.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: Bonney Wrenches

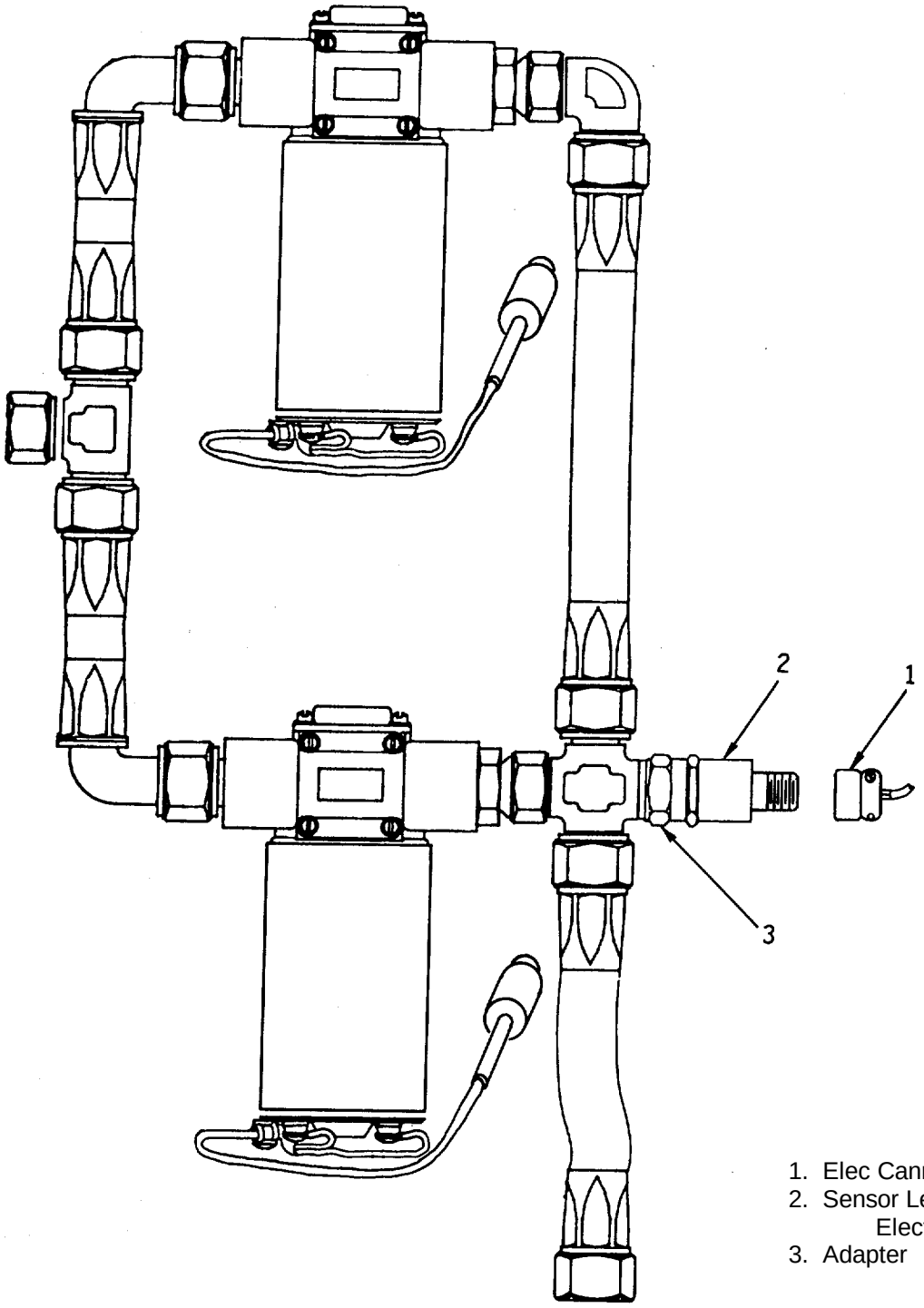
Material /Parts:

Sensor Level Electro Optical
(7, Fig C-7), Appx C

Equipment Conditions:

Refer to Figure 3-7.

ERFS tank cam lever CLOSED.
Suction hose assembly coupling closed.
Refer to Figure 1-1, No. 14.
All electrical power OFF.
All FMCP switches OFF.



1. Elec Cannon Plug
2. Sensor Level Electro Optical
3. Adapter

Figure 3-7. Removal and Replacement of ERFS Fuel Sensor Level Electro Optical

GENERAL SAFETY INSTRUCTIONS

WARNING

ELECTRICAL GROUNDING OF THE HELICOPTER. Army regulations require the grounding of the helicopter when parked and during all fueling and defueling operations. No electrical switches shall be operated except those necessary for servicing during fueling and defueling. No smoking or flame during all fueling and defueling operations.

REMOVAL

1. Disconnect electrical cannon plug (1) from sensor level electro optical (2).

2. Remove sensor level electro optical (2) from adapter (3).

INSPECTION

1. Visually inspect threads on adapter (3) and new sensor level electro optical (2).

2. Check threads on electrical cannon plug and on new switch.

INSTALLATION

Install new sensor level electro optical.

a. Connect electrical cannon plug (1) to sensor level electro optical (2).

b. Clean up any spilled fuel and check system for proper operation.

c. Perform maintenance operational check (MOC).

3-18. MAINTENANCE OF FMCP COMPONENTS.

REPLACE FUEL PUMP.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: Bonney Wrenches

Material/Parts:

Fuel Pump (1, Fig C-7), Appx C
Packing

Equipment Conditions:

Refer to Figure 3-8.

All ERFS tank cam levers CLOSED.
All tee and system coupling valves CLOSED. Suction hose assembly (14) coupling closed.
All electrical power OFF. Refer to Figure 1-1.

GENERAL SAFETY INSTRUCTIONS

WARNING

ELECTRICAL GROUNDING OF THE HELICOPTER. Army regulations require the grounding of the helicopter when parked and during all fueling and defueling operations. No electrical switches shall be operated except those necessary for servicing during fueling and defueling. No smoking or flame during all fueling and defueling operations.

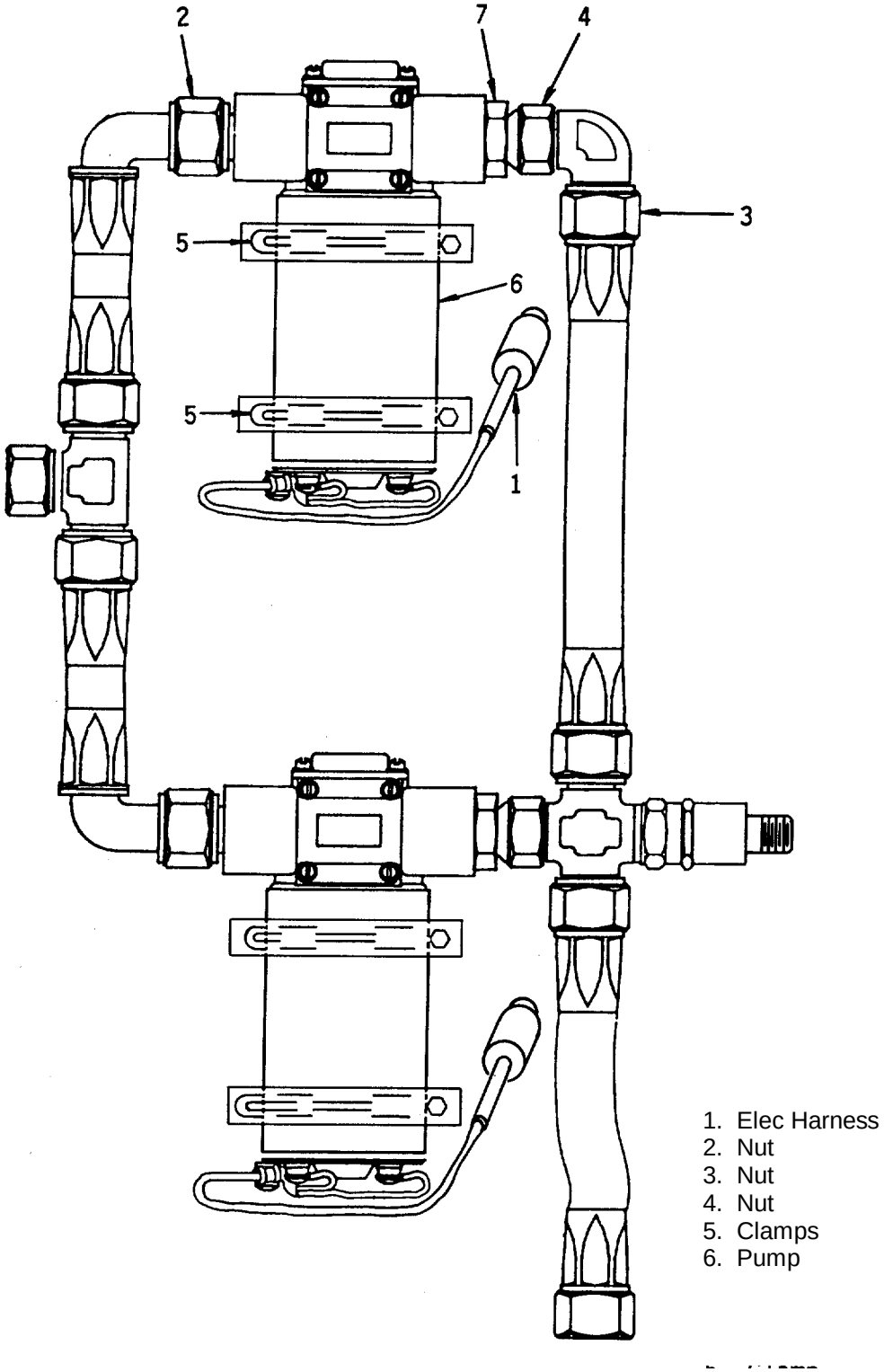


Figure 3-8. Removal and Replacement of ERFS Fuel Pump

REMOVAL

1. Disconnect electrical harness (1).
2. Loosen nuts (2 and 3).
3. Loosen nut (4).
4. Remove clamps (5).
5. Remove pump (6).
6. Remove nipple (7) and discard packing.

NOTE

- **Install new packing on nipple (7).**
- **All 4 pumps on the system can be removed using same procedure.**

INSPECTION

1. Visually inspect new pump fittings for thread damage.
2. Inspect thread on hose assembly.
3. Inspect wire harness for damage and cannon plug threads before connecting harness plugs.

INSTALLATION

1. Install new packing on nipple fitting (7) and install fitting on pump.
2. Install pump (6).
3. Install clamps (5).
4. Install nuts (4), (3), and (2) and tighten.
5. Connect electrical wire (1).
6. Test system for leaks. Refer to Chapter 2, paragraph 2-13, for pressure check.

3-19. SUCTION AND DISCHARGE HOSES.

REPLACE HOSE.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: Bonney Wrenches

Material/Parts:

Fuel Hose (22, 23, Fig C-2), Appx C

Equipment Conditions:

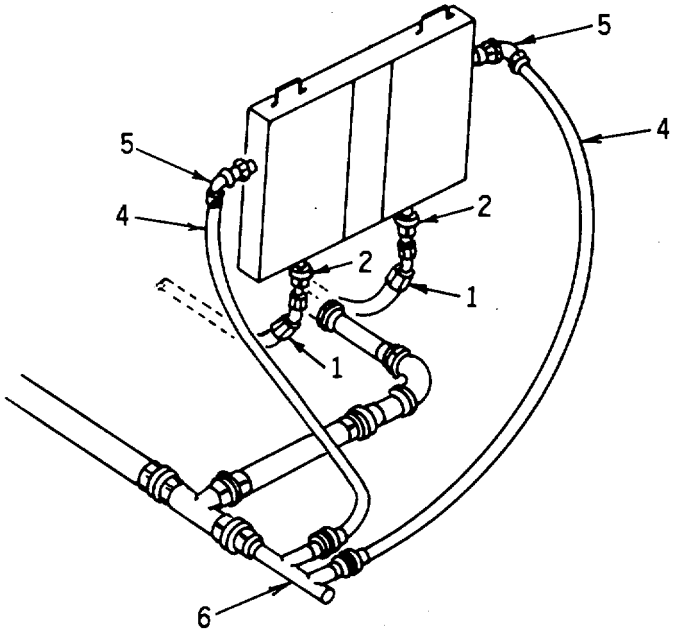
Refer to Figure 3-9.

All ERFS tank cam levers CLOSED.
All coupling valves CLOSED.
All electrical power OFF.

GENERAL SAFETY INSTRUCTIONS

WARNING

ELECTRICAL GROUNDING OF THE HELICOPTER. Army regulations require the grounding of the helicopter when parked and during all fueling and defueling operations. No electrical switches shall be operated except those necessary for servicing during fueling and defueling. No smoking or flame during all fueling and defueling operations.



1. Discharge Fuel Hose
2. Quick Disconnect Coupling
3. Quick Disconnect Coupling
4. Suction Hose
5. Quick Disconnect Coupling
6. Tee Fitting

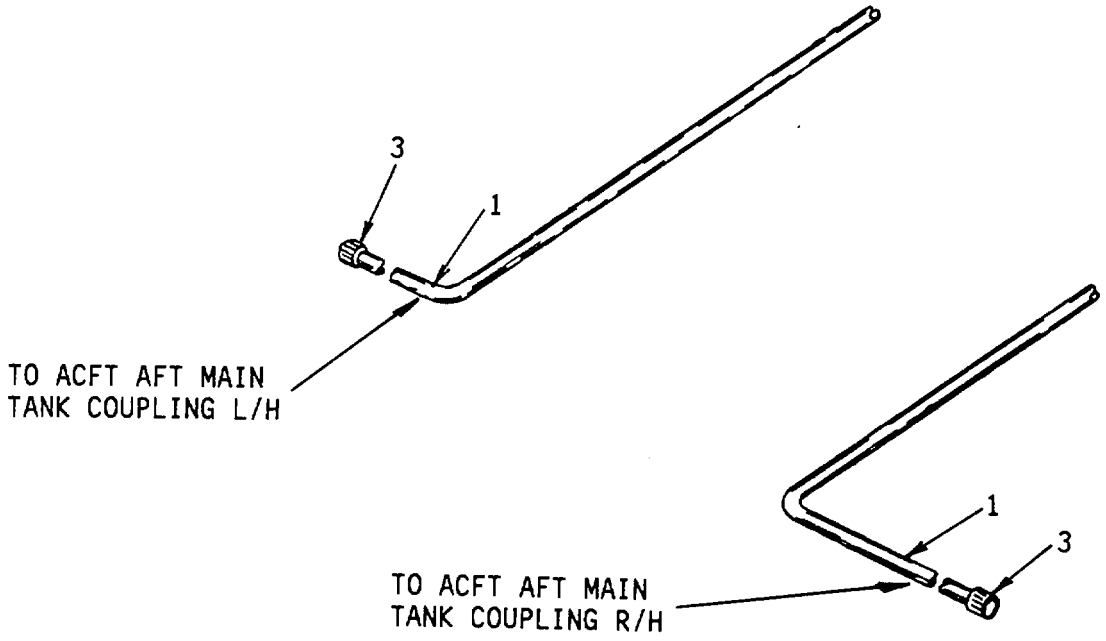


Figure 3-9. Removal of Suction and Discharge Fuel Hose

REMOVAL

1. Disconnect discharge fuel hose (1), at FMCP quick disconnect coupling (2).

2. Disconnect other end of hose at quick disconnect (3) to main tank coupling.

3. Remove quick disconnect couplings (2 and 3) from hose to be replaced, and set aside for installation on new hose.

4. Disconnect suction hose (4) at quick disconnect coupling (5) at FMCP.

5. Disconnect other end of hose at tee fitting (6).

6. Remove couplings (5) from hose (4).

INSPECTION

1. Visually inspect new hose for kinks and obvious damage to outer insulation.

2. Inspect locknuts on new hose for thread damage and also damage to coupling fitting threads.

INSTALLATION

1. Install quick disconnect couplings (2 and 3) to both ends of hose (1).

2. Route long hose under tank skid carefully, and secure quick disconnect (3) to main tank coupling first; then forward end to FMCP box coupling (2).

3. Install quick disconnect couplings (5) on suction hose (4).

4. Install other end of hose (4) to tee (6).

5. Secure end with quick disconnect coupling to FMCP box coupling.

3-20. MAINTENANCE OF ERFS COMPONENTS.

LIQUID LEVEL INDICATOR. REPLACE LIQUID LEVEL INDICATOR.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: 1-5/16 Crow Foot

Material/Parts:

Adhesive (item 14, Appx D)
Liquid Level Indicator (61, 62, Fig C-2), Appx C
Flashlight (explosion proof)

Equipment Conditions:
Refer to Figure 3-10.

ERFS tank must be empty and separate from other tanks.
Tank access cover removed.
Tank grounded.
Tank must be purged. Refer to Chapter 3, paragraph 3-25.

GENERAL SAFETY INSTRUCTIONS

WARNING

Injury to personnel and equipment may occur if the purging maintenance procedure above is not performed. The fuel vapor and air mixture in the tank can cause a violent explosion setoff by sparks from tools being dropped in tank.

REMOVAL

1. Remove retainer (1) and float (2).

2. Remove nut (3) and washer (4).

3. Remove tube (5).

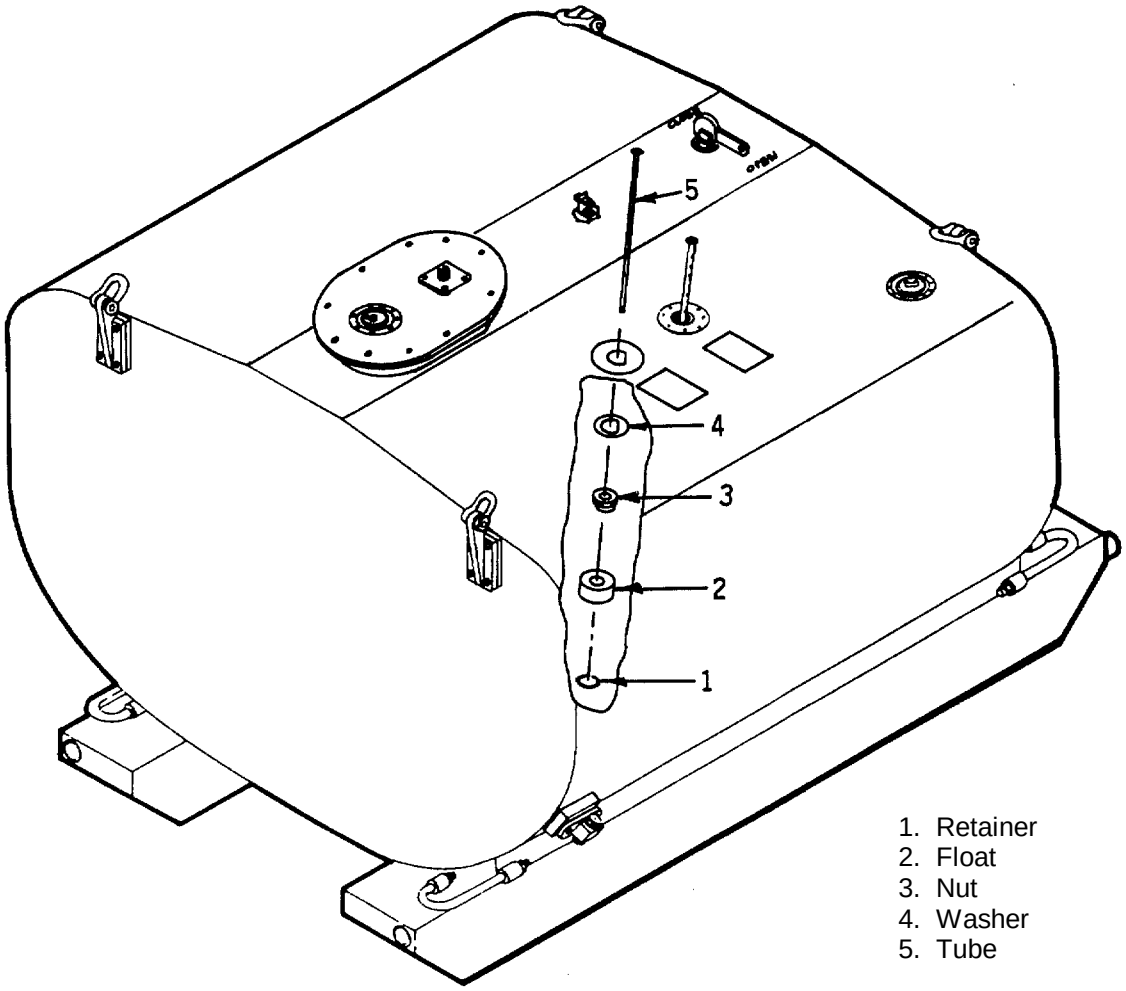


Figure 3-10. Removal and Replacement of Liquid Level Indicator

INSPECTION

1. Visually inspect threads on new indicator tube.

2. Check threads on nut (3).

3. Ensure that new indicator tube has packing installed on upper groove.

INSTALLATION

1. Install tube (5)

2. Install washer (4) and nut (3), and tighten nut.

3. Install float (2) and retainer (1).

3-21. DUMP VALVE. Replace dump valve.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: Bonney Wrench, Drift, Hammer, 3/4 in. Box-End Wrench

Materials/Parts:

Dump Valve (31, Fig C-3), Appx C
Flashlight (explosion proof)
Gaskets (30, Fig C-3), Appx C

Equipment Conditions:

Refer to Figure 3-11.

Tank must be empty and separate from other tanks
Tank access cover removed.
Tank grounded.
Tank must be purged. Refer to Chapter 3, paragraph 3-25.

GENERAL SAFETY INSTRUCTIONS

WARNING

Injury to personnel and equip- ment may occur if the purging maintenance procedure above is not performed. The fuel vapor and air mixture in the tank can cause a violent explosion setoff by sparks from tools being dropped in tank.

REMOVAL

1. Remove dust cover (1).

2. Remove nuts (2) and washers (3).

3. Remove bolts (4) and flange (5).

4. Remove gaskets (6).

5. Remove pin (7) and lever (8).

6. Remove setscrew (9) and block (10).

7. Slide rod (11), yoke (12), and rod (13) down through support (14).

8. Disconnect dump valve (15) from rod (13).

INSPECTION

1. Visually inspect all hardware removed.

2. Inspect dump valve and disassemble as shown in Figure C-2, Appx C, if needed.

INSTALLATION

1. Install in reverse order of removal.

2. Check for leaks after completion of work.

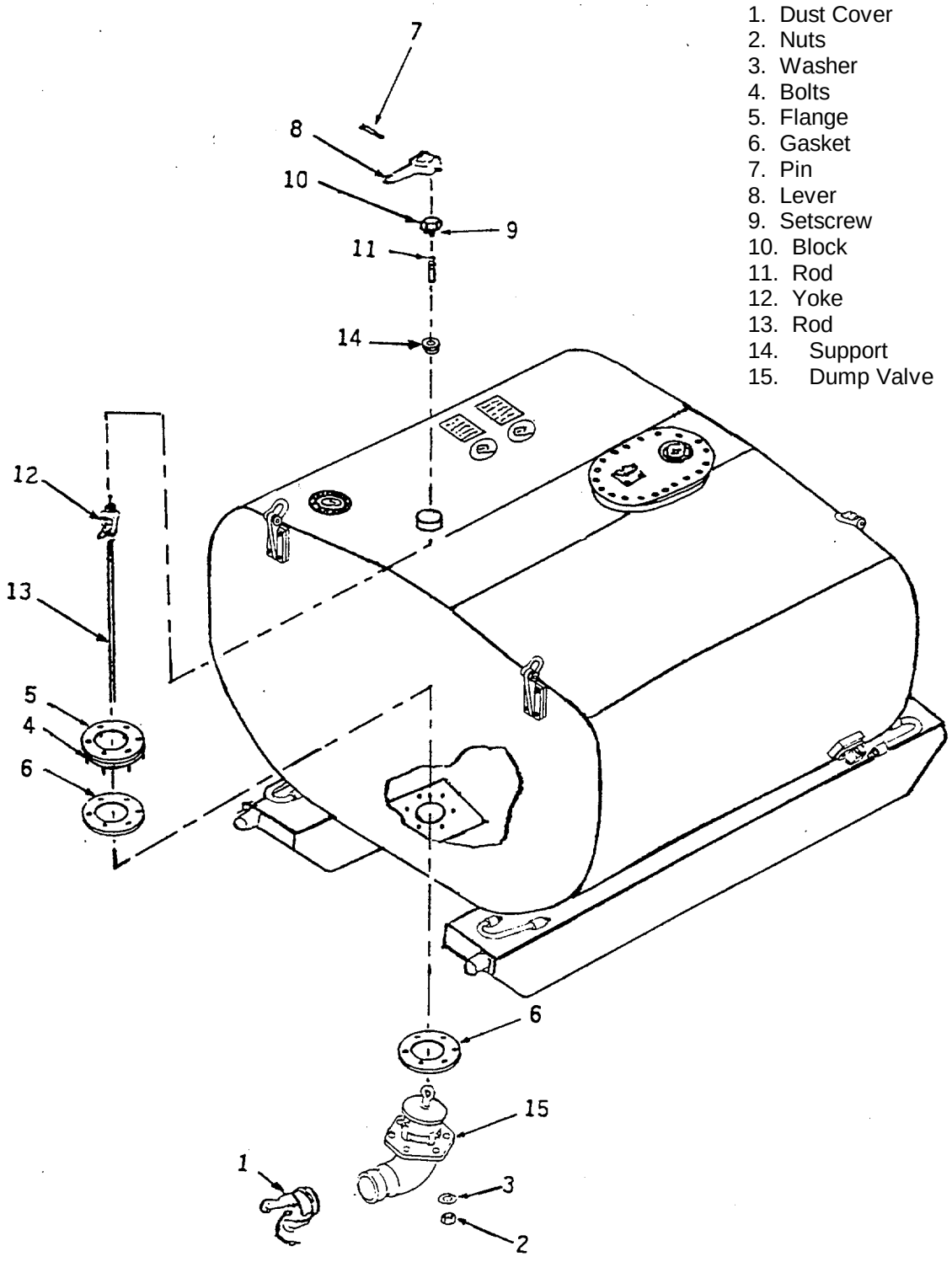


Figure 3-11. Removal and Replacement of Dump Valve

3-22. FUEL FILTER. Replace filter.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: Safety Wire Pliers

Materials/Parts:

Fuel Filter (42, Fig C-3), Appx C
Rag (item 3, Appx D)
Safety Wire 0.032 in.
Seal (41, 43, Fig C-3), Appx C

Equipment Conditions:

Refer to Figure 3-12.

Tank must be grounded.
Tank cam lever dump valve closed.
Fuel hose from tank to manifold must be isolated using the hose couplings shutoff capability.

GENERAL SAFETY INSTRUCTIONS

CAUTION

Fuel will spill if the tank cam lever dump valve or hose couplings are not in "closed" position.

REMOVAL

1. Remove safety wire from adapter (1).

2. Pull lock tabs on adapter (1) outward.

3. Disconnect adapter (1) from dump valve (2), and remove seal (3), screen (4), and seal (5).

INSPECTION

1. Visually inspect screen (4) for cleanliness.

2. Clean screen (4) with solvent (item 16, Appx D), and blow dry.

3. Replace screen (4) if damaged.

INSTALLATION

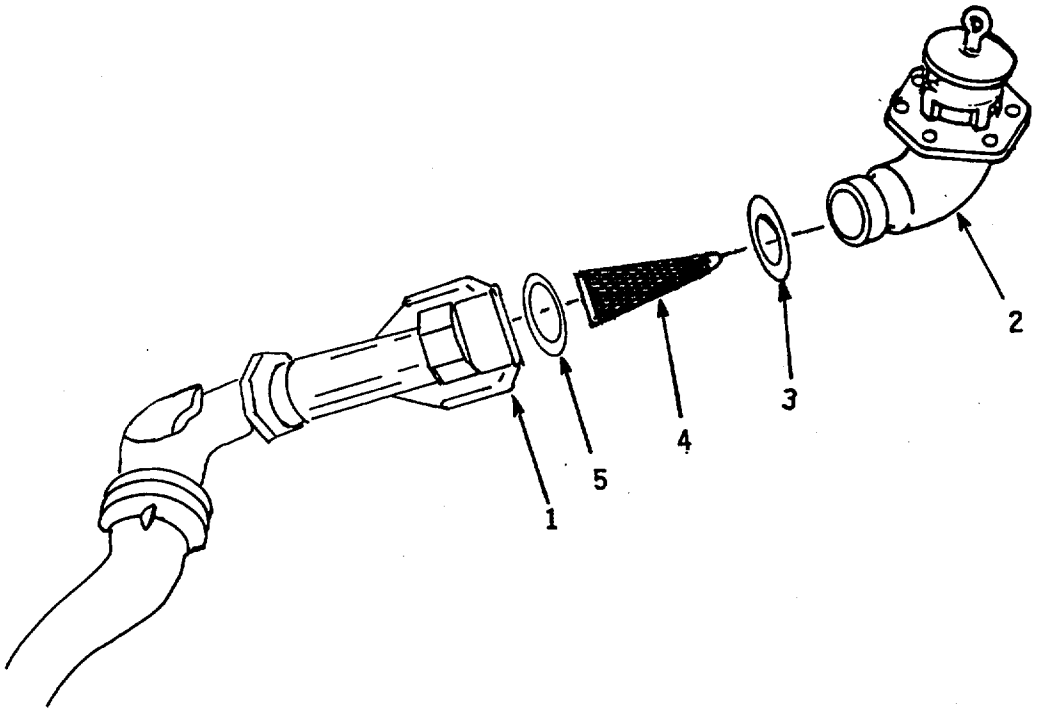
1. Install seal (5) into adapter (1).

2. Install screen (4), and ensure that the screen flange is seated into grooved area of seal (5).

3. Install seal (3) around screen (4). Ensure that seal (5) and (3) are properly seated in machined groove of adapter (1).

4. Connect adapter (1) to dump valve (2). Secure lock tabs on adapter with safety wire.

5. Check for leaks.



1. Adapter
2. Dump Valve
3. Seal
4. Screen
5. Seal

Figure 3-12. Remove and Replace Fuel Filter

3-23. FUEL FLOAT ASSEMBLY. Replace.

This task covers:

a. Removal.
b. Inspection.
c. Installation.

INITIAL SETUP

Tools: 3/4 and 1/4 in. Wrench, 24 in.
Adjustable Wrench, Putty Knife
Steel Measuring Tape

Materials/Parts:

Packing Preformed (79, 80, Fig C-3), Appx C
Float Switch (83, Fig C-2), Appx C
Sealant (item 15, Appx D)
MIL-S-8802E/3, Type II, Class B-2

Equipment Conditions:

Refer to Figure 3-13.

Tank must be empty and separate from other tanks.
Tank access cover removed.
Tank grounded.
Tank must be purged. Refer to Chapter 3, paragraph 3-25.

GENERAL SAFETY INSTRUCTIONS

WARNING

Injury to personnel and equipment may occur if the purging maintenance procedure above is not performed. The fuel vapor and air mixture in the tank can cause a violent explosion setoff by sparks from tools being dropped in tank.

REMOVAL

1. Remove sealant with putty knife.

2. Remove tank plug (5) using adjustable wrench.

3. Disassemble on workbench. Refer to Appx C, Figure C-2.

4. Remove nuts (1), washers (2), screws (3) from receptacle (4).

5. Remove nuts (6), bracket (7), and packing (8).

6. If defective, replace float switch (9) as follows:

a. Unsolder wires from receptacle (4).

b. Remove float switch from tubes (10 & 11), and remove packing (12).

INSPECTION

1. Inspect electrical wire harness for frayed insulation, broken wires, or loose pin to wire connection.

2. Test float switch (9), replace if defective. Refer to step (6) above.

ASSEMBLY/ INSTALLATION

1. Install packing (12) on float switch (9), and guide electrical wires through tubes (10 & 11).
2. Install nut (6), packing (8), plug (5), bracket (7). Do not tighten any of the nuts (6) onto plug (5) at this time.

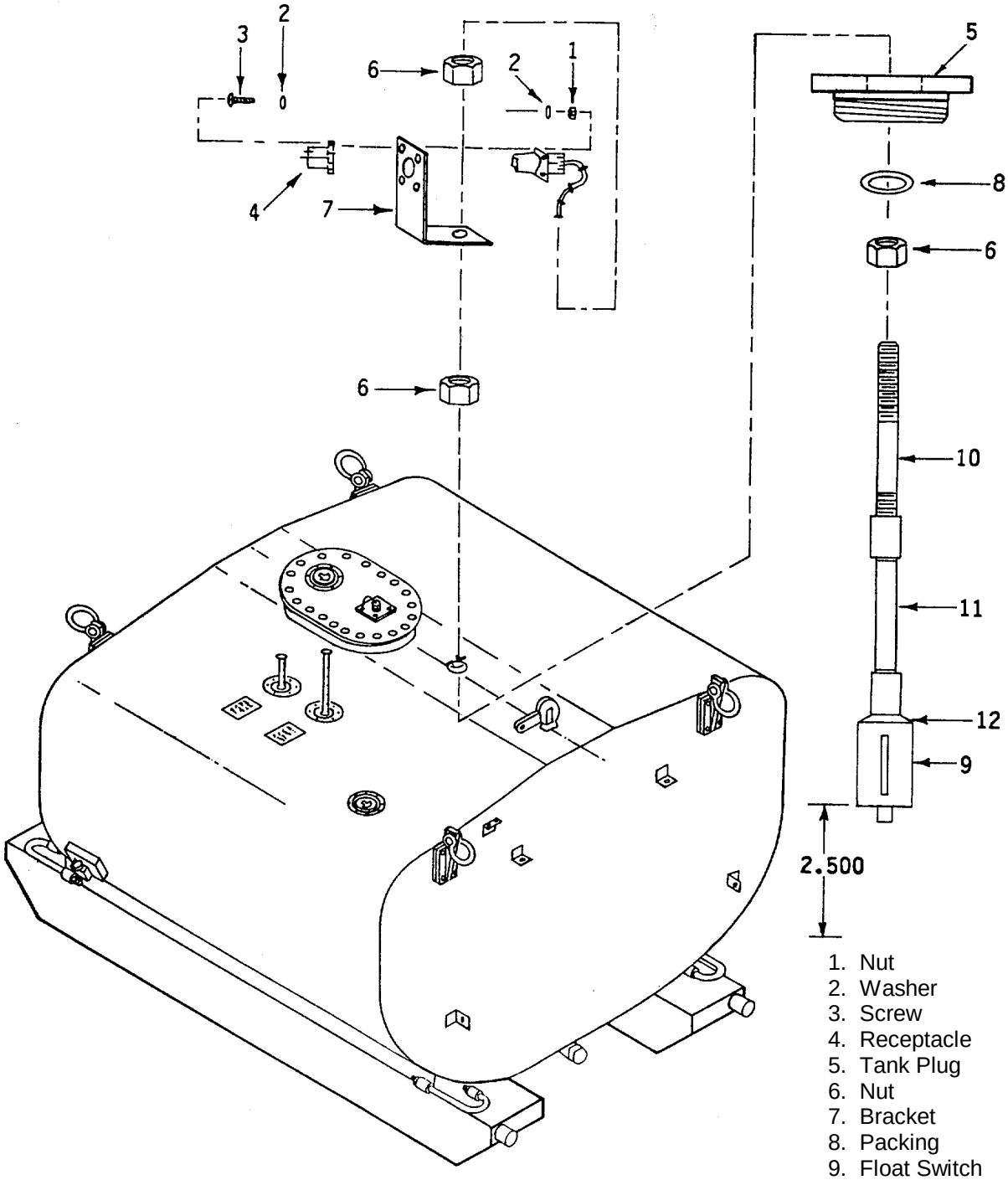
3. Solder wires to receptacle (4) pins, and install screws (3), washers (2), and nuts (1).

4. Seal areas with sealant (item 15, Appx D).

5. Install assembled components in tank and tighten tank plug (5).

6. Adjust tube (10) to meet 2.5 inch clearance between float (9) and bottom of tank.

7. Tighten nuts (6) after adjustment, and seal center of tube (10) and entire area around plug (5) with sealant (item 15, Appx D).



1. Nut
2. Washer
3. Screw
4. Receptacle
5. Tank Plug
6. Nut
7. Bracket
8. Packing
9. Float Switch
10. Tube
11. Tube
12. Packing

Figure 3-13. Remove and Replace Fuel Float Assembly

Section V. PREPARATION FOR STORAGE OR SHIPMENT

3-24. SCOPE. This section contains information and references of information pertaining to preservation, storage, and shipping.

3-25. PRESERVATION. The tank can be purged and preserved as follows:

WARNING

- **Ground aircraft and all equipment used in performing this operation. Use appropriate clothing and gloves and goggles.**
- **Drain fuel tank. Do not allow tank to remain empty overnight after fuel is drained.**

a. Electrical Harnesses, Tiedown Straps, and Vent Lines.

(1) Remove electrical wire harness and store inside storage container provided for system components.

(2) Remove tiedown straps and roll up, and store inside storage container.

(3) Remove vent lines from tanks and store.

b. Fuel Management Control Panel. (FMCP).

(1) Remove FMCP from 600 gallon tank.

(2) Empty residual fuel from FMCP by opening both pump inlet and outlet manifold lines. Remove as much fuel as possible.

(3) Install pump inlet and outlet dust covers.

(4) Wipe up any fuel that may have spilled on or inside the FMCP and secure.

(5) Install FMCP inside storage container using quick release pins.

c. Fuel Manifold Transfer Lines.

(1) Remove all fuel manifold transfer lines from aircraft.

(2) Open and drain residual fuel from each line, tee, and elbow fittings into an approved fuel storage container. This is done to prevent over expansion of fuel lines due to normal heating/ cooling which will result in damage to hoses during storage.

(3) Place dust caps on each line, tee, and elbow after draining residual fuel, and store inside storage container.

d. 600 Gallon Tank.

(1) Defuel tank into aircraft's main tank or into defueling truck as required. Refer to paragraph 3-14.

(2) Remove residual fuel in tank.

(3) Pour approximately 5 gallons of lubricating oil (item 12, Appx D) to help reduce the flash point of the empty fuel tank.

(4) Flush the bottom of tank thoroughly with the oil.

(5) Close dump valve on tank after it is drained, and fill with lubricating oil (item 12, Appx D). Allow oil to remain in fuel cell for 24 hours.

(6) Drain lubricating oil and let tank stand for 2 to 3 hours, and then test with a combustible gas indicator for presence of fuel vapors. If an unsafe condition exists, reflush tank with fresh oil until a safe reading is obtained.

(7) Attach a tag to the fuel filler cap with information stating that the tank has been preserved with oil (item 12, Appx D), and that no flushing is required when depreserving tank.

NOTE

In order to allow tank to breathe when stored, do not secure vent fitting caps tightly.

(8) Apply corrosion preventive compound (item 4, Appx D) to metal fittings and exposed bare metal areas.

(9) Remove tank from aircraft and store in an approved tank storage site.

(10) Install vent dust cap and tank opening cap.

(11) Ensure fuel filler port caps are installed and secured.

(12) Ensure fuel quantity sticks are down, locked, and secured. This prevents water from entering storage tube.

3-26. STORAGE.

a. The ERFS tanks and components should be stored outside in a secure location. The tank and storage con- tainer should be grounded due to containing fuel/vapors in a residual form. In addition, the following procedures shall be followed:

(1) The 600 gallon fuel tank and all of its components stored inside the storage container shall be preserved in accordance with paragraph 3-25 above.

(2) The 600 gallon tank and storage container shall be inspected for bare metal and treated accordingly to prevent corrosion.

(3) Outside storage is complete when tank and storage container is preserved.

b. For administrative storage instructions, refer to AR 750-1, Army Material Maintenance Concepts and Policy, and TM 740-90-1, Maintenance of Supplies and Equipment.

3-27. SHIPPING. The ERFS 600 gallon fuel tanks and its components can be shipped after complete purging of the fuel tanks. Shipping and storage container (P/N 9329-100, P/N 9329-200) will be used, and a list of all items in containers provided. The following procedures will be complied with prior to shipping:

a. Drain all fuel from tank. Refer to paragraph 3-14.

b. Connect static ground cable into ground receptacle on fuel tank.

WARNING

In addition to these procedures, follow all procedures for purging fuel tanks given in TM 55-1500- 204-25/1.

c. All residual fuel must be removed and may require removal of fuel tank access cover plate.

d. Insert defuel nozzle directly into tank and defuel residual fuel.

e. Remove forward filter cap.

f. Connect a one quarter inch ID flexible hose to an inert gas supply such as Argon (item 1, Appx D), Carbon Dioxide (item 2, Appx D), or filtered clean shop air.

g. Put the open end of the hose into the tank and secure in place.

h. Purge tank for 2 hours at 30 psi.

i. Turn off inert gas supply. Reinstall access cover plate and filler cap, and allow tank to set for 3 hours.

j. Test fuel tank with a combustible gas indicator for presence of fuel vapor. If an unsafe condition exists, repeat purging.

k. Preserve fuel tank by coating all interior surfaces with lubricating oil (item 12, Appx D), MIL-L-6081, grade 1010.

l. Attach tag to filler cap with the following information printed on it:

THIS FUEL TANK HAS BEEN PURGED IN ACCORDANCE WITH TM 55-1560-307-13&P AND IS GAS FREE. REMOVE THIS TAG UPON FILLING TANK WITH FUEL.

/

Date Signature

APPENDIX A

REFERENCES

A-1 Dictionaries of Terms and Abbreviations

AR 310-25 ..... Dictionary of United States Army Terms
AR 310-50 ..... Authorized Abbreviations and Brevity Codes

A-2 Publication Index

DA PAM 25-30..... Consolidated Index of Army Publications and Blank Forms

A-3 Logistics and Storage

TM 473-200-1 ..... Storage and Materials Handling

A-4 Maintenance of Supplies and Equipment

AR 750-1 ..... Army Material Maintenance Concepts and Policies

TM 43-0139 ..... Painting Operations Instructions for Field Use

A-5 Other Publications

AR 420-90. ..... Fire Prevention and Protection
AR 55-38 ..... Reporting of Transportation Discrepancies in Shipments

AR 700-58. ..... Packaging Improvement Report
AR 70-38 ..... Research, Development, Test and Evaluation of Materials for Extreme Climatic Conditions

DA PAM 310-13..... Military Publications Posting and Filing
DA PAM 738-751..... Functional User's Manual for the Army Maintenance Management System - Aviation (TAMMS-A)

FM 10-68. ..... Aircraft Refueling
FM 10-69. ..... Petroleum Supply Point, Equipment and Operations
FM-21-11. ..... First Aid For Soldiers

TB 43-180..... Calibration Requirements for the Maintenance of Army Materiel

TM 55-1500-204-25/1 ..... General Aircraft Maintenance Manual
TM 55-1520-240-10 ..... Operator's Manual
TM 55-1520-240-23 ..... Aviation Unit and Aviation Intermediate Maintenance Manual

TM 55-1680-358-12&P .... Helicopter Internal Cargo Handling System
TM 750-244-1-5..... Procedures for the Destruction of Aviation Ground Support Equipment (FSC 4920) to Prevent Enemy Use

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. MAINTENANCE ALLOCATION CHART.

a. This Maintenance Allocation Chart (MAC) assigns maintenance functions in accordance with the Three Levels of Maintenance concept for Army Aviation. These maintenance levels (categories) Aviation Unit Maintenance (AVUM), Aviation Intermediate Maintenance (AVIM), and Depot Maintenance are depicted on the MAC as:

AVUM, which corresponds to an 0 Code in the Repair Parts and Special Tools List (RPSTL)

AVIM, which corresponds to an F Code in the Repair Parts and Special Tools List (RPSTL) DEPOT, which corresponds to a D Code in the Repair Parts and Special Tools List (RPSTL)

b. The maintenance to be performed below depot and in the field is described as follows:

(1) AVUM activities will be staffed and equipped to perform high frequency "On-Aircraft" maintenance tasks required to retain or return aircraft systems to a serviceable condition. The maintenance capability of the AVUM will be governed by the MAC and limited by the amount and complexity of ground support equipment (GSE), facilities required, authorized manning strength, and critical skills available. The range and quantity of authorized spare modules/components will be consistent with the mobility requirements dictated by the air mobility concept. (Assignments of maintenance tasks to divisional company size aviation units will consider the overall maintenance capability of the division, the requirement to conserve personnel and equipment resources, and air mobility requirements.)

(a) Company size aviation units. Perform those tasks which consist primarily of preventive maintenance and maintenance repair and replacement functions associated with sustaining a high level of aircraft operational readiness. Perform maintenance inspections and servicing to include preflight, daily, intermediate, periodic (or phased), and special inspections as authorized by the MAC or higher headquarters. Identify the cause of equipment/system malfunctions using applicable technical manual troubleshooting instructions, built-in test equipment (BITE), installed aircraft instruments, or test, measurement, and diagnostic equipment (TMDE). Replace worn or damaged modules/components that do not require complex adjustments or system alinement and which can be removed/installed with available skills, tools, and ground support equipment. Perform operational and continuity checks and make minor repairs to the electrical system. Inspect, service and make operational, capacity, and pressure checks to hydraulic systems. Perform servicing, functional adjustments, and minor repair/replacement to the flight control, propulsion, power train, and fuel systems. Accomplish air frame repair that does not require extensive disassembly, jigging, or alinement. The manufacture of air frame parts will be limited to those items which can be fabricated with tools and equipment found in current air mobile tool and shop sets. Evacuate unserviceable modules/components and end items beyond the repair capability of AVUM to the supporting AVIM.

(b) Less Than Company Size Aviation Units. Aviation elements organic to brigade, group, battalion headquarters, and detachment size units are normally small and have less than ten aircraft assigned. Maintenance tasks performed by these units will be those which can be accomplished by the aircraft crew chief or assigned aircraft repairman and will normally be limited preventive maintenance, inspections, servicing, spot painting, stop drilling, application of nonstress patches, minor adjustments, module/component fault diagnosis, and replacement of selected modules/components. Repair functions will normally be accomplished by the supporting AVIM unit.

(2) AVIM provides mobile, responsive "one-stop" maintenance support. (Maintenance functions which are not conducive to sustaining air mobility will be assigned to depot maintenance). AVIM may perform all maintenance functions authorized to be done at AVUM. Repair of equipment for return to user will emphasize support or operational readiness requirements. Authorized maintenance includes replacement and repair of modules/components and end items which can be accomplished efficiently with available skills, tools, and equipment. AVIM established the Direct Exchange (DX) program for AVUM units by repairing selected items for return to stock when such repairs cannot be accomplished at the AVUM level. The AVIM level inspects, troubleshoots, performs diagnostic tests, repairs, adjust, calibrates and alines aircraft system modules/components. AVIM units will have capability to determine the serviceability of specified modules/components removed prior to the expiration of the time between overhaul (TBO) or finite life. Module/component disassembly and repair will support the DX program and will normally be limited to tasks requiring cleaning and the replacement of seals, fittings, and items of common hardware. Airframe repair and fabrication of parts will be limited to those maintenance tasks which can be performed with available tools and test equipment. Unserviceable repairable modules/components and end items which are beyond the capability of AVIM to repair will be evacuated to Depot Maintenance. AVIM will perform aircraft weight and balance inspections and other special inspections which exceed AVUM capability. Provides quick response maintenance support, including aircraft recovery and air evacuation, on-the-job training, and technical assistance through the use of mobile maintenance contact teams. Maintains authorized operational readiness float aircraft. Provides collection and classification services for serviceable/unserviceable material. Operates a cannibalization activity in accordance with AR 750-50. (The aircraft maintenance company within the maintenance battalion of a division will perform AVIM functions consistent with air mobility requirements and conservation of personnel and equipment resources. Additional intermediate maintenance support will be provided by the supporting nondivisional AVIM unit.)

B-2. USE OF THE MAINTENANCE ALLOCATION CHART (SECTION II).

a. The maintenance allocation chart assigns maintenance functions to the lowest category of maintenance based on past experience and the following considerations:

(1) Skills available.

(2) Work time required.

(3) Tools and test equipment required and/or available.

b. Only the lowest category of maintenance authorized to perform a maintenance function is indicated. If the lowest maintenance category cannot perform all tasks of any single maintenance function (e.g., test repair), then the higher maintenance level(s) that can accomplish additional tasks will also be indicated.

c. A maintenance function assigned to a maintenance category will automatically be authorized to be performed at any higher maintenance category.

d. A maintenance function that cannot be performed at the assigned category of maintenance for any reason may be evacuated to the next higher maintenance category. Higher maintenance categories will perform the maintenance functions of lower maintenance categories when required or directed by the commander that has the authority to direct such tasking.

e. The assignment of a maintenance function will not be construed as authorization to carry the related repair parts or spares in stock. Information to requisition or otherwise secure the necessary repair parts will be as specified in the associated repair parts and special tools list (RPSTL).

f. Normally there will be no deviation from the assigned level of maintenance. In cases of operational necessity, maintenance functions assigned to a maintenance level may, on a one-time basis and at the request of the lower maintenance level, be specifically authorized by the maintenance officer of the level of maintenance to which the function is assigned. The special tools, equipment, etc. , required by the lower level of maintenance to perform this function will be furnished by the maintenance level to which the function is assigned. This transfer of a maintenance function to a lower maintenance level does not relieve the higher maintenance level of the responsibility for the function. The higher level of maintenance will provide technical supervision and inspection of the function being performed at the lower level.

g. Changes to the maintenance allocation chart will be based on continuing evaluation and analysis by responsible technical personnel and on reports received from field activities.

B-3. MAINTENANCE FUNCTIONS. Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the 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. Aline. 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 3d position code of the SMR code.

i. Repair. The application of maintenance services', including fault location/troubleshooting2, removal/ installation, and disassembly/assembly procedures3, and maintenance actions4 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 equipment/components.

B-4. FUNCTIONAL GROUPS (Section II, Columns 1 and 2). The functional group shown in Section II, under columns 1 and J 2, identify maintenance significant components, assemblies, and subassemblies with next higher assembly. B-5. MAINTENANCE FUNCTION (Section II, Column 3). Column 3 lists the functions to be performed on the items listed in column 2.

B-6. MAINTENANCE CATEGORIES AND WORK TIMES (Section II, Column 4). The maintenance categories (levels) AVUM, AVIM, and DEPOT are listed on the Maintenance Allocation Chart with individual columns that include the work times for maintenance functions at each maintenance level. Work time presentations such as "0. 1" indicate the average time it requires a maintenance level to perform a specified maintenance function. If a work time has not been established, the columnar presentation shall indicate "____.____" Maintenance levels higher than the level of maintenance indicated are authorized to perform the indicated function.

B-7. TOOLS AND TEST EQUIPMENT (Section II, Column 5, and Section III). Common tool sets (not individual tools), special tools, test, and support equipment required to perform maintenance functions are listed alphabetically in Section III with a reference number to permit crossreferencing to column 5 in the MAC. In addition, the maintenance category authorized to use the device is listed along with the item National stock number (NSN) and, if applicable, the tool number to aid in identifying the tool/device.

---

[1]Services inspect, test, service, adjust, aline, calibrate, and/or replace.

[2]Fault locate/troubleshoot the process of investigating and detecting the cause of equipment malfunctioning; the act of isolating a fault within a system or unit under test (UUT).

[3]Disassemble/assemble encompasses the step-by-step taking apart (or breakdown) of a spare/functional group coded item to the level of its least componency identified as maintenance significant (i.e., assigned an SMR code) for the category of maintenance under consideration.

[4]Actions welding, grinding, riveting, straightening, facing, remachining, and/or resurfacing.

Section II. Use of Maintenance Allocation Chart

MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS:
Helicopter Extended Range Fuel System (ERFS)
P/N 85SDSCC-D-0007-2

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQUIPMENT	(6) REMARKS
			AVUM	AVIM	DEPOT		
01	SYSTEM INSTALLATION						
	Fuel Tank	Install	-.-				
		Service	-.-				
		Test	-.-			278	
		Repair		-.-		278	
0101	Mount Assemblies	Inspect					
		Replace	-.-			278	
0102	Line & Fitting Assys	Inspect					
		Replace	-.-			103	
0103	Hose Assys	Inspect	-.-				
		Replace	-.-			278	
0104	Coupling and Adapter Assys	Inspect	-.-				
		Replace	-.-			278	
0105	Wiring Harness Assys	Inspect	-.-				
		Replace	-.-			278	
		Repair		-.-		277	
02	TANK ASSY						
0201	Access Door & Gasket	Inspect					
		Replace	-.-			278	
0202	Lines & Fitting Assys	Inspect					
		Replace	-.-			278	
0203	Wiring Harness Assys	Inspect	-.-				
		Replace	-.-			278	
		Repair		-.-		277	
0204	Liquid Level Indicators	Inspect					
		Replace	-.-			278	
0205	Fuel Filler Assy	Inspect	-.-				
		Replace	-.-			278	

Section II. Use of Maintenance Allocation Chart (Cont)

MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS:
Helicopter Extended Range Fuel System (ERFS)
P/N 85SDSCC-D-0007-2

(1)	(2)	(3)	(4)			(5)	(6)
GROUP NUMBER	COMPONENT ASSEMBLY	MAINTENANCE FUNCTION	MAINTENANCE CATEGORY			TOOLS AND EQUIPMENT	REMARKS
			AVUM	AVIM	DEPOT		
0206	Fuel Drain	Inspect	-.-				
		Replace	-.-			278	
0207	Fuel Valve	Inspect	-.-				
		Replace	-.-			278	
0208	Fuel Quantity	Inspect					
		Replace	-.-			278	
0209	Fuel Filter	Inspect	-.-			278	
		Replace	-.-				
03	CONTROL PANEL ASSY						
0301	Control Panels	Inspect	-.-				
		Replace	-.-	-.-		278	
		Repair	-.-			278	
0302	Panel Box	Inspect	-.-				
		Replace	-.-	-.-			
		Repair	-.-				
0303	Fuel Pump	Inspect					
		Replace	-.-			103	
0304	Elec Control Panel	Inspect					
		Replace	-.-	-.-		278	
		Repair	-.-			277	
0305	Wiring Harness Assy	Inspect					
		Replace	-.-	-.-		278	
		Repair	-.-			277	
0306	Sensor Level Electro Optical	Inspect	-.-				
		Replace	-.-			103	

Section II. Use of Maintenance Allocation Chart (Cont)

MAINTENANCE ALLOCATION CHART

NOMENCLATURE OF END ITEMS
Helicopter Extended Range Fuel System (ERFS)
P/N 85SDSCC-D-0007-2

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY			(5) TOOLS AND EQUIPMENT	(6) REMARKS
			AVUM	AVIM	DEPOT		
0307	Lines and Fitting Assys	Inspect	-.-				
		Replace	-.-			103	
0308	Quick Release Pins	Inspect	-.-				
		Replace	-.-			278	
04	RESTRAINT ASSY						
0401	Tiedown Assys	Inspect	-.-				
		Replace	-.-			278	
0402	Tiedown Straps	Inspect	-.-				
		Replace	-.-			278	

Section III. Tool and Test Equipment Requirements

HELICOPTER EXTENDED RANGE FUEL SYSTEM (ERFS)				
TOOL OR TEST EQUIPMENT REFERENCE CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
277	AVIM/AVUM	Tool Kit, Electrical Repairer	5180-00-323-4195	SC518099CLA06
278	AVIM/AVUM	Tool Kit, Aircraft Mechanic	5180-00-323-4692	SC518099CLAO1HR
103	AVUM	Wrench	5120-00-203-4812 5120-00-203-4804 5120-00-203-4806 5120-00-203-4808 5120-00-203-4802	1232 1248 1244 1240 1252

APPENDIX C
OPERATOR, AVIATION UNIT, AND AVIATION INTERMEDIATE MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C-1. SCOPE. This repair parts and special tools list (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 AVUM and AVIM maintenance of the Extended Range Fuel System. It authorizes the requisitioning, issue, and disposition of spares, repair parts, and special tools as indicated by 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. Bulk materials are listed by item name in Appendix C. Repair part kits are listed separately in their own function group within Section II. Repair parts for reparable special tools are also listed in this section.

b. Section III Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL for the performance of maintenance.

c. Section IV Cross-Reference Indexes. A list, in National Item Identification Number (NIIN) sequence, of all National Stock Numbers (NSN) appearing in the listings, followed by a separate list in alphanumeric sequence of all part numbers appearing in the listings. National stock numbers and part numbers are cross-referenced to each illustration figure and item number appearance. The figure and item number index lists figure and item numbers in alphanumeric sequence and cross references NSN, CAGE, and part numbers.

C-3. EXPLANATION OF COLUMNS (Sections II and III).

a. ITEM NO. Column. Indicates the number used to identify items called out in the illustration.

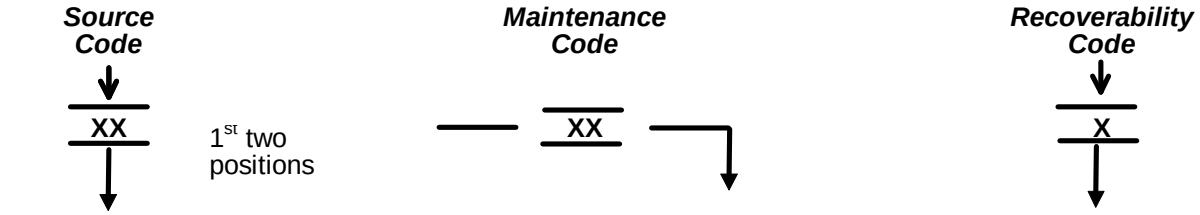
b. SMR-CODE Column. The Source, Maintenance, and Recoverability (SMR) code is a 5-position code containing supply/requisitioning information, maintenance category authorization criteria, and disposition instruction, as shown in the following breakout:

(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 follows:

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 CAGE and part number given.

XC - Installation drawing, diagram, instruction sheet, field service drawing that is identified by manufacturer's part number.



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

Code	Explanation
PA PB PC** PD PE PF 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 3rd position of the SMR code. **NOTE: Items coded PC are subject to deterioration.
KD KF KB	Items with these codes are not to be requested/re-quisitioned individually. They are part of a kit which is authorized to the maintenance category in-dicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.

Code	Explanation
MO-(Made at org/ AVUM Level) MF-(Made at DS/ AVIM Level) MH-(Made at GS Level) ML-(Made at Spe-cialized Repair Act (SRA) 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 3rd position code of the SMR code, but the source code indicated it is made at a higher level, order the item from the higher level of maintenance.

Code	Explanation
AO-(Assembled by org/AVUM Level) AF-(Assembled by DS/AVIM Level) AH-(Assembled by GS Category) AL-(Assembled by SRA) 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 maint-enance indicated by the source code. If the 3rd position code of the SMR code authorizes you to replace the item, but the source code indicates the items are assembled at a higher level, order the item from the higher level of maintenance.

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 CAGE and part number given.

XC Installation drawing, diagram, instruction sheet, field service drawing, that is identified by manufacturer's part number.

XD Item is not stocked. Order an "XD"-coded item through normal supply channels using the CAGE 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" or those aircraft support items restricted by requirements of AR 750-1.

(2) Maintenance Code. Maintenance code 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 aviation unit maintenance.
O	-Organizational or aviation unit category can remove, replace, and use the item.
F	-Direct support or aviation intermediate 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 or (aviation unit) is the lowest level that can do complete repair of the item.

F -Direct support or aviation intermediate 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 Application/Explanation Code

H -Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.

Recoverability Application/Explanation Code

D -Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.

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. COMMERCIAL AND GOVERNMENT ENTITY (CAGE) CODE Column. A five position numeric or alphanumeric code used to associate a source, manufacturer, or controller to all reference and/or part numbers.

d. PART NUMBER Column. 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 or its engineering drawings, specifications standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an 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. This column includes the

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

(2) The physical security classification of the item is indicated by the parenthetical entry (e. g. , Phy Sec C1 (C) -Confidential, Phy Sec Cl (S) -Secret, Phy Sec Cl (T) Top Secret). No parts of the extended range fuel system have a physical security classification.

(3) Items that are included in kits and sets are listed below the name of the kit or set.

(4) Spare/repair parts that make up an assembled item are listed immediately following the assembled item line entry.

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

(6) When the item is not used with all serial numbers of the same model, the effective serial numbers are shown on the last line(s) of the description (before UOC).

(7) The usable on code, when applicable (see paragraph C-5, Special information.

(8) In the Special Tools List section, the basis of issue (BOI) appears as the last line(s) in the entry for each special tool, special TMDE, and other special support equipment. When density of equipments supported exceeds density spread indicated in the basis of issue, the total authorization is increased proportionately.

(9) The statement "END OF FIGURE" appears just below the last item description in Column 5 for a given figure in both Section II and Section III.

f. QTY Column'. 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 NSN of the NSN (i. e. , 5305-01-674-1467). NIIN 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 and Section III.

(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 0 through 9 and each following letter or digit in like order).

(1) CAGE Column. The Commercial and Government Entity (CAGE) 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.

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

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

(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. FIGURE AND ITEM NUMBER INDEX.

(1) FIG. Column. This column lists the number of the figure where the item is identified/located in Section II and III.

(2) 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.

(3) STOCK NUMBER Column. This column lists the NSN for the item.

(4) CAGE Column. The Commercial and Government Entity (CAGE) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc. that supplies the item.

(5) 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-5. SPECIAL INFORMATION. Use the following subparagraphs as applicable:

a. USABLE ON CODE. The usable on code appears in the lower left corner of the Description column heading. Usable on codes are shown as "UOC: . . . in the Description Column (justified left) on the first line applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in the RPSTL are:

Code	Used On
PAA	Model M114
PAB	Model M114A
PAC	Model M114B

(These codes and model numbers are examples only.)

b. 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. Detailed fabrication instructions for item source codes to be manufactured or fabricated are found in TM 55-1560-307-13&P.

c. ASSEMBLY INSTRUCTION. Detailed assembly instructions for items source coded to be assembled from component spare/repair parts are found in TM 55-1560-307-13&P. Items that make up the assembly are listed immediately following the assembly item entry or reference is made to an applicable figure.

d. KITS. Line item entries for repair parts kits appear in a group in Section II.

e. 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.

f. ASSOCIATED PUBLICATIONS. Not applicable.

C-6. HOW TO LOCATE REPAIR PARTS.

a. 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 use the figure and item number index to find the NSN.

b. WHEN NATIONAL STOCK NUMBER OR PART NUMBER IS KNOWN:

(1) First. Using the national stock number or the part number index, find the pertinent national stock number or part number. The NSN index is in National Item Identification Number (NIIN) sequence (see 4. 1(1)). The part numbers in the part number index are listed in ascending alphanumeric sequence (see 4. b). Both indexes cross reference you to the illustration/figure and item number of the item you are looking for.

(2) Second. Turn to 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. (Abbreviations must be applicable to specific RPSTL and not listed in MIL-STD-12).

Abbreviations	Explanation
cd or zn-pltd	cadmium or zinc-plated
MOD	Model
opng	opening
NIIN	National Item Identification Number (consists of the last 9 digits of the NSN)
RPSTL	Repair Parts and Special Tools List

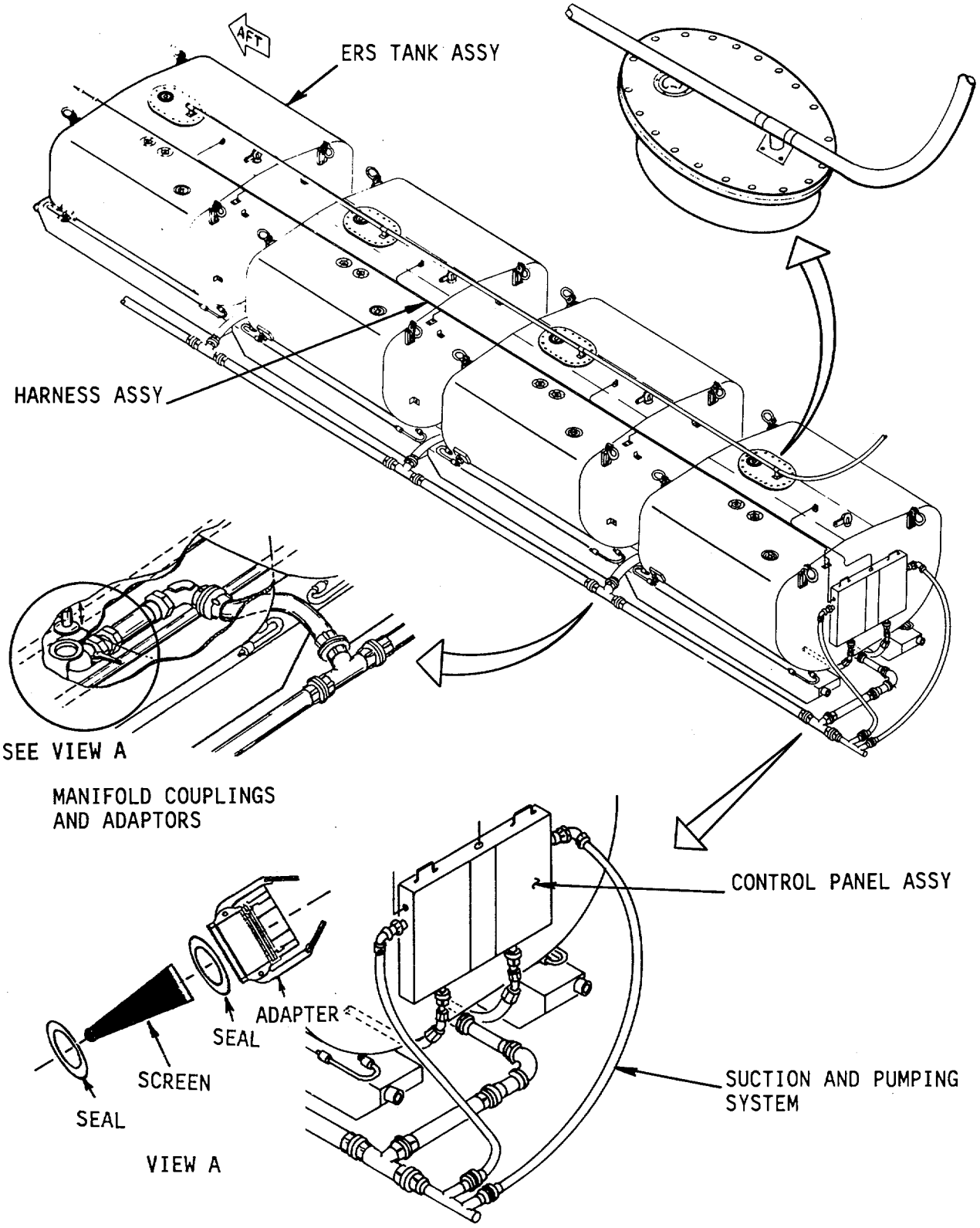


Figure C-1. Extended Range Fuel System

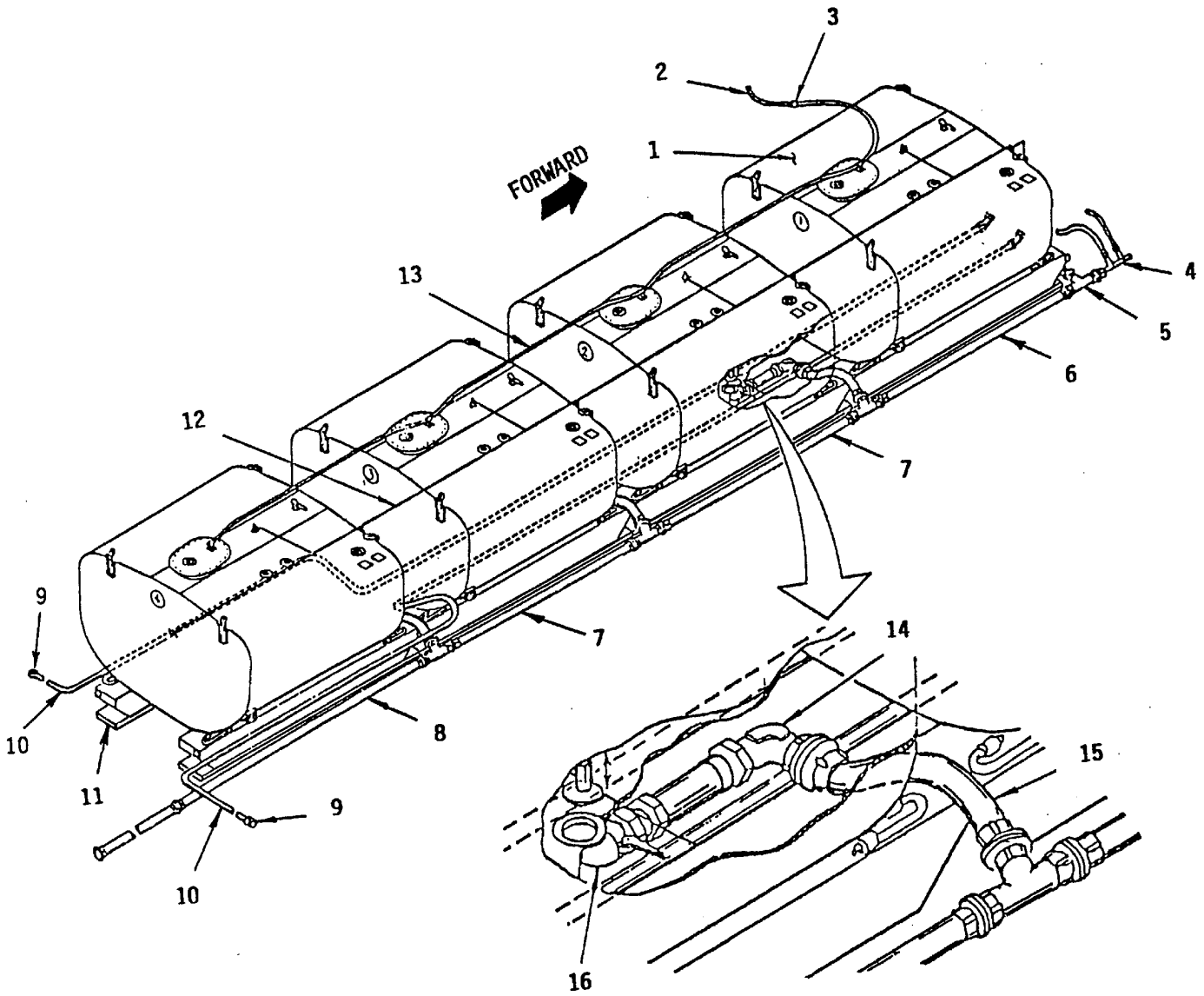


Figure C-2. Extended Range Fuel System (Sheet 1 of 2)

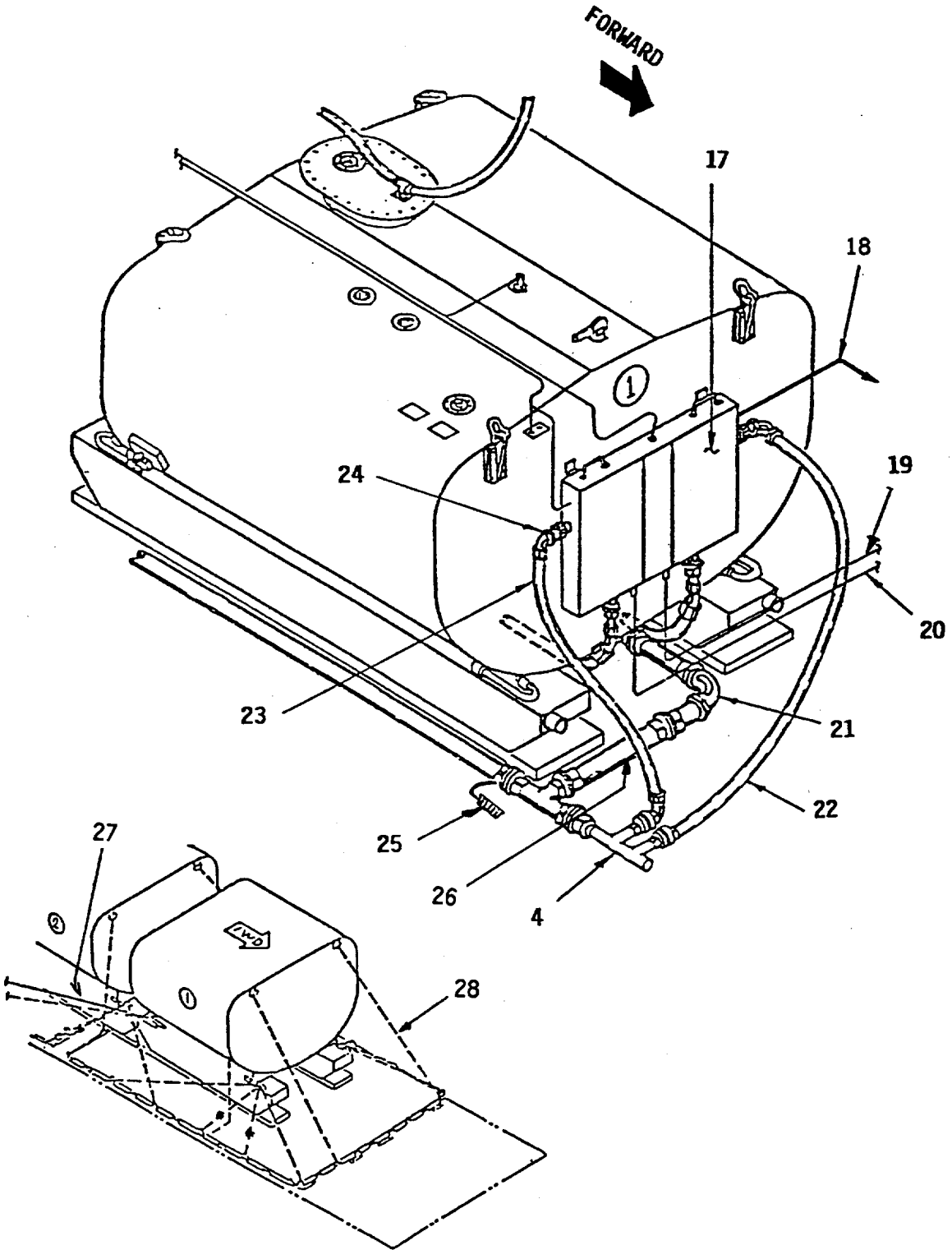


Figure C-2. Extended Range Fuel system (Sheet 2 of 2)

ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
				GROUP 01: Sys Installation Fuel Tank Fig C-2. Extended Range Fuel Sys 85SDSCC-D0007-2	
1	XDOFF	12757	85SDSCC-D-0007-115	ERFS Tank Assy	4
2	MFFZZ	96906	MS28741-24D-0160	Hose Assy (M/F, ref Appx E).	1
3	PAOZZ	96906	MS24399D28	Reducer.	1
4	PAOZZ	00624	AE86844Z	Coupling, Half	1
5	PAOZZ	00624	AE82111R	Tee Assy	4
6	PAOZZ	00624	AE706285-6	Hose Assy.	1
7	PAOZZ	00624	AE706285-3	Hose Assy.	2
8	PAOZZ	00624	AE706285-1	Hose Assy.	1
9	PAOZZ	00624	114PS491-2	Quick Disconnect	2
10	PAOZZ	12757	950234-16D-2300	Hose Assy.	2
11	MFOZZ	12757	85SDSCC-D-0007-187	Decking (M/F, ref Appx E) .	8
12	MFFZZ	12757	85SDSCC-D-0007-113	Harness Assy (M/F, ref Appx E)	1
13	PAOZZ	00624	390A-16D-0720	Hose Assy.	4
14	PAOZZ	00624	AE82567R	Coupling Half 900.	3
15	PAOZZ	00624	AE706285-2	Hose Assy.	3
16	PAOZZ	00624	AE25010-011	Adapter.	4
17	PAOZZ	00624	85SDSCC-D-0007-99	Control Panel Assy .	1
18	PAOZZ	15757	85SDSCC-D-0007-192	Ground Strap	1
19	MFFZZ	15757	85SDSCC-D-0007-112	Electrical Harness Assy (M/F, ref Appx E) .	1
20	MFFZZ	15757	85SDSCC-D-0007-114	Electrical Harness Assy (M/F, ref Appx E) .	1
21	PAOZZ	00624	AE82568R	Elbow Assy .	1
22	MFFZZ	00624	000-950192-16D-0960	.Hose Assy (M/F, ref Appx E).	1
23	MFFZZ	00624	180-950248-16D-0360	.Hose Assy (M/F, ref Appx E).	1
24	PAFZZ	00624	AE85893M	Coupling, Half	4
25	PAOZZ	00624	AE82155R	Cap, Coupling.	34
26	PAOZZ	00624	AE706285-5	Hose Assy.	1
27	PAOZZ	23755	B-D-10000R/0-234 HH-24	Strap, Webbing	8
28	PAOZZ	23755	SP4212-1	Strap, Webbing	38
				END OF FIGURE	

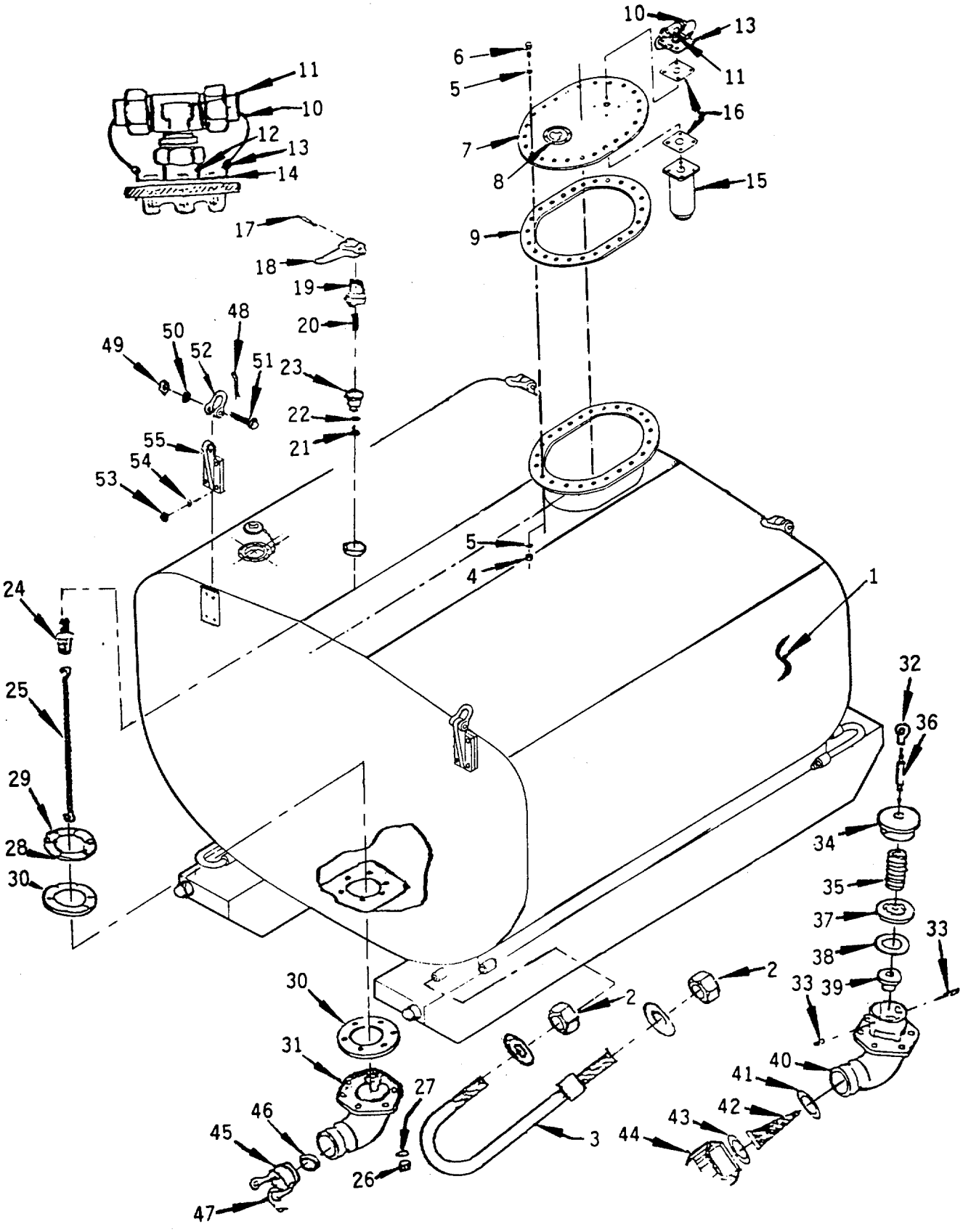


Figure C-3. ERFS Tank (Sheet 1 of 2)

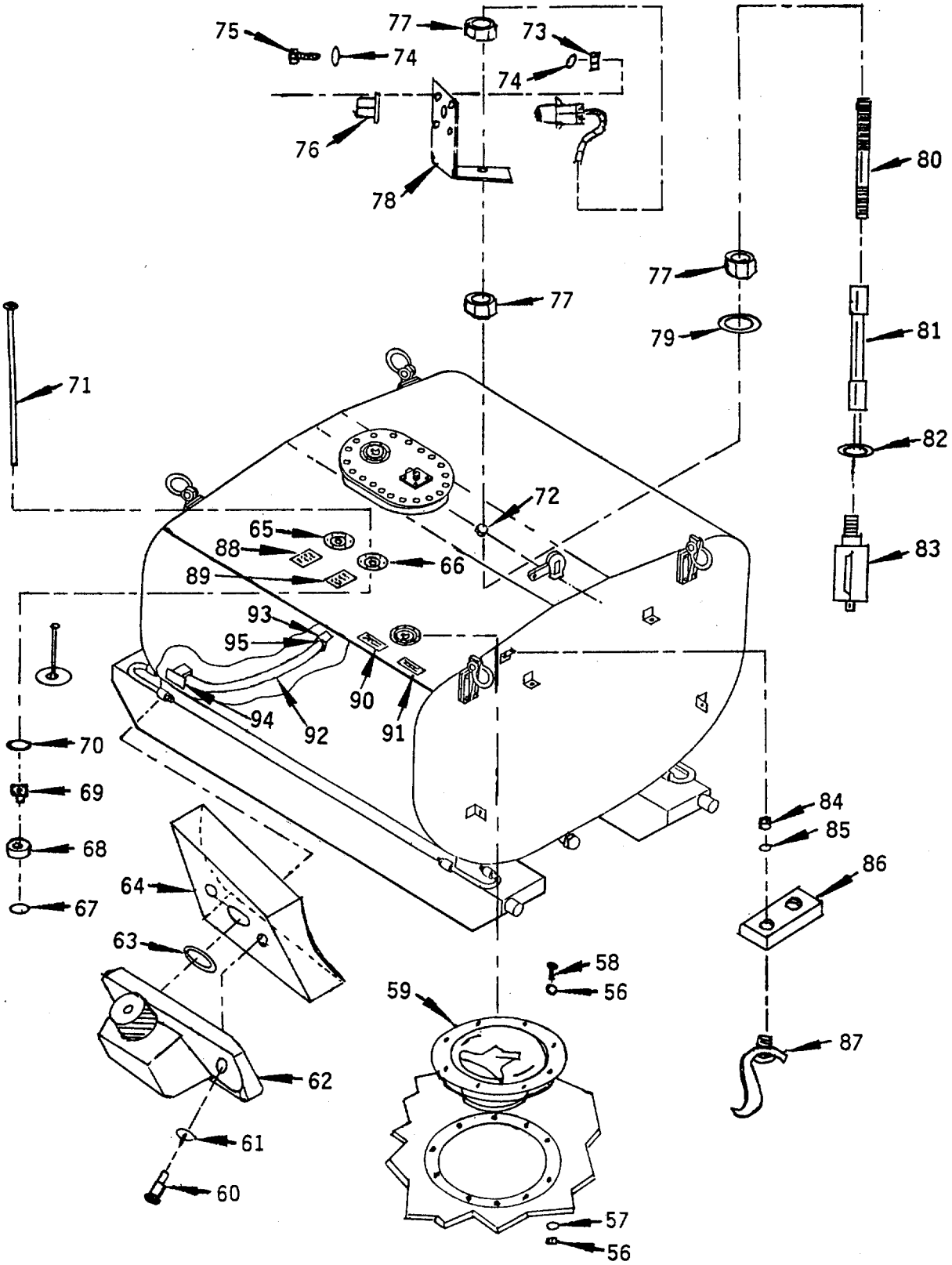


Figure C-3. ERFS Tank (Sheet 2 of 2)

ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
				GROUP 02: Tank Assy	
				Fig C-3. ERFS Tank 85SDSCC-D-0007-115	
1	XAOZZ	97403	13217E7080	Tank	1
2	PAOZZ	96906	MS51922-49	Nut, Self-Locking, He	8
3	XDOZZ	97403	5-14-365-16	Loop Drag	4
4	PAOZZ	96906	MS21045L5	Nut, Self-Locking.	20
5	PAOZZ	88044	AN960PD516	Washer, Flat	40
6	PAOZZ	88044	AN5-13A	Bolt, Machine	20
7	MFFZZ	12757	85SDSCC-D-0007-123	Cover (M/F 6061-TA Alum 0.375 X 15.00 X 19.25, ref Appx E)	1
8	MFOZZ	12757	85SDSCC-D-0007-119	Fuel Filler Cap (M/F P/N SS960609, ref Appx E).	2
8A	PADZZ	78286	SS9609GZ1810	Cap, Filler Opening	2
9	MFFZZ	12757	85SDSCC-D-0007-120	Gasket (M/F MIL-R-8855D, Class 1 GR60, ref Appx E).	1
10	MFFZZ	12757	85SDSCC-D-0007-106	Fitting, Vent	1
11	PAFZZ	96906	MS51524B16	Tee.	1
12	XAOZZ	12757	85SDSCC-d-0007-118	Fitting, Vent.	1
13	PAOZZ	88044	AN4-7A	Bolt, Machine	4
14	PAOZZ	88044	AN960C416L	Washer, Flat	4
15	PAOZZ	97499	214-066-005-1	Rollover Vent Valve.	1
16	PAOZZ	96906	214-066-015-1	Gasket	2
17	PAOZZ	96906	MS16562-256	Pin, Spring.	1
18	PAOZZ	97403	5-14-365-52-1	Lever, Cam	1
19	PAOZZ	97403	13217E7090	Adapter, Rod Cam Lever	1
20	PAOZZ	97403	13217E7087	Rod, Cam Lever, Upper.	1
21	PAOZZ	96906	MS5691-36	Nut, Jam	1
22	PAOZZ	96906	MS29513-112	Packing, Preformed	1
23	PAOZZ	97403	13217E7086	Base; Cam Lever.	1
24	PAOZZ	97403	13217E7088	Yoke, Adjusting Valve.	1
25	PAOZZ	97403	13217E7089	Rod, Lower Operating	1
26	PAOZZ	96906	MS51922-33	Nut; Plain, Hex.	6
27	PAOZZ	96906	MS35338-48	Washer, Lock, Valve Mtg.	6
28	PAOZZ	96906	MS90725-115	Screw, Cap Hex	6
29	PAOZZ	97403	13217E7082	Ring, Backup	1
30	PAOZZ	97403	13217E7084	Gasket, Valve Mtg.	2
31	PAOFF	97403	13217E7096	Valve, Dispensing	1
32	XDFZZ	79515	A609	Nut, Eye.	1
33	XDFZZ	79515	P432	Setscrew.	2
34	XDFZZ	79515	P402A	Bonnet.	1
35	XDFZZ	79515	P414	Plunger, Spring	1
36	XDFZZ	79515	P425A	Stem, Plunger	1
37	XDFZZ	79515	P404	Retainer.	1
38	XDFZZ	79515	P431	Disc, Plunger	1
39	XDFZZ	79515	P403	Nut, Plunger Disc	1

ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
40	XDFZZ	79515	P4012E	Body, Valve	1
41	PAOZZ	12757	89SDSCC-D-01 04-6	Seal	1
42	PAOZZ	12757	89SDSCC-D-0104-4	Screen Assy	1
43	PAOZZ	12757	89SDSCC-D-01 04-5	Seal	1
44	PAOZZ	00624	AE25010-011	Adapter, Female Cam Lock	4
45	PAOZZ	96906	MS27028-11	Cap, Dust	1
46	PAOZZ	96906	MS27030-6	Gasket, Cap	1
47	PAOZZ	14555	110-6	Chain with Ring	1
48	PAOZZ	96906	MS24665-289	Pin, Cotter	1
49	PAOZZ	88044	AN310C12	Nut, Castellated, Hex	1
50	PAOZZ	96906	MS27183-23	Washer	1
51	PAOZZ	96906	MS51105-464	Bolt	1
52	PAOZZ	97403	13217E7085	Eye, Lifting	1
53	PAOZZ	96906	MS90728-109	Bolt	4
54	PAOZZ	96906	MS27183-18	Washer	4
55	PAOZZ	97403	13217E7092	Bracket, Modif (M/F, ref Appx E)	1
56	PAOZZ	96906	MS21045L4	Nut	8
57	PAOZZ	88044	AN960PD416	Washer	16
58	PAOZZ	88044	AN4-7A	Bolt	8
59	MFOZZ	12757	85SDSCC-D-0007-119	Fuel Filler Cap (M/F SS9609, ref Appx E)	2
60	PAOZZ	96906	MS16996-21	Screw	2
61	PAOZZ	96906	MS122032	Washer, Lock	2
62	PAFZZ	79499	205-063-604-1	Cock Poppet Drain	1
63	PAFZZ	96906	MS29513-114	Packing, Preformed	1
64	XDOZZ	12757	85SDSCC-D-0007-116	Mount Block Assy	1
65	PAOZZ	86831	1140-0161-1	Liquid Level Indicator (short)	1
66	PAOZZ	86831	1140-0161-2	Liquid Level Indicator (long)	1
67	PAOZZ	86831		Retainer, Float	1
68	PAOZZ	86831		Float	1
69	PAOZZ	86831	MS21083C/4	Nut	1
70	PAOZZ	86831		Washer	1
71	PAOZZ	86831		Inner Stick Assy	1
72		12757	85SDSCC-D-0007-9	Float Assy	1
73	PAOZZ	80205	NAS679-A06W	Nut	4
74	PAOZZ	88044	AN960-PBL	Washer	8
75	PAOZZ	96906	MS35206-215	Screw	4
76	PAOZZ	96906	MS3472L1 4-4P	Receptacle	1
77	PAOZZ	96906	MS24400-D5	Nut	3
78	MFOZZ	96906	85SDSCC-D-0007-20	Bracket (M/F 2024T3 Al Alloy, ref Appx E)	1
79	PAOZZ	96906	NAS677-8	Packing, Preformed	1
80			85SDSCC-D-0007-29	Tube	1
81			85SDSCC-D-0007-10	Tube	1
82	PAOZZ	96906	MS28772-6	Packing, Preformed	1
83			205-060-613-3	Float Switch	1
84				Nut	2
85				Washer	2
86	XDOZZ	12757	85SDSCC-D-0007-117	Bracket, Mount	2

ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
87	PAFZZ	96906	MS90298-2	Connector, Receptacle	2
88	XDOZZ	12757	85SDSCC-D-0007-184	Decal	1
89	XDOZZ	12757	85SDSCC-D-0007-182	Decal	1
90	XDOZZ	12757	85SDSCC-D-0007-197	Decal	1
91	XDOZZ	12757	85SDSCC-D-0007-196	Decal	1
92	XAOZZ	81349	M83796/IG200E	Hose	1
93	PAOZZ	88044	AN833-6	Elbow 900, Bulkhead	1
94	PAOZZ	96906	MS24392-6	Nipple, Tube	1
95	XDOZZ	12757	85SDSCC-D-0007-124	Bracket	
				END OF FIGURE	

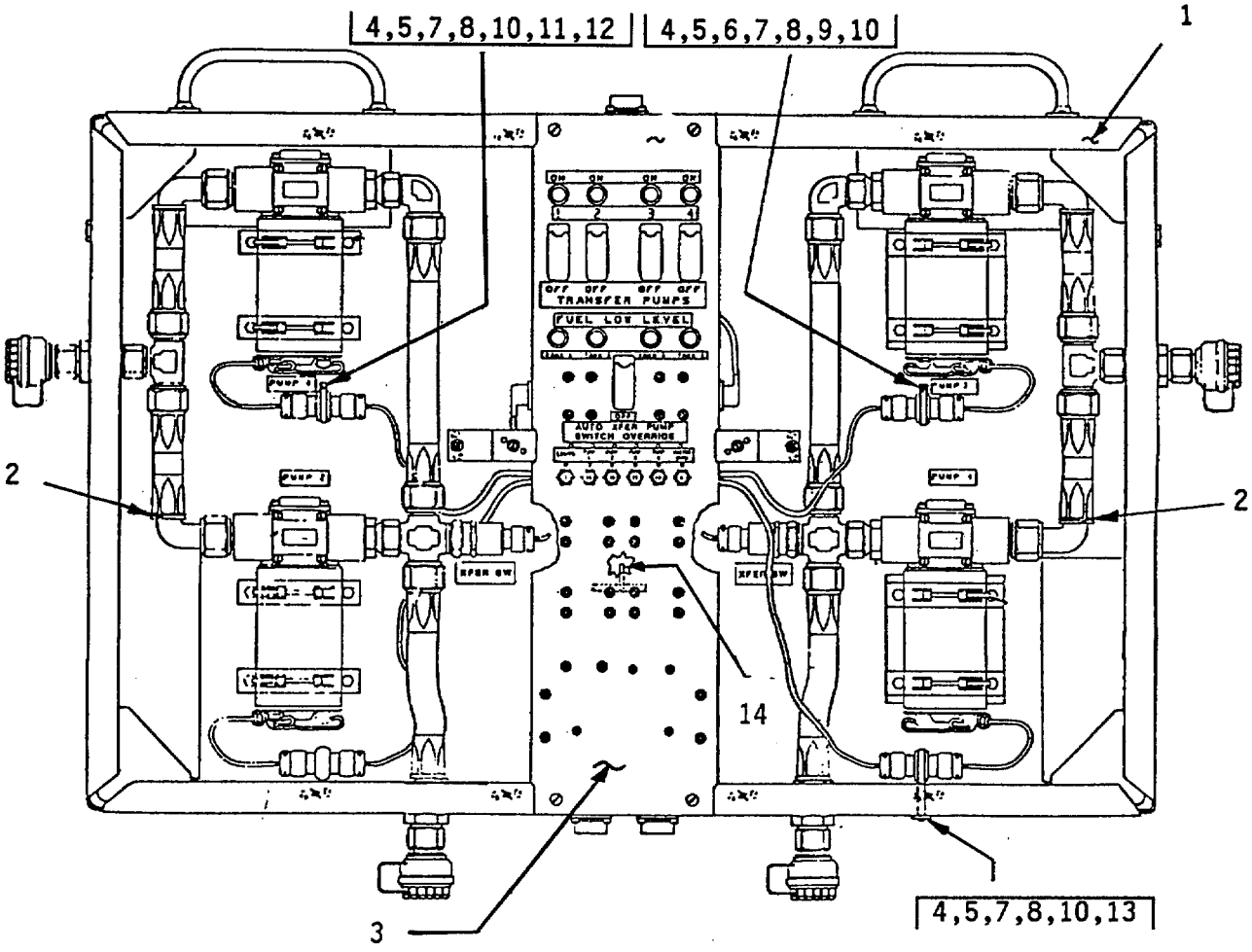


Figure C-4. Control Panel Assembly

ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
				GROUP 03: Control Panel Assy	
				Fig C-4. Control Panel Assy 85SDSCC-D-0007-99	
1	XAFFF	12757	85SDSCC-D-0007-100	Panel Assy .	1
2	AOOO0	12757	85SDSCC-D-0007-101	Pump Assy.	4
3	XAFFF	12757	85SDSCC-D-0007-103	Elec Control Panel Assy.	1
4	PAOZZ	96906	MS35333-73	Washer	8
5	PAOZZ	96906	MS35207-274	Screw	1
6	PAOZZ	96906	MS35650-320	Nut, Plain	4
7	PAOZZ	88044	AN960-10L	Washer	8
8	PAOZZ	80205	NAS43DD3-128	Spacer	1
9	PAOZZ	96906	MS21919WDG13	Clamp	4
10	PAOZZ	96906	MS35207-270	Screw.	1
11	PAOZZ	80205	NAS43DD3-64	Spacer	1
12	PAOZZ	96906	MS35207-264	Screw.	1
13	PAOZZ	96906	MS3367	Tie Strap, Plastic	2
				END OF FIGURE	

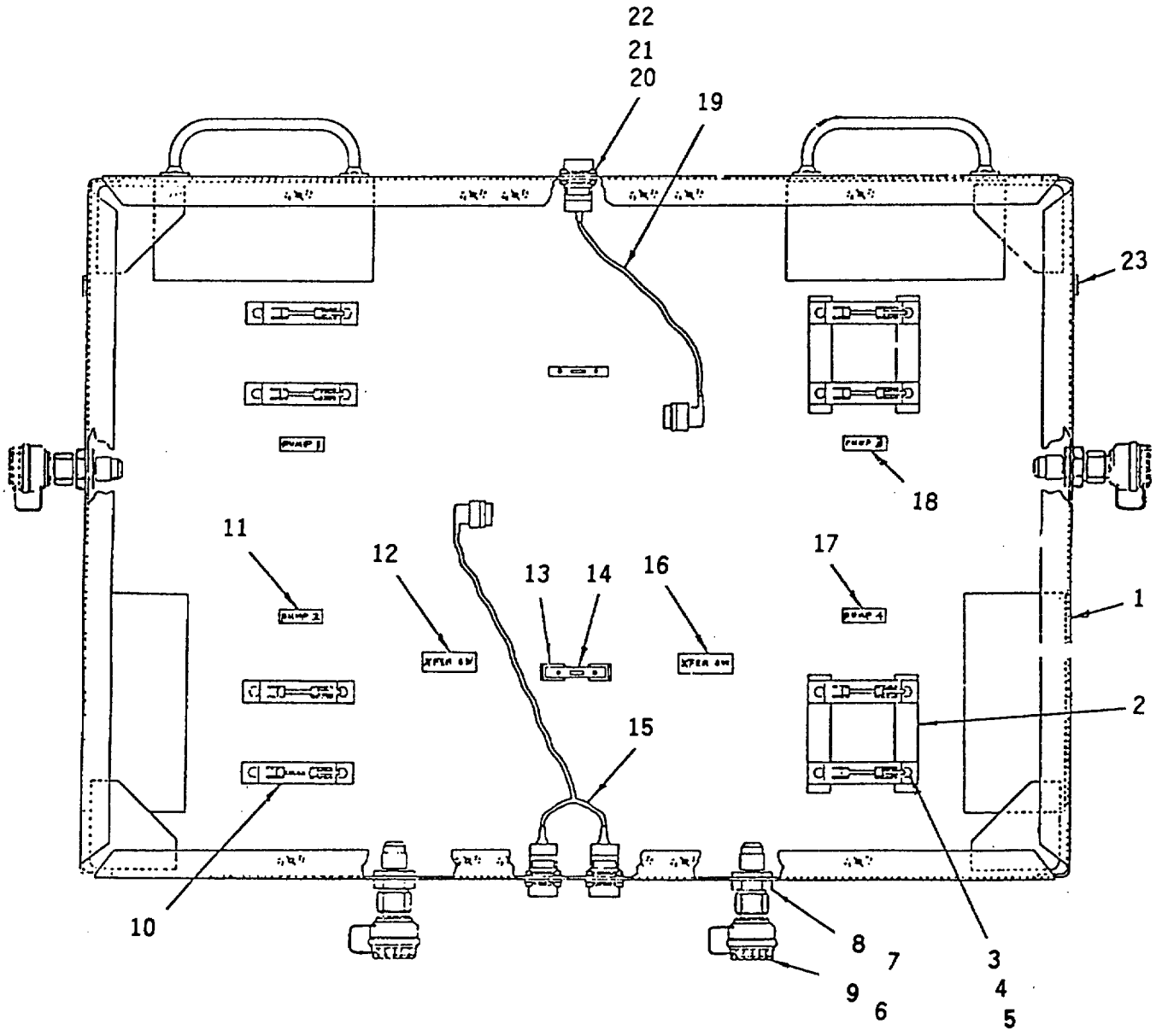


Figure C-5. Panel Assembly

ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
				GROUP 0301: Control Panels	
				Fig C-5. Panel Assy 85SDSCC-D-0007-100	
1	MFFZZ	12757	85SDSCC-D-0007-104	Box Assy (M/F, ref Appx E) .	1
2	MFFZZ	12757	85SDSCC-D-0007-138	Pump Riser (M/F, ref Appx E)	4
3	PAOZZ	88044	AN4-20A	Bolt	8
4	PAOZZ	88044	AN960PD416	Washer	32
5	PAOZZ	88044	AN960D6	Washer	12
6	PAOZZ	96906	MS51860-58	Nut.	4
7	PAOZZ	96906	MS28778-12	Packing, Preformed .	4
8	PAOZZ	96906	MS51520B-12	Nipple	4
9	PAOZZ	00624	AE85861M	Coupling, Half	4
10	PAOZZ	00624	916-265S	Clamp, Quick Coupler Latch .	8
11	XDOZZ	12757	85SDSCC-D-0007-176	Decal.	1
12	XDOZZ	12757	85SDSCC-D-0007-196	Decal.	2
13	PAOZZ	88044	AN743-12	Bracket, Support	2
14	PAOZZ	96906	MS3339-1-9	Plate, Mounting Plastic.	2
15	MFFZZ	12757	85SDSCC-D-0007-110	Elec Harness Assy (M/F, ref Appx E)	1
16	XDOZZ	12757	85SDSCC-D-0007-196	Decal.	2
17	XDOZZ	12757	85SDSCC-D-0007-178	Decal.	1
18	XDOZZ	12757	85SDSCC-D-0007-177	Decal.	1
19	MFFZZ	12757	85SDSCC-D-0007-111	Elec Harness Assy (M/F, ref Appx E)	1
20	PAOZZ	96906	MS21045L06	Nut, Locking .	12
21	PAOZZ	88044	AN960D6	Washer	12
22	PAOZZ	96906	MS35206-230	Screw	12
23	PAOZZ	96906	MS90298-2	Receptacle .	2
				END OF FIGURE	

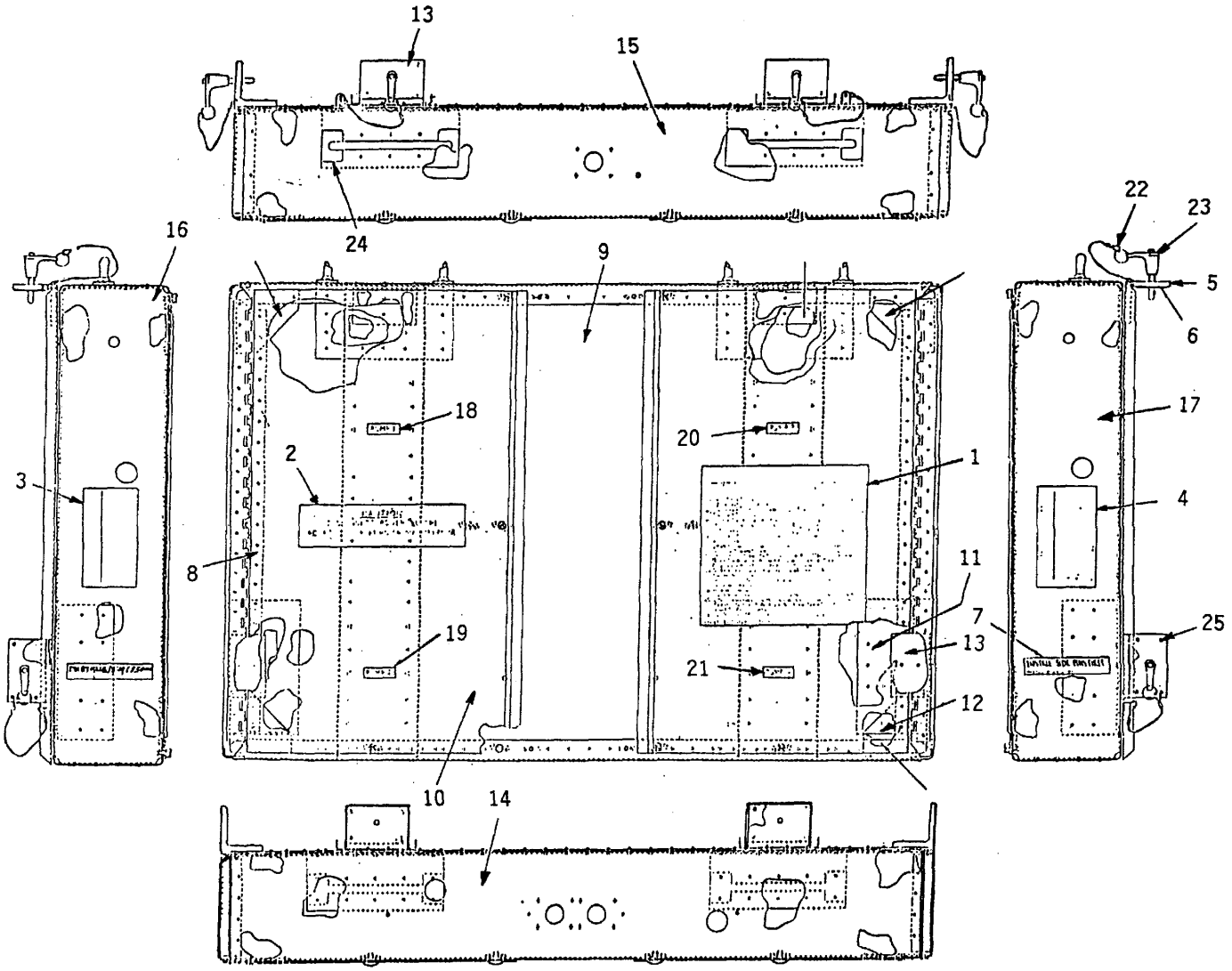


Figure C-6. Panel Box Assembly

(1) ITEM NO	(2) SMR CODE	(3) CAGEC	(4) PART NUMBER	(5) DESCRIPTION AND USABLE ON CODES(UOC)	(6) QTY
				GROUP 0302: Panel Box	
				Fig C-6. Panel Box Assy 85SDSCC-D-0007-104	
1	XDOZZ	12757	85SDSCC-D-0007-183	Decal.	1
2	XDOZZ	12757	85SDSCC-D-0007-191	Decal.	1
3	XDOZZ	12757	85SDSCC-D-0007-193	Decal.	
4	XDOZZ	12757	85SDSCC-D-0007-194	Decal.	
5	PAOZZ	88044	AN743-12	Bracket, Support	4
6	MFFZZ	12757	85SDSCC-D-0007-143	Pad, Teflon (M/F, ref Appx E).	4
7	XDOZZ	12757	85SDSCC-D-0007-201	Decal.	2
8	MFFZZ	96906	MS2057P5-2150	Hinge Strap (M/F, ref Appx E).	2
9	MFFZZ	12757	85SDSCC-D-0007-125	Panel, Back (M/F, ref Appx E).	1
10	MFFZZ	12757	85SDSCC-D-0007-126	Door (M/F, ref Appx E) .	2
11	MFFZZ	12757	85SDSCC-D-0007-127	Doubler.	4
12	MFFZZ	12757	85SDSCC-D-0007-128	Gusset	4
13	MFFZZ	12757	85SDSCC-D-0007-129	Mount.	4
14	MFFZZ	12757	85SDSCC-D-0007-130	Panel, Bottom (M/F, ref Appx E).	1
15	MFFZZ	12757	85SDSCC-D-0007-131	Panel, Top (M/F, ref Appx E) .	1
16	MFFZZ	12757	85SDSCC-D-0007-132	Panel, Left-Hand (M/F, ref Appx E) .	
17	MFFZZ	12757	85SDSCC-D-0007-133	Panel, Right-Hand (M/F, ref Appx E).	1
18	XDOZZ	12757	85SDSCC-D-0007-175	Decal.	1
19	XDOZZ	12757	85SDSCC-D-0007-176	Decal	1
20	XDOZZ	12757	85SDSCC-D-0007-177	Decal.	1
21	XDOZZ	12757	85SDSCC-D-0007-178	Decal.	1
22	XDFZZ	78286	SS9096-B02HH0060	Cable, Attaching	4
23	PADZZ	80205	NAS1334A5S09	Pin, Quick Release .	4
24	XDOZZ	97499	205-030-493-1	Handle	2
25	PAOZZ	96906	MS20426AD3	Rivets	AR
				END OF FIGURE	

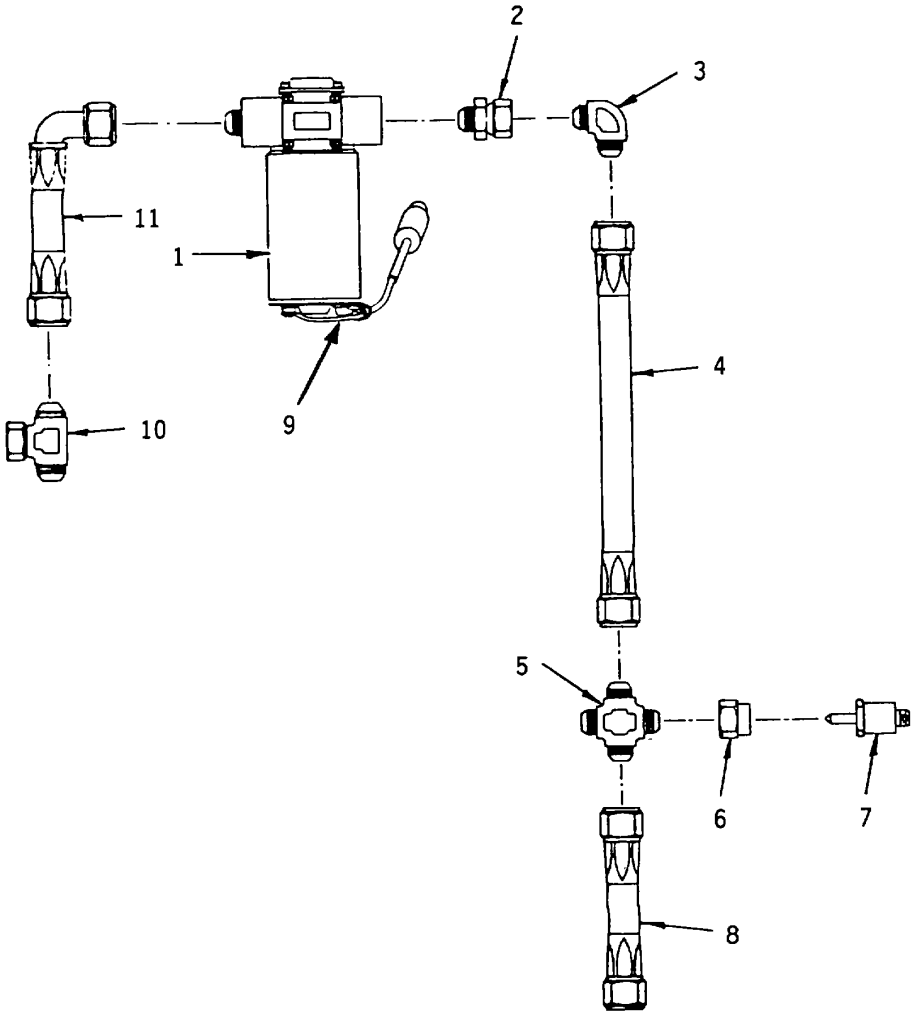


Figure C-7. Pump Assembly

ITEM NO.	SMR CODE	CAGE	PART NO.	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
				GROUP 0303: Fuel Pump **Fig C-7. Pump Assy** **85SDSCC-D-0007-101**	
1	PAOZZ	00624	3B7-6	.Pump	2
2	PAOZZ	00624	2266-12-12S	.Nipple	2
3	PAOZZ	88049	AN821-12D	.Elbow.	1
4	MFZZZ	81349	M83796/1K086A	.Hose (M/F, ref Appx E)	1
5	PAOZZ	88044	AN827-12D	.Cross	1
6	PAOZZ	97484	1Z2634	.Adapter.	1
7	PAOZZ	97484	2F2633	.Sensor Level Electro Control	1
8	MFZZZ	81349	M83796/1K047A	.Hose (M/F, ref Appx E)	1
9	PAOZZ	96906	MS25171-1S	.Cable, Nipple	2
10	PAOZZ	96906	MS51524B-12	.Tee	1
11	MFFZZ	81349	M83796/1K043E	.Hose (M/F, ref Appx E)	2
				END OF FIGURE	

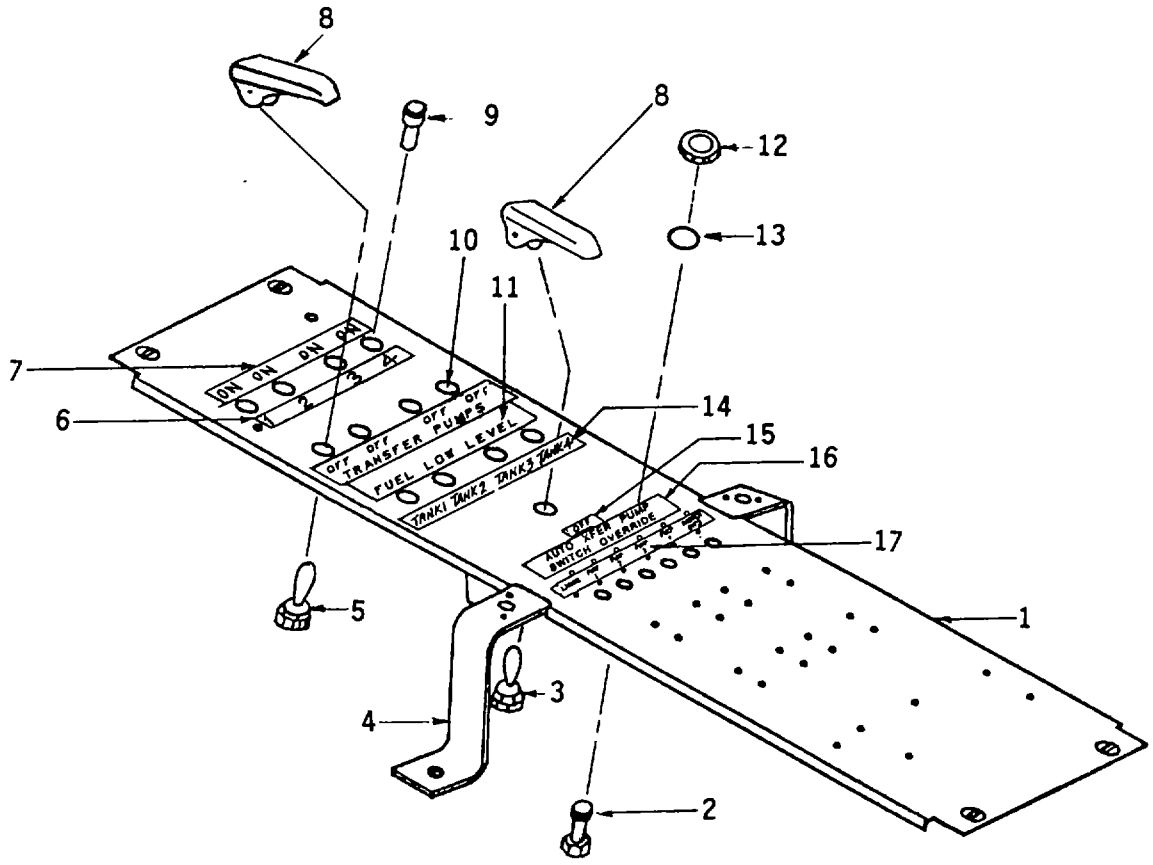


Figure C-8. Electrical Control Panel (Sheet 1 of 2)

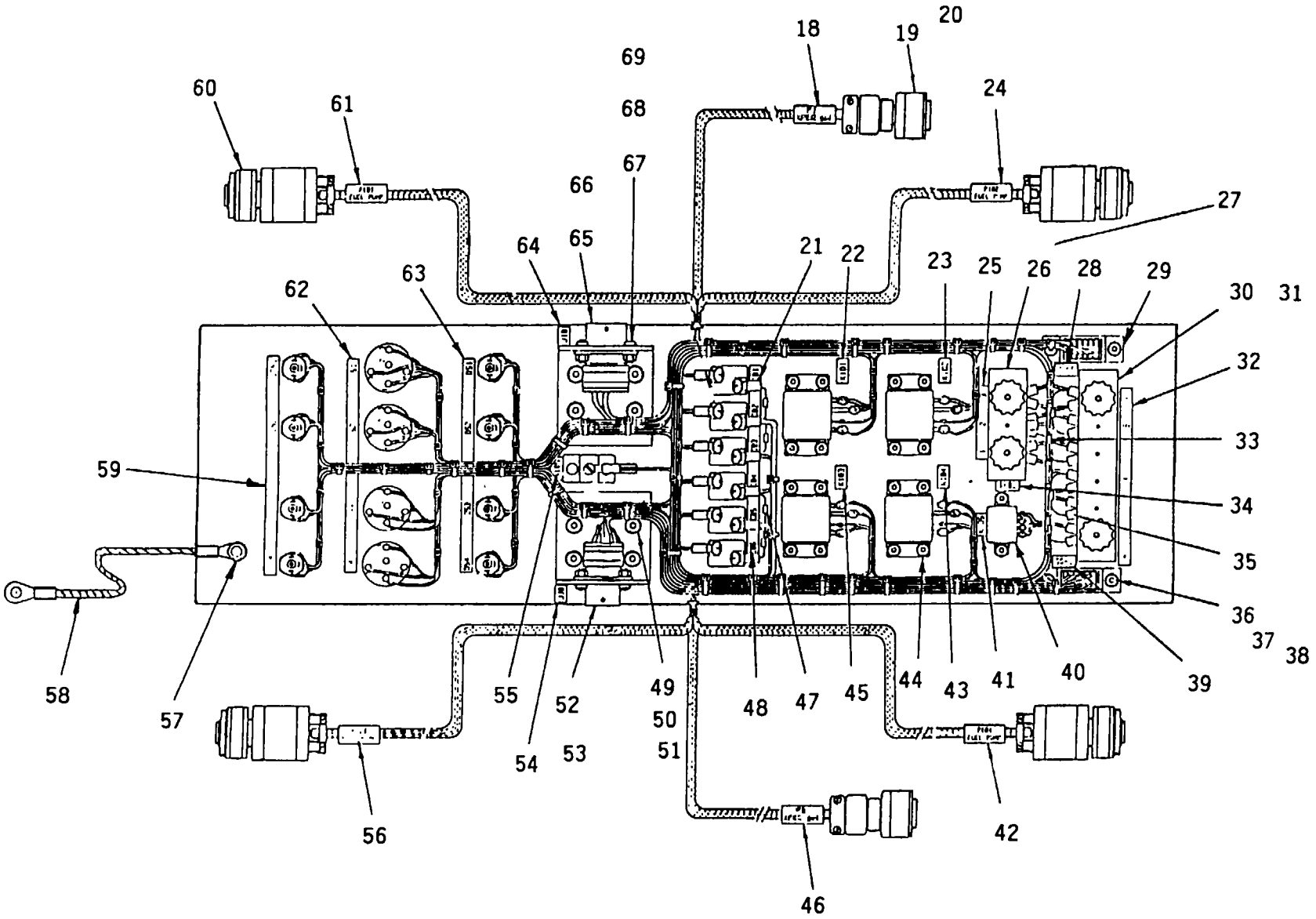


Figure C-8. Electrical Control Panel (Sheet 2 of 2)

ITEM NO.	SMR CODE	CAGE	PART NO.	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
				GROUP 0304: Elec Control Panel	
				Fig C-8. Elec Control Panel Assy 85SDSCC-D-0007-103	
1	XAOZZ	12757	85SDSCC-D-0007-105	Electrical Panel Assy	1
2	PAOZZ	96906	MS3320-1	Circuit Breaker.	2
	PAOZZ	96906	MS3320-10	Circuit Breaker.	4
3	PAOZZ	96906	MS24523-23	Switch .	1
4	MZOZZ	12757	85SDSCC-D-0007-102	Brace Strap Assy (M/F, ref Appx E)	1
5	PAOZZ	81340	M5594/1-2	Switch, Mag Hold .	4
6	XDOZZ	12757	85SDSCC-D-0007-163	Decal.	1
7	XDOZZ	12757	85SDSCC-D-0007-162	Decal.	1
8	PAOZZ	96906	MS25224-1	Cover Switch .	5
9	PAOZZ	96906	MS25041-11	Light Indicator.	8
10	XDOZZ	12757	85SDSCC-D-6007-164	Decal.	1
11	XDOZZ	12757	85SDSCC-D-0007-165	Decal	1
12	PAOZZ	96906	MS25082B21	Nut.	1
13	PAOZZ	96906	MS35333-121	Washer	1
14	XDOZZ	12757	85SDSCC-D-0007-166	Decal.	1
15	XDOZZ	12757	85SDSCC-D-0007-167	Decal.	1
16	XDOZZ	12757	85SDSCC-D-0007-195	Decal.	1
17	XDOZZ	12757	85SDSCC-D-0007-174	Decal.	1
18	XDOZZ	12757	85SDSCC-D-0007-169	Sleeve	1
19	PAOZZ	96906	MS3106A10OSL-3S	Connector.	2
20	PAFZZ	81349	M85049/55-10A	Clamp, Backshell 90	2
21	PAOZZ	96906	MS25036-156	Terminal Lug .	6
22	XDOZZ	12757	85SDSCC-D-0007-153	Decal.	1
23	XDOZZ	12757	85SDSCC-D-0007-155	Decal.	1
24	XDOZZ	12757	85SDSCC-D-0007-170	Decal.	1
25	XDOZZ	12757	85SDSCC-D-0007-161	Decal.	1
26	PAOZZ	96906	MS25226-2-3	Link, Terminal .	1
27	PAOZZ	96906	MS18029-1S3	Cover Assy Terminal.	1
28	XDOZZ	12757	85SDSCC-D-0007-159	Decal.	1
29	PAFZZ	81349	M81714/28-20	Module, Ground	2
30	PAFZZ	96906	MS27212-1-20	Terminal Cover	1
31	PAFZZ	96906	MS18029-1S6	Cover Assy Terminal.	1
32	XDOZZ	12757	85SDSCC-D-0007-160	Decal.	1
33	XDOZZ	07623	IN4001	Semiconductor.	8
34	XDOZZ	12757	85SDSCC-D-0007-157	Decal	1
35	PAOZZ	96906	MS25036-102	Terminal Lug .	27
36	XDOZZ	12757	85SDSCC-D-0007-162	Decal.	1
37	XDOZZ	12757	85SDSCC-D-0007-163	Decal.	1
38	XDOZZ	12757	85SDSCC-D-0007-164	Decal.	1
39	XDOZZ	12757	85SDSCC-D-0007-158	Decal.	1
40	XDOZZ	07623	M6106/27-029	Relay.	1

ITEM NO.	SMR CODE	CAGE	PART NO.	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
41	XDOZZ	12757	85SDSCC-D-0007-156	Decal	1
42	XDOZZ	12757	85SDSCC-D-0007-173	Decal	1
43	XDOZZ	12757	85SDSCC-D-0007-154	Decal	1
44	PAOZZ	96906	MS27743-5	Relay	4
45	XDOZZ	12757	85SDSCC-D-0007-152	Decal	1
46	XDOZZ	12757	85SDSCC-D-0007-172	Decal	1
47	XDOZZ	07623	IN4001	Semiconductor	8
48	XDOZZ	12757	85SDSCC-D-0007-151	Decal	1
49	PAOZZ	96906	MS35707-262	Screw	2
50	PAOZZ	88044	AN960-10L	Washer	4
51	PAOZZ	96906	MS21044-N3	Nut	2
52	PAFZZ	96906	MS3472W12-8S	Receptacle	1
53	PAFZZ	81349	M85049/31-1-12W	Backshell	1
54	XDOZZ	12757	85SDSCC-D-0007-148	Decal	1
55	XDOZZ	12757	85SDSCC-D-0007-150	Decal	1
56	XDOZZ	12757	85SDSCC-D-0007-170	Decal	1
57	XDOZZ	12757	MS35207-279	Screw	1
58	PAOZZ	81349	M83413/8-BO6BB	Jumper Assy	1
59	XDOZZ	12757	85SDSCC-D-0007-145	Decal	1
60	PAFZZ	96906	MS3106F125-3S	Connector	4
61	XDOZZ	12757	85SDSCC-D-0007-168	Decal	1
62	XDOZZ	12757	85SDSCC-D-0007-146	Decal	1
63	XDOZZ	12757	85SDSCC-D-0007-147	Decal	1
64	XDOZZ	12757	85SDSCC-D-0007-149	Decal	1
65	PAFZZ	96906	MS3472W14-4P	Receptacle	1
66	PAFZZ	81349	M85049/31-1-14W	Backshell	1
67	PAOZZ	88044	AN960-10L	Washer	9
68	PAFZZ	96906	MS21042-3	Locknut	1
69	PAFZZ	96906	MS35338-48	Washer, Lock	1

END OF FIGURE

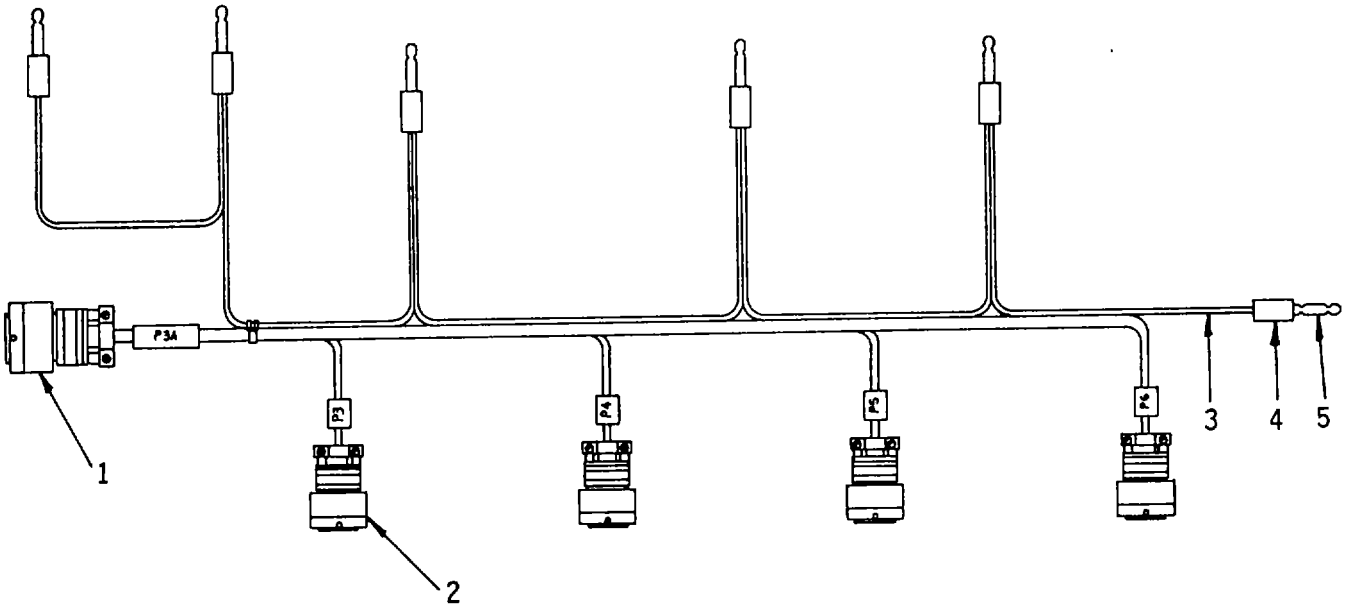


Figure C-9. Harness Assembly

ITEM NO.	SMR CODE	CAGE	PART NO.	DESCRIPTION AND USABLE ON CODES (UOC)	QTY
				GROUP 0305: Wiring Harness Assy	
				Fig C-9 Harness Assy	
	MFFZZ	12757	85SDSCC-D-0007-113	.Harness Assy (M/F, ref Appx E)	1
1	PAFZZ	96906	MS3476W14-5P	..Connector	1
2	PAFZZ	96906	MS3476W14-4S	..Connector.....	4
3			QQW34R1201B	...Wire	1
4			MS3493-5	...Plug Assembly.....	5
5	MFFZZ	12757	85SDSCC-D-0007-190	...Connector (M/F, ref Appx E).....	1
				END OF FIGURE	

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

Section IV

NATIONAL STOCK NUMBER	FIG. NO.	ITEM NO.
...	C-2	2
...	C-2	10
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...	C-2	13
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...	C-3	90
...	C-3	91
...	C-3	93
...	C-3	94
....	C-4	1
....	C-4	2
....	C-4	3
...	C-4	6
....	C-4	8
....	C-4	9
....	C-4	11
...	C-4	13
....	C-5	1
...	C-5	2
...	C-5	11
...	C-5	12
....	C-5	15
...	C-5	16
...	C-5	17
...	C-5	18
...	C-5	19
...	C-6	1
....	C-6	2
....	C-6	3
....	C-6	4
....	C-6	6
...	C-6	7
...	C-6	8
...	C-6	9
...	C-6	10
...	C-6	11
...	C-6	12
...	C-6	13

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...	C-6	14
...	C-6	15
...	C-6	17
...	C-6	17
...	C-6	18
...	C-6	19
...	C-6	20
...	C-6	21
....	C-6	22
...	C-7	4
...	C-7	8
....	C-7	9
....	C-7	11
...	C-8	1
...	C-8	4
...	C-8	5
...	C-8	6
...	C-8	7
....	C-8	8
....	C-8	9
....	C-8	10
...	C-8	11
....	C-8	12
....	C-8	14
....	C-8	15
...	C-8	16
....	C-8	17
...	C-8	18
...	C-8	19
...	C-8	20
....	C-8	22
...	C-8	23
...	C-8	24
...	C-8	25
...	C-8	27
...	C-8	28
....	C-8	29
....	C-8	32
....	C-8	34
....	C-8	36
...	C-8	37
...	C-8	38
...	C-8	39
...	C-8	41
...	C-8	42
...	C-8	43
...	C-8	45
...	C-8	46
...	C-8	48
...	C-8	54
...	C-8	55
...	C-8	56
...	C-8	59
...	C-8	61
...	C-8	62
...	C-8	63
...	C-8	64
...	C-9	5
5310-00-003-9415	C-3	54
5305-00-052-9329	C-3	60
4730-00-054-7296	C-7	10
5330-00-063-2506	C-3	30
5305-00-071-2066	C-3	53
5305-00-071-2071	C-3	28
5340-00-077-2459	C-6	23
5320-00-117-6937	C-6	25
5940-00-143-4775	C-8	21
5306-00-151-1416	C-5	3
5306-00-151-2626	C-3	6
5310-00-159-6209	C-3	61
5310-00-167-0738	C-5	5
5310-00-167-0738	C-5	21
5310-00-167-0834	C-4	7
5310-00-167-0834	C-8	50
5310-00-167-0834	C-8	67
5310-00-184-9200	C-3	74
5310-00-187-2354	C-3	57
5310-00-187-2354	C-5	4
5310-00-187-2399	C-3	5
6145-00-191-8457	C-9	3
4730-00-194-1046	C-7	3
5940-00-204-8966	C-8	35
5925-00-224-7422	C-8	2
5310-00-225-6993	C-3	26
4730-00-231-3078	C-3	93
5940-00-247-0524	C-8	31
5330-00-248-3846	C-3	63
5330-00-251-8839	C-5	7
4730-00-256-2310	C-7	5
5961-00-257-6865	C-8	33

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5961-00-257-6865	C-8	47
5310-00-269-4040	C-3	2
5310-00-282-7832	C-3	77
5925-00-431-3255	C-8	2
5935-00-432-9340	C-3	87
5935-00-432-9340	C-5	23
5306-00-515-8064	C-3	13
5306-00-515-8064	C-3	58
5330-00-524-4375	C-3	16
4820-00-527-4333	C-3	15
5310-00-543-5933	C-4	4
5935-00-572-5154	C-9	4
5310-00-584-5272	C-8	69
5310-00-584-5272	C-3	27
5430-00-585-2529	C-2	1
5430-00-585-2529	C-3	1
5310-00-587-5559	C-3	4
5340-00-598-8251	C-5	13
5340-00-598-8251	C-6	5
6150-00-600-6259	C-8	26
4730-00-649-9100	C-3	45
5930-00-683-1629	C-8	3
4730-00-684-7446	C-2	3
5310-00-685-3622	C-3	73
5305-00-717-5467	C-8	49
1670-00-725-1437	C-2	28
5330-00-733-2208	C-3	19
5330-00-733-2208	C-3	22
5315-00-753-3895	C-3	17
5340-00-794-6956	C-3	23
4730-00-798-2966	C-3	11
5310-00-807-1467	C-8	68
5310-00-809-8533	C-3	50
1680-00-839-1756	C-6	24
5340-00-849-7043	C-5	14
5310-00-857-5557	C-3	56
5310-00-857-5560	C-5	20
5310-00-877-5797	C-8	51
5305-00-889-2997	C-3	75
5305-00-889-3000	C-5	22
5310-00-897-6145	C-3	69
5310-00-899-6082	C-3	21
5310-00-905-5454	C-8	13
4730-00-933-0816	C-5	8
5940-00-950-1610	C-8	30
5305-00-958-0671	C-4	5
2915-00-968-6363	C-3	83
5305-00-989-7435	C-4	12
5305-00-993-2463	C-8	57
5305-00-995-3440	C-4	10
4720-01-H76-8433	C-3	92
5340-01-H76-8483	C-5	10
6680-01-H77-0066	C-7	7
5945-01-011-1318	C-8	44
4930-01-017-3637	C-3	24
4930-01-041-6870	C-3	18
5935-01-064-5841	C-3	76
1560-01-078-5647	C-3	59
4730-01-093-8464	C-5	6
5935-01-108-4486	C-9	1
5945-01-114-1288	C-8	40
4730-01-117-5649	C-7	2
5314-01-137-4739	C-3	20
4730-01-140-6760	C-2	9
5935-01-148-4737	C-8	60
4020-01-150-2927	C-3	31
5935-01-163-3224	C-8	66
5935-01-170-9127	C-8	52
5341-01-173-7592	C-3	25
5935-01-176-4517	C-9	2
5935-01-199-7154	C-8	65
6150-01-201-1570	C-8	58
4730-01-214-0994	C-2	21
4730-01-214-0996	C-2	5
4720-01-214-1001	C-2	6
4720-01-214-1002	C-2	8
4720-01-214-1003	C-2	7
4730-01-214-2570	C-3	44
4730-01-214-2910	C-2	16
4730-01-214-2913	C-2	14
4720-01-214-2914	C-2	15
4720-01-214-2915	C-2	26
5340-01-233-3063	C-2	27
1680-01-238-8159	C-7	1
5935-01-256-0252	C-8	53
4730-01-276-7563	C-5	9
4730-01-276-7564	C-2	4
4730-01-276-7564	C-2	24
6680-01-293-9094	C-3	66
6680-01-293-9095	C-3	65
4730-01-312-9233	C-7	6

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CAGE	PART NUMBER	NATIONAL STOCK NUMBER	FIG. NO.	ITEM NO.
...	...	...	C-3	84
...	...	...	C-3	85
86831	...	...	C-3	67
86831	...	...	C-3	68
86831	...	...	C-3	70
86831	...	...	C-3	71
00624	AE25010-011	4730-01-214-2910	C-2	16
00624	AE25010-011	4730-01-214-2570	C-3	44
00624	AE706285-1	4720-01-214-1002	C-2	8
00624	AE706285-2	4720-01-214-2914	C-2	15
00624	AE706285-3	4720-01-214-1003	C-2	7
00624	AE706285-5	4720-01-214-2915	C-2	26
00624	AE706285-6	4720-01-214-1001	C-2	6
00624	AE82111R	4730-01-214-0996	C-2	5
00624	AE82155R		C-2	25
00624	AE82567R	4730-01-214-2913	C-2	14
00624	AE82568R	4730-01-214-0994	C-2	21
00624	AE85861M	4730-01-276-7563	C-5	9
00624	AE85893M	4730-01-276-7564	C-2	24
00624	AE86844Z	4730-01-276-7564	C-2	4
88044	AN310C12		C-3	49
88044	AN4-20A	5306-00-151-1416	C-5	3
88044	AN4-7A	5306-00-515-8064	C-3	13
88044	AN4-7A	5306-00-515-8064	C-3	58
88044	AN5-13A	5306-00-151-2626	C-3	6
88044	AN743-12	5340-00-598-8251	C-5	13
88044	AN743-12	5340-00-598-8251	C-6	5
88049	AN821-12D	4730-00-194-1046	C-7	3
88044	AN827-12D	4730-00-256-2310	C-7	5
88044	AN833-6	4730-00-231-3078	C-3	93
88044	AN960-PBL	5310-00-184-9200	C-3	74
88044	AN960-10L	5310-00-167-0834	C-4	7
88044	AN960-10L	5310-00-167-0834	C-8	50
88044	AN960-10L	5310-00-167-0834	C-8	67
88044	AN960C416L		C-3	14
88044	AN960PD416	5310-00-187-2354	C-3	57
88044	AN960PD416	5310-00-187-2354	C-5	4
88044	AN960PD516	5310-00-187-2399	C-3	5
88044	AN960D6	5310-00-167-0738	C-5	5
88044	AN960D6	5310-00-167-0738	C-5	21
79515	A609		C-3	32
23755	B-D-1000OR/O 214 HH-24	5340-01-233-3063	C-2	27
07623	IN4001	5961-00-257-6865	C-8	33
07623	IN4001	5961-00-257-6865	C-8	45

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CAGE	PART NUMBER	NATIONAL STOCK NUMBER	FIG. NO.	ITEM NO.
96906	MS122032	5310-00-159-6209	C-3	61
96906	MS16562-256	5315-00-753-3895	C-3	17
96906	MS16996-21	5305-00-052-9329	C-3	60
96906	MS18029-1S3	...	C-8	27
96906	MS18029-1S6	5940-00-247-0524	C-8	31
PAOZZ	MS20426AD3	5320-00-117-6937	C-6	25
96906	MS2057P5-2150	...	C-6	8
96906	MS21042-3	5310-00-807-1467	C-8	68
96906	MS21044-N3	5310-00-877-5797	C-8	51
96906	MS21045L06	5310-00-857-5560	C-5	20
96906	MS21045L4	5310-00-857-5557	C-3	56
96906	MS21045L5	5310-00-587-5559	C-3	4
86831	MS21083C/4	5310-00-897-6145	C-3	69
96906	MS21919WDG13	...	C-4	9
96906	MS24392-6	...	C-3	94
96906	MS24399D28	4730-00-684-7446	C-2	3
96906	MS24400-D5	5310-00-282-7832	C-3	77
96906	MS24523-23	5930-00-683-1629	C-8	3
96906	MS24665-289	...	C-3	48
96906	MS25036-102	5940-00-204-8966	C-8	35
96906	MS25036-156	5940-00-143-4775	C-8	21
96906	MS25041-11	...	C-8	9
96906	MS25082B21	...	C-8	12
96906	MS25171-1S	...	C-7	9
96906	MS25224-1	...	C-8	8
96906	MS25226-2-3	6150-00-600-6259	C-8	26
96906	MS27028-11	4730-00-649-9100	C-3	45
96906	MS27030-6	...	C-3	46
96906	MS27183-18	5310-00-003-9415	C-3	54
96906	MS27183-23	5310-00-809-8533	C-3	50
96906	MS27212-1-20	5940-00-950-1610	C-8	30
96906	MS27743-5	5945-01-011-1318	C-8	44
96906	MS28741-24D-0160	...	C-2	2
96906	MS28772-6	...	C-3	82
96906	MS28778-12	5330-00-251-8839	C-5	7
96906	MS29513-112	5330-00-733-2208	C-3	22
96906	MS29513-114	5330-00-248-3846	C-3	63
96906	MS3106A10SL-3S	...	C-8	19
96906	MS3106F125-3S	5935-01-148-4737	C-8	60
96906	MS3320-1	5925-00-224-7422	C-8	2
96906	MS3320-10	5925-00-431-3255	C-8	2
96906	MS3339-1-9	5340-00-849-7043	C-5	14
96906	MS3367	...	C-4	13
96906	MS3472L14-4P	5935-01-064-5841	C-3	76
96906	MS3472W12-8S	5935-01-170-9127	C-8	52

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96906	MS3472W14-4P	5935-01-199-7154	C-8	65
96906	MS3472W14-4S	5935-01-176-4517	C-9	2
96906	MS3476W14-5P	5935-01-108-4486	C-9	1
96906	MS3493-5	5935-00-572-5154	C-4	4
96906	MS35206-215	5305-00-889-2997	C-3	75
96906	MS35206-230	5305-00-889-3000	C-5	22
96906	MS35207-264	5305-00-989-7435	C-4	12
80205	MS35207-270	5305-00-995-3440	C-4	10
96906	MS35207-274	5305-00-958-0671	C-4	5
96906	MS35207-279	5305-00-993-2463	C-8	57
96906	MS35333-121	5310-00-905-5454	C-8	13
96906	MS35333-73	5310-00-543-5933	C-4	4
96906	MS35338-48	5310-00-584-5272	C-3	27
96906	MS35338-48	5310-00-584-5272	C-8	69
96906	MS35650-320	...	C-4	6
96906	MS35707-262	5305-00-717-5467	C-8	49
96906	MS51105-464	...	C-3	51
96906	MS51520B-12	4730-00-933-0816	C-5	8
96906	MS51524B-12	4730-00-054-7296	C-7	10
96906	M5S51524816	4730-00-798-2966	C-3	11
96906	MS51860-58	4730-01-093-8464	C-5	6
96906	MS51922-33	5310-00-225-6993	C-3	26
96906	MS51922-49	5310-00-269-4040	C-3	2
96906	MS5691-36	5310-00-899-6082	C-3	21
96906	MS90298-2	5935-00-432-9340	C-3	87
96906	MS90298-2	5935-00-432-9340	C-5	23
96906	M590725-115	5305-00-071-2071	C-3	28
96906	MS90728-109	5305-00-071-2066	C-3	53
81340	M5594/1-2	...	C-8	5
07623	M6106/27-029	5945-01-114-1288	C-8	40
81349	M81714/28-20		C-8	29
81349	M83413/8-B06BB	6150-01-201-1570	C-8	58
81349	M83796/IG200E	4720-01-H76-8433	C-3	92
81349	M83796/1K043E	...	C-7	11
81349	M83796/1K047A	...	C-7	8
81349	M83796/1K086A	...	C-7	4
81349	M85049/55-10A	...	C-8	20
81349	M85049/31-1-12W	5935-01-256-0252	C-8	53
81349	M85049/31-1-14W	5935-01-163-3224	C-8	66
PADZZ	NAS1334A5S09	5340-00-077-2459	C-6	23
80205	NAS43DD3-128		C-4	8
80205	NAS43DD3-64	...	C-4	11
96906	NAS677-8		C-3	79
80205	NAS679-AO6W	5310-00-685-3622	C-3	73
79515	P4012E	...	C-3	40

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CAGE	PART NUMBER	NATIONAL STOCK NUMBER	FIG. NO.	ITEM NO.
79515	P402A	...	C-3	34
79515	P403	...	C-3	39
79515	P404	...	C-3	37
79515	P414	...	C-3	35
79515	P425A	...	C-3	36
79515	P431	...	C-3	38
79515	P432	...	C-3	33
...	QQW34R1201B	6145-00-191-8457	C-9	3
2375	SP4212-1	1670-00-725-1437	C-2	28
12757	SS9096-B02HH0060	...	C-6	22
78286	SS9609GZ1810	...	C-3	8A
00624	000-950192-16D-0960	...	C-2	22
97484	1Z2634	4730-01-312-9233	C-7	6
14555	110-6	...	C-3	47
00624	114PS491-2	4730-01-140-6760	C-2	9
86831	1140-0161-1	6680-01-293-9095	C-3	65
86831	1140-0161-2	6680-01-293-9094	C-3	66
97403	13217E7080	...	C-3	1
97403	13217E7082	...	C-3	29
97403	13217E7084	5330-00-063-2506	C-3	30
97403	13217E7085	...	C-3	52
97403	13217E7086	5340-00-794-6956	C-3	23
97403	13217E7087	5314-01-137-4739	C-3	20
97403	13217E7088	4930-01-017-3637	C-3	24
97403	13217E7089	5341-01-173-7592	C-3	25
97403	13217E7090	5330-00-733-2208	C-3	19
97403	13217E7092	...	C-3	55
97403	13217E7096	4020-01-150-2927	C-3	31
00624	180-950248-16D-0360	...	C-2	23
97484	2F2633	6680-01-H77-0066	C-7	7
XDOZZ	205-030-493-1	1680-00-839-1756	C-6	24
	205-060-613-3	2915-00-968-6363	C-3	83
79499	205-063-604-1	1560-01-078-5647	C-3	62
97499	214-066-005-1	4820-00-527-4333	C-3	15
96906	214-066-015-1	5330-00-524-4375	C-3	16
00624	2266-12-12S	4730-01-117-5649	C-7	2
00624	3B7-6	1680-01-238-8159	C-7	1
00624	390A-16D-0720	...	C-2	13
97403	5-14-365-16	...	C-3	3
97403	5-14-365-52-1	4930-01-041-6870	C-3	18
	85SDSCC-D-0007-10	...	C-3	81
12757	85SDSCC-D-0007-100	...	C-4	1
12757	85SDSCC-D-0007-101	...	C-4	2
12757	85SDSCC-D-0007-102	...	C-8	4
12757	85SDSCC-D-0007-103	...	C-4	3

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CAGE	PART NUMBER	NATIONAL STOCK NUMBER	FIG. NO.	ITEM NO.
12757	85SDSCC-D-0007-104	...	C-5	1
12757	85SDSCC-D-0007-105	...	C-8	1
12757	85SDSCC-D-0007-106	...	C-3	10
12757	85SDSCC-D-0007-110	...	C-5	15
12757	85SDSCC-D-0007-111	...	C-5	19
15757	85SDSCC-D-0007-112	...	C-2	19
12757	85SDSCC-D-0007-113	...	C-2	12
15757	85SDSCC-D-0007-114	...	C-2	20
12757	85SDSCC-D-0007-116	...	C-3	64
12757	85SDSCC-D-0007-117	...	C-3	86
12757	85SDSCC-D-0007-118	...	C-3	12
12757	85SDSCC-D-0007-119	...	C-3	8
12757	85SDSCC-D-0007-119	...	C-3	59
12757	85SDSCC-D-0007-120	...	C-3	9
12757	85SDSCC-D-0007-123	...	C-3	7
12757	85SDSCC-D-0007-124	...	C-3	95
12757	85SDSCC-D-0007-125	...	C-6	9
12757	85SDSCC-D-0007-126	...	C-6	10
12757	85SDSCC-D-0007-127	...	C-6	11
12757	85SDSCC-D-0007-128	...	C-6	12
12757	85SDSCC-D-0007-129	...	C-6	13
12757	85SDSCC-D-0007-130	...	C-6	14
12757	85SDSCC-D-0007-131	...	C-6	15
12757	85SDSCC-D-0007-132	...	C-6	16
12757	85SDSCC-D-0007-133	...	C-6	17
12757	85SDSCC-D-0007-138	...	C-5	2
12757	85SDSCC-D-0007-143	...	C-6	6
12757	85SDSCC-D-0007-145	...	C-8	59
12757	85SDSCC-D-0007-146	...	C-8	62
12757	85SDSCC-D-0007-147	...	C-8	63
12757	85SDSCC-D-0007-148	...	C-8	54
12757	85SDSCC-D-0007-149	...	C-8	64
12757	85SDSCC-D-0007-150	...	C-8	55
12757	85SDSCC-D-0007-151	...	C-8	48
12757	85SDSCC-D-0007-152	...	C-8	45
12757	85SDSCC-D-0007-153	...	C-8	22
12757	85SDSCC-D-0007-154	...	C-8	43
12757	85SDSCC-D-0007-155	...	C-8	23
12757	85SDSCC-D-0007-156	...	C-8	41
12757	85SDSCC-D-0007-157	...	C-8	34
12757	85SDSCC-D-0007-158	...	C-8	39
12757	85SDSCC-D-0007-159	...	C-8	28
12757	85SDSCC-D-0007-160	...	C-8	32
12757	85SDSCC-D-0007-161	...	C-8	25
12757	85SDSCC-D-0007-162	...	C-8	7

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CAGE	PART NUMBER	NATIONAL STOCK NUMBER	FIG. NO.	ITEM NO.
12757	85SDSCC-D-0007-162	...	C-8	36
12757	85SDSCC-D-0007-163	...	C-8	6
12757	85SDSCC-D-0007-163	...	C-8	37
12757	85SDSCC-D-0007-164	...	C-8	10
12757	85SDSCC-D-0007-164	...	C-8	38
12757	85SDSCC-D-0007-165	...	C-8	11
12757	85SDSCC-D-0007-166	...	C-8	14
12757	85SDSCC-D-0007-167	...	C-8	15
12757	85SDSCC-D-0007-174	...	C-8	17
12757	85SDSCC-D-0007-168	...	C-8	61
12757	85SDSCC-D-0007-169	...	C-8	18
12757	85SDSCC-D-0007-170	...	C-8	24
12757	85SDSCC-D-0007-170	...	C-8	56
12757	85SDSCC-D-0007-172	...	C-8	46
12757	85SDSCC-D-0007-173	...	C-8	42
12757	85SDSCC-D-0007-175	...	C-6	18
12757	85SDSCC-D-0007-176	...	C-5	11
12757	85SDSCC-D-0007-176	...	C-6	19
12757	85SDSCC-D-0007-177	...	C-5	18
12757	85SDSCC-D-0007-177	...	C-6	20
12757	85SDSCC-D-0007-178	...	C-5	17
12757	85SDSCC-D-0007-178	...	C-6	21
12757	85SDSCC-D-0007-182	...	C-3	89
12757	85SDSCC-D-0007-183	...	C-6	1
12757	85SDSCC-D-0007-184	...	C-3	88
12757	85SDSCC-D-0007-187	...	C-2	11
12757	85SDSCC-D-0007-113	...	C-9	5
12757	85SDSCC-D-0007-191	...	C-6	2
15757	85SDSCC-D-0007-192	...	C-2	18
12757	85SDSCC-D-0007-193	...	C-6	3
12757	85SDSCC-D-0007-194	...	C-6	4
12757	85SDSCC-D-0007-195	...	C-8	16
12757	85SDSCC-D-0007-196	...	C-3	91
12757	85SDSCC-D-0007-196	...	C-5	12
12757	85SDSCC-D-0007-196	...	C-5	16
12757	85SDSCC-D-0007-197	...	C-3	90
96906	85SDSCC-D-0007-20	...	C-3	75
12757	85SDSCC-D-0007-201	...	C-6	7
...	85SDSCC-D-0007-29	...	C-3	80
12757	85SDSCC-D-0007-9	...	C-3	72
00624	85SDSCC-D-0007-99	...	C-2	17
12757	89SDSCC-D-01 04-4	4730-01-325-3820	C-3	42
12757	89SDSCC-D-0104-5	5330-01-331-0499	C-3	43
12757	89SDSCC-D-0104-6	5330-01-330-6368	C-3	41
00624	916-265S	5340-01-H76-8483	C-5	10
12757	950234-16D-2300		C-2	10

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FIG NO.	ITEM NO.	NATIONAL STOCK NUMBER	CAGE	PART NUMBER
C-2	1	5430-00-585-2529	12757	85SDSCC-D-0007-115
C-2	2	...	96906	MS28741-24D-0160
C-2	3	4730-00-684-7446	96906	MS24399D28
C-2	4	4730-01-276-7564	00624	AE86844Z
C-2	5	4730-01-214-0996	00624	AE82111R
C-2	6	4720-01-214-1001	00624	AE706285-6
C-2	7	4720-01-214-1003	00624	AE706285-3
C-2	8	4720-01-214-1002	00624	AE706285-1
C-2	8A	...	78286	SS9609GZ1 810
C-2	9	4730-01-140-6760	00624	114PS491-2
C-2	10	...	12757	950234-16D-2300
C-2	11	...	12757	85SDSCC-D-0007-187
C-2	12	...	12757	85SDSCC-D-0007-113
C-2	13	...	00624	390A-16D-0720
C-2	14	4730-01-214-2913	00624	AE82567R
C-2	15	4720-01-214-2914	00624	AE706285-2
C-2	16	4730-01-214-2910	00624	AE25010-011
C-2	17	...	00624	85SDSCC-D-0007-99
C-2	18	...	15757	85SDSCC-D-0007-192
C-2	19	...	15757	85SDSCC-D-0007-112
C-2	20	...	15757	85SDSCC-D-0007-114
C-2	21	4730-01-214-0994	00624	AE82568R
C-2	22	...	00624	000-950192-16D-0960
C-2	23	...	00624	180-950248-16D-0360
C-2	24	4730-01-276-7564	00624	AE85893M
C-2	25	...	00624	AE82155R
C-2	26	4520-01-214-2915	00624	AE706285-5
C-2	27	5340-01-233-3063	23755	B-D-1 0000R/0-234 HH-24
C-2	28	1670-00-725-1437	23755	SP4212-1
C-3	1	...	97403	13217E7080
C-3	2	5310-00-269-4040	96906	MS51922-49
C-3	3	...	97403	5-14-365-16
C-3	4	5310-00-587-5559	96906	MS21 045L5
C-3	5	5310-00-187-2399	88044	AN960PD516
C-3	6	5306-00-151-2626	88044	AN5-13A
C-3	7	...	12757	85SDSCC-D-0007-123
C-3	8	...	12757	85SDSCC-D-0007-119
C-3	9	...	12757	85SDSCC-D-0007-120
C-3	10	...	12757	85SDSCC-D-0007-106
C-3	11	4730-00-798-2966	96906	MS51524B16
C-3	12	...	12757	85SDSCC-D-0007-118
C-3	13	5306-00-515-8064	88044	AN4-7A
C-3	14	...	88044	AN960C416L
C-3	15	4820-00-527-4333	97499	214-066-005-1
C-3	16	5330-00-524-4375	96906	214-066-015-1

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C-3	17	5315-00-753-3895	96906	MS16562-256
C-3	18	4930-01-041-6870	97403	5-14-365-52-1
C-3	19	5330-00-733-2208	97403	13217E7090
C-3	20	5314-01-137-4739	97403	13217E7087
C-3	21	5310-00-899-6082	96906	MS5691-36
C-3	22	5330-00-733-2208	96906	MS29513-112
C-3	23	5340-00-794-6956	97403	13217E7086
C-3	24	4930-01-017-3637	97403	13217E7088
C-3	25	5341-01-173-7592	97403	13217E7089
C-3	26	5310-00-225-6993	96906	MS51922-33
C-3	27	5310-00-584-5272	96906	MS35338-48
C-3	28	5305-00-071-2071	96906	MS90725-115
C-3	29	...	97403	13217E7082
C-3	30	5330-00-063-2506	97403	13217E7084
C-3	31	4020-01-150-2927	97403	13217E7096
C-3	32	...	79515	A609
C-3	33	...	79515	P432
C-3	34	...	79515	P402A
C-3	35	...	79515	P414
C-3	36	...	79515	P425A
C-3	37	...	79515	P404
C-3	38	...	79515	P431
C-3	39	...	79515	P403
C-3	40	...	79515	P4012E
C-3	41		12757	85SDSCC-D-0104-6
C-3	42		12757	85SDSCC-D-0104-4
C-3	43		12757	85SDSCC-D-0104-5
C-3	44	4730-01-214-2570	00624	AE25010-011
C-3	45	4730-00-649-9100	96906	MS27028-11
C-3	46	...	96906	MS27030-6
C-3	47		14555	110-6
C-3	48	...	96906	MS24665-289
C-3	49		88044	AN310C12
C-3	50	5310-00-809-8533	96906	MS27183-23
C-3	51		96906	MS51105-464
C-3	52		97403	13217E7085
C-3	53	5305-00-071-2066	96906	MS90728-109
C-3	54	5310-00-003-9415	96906	MS27183-18
C-3	55		97403	13217E7092
C-3	56	5310-00-857-5557	96906	MS21045L4
C-3	57	5310-00-187-2354	88044	AN960PD416
C-3	58	5306-00-515-8064	88044	AN4-7A
C-3	59	...	12757	85SDSCC-D-0007-119
C-3	60	5305-00-052-9329	96906	MS16996-21
C-3	61	5310-00-159-6209	96906	MS122032

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FIG NO.	ITEM NO.	NATIONAL STOCK NUMBER	CAGE	PART NUMBER
C-3	62	1560-01-078-5647	79499	205-063-604-1
C-3	63	5330-00-248-3846	96906	MS29513-114
C-3	64	...	12757	85SDSCC-D-0007-116
C-3	65	6680-01-293-9095	86831	1140-0161-1
C-3	66	6680-01-293-9094	86831	1140-0161-2
C-3	67	...	86831	...
C-3	68	...	86831	...
C-3	69	5310-00-897-6145	86831	MS21083C/4
C-3	70	...	86831	...
C-3	71	...	86831	...
C-3	72	...	12757	85SDSCC-D-0007-9
C-3	73	5310-00-685-3622	80205	NAS679-AO6W
C-3	74	5310-00-184-9200	88044	AN960-PBL
C-3	75	5305-00-889-2997	96906	MS35206-215
C-3	76	5935-01-064-5841	96906	MS3472L14-4P
C-3	77	5310-00-282-7832	96906	MS24400-D5
C-3	78	...	96906	85SDSCC-D-0007-20
C-3	79	...	96906	NAS677-8
C-3	80		...	85SDSCC-D-0007-29
C-3	81	...	...	85SDSCC-D-0007-10
C-3	82	...	96906	MS28772-6
C-3	83	2915-00-968-6363	...	205-060-613-3
C-3	84		...	...
C-3	85		...	...
C-3	86	...	12757	85SDSCC-D-0007-117
C-3	87	5935-00-432-9340	96906	MS90298-2
C-3	88	...	12757	85SDSCC-D-0007-184
C-3	89	...	12757	85SDSCC-D-0007-182
C-3	90	...	12757	85SDSCC-D-0007-197
C-3	91	...	12757	85SDSCC-D-0007-196
C-3	92	4720-01-H76-8433	81349	M83796/IG200E
C-3	93	4730-00-231-3078	88044	AN833-6
C-3	94	...	96906	MS24392-6
C-3	95	...	12757	85SDSCC-D-0007-124
C-4	1	...	12757	85SDSCC-D-0007-100
C-4	2	...	12757	85SDSCC-D-0007-101
C-4	3	...	12757	85SDSCC-D-0007-103
C-4	4	5310-00-543-5933	96906	MS35333-73
C-4	5	5305-00-958-0671	96906	MS35207-274
C-4	6	...	96906	MS35650-320
C-4	7	5310-00-167-0834	88044	AN960-10L
C-4	8	...	80205	NAS43DD3-128
C-4	9	...	96906	MS21919WDG13
C-4	10	5305-00-995-3440	80205	MS35207-270
C-4	11	...	80205	NAS43DD3-64

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FIG NO.	ITEM NO.	NATIONAL STOCK NUMBER	CAGE	PART NUMBER
C-4	12	5305-00-989-7435	96906	MS35207-264
C-4	13	...	96906	MS3367
C-5	1	...	12757	85SDSCC-D-0007-104
C-5	2	...	12757	85SDSCC-D-0007-138
C-5	3	5306-00-151-1416	88044	AN4-20A
C-5	4	5310-00-187-2354	88044	AN960PD416
C-5	5	5310-00-167-0738	88044	AN960D6
C-5	6	4730-01-093-8464	96906	MS51860-58
C-5	7	5330-00-251-8839	96906	MS28778-12
C-5	8	4730-00-933-0816	96906	MS51520B-12
C-5	9	4730-01-276-7563	00624	AE85861M
C-5	10	5340-01-H76-8483	00624	916-265S
C-5	11	...	12757	85SDSCC-D-0007-176
C-5	12	...	12757	85SDSCC-D-0007-196
C-5	13	5340-00-598-8251	88044	AN743-12
C-5	14	5340-00-849-7043	96906	MS3339-1-9
C-5	15	...	12757	85SDSCC-D-0007-110
C-5	16	...	12757	85SDSCC-D-0007-196
C-5	17	...	12757	85SDSCC-D-0007-178
C-5	18	...	12757	85SDSCC-D-0007-177
C-5	19	...	12757	85SDSCC-D-0007-111
C-5	20	5310-00-857-5560	96906	MS21045L06
C-5	21	5310-00-167-0738	88044	AN960D6
C-5	22	5305-00-889-3000	96906	MS35206-230
C-5	23	5935-00-432-9340	96906	MS90298-2
C-6	1	...	12757	85SDSCC-D-0007-183
C-6	2	...	12757	85SDSCC-D-0007-191
C-6	3	...	12757	85SDSCC-D-0007-193
C-6	4	...	12757	85SDSCC-D-0007-194
C-6	5	5340-00-598-8251	88044	AN743-12
C-6	6	...	12757	85SDSCC-D-0007-143
C-6	7	...	12757	85SDSCC-D-0007-201
C-6	8	...	96906	MS2057P5-2150
C-6	9	...	12757	85SDSCC-D-0007-125
C-6	10	...	12757	85SDSCC-D-0007-126
C-6	11	...	12757	85SDSCC-D-0007-127
C-6	12	...	12757	85SDSCC-D-0007-128
C-6	13	...	12757	85SDSCC-D-0007-129
C-6	14	...	12757	85SDSCC-D-0007-130
C-6	15	...	12757	85SDSCC-D-0007-131
C-6	16	...	12757	85SDSCC-D-0007-132
C-6	27	...	12757	85SDSCC-D-0007-133
C-6	18	...	12757	85SDSCC-D-0007-175
C-6	19	...	12757	85SDSCC-D-0007-176
C-6	20	...	12757	85SDSCC-D-0007-177

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C-6	21	...	12757	85SDSCC-D-0007-178
C-6	22	...	78286	SS9096-B02HH0060
C-6	23	5340-00-077-2459	80205	NAS1334A5S09
C-6	24	1680-00-839-1756	97499	205-030-493-1
C-6	25	5320-00-117-6937	96906	MS20426AD3
C-7	1	1680-01-238-8159	00624	3B7-6
C-7	2	4730-01-117-5649	00624	2266-12-12S
C-7	3	4730-00-194-1046	88049	AN821-12D
C-7	4	...	81349	M83796/1K086A
C-7	5	4730-00-256-2310	88044	AN827-12D
C-7	6	4730-01-312-9233	97484	1Z2634
C-7	7	6680-01-H77-0066	97484	2F2633
C-7	8	...	81349	M83796/1K047A
C-7	9	...	96906	MS25171-1S
C-7	10	4730-00-054-7296	96906	MS51524B-12
C-7	11	...	81349	M83796/1K043E
C-8	1	...	12757	85SDSCC-D-0007-105
C-8	2	5925-00-224-7422	96906	MS3320-1
C-8	2	5925-00-431-3255	96906	MS3320-10
C-8	3	5930-00-683-1629	96906	MS24523-23
C-8	4	...	12757	85SDSCC-D-0007-102
C-8	5	...	81340	M5594/1-2
C-8	6	...	12757	85SDSCC-D-0007-163
C-8	7	...	12757	85SDSCC-D-0007-162
C-8	8	...	96906	MS25224-1
C-8	9	...	96906	MS25041-11
C-8	10	...	12757	85SDSCC-D-0007-164
C-8	11	...	12757	85SDSCC-D-0007-165
C-8	12	...	96906	MS25082B21
C-8	13	5310-00-905-5454	96906	MS35333-121
C-8	14	...	12757	85SDSCC-D-0007-166
C-8	15	...	12757	85SDSCC-D-0007-167
C-8	16	...	12757	85SDSCC-D-0007-195
C-8	17	...	12757	85SDSCC-D-0007-174
C-8	18	...	12757	85SDSCC-D-0007-169
C-8	19	...	96906	MS3106A10OSL-3S
C-8	20	...	81349	M85049/55-10A
C-8	21	5940-00-143-4775	96906	MS25036-156
C-8	22	...	12757	85SDSCC-D-0007-153
C-8	23	...	12757	85SDSCC-D-0007-155
C-8	24	...	12757	85SDSCC-D-0007-170
C-8	25	...	12757	85SDSCC-D-0007-161
C-8	26	6150-00-600-6259	96906	MS25226-2-3
C-8	27	...	96906	MS18029-1S3
C-8	28	...	12757	85SDSCC-D-0007-159

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FIG NO.	ITEM NO.	NATIONAL STOCK NUMBER	CAGE	PART NUMBER
C-8	29	...	81349	M81714/28-20
C-8	30	5940-00-950-1610	96906	MS27212-1-20
C-8	31	5940-00-247-0524	96906	MS18029-1S6
C-8	32	...	12757	85SDSCC-D-0007-160
C-8	33	5961-00-257-6865	07623	IN4001
C-8	34	...	12757	85SDSCC-D-0007-157
C-8	35	5940-00-204-8966	96906	MS25036-102
C-8	36	...	12757	85SDSCC-D-0007-162
C-8	37	...	12757	85SDSCC-D-0007-163
C-8	38	...	12757	85SDSCC-D-0007-164
C-8	39	...	12757	85SDSCC-D-0007-158
C-8	40	5945-01-114-1288	07623	M6106/27-029
C-8	41	...	12757	85SDSCC-D-0007-156
C-8	42	...	12757	85SDSCC-D-0007-173
C-8	43	...	12757	85SDSCC-D-0007-154
C-8	44	5945-01-011-1318	96906	MS27743-5
C-8	45	...	12757	85SDSCC-D-0007-152
C-8	46	...	12757	85SDSCC-D-0007-172
C-8	47	5961-00-257-6865	07623	IN4001
C-8	48	...	12757	85SDSCC-D-0007-151
C-8	49	5305-00-717-5467	96906	MS35707-262
C-8	50	5310-00-167-0834	88044	AN960-1OL
C-8	51	5310-00-877-5797	96906	MS21044-N3
C-8	52	5935-01-170-9127	96906	MS3472W12-8S
C-8	53	5935-01-256-0252	81349	M85049/31-1-12W
C-8	54	...	12757	85SDSCC-D-0007-148
C-8	55	...	12757	85SDSCC-D-0007-150
C-8	56	...	12757	85SDSCC-D-0007-170
C-8	57	5305-00-993-2463	12757	MS35207-279
C-8	58	6150-01-201-1570	81349	M83413/8-B06BB
C-8	59	...	12757	85SDSCC-D-0007-145
C-8	60	5935-01-148-4737	96906	MS3106F125-3S
C-8	61	...	12757	85SDSCC-D-0007-168
C-8	62	....	12757	85SDSCC-D-0007-146
C-8	63	...	12757	85SDSCC-D-0007-147
C-8	64	...	12757	85SDSCC-D-0007-149
C-8	65	5935-01-199-7154	96906	MS3472W14-4P
C-8	66	5935-01-163-3224	81349	M85049/31-1-14W
C-8	67	5310-00-167-0834	88044	AN960-10L
C-8	68	5310-00-807-1467	96906	MS21042-3
C-8	69	5310-00-584-5272	96906	MS35338-48
C-9	1	5935-01-108-4486	96906	MS3476W14-5P
C-9	2	5935-01-176-4517	96906	MS3476W14-4S
C-9	3	6145-00-191-8457	...	QQW34R1201B
C-9	4	5935-00-572-5154	...	MS3493-5
C-9	5	...	12757	85SDSCC-D-0007-190

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. SCOPE. This appendix lists expendable supplies and materials you will need to operate and maintain the ERFS. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

a. 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 cleaning compound, item 5, Appendix D").

b. Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
U - Organizational Maintenance

c. National Stock Number. This is the National ,Stock Number assigned to the item; use it to request or requisition the item.

d. Description. Indicates the Federal item name and if required, a description to identify the item. The last line for each item indicates the Commercial and Government Entity (CAGE) in parenthesis followed by the part number.

e. 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., 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 SUPPLIES AND MATERIALS LIST

ITEM NO.	LEVEL	NSN	DESCRIPTION	UNIT OF MEASURE
1	0	6830-00-935-1008	Argon Gas, MIL-A-18455B	AR
2	0	6830-00-682-6840	Carbon Dioxide, Type II, Grade B, BB-C-101B	AR
3	0	7920-00-205-3570	Cloth (Rags) DDD-R-30	BD
4	0	6850-00-270-5557	Condition, Metal & Rust Remover, Type II, MIL-M10578	CN
5	0	5930-00-108-1877	Cover, Seal Tight, Rubber	TU
6	U	8010-00-935-7080	Epoxy, Primer, MIL-L-23377	GAL
7	0	9130-11-500-0003	Fuel, Turbine, Grade JP-4	GAL
8	0	9130-11-500-0005	Fuel, Turbine, Grade JP-5	GAL
9	0	9130-01-031-5810	Fuel, Turbine, Grade JP-8	GAL
10	0	5330-00-612-2674	Gasket	BU
11	0	5330-00-524-4375	Gasket	BU
12	0	9150-00-273-2388	Oil, Lubricant, MIL-L-6081, Grade 1010	GAL
13	U	8010-00-131-6254	Paint, Carc, MIL-C-46168	GAL
14	0	8030-00-152-0013	Seal Tight	TU
15	0	8030-01-025-1692	Sealing Compound, Type II, Grade "N", MIL-S8802E	CN
16	0	6850-00-285-8011	Solvent, Dry Cleaning P-D-680	GAL
17	0	5930-00-984-6582	Strap, Tiedown	AR
18	0	8040-01-129-2559	Adhesive, 82C18	CN

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APPENDIX E

ILLUSTRATED LIST OF MANUFACTURED ITEMS

E-1. INTRODUCTION. This appendix includes complete instructions for making items authorized to be manufactured/fabricated at organizational maintenance (or Aviation Unit Maintenance if applicable).

a. A part number index in alphanumeric order is provided for cross-referencing the part number of the item to be manufactured to the figure which covers fabrication criteria.

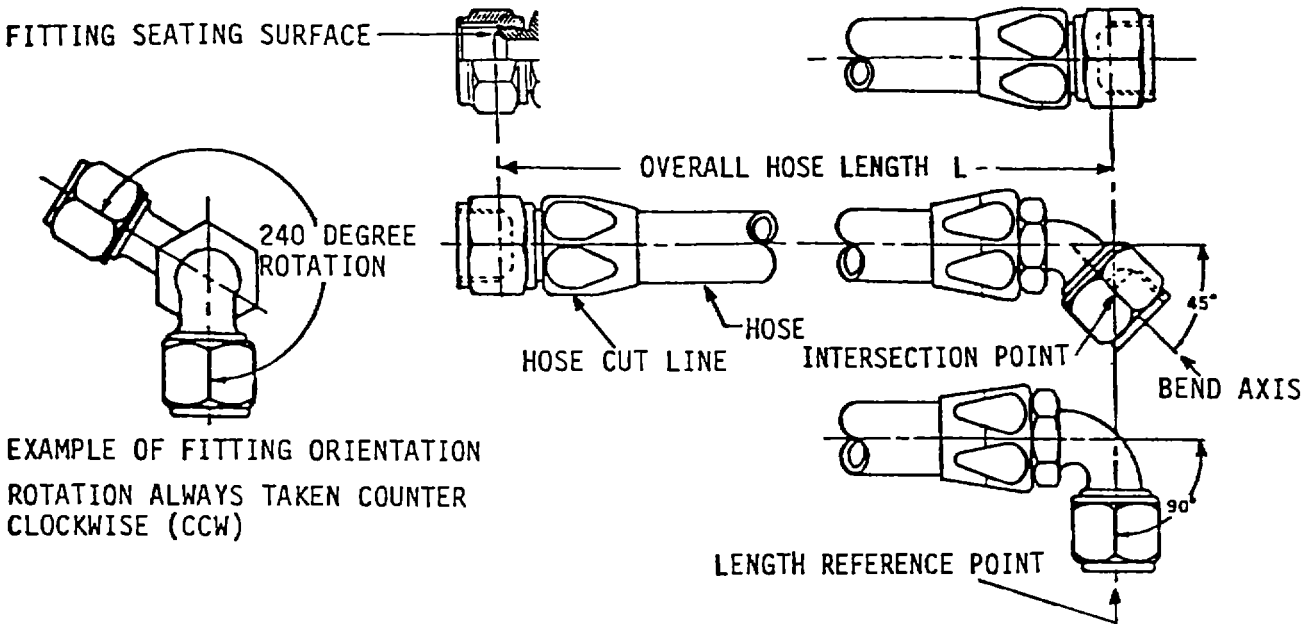
b. Bulk material needed for manufacturing an item is listed by part number or specification number. Refer to Figure E-1.

E-2. MANUFACTURED ITEMS PART NUMBER INDEX. The index (Table E-1) lists all part numbers of items illustrated in this appendix. The part number of each manufactured item is referenced in Figure E-1.

E-3. INSTRUCTIONAL CRITERIA. Refer to Figure E-2.

Table E-1. PIN Index

PART NUMBER	FIGURE NUMBER
MS2057P5-2150	E-14
MS28741-24D-0160	E-1
M83796/1K043E	E-1
M83796/1K047A	E-1
M83796/1K086A	E-1
000-950192-16D-0960	E-1
180-950248-16D-0360	E-1
85SDSCC-D-0007-102	E-12
85SDSCC-D-0007-104	E-8
85SDSCC-D-0007-106	E-6
85SDSCC-D-0007-110	E-10
85SDSCC-D-0007-111	E-11
85SDSCC-D-0007-112	E-3
85SDSCC-D-0007-113	E-3
85SDSCC-D-0007-114	E-3
85SDSCC-D-0007-119	E-5
85SDSCC-D-0007-120	E-4
85SDSCC-D-0007-123	E-4
85SDSCC-D-0007-125	E-15
85SDSCC-D-0007-126	E-16
85SDSCC-D-0007-127	E-17
85SDSCC-D-0007-128	E-18
85SDSCC-D-0007-129	E-19
85SDSCC-D-0007-130	E-20
85SDSCC-D-0007-131	E-21
85SDSCC-D-0007-132	E-22
85SDSCC-D-0007-133	E-23
85SDSCC-D-0007-138	E-9
85SDSCC-D-0007-143	E-13
85SDSCC-D-0007-187	E-2
85SDSCC-D-0007-20	E-7
950234-16D-2300	E-1



P/N	BULK HOSE NSN	STRAIGHT FITTING NSN	45° FITTING NSN	90° FITTING NSN	ORIENTATION DEG ROTATION	LENGTH L IN INCHES
MS28741-24D-0160	4720-00-289-9199	(2 ea) 4730-00-844-3483	N/A	N/A	N/A	16
000-950192-16D-0960	4720-00-595-1088	(1 ea) 4730-00-842-1139	N/A	(1 ea) 4730-01-108-8999	N/A	96
180-950248-16D-0360	4730-00-595-1088	N/A	N/A	(2 ea) 4730-01-108-8986	180	36
9050234-16D-2300	4730-00-595-1088	4730-00-842-1139	(1 ea) 4730-00-541-0844	N/A	N/A	230
M83796/1K047A	4720-00-555-3499	(2 ea) 4730-00-541-1957	N/A	N/A	N/A	5-3/8
M83796/1K043E	4720-00-555-3499	(1 ea) 4730-00-541-1957	N/A	(1 ea) 4730-00-238-5338	N/A	4
M83796/1K086A	4720-00-555-3499	(2 ea) 4730-00-541-1957	N/A	N/A	N/A	8-3/4

NOTES:
1. FABRICATE NONMETALLIC HOSE ASSEMBLIES USING MATERIALS AND DIMENSIONS LISTED.
2. ALL HOSE ASSEMBLIES SHALL BE FABRICATED IN ACCORDANCE WITH INSTRUCTIONS CONTAINED IN TM 55-1500-204-25/1 AND TB 750-125.
3. OVERALL HOSE LENGTH L IS MEASURED FROM FACE OF EACH END FITTING'S SEATING SURFACE. IN INSTANCES WHERE A 45° or 90° ELBOW FITTING IS USED, THE INTERSECTION POINT OF FITTING SEATING SURFACE LINE AND THE BEND AXIS IS USED AS HOSE LENGTH REFERENCE POINT.
4. ALL DIMENSIONS ARE IN INCHES.

Figure E-1. Fabrication of Hose Assemblies

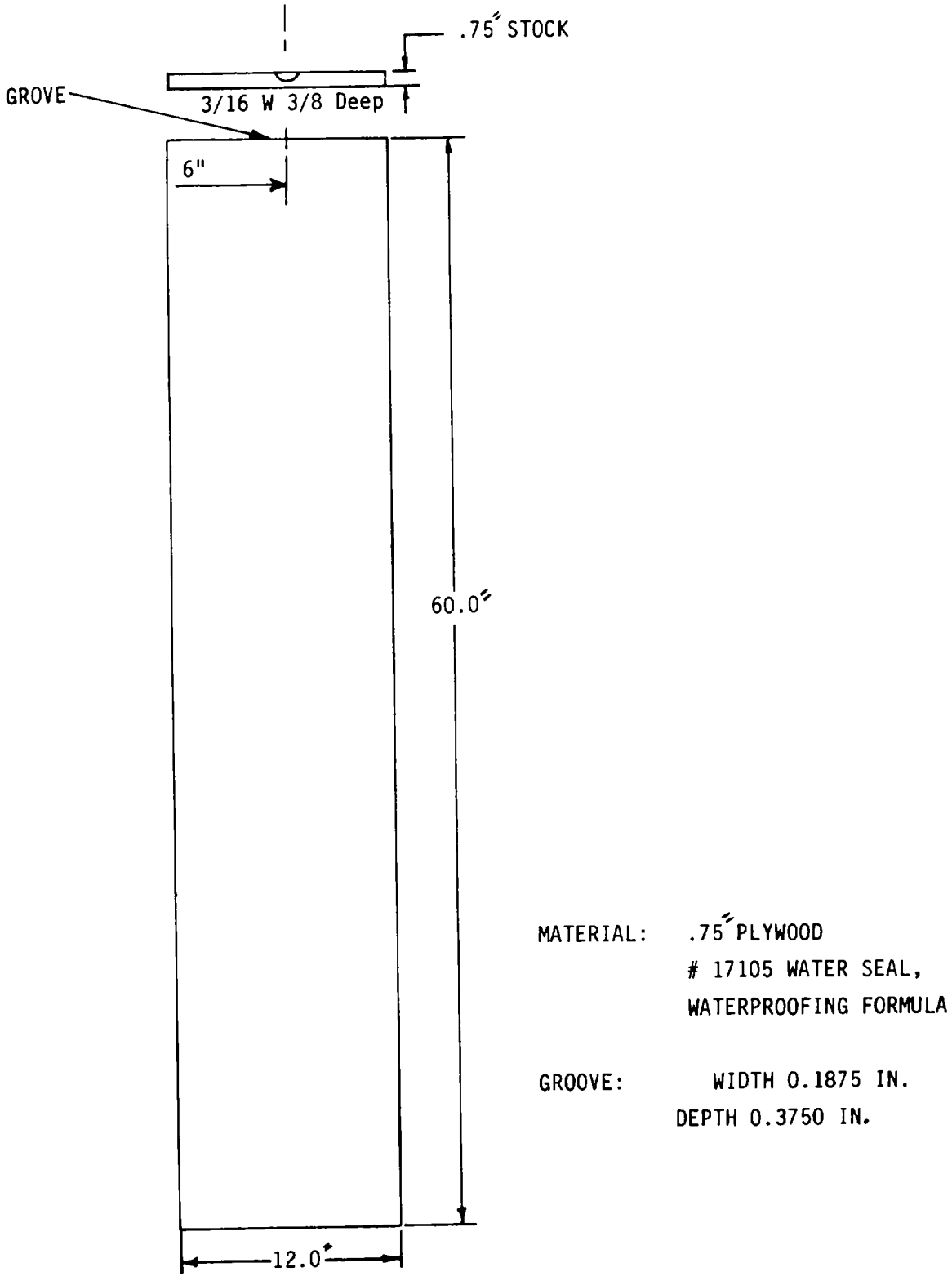
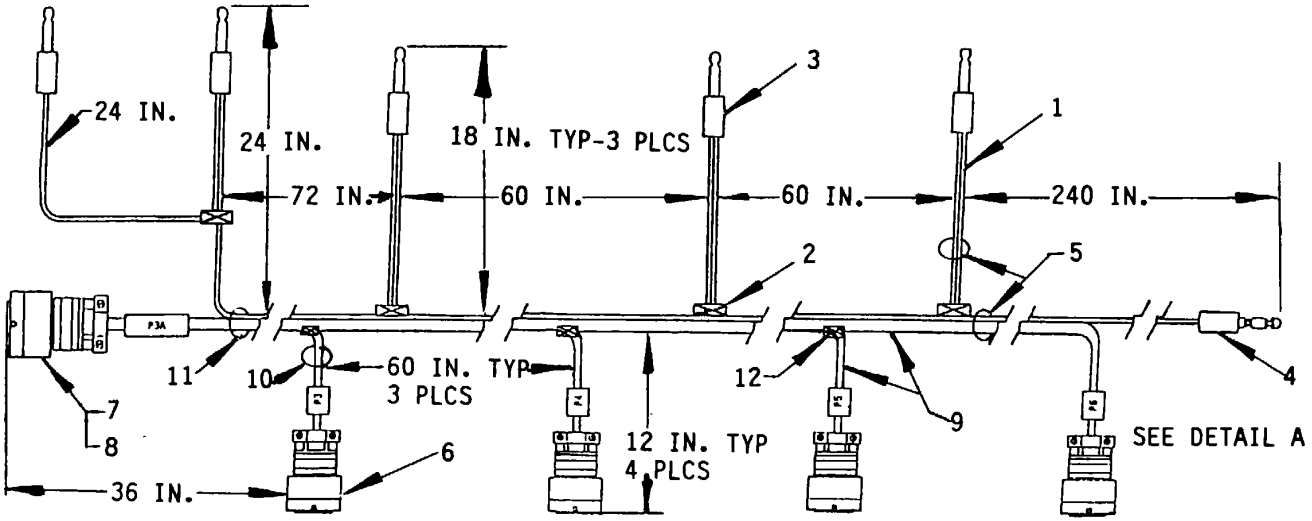


Figure E-2. Fabrication of Decking, PIN 85SDSCC-D-0007-187



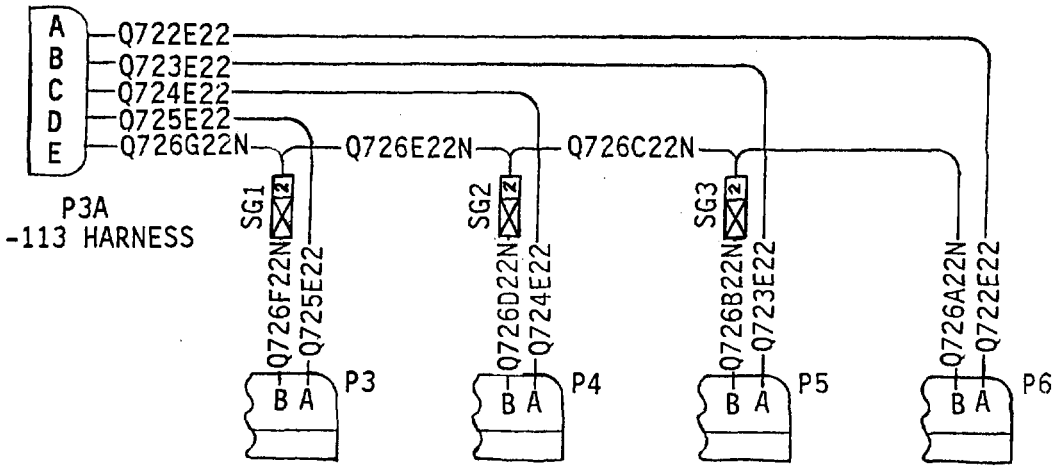
ITEMS FOR GROUND STRAP HARNESS:

1. GROUND STRAP WIRE, QQW343R1201B (81349), BULK 540 IN.
2. SPLICE CONDUCTOR, M83519/2-9 (66114), 4 EA.
3. PLUG ASSEMBLY, MS3493-5 (96906), TYPICAL IN 5 PLACES.
4. PLUG CONNECTOR, 85SDSCC-D-0007-190 (12757, 1 EA. FABRICATE PER DETAIL A, FIG E-3, SHEET 2 OF 3.
5. INSULATION SLEEVE, SHRINKABLE, RNF-100 3/16 IN. BLACK (06090), BULK 540 IN., USE ON GROUND HARNESS ONLY.

ITEMS FOR LOW LEVEL WARNING HARNESS

6. CONNECTOR, MS3476W14-4S (96906), TYPICAL IN 4 PLACES.
7. CONNECTOR, MS3476W14-5P (96906), 1 EA.
8. ADAPTER, M85049/52-1-14W (81349), 1 EA.
9. WIRING, SEE WIRE CHART, FIG E-3, SHEET 2 OF 3.
10. INSULATION SLEEVE, SHRINKABLE, RNF-100 1/4 IN. BLACK (06090), USE ON LOW LEVEL WARNING HARNESS ONLY.
11. INSULATION SLEEVE, SHRINKABLE, RNF-100 3/18 IN. BLACK (06090), USE TO COMBINE AND BIND THE GROUND STRAP AND LOW LEVEL WARNING HARNESS TOGETHER.
12. CRIMP ELEC SPLICE, PERMANENT, M81824/1-2 (81349), 3 EA.

Figure E-3. Fabrication of Electrical Harness Assembly, P/N 85SDSCC-0-0007-112,-113,-114 (Sheet 1 of 3)



WIRE CHART						
WIRE NO.	TYPE	LG/IN	END 1	PIN	END 2	PIN
Q722E22	*1	228	P3A	A	P6	A
Q723E22	1	168	P3A	B	P5	A
Q724E22	1	108	P3A	C	P4	A
Q725E22	1	48	P3A	D	P3	A
Q726A22N	1	72	P6	B	SG3	
Q726B22N	1	12	P5	B	SG3	
Q726C22N	1	60	SG3		SG2	
Q726D22N	1	12	P4	B	SG2	
Q726E22N	1	60	SG2		SG1	
Q726F22N	1	12	P3	B	SG1	
Q726G22N	1	36	SG1		P2A	E
*TYPE 1 WIRE PER MIL-W-22759/43-22-9 WIRE LENGTH TOLERANCE + 3 IN., - 0 IN.						

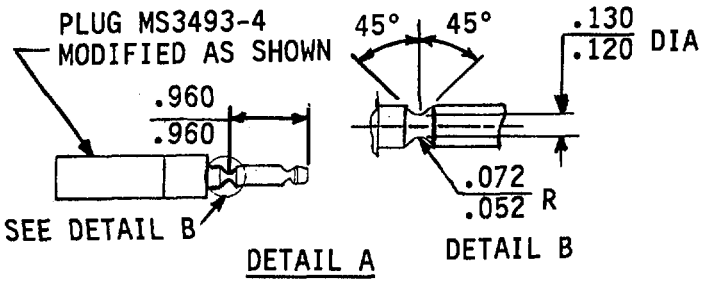
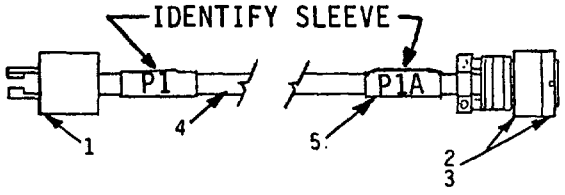
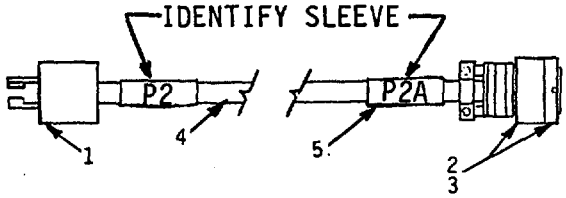


Figure E-3. Fabrication of Electrical Harness Assembly, P/N 85SDSCC-D-0007-112,-113,-114 (Sheet 2 of 3)



NOTE:
1. CONNECTIONS AT P1:
   WHITE WIRE TO NARROW PIN ON PLUG 1.
   BLACK WIRE TO WIDE PIN ON PLUG 1.
2. CONNECTIONS AT P1A:
   WHITE WIRE TO 'A' PIN ON CONNECTOR 2.
   BLACK WIRE TO 'B' PIN ON CONNECTOR 2.

85SDSCC-D-0007-112 HARNESS ASSEMBLY



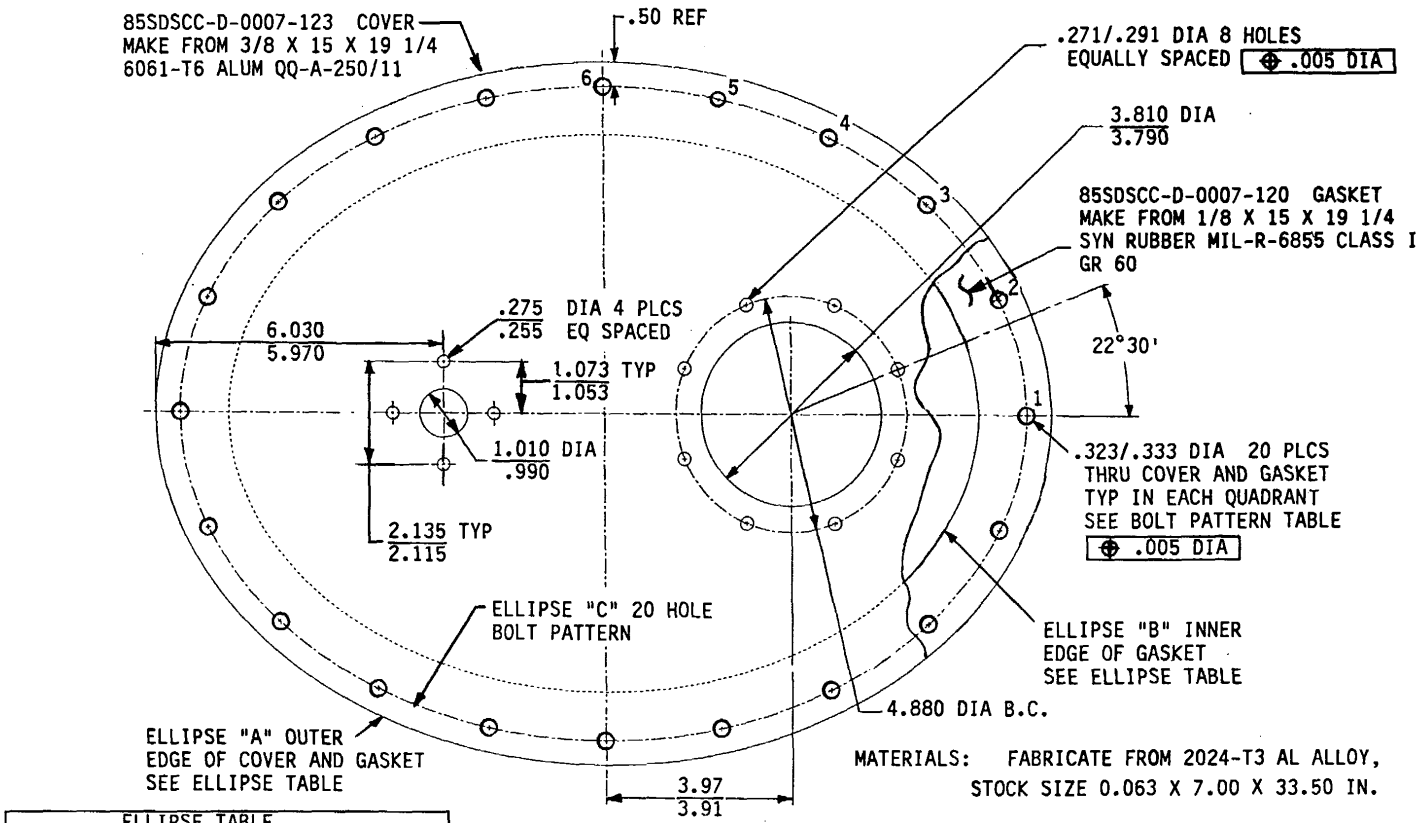
NOTE:
1. CONNECTIONS AT P2:
   WHITE WIRE TO NARROW PIN ON PLUG 1.
   BLACK WIRE TO WIDE PIN ON PLUG 1.
2. CONNECTIONS AT P2A:
   WHITE WIRE TO 'A' PIN ON CONNECTOR 2.
   BLACK WIRE TO 'B' PIN ON CONNECTOR 2.

85SDSCC-D-0007-114 HARNESS ASSEMBLY

ITEMS FOR -112 AND -114 HARNESS:

1. CONNECTOR PLUG, 7102-C (74545), 1 EA.
2. CONNECTOR, MS3476W14-4S (96906), 1 EA.
3. ADAPTER, M85049/52-1-14W (81349), 1 EA.
4. CABLE, POWER, CO-02HLF(2/12)0625 (81349)
   LENGTH AS FOLLOWS:
   FOR -112 HARNESS, 276.0/286.0 INCHES.
   FOR -114 HARNESS, 180.0/190.0 INCHES.
5. SLEEVE INSULATING,(IDENTIFYING), M23053/5-109-9 (81349), 1 INCH PER SLEEVE.

Figure E-3. Fabrication of Electrical Harness Assembly, P/N 85SDSCC-D-0007-112,-113,-114 (Sheet 3 of 3)



ELLIPSE TABLE		
ELLIPSE	ELLIPSE AXIS	
	MAJOR	MINOR
"A"	18.750	14.500
"B"	15.750	11.500
"C"	17.750	13.500

ELLIPSE BOLT PATTERN CO-ORDINATES		
BOLT	X AXIS	Y AXIS
#1	8.8750	0.0000
2	8.3065	2.3771
3	6.8155	4.3235
4	4.7744	5.6900
5	2.4473	6.4883
6	0.0000	6.7500

FINISHES:

1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

Figure E-4. Fabrication of Gasket & Cover, PIN 85SDSCC-D-0007-120 & -123

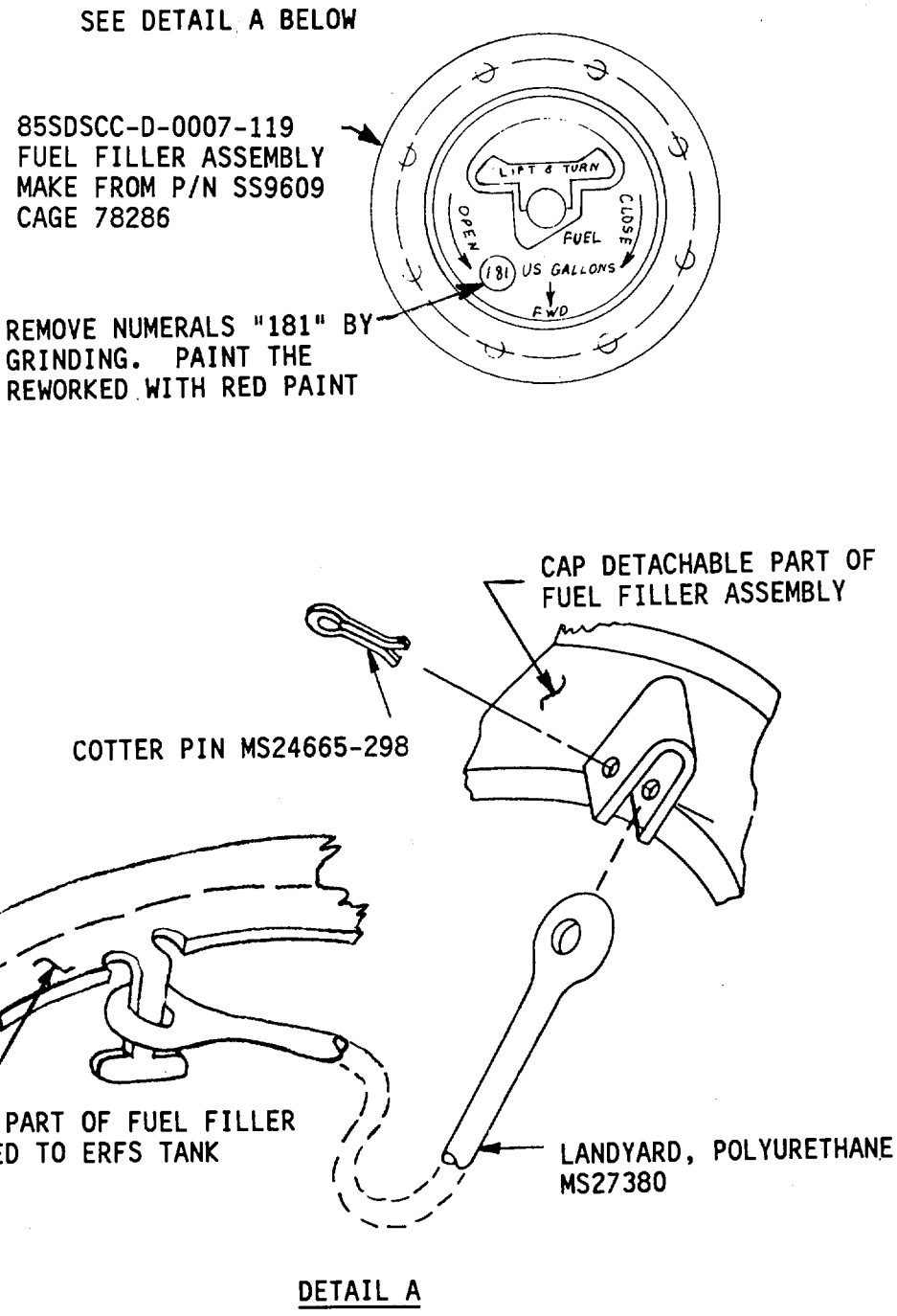
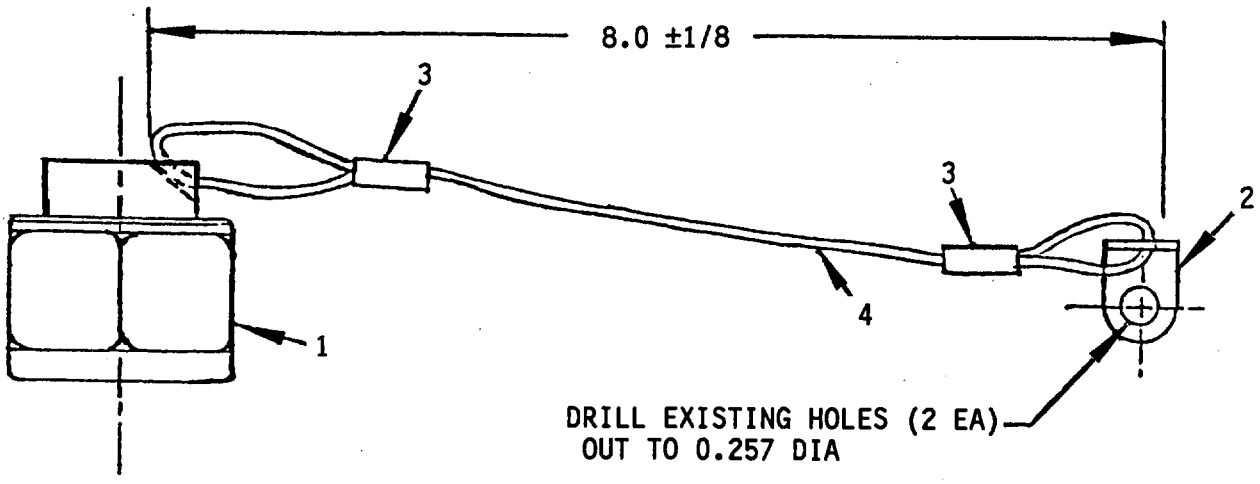
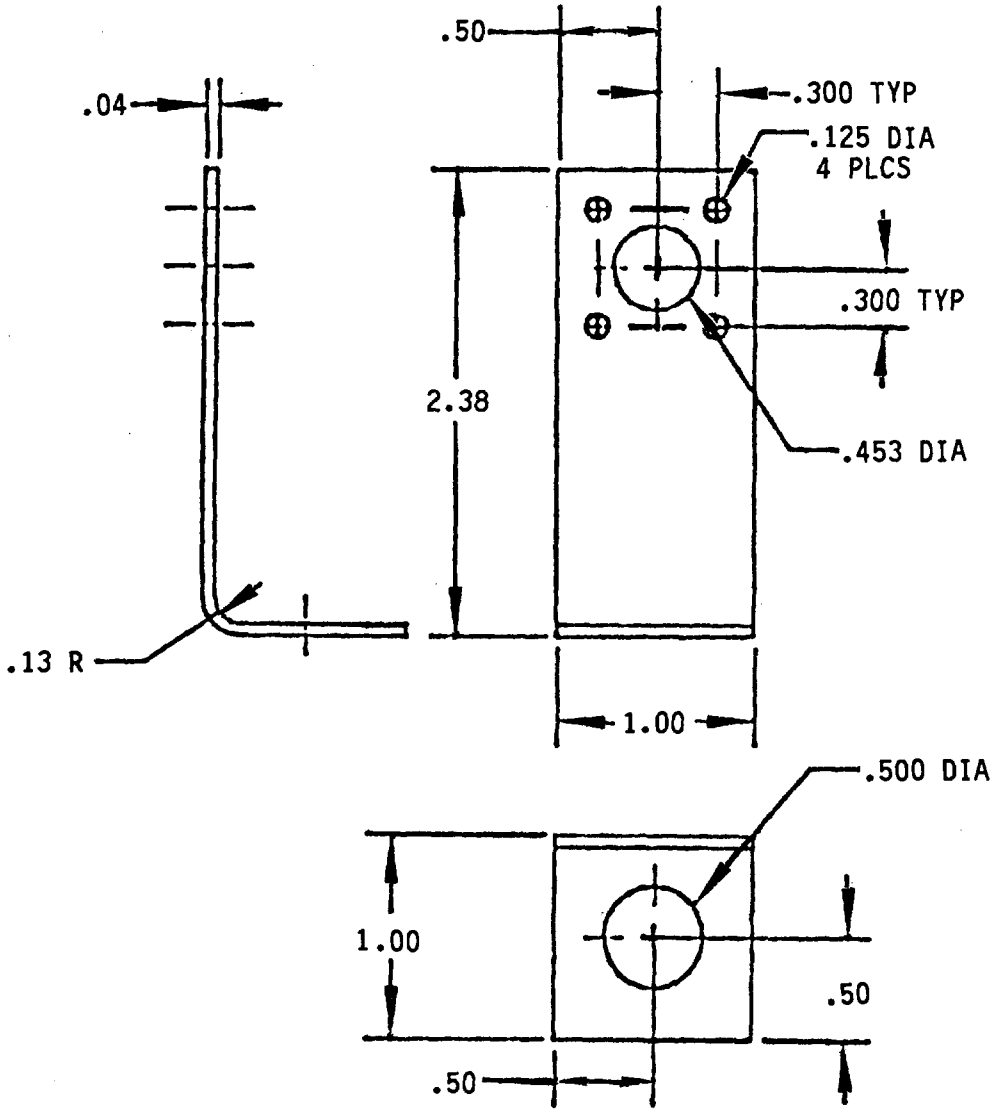


Figure E-5. Fabrication of Fuel Filler Cap, PIN 85SDSCC-D-0007-119



1. CAP ASSEMBLY, AN926A16
2. BRACKET, AN743-12
3. SWAGING SLEEVE, MS51844-62
4. WIRE ROPE, FLEXIBLE, MIL-W-83420
   TYPE II, COMP A 1/16 NOM DIA X 16 LONG

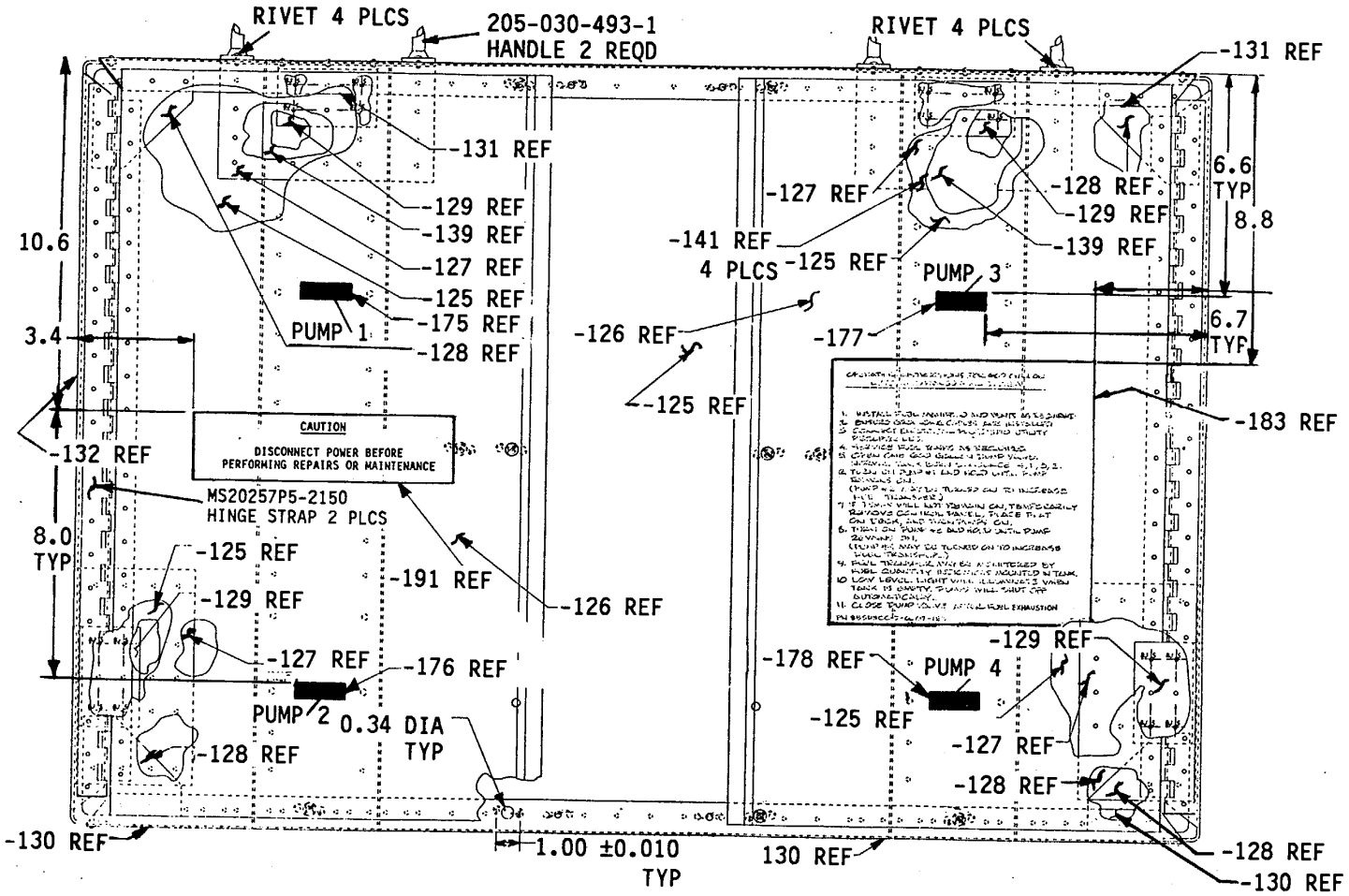
Figure E-6. Fabrication of Dust Cap, PIN 85SDSCC-D-0007-106



MATERIAL: 2024-T3 AL ALLOY X 0.040 THICK.

FINISH:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031 FED STD 595) PER MIL-C-46168.

Figure E-7. Fabrication of Bracket, P/N 85SDSCC-D-0007-20



FRONT ELEVATION

Figure E-8. Fabrication of Box Assembly, PIN 85SDSCC-D-0007-104 (Sheet 1 of 3)

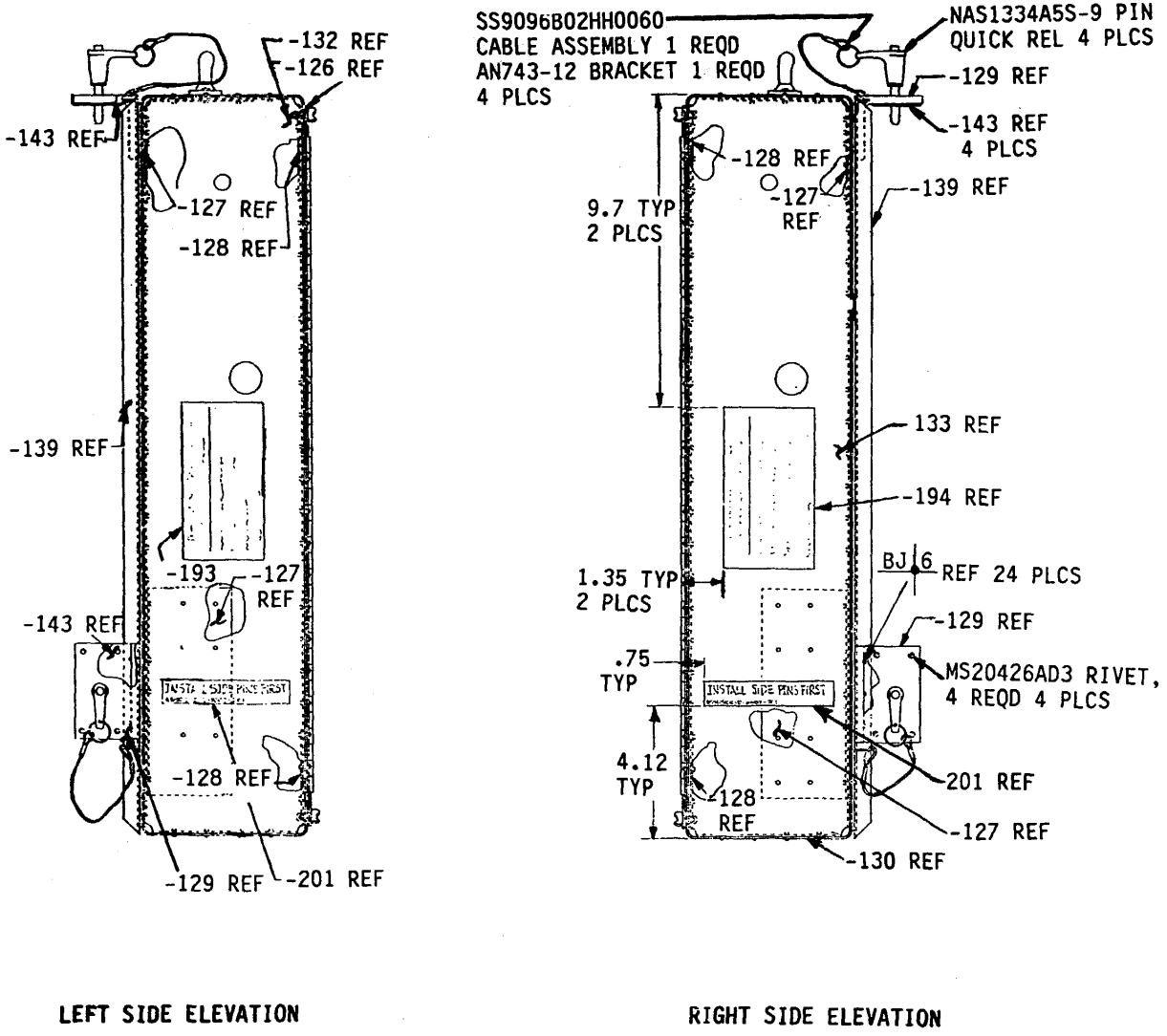
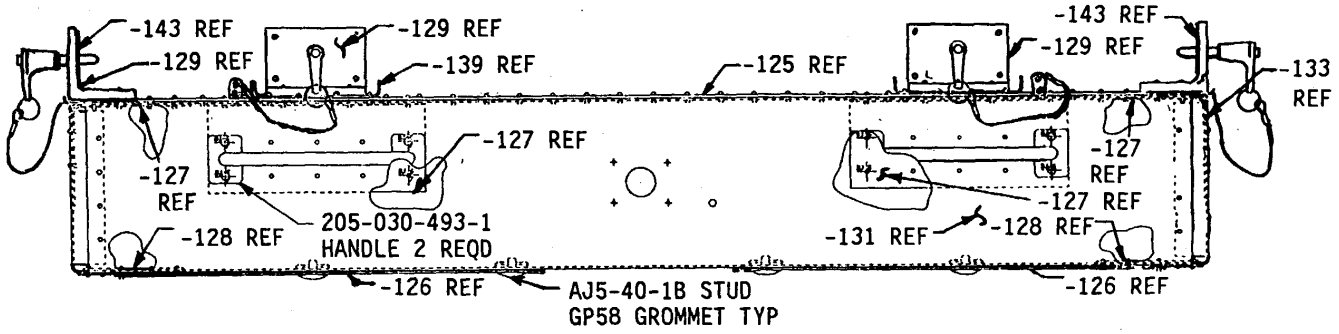
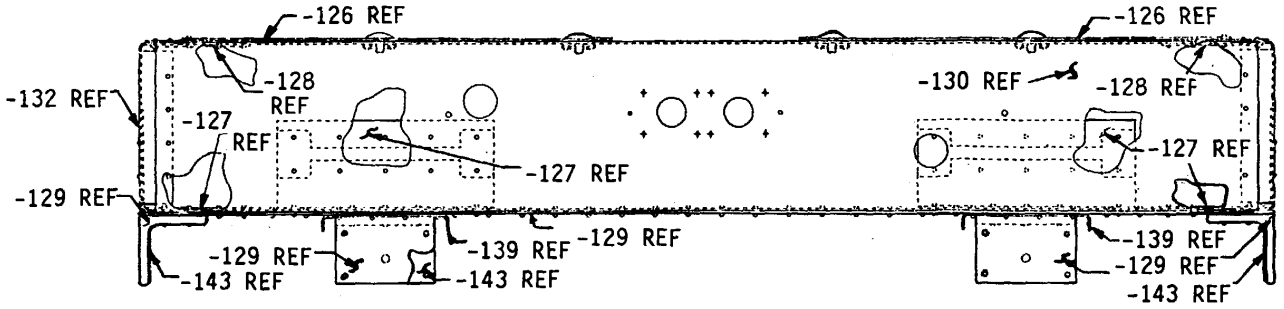


Figure E-8. Fabrication of Box Assembly, P/N 85SDSCC-D-0007-104 (Sheet 2 of 3)

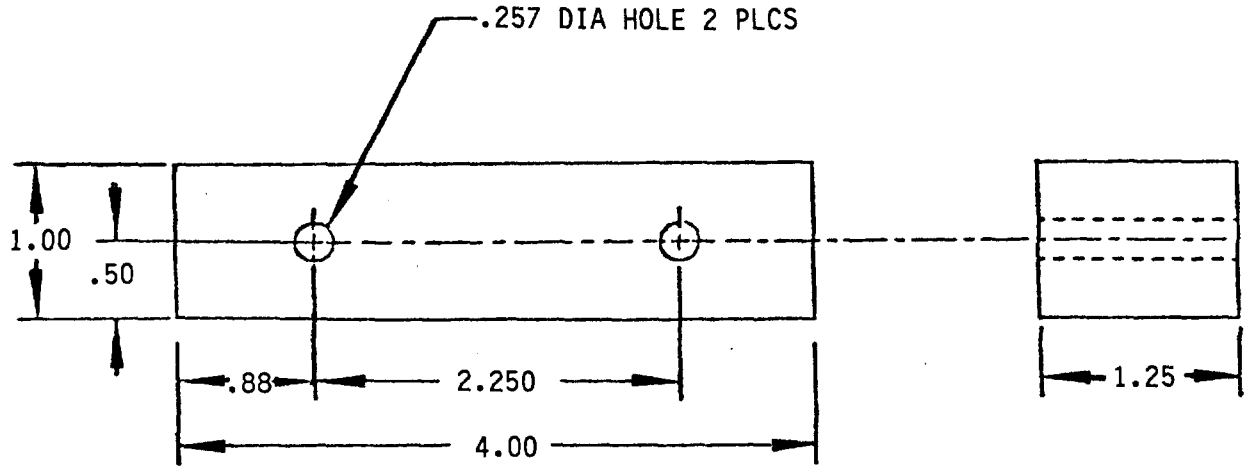


TOP ELEVATION



BOTTOM ELEVATION

Figure E-8. Fabrication of Box Assembly, P/N 85SDSCC-D-0007-104 (Sheet 3 of 3)

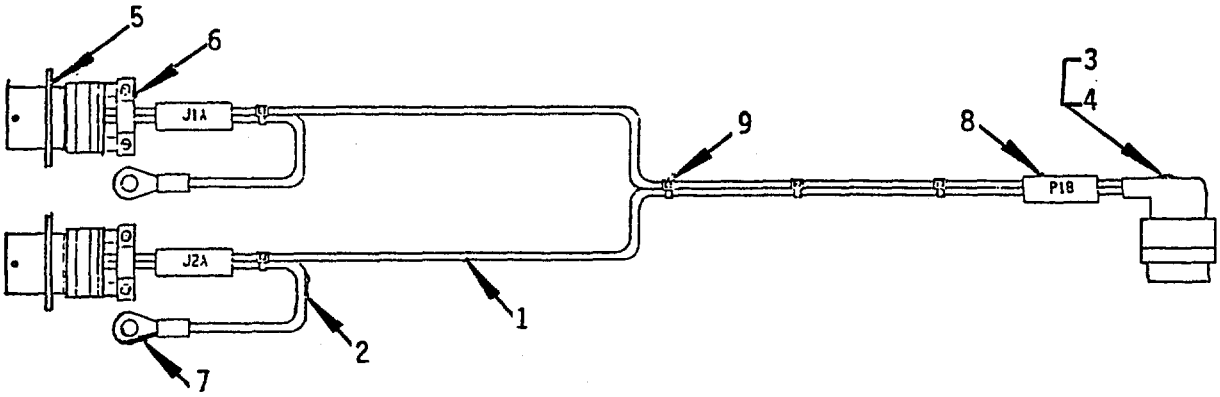


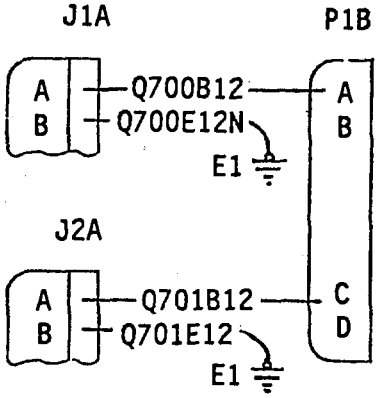
MATERIALS: FABRICATE FROM 2024-T3 AL ALLOY, STOCK SIZE 1 X 1-1/4 X 4 IN.

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.010

Figure E-9. Fabrication of Pump Riser, P/N 85SDSCC-D-0007-138



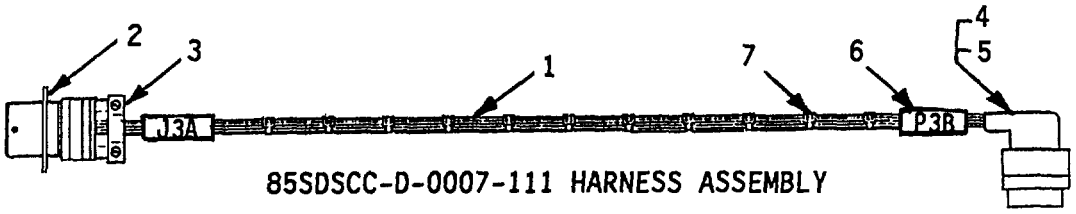


-110 HARNESS WIRING SCHEMATIC

ITEMS FOR -110 HARNESS

1. WIRE, ELEC, M22759/43-12-9 (81349), 20 IN. IN 2 PLCS.
2. WIRE, ELEC, M22759/43-12-9 (81349), 6 IN. IN 2 PLCS.
3. CONNECTOR, MS3476W14-4S (96906), 1 EA.
4. ADAPTER, CABLE CLAMP, M85049/51-1-14W (81349), 1 EA.
5. RECEPTOR CONNECTOR, MS3472W14-4P (96906), 2 EA.
6. ADAPTER, CABLE CLAMP, M85049/52-1-14W (81349), 2 EA.
7. TERMINAL LUG, MS25036 (96906), 2 EA.
8. SLEEVE INSULATING, (IDENTIFYING), M23053/5-107-9 (81349), 1 IN. IN 3 PLCS.
9. STRAP, TIEDOWN ELEC, MS3367-1-0 (96906), QTY AS REQD.

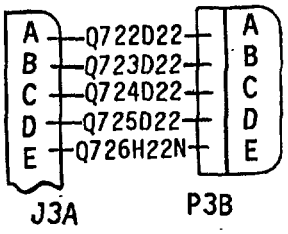
Figure E-10. Fabrication of Electrical Harness Assembly, P/N 85SDSCC-D-0007-110



85SDSCC-D-0007-111 HARNESS ASSEMBLY

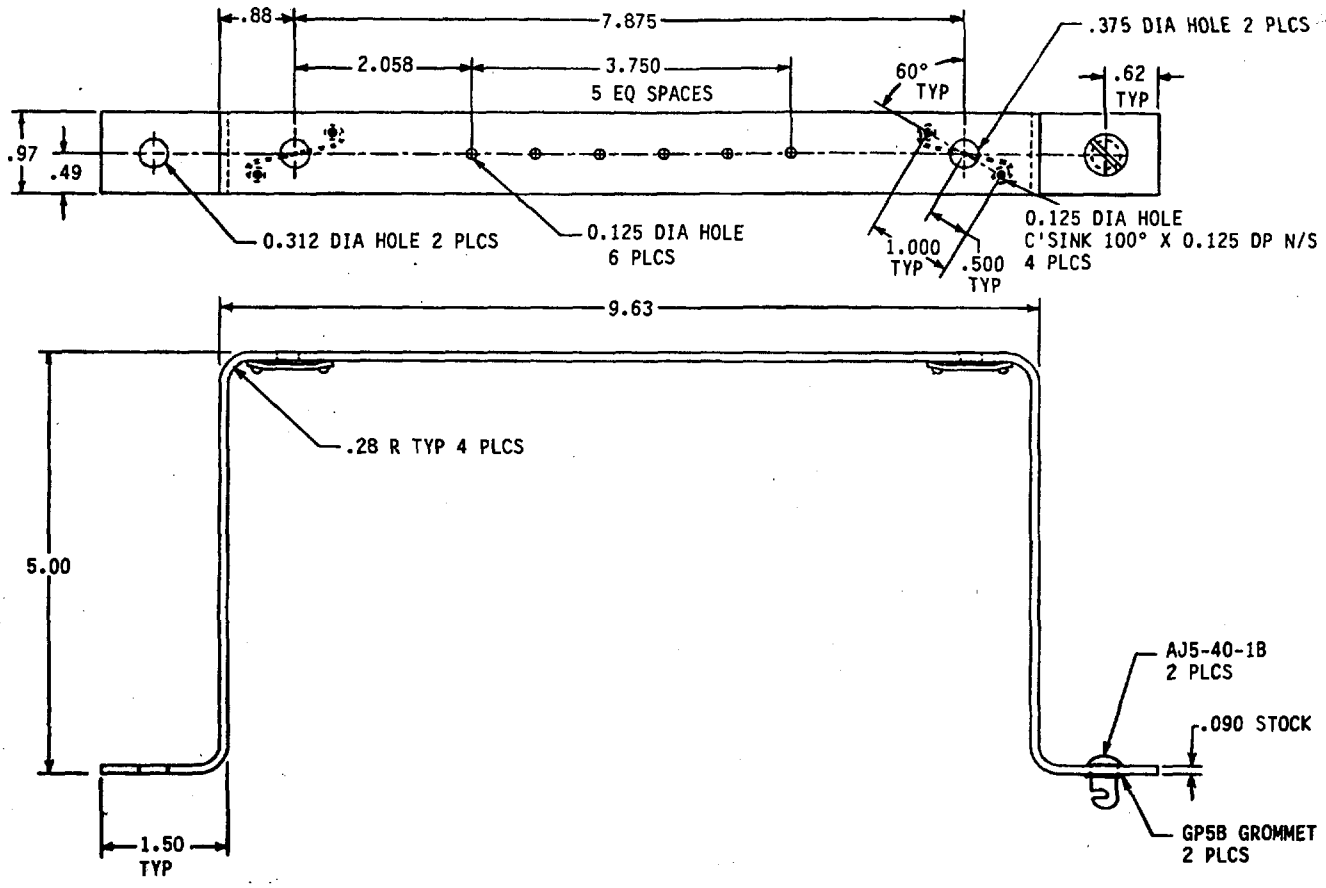
ITEMS FOR -111 HARNESS ASSEMBLY

1. WIRE, ELECTRICAL, M22759/43-22-9 (81349), 20 INCHES IN 5 PLACES (5 CONDUCTORS).
2. RECEPTOR CONNECTOR, MS3472W14-5S (96906), 1 EACH.
3. ADAPTER, CABLE CLAMP, M85049/52-1-14W (81349), 1 EACH.
4. CONNECTOR, MS3476W12-8P (96906), 1 EACH.
5. ADAPTER, CABLE CLAMP, M85049/51-1-12W (81349), 1 EACH.
6. SLEEVE, INSULATING (IDENTIFYING), M23053/5-107-9 (81349), 1 INCH IN 2 PLACES.
7. STRAP, TIEDOWN ELECTRICAL, MS3367-1-0 (96906), QUANTITY AS REQUIRED.



-111 HARNESS WIRING SCHEMATIC

Figure E-11. Fabrication of Electrical Harness Assembly, PIN 85SDSCC-D-0007-111



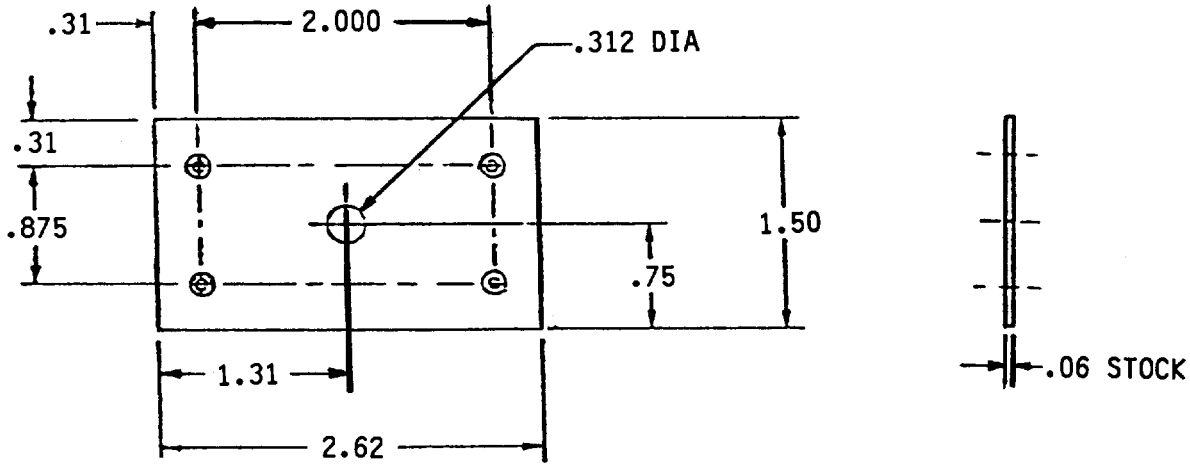
MATERIALS: 0.090 2024-T3 AL ALLOY

RIVET	MS20426AD4	2
RECEPTACLE	S5A-200	2
STUD	AJ5-40-1B	2
GROMMET	GP5B	2

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-12., Fabrication of Brace Strap Assembly, P/N 85SDSCC-D-0007-102

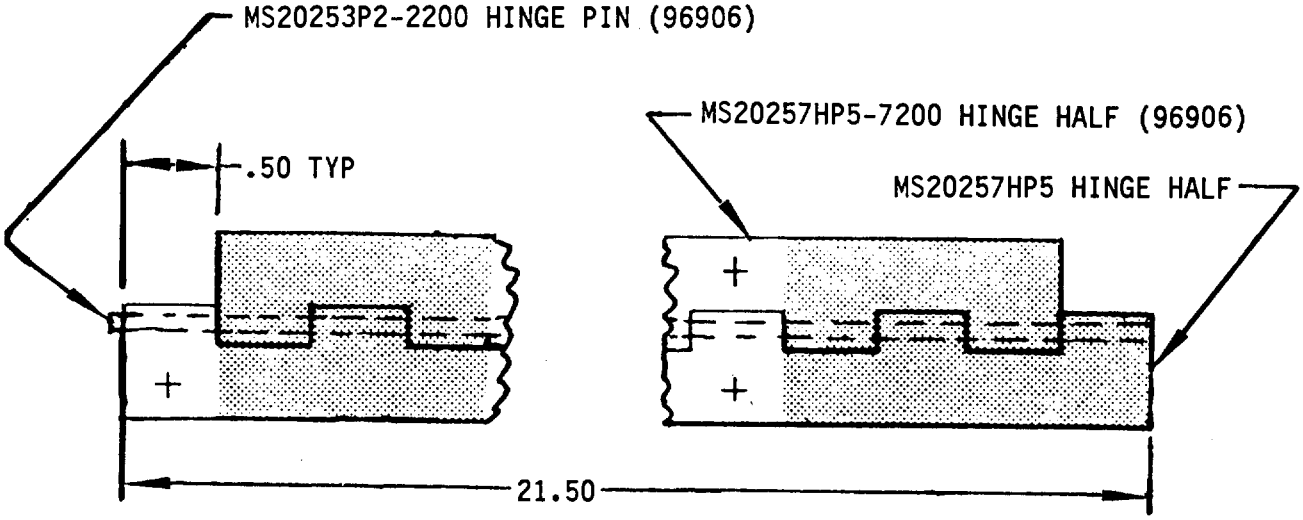


MATERIALS: 0.063 TEFLON THICKNESS

FINISHES: NONE

TOLERANCES: .X ±0.1
.XX ±0.03
.XXX ±0.010

Figure E-13. Fabrication of Teflon Pad, PIN 85SOSCC-D-0007-143



MATERIALS: FABRICATE HINGES FROM MS20257HP5-7200 (72 IN. LONG) HINGE HALF. CUT TWO PIECES TO LENGTH PER DRAWING DIMENSIONS.

FINISHES:
1. REMOVE ALL BURRS AND SHARP EDGES.
2. PRIME WITH EPOXY PRIMER PER MIL-P-23377 PRIOR TO RIVETING IN PLACE.
3. SECURE HINGE PIN BY PEENING A FLAT ON BOTH ENDS AFTER ASSEMBLY.

TOLERANCES: ALL DIMENSIONS ARE IN INCHES.

.X ±0.1
.XX ±0.03
.XXX ±0.010

Figure E-14. Fabrication of Hinge, MS20257P-2150

MATERIALS: 0.25 X 2.00 X 2.00 6061-T6511 EXTR

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES: .X ±0.1
.XX ±0.03
.XXX ±0.005

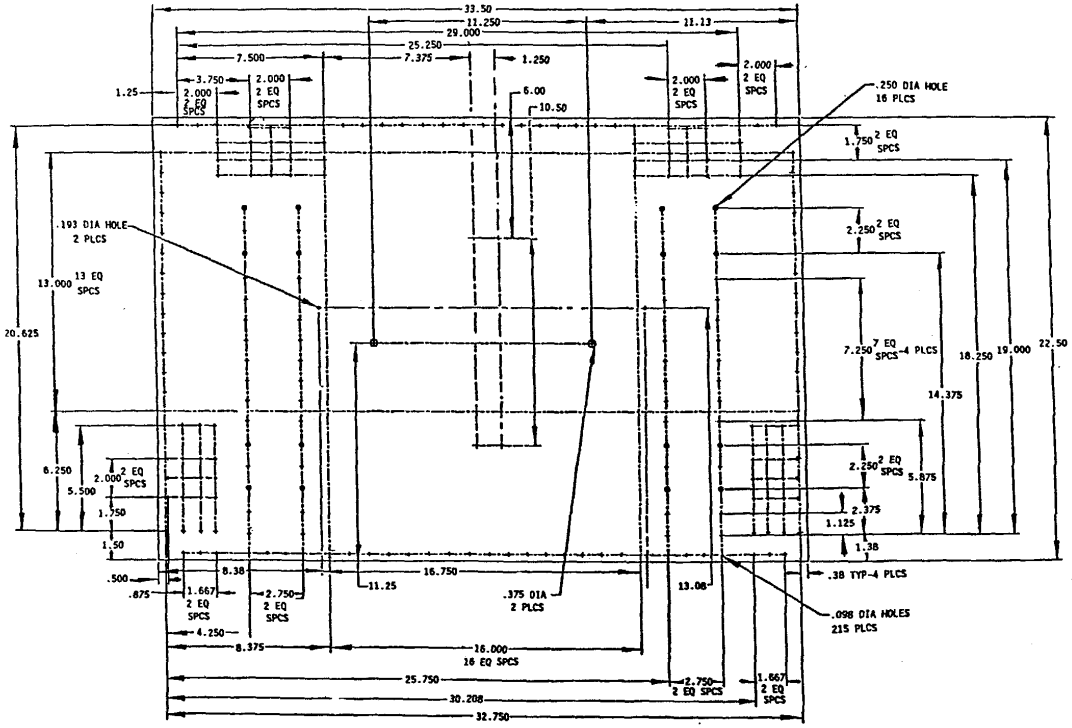
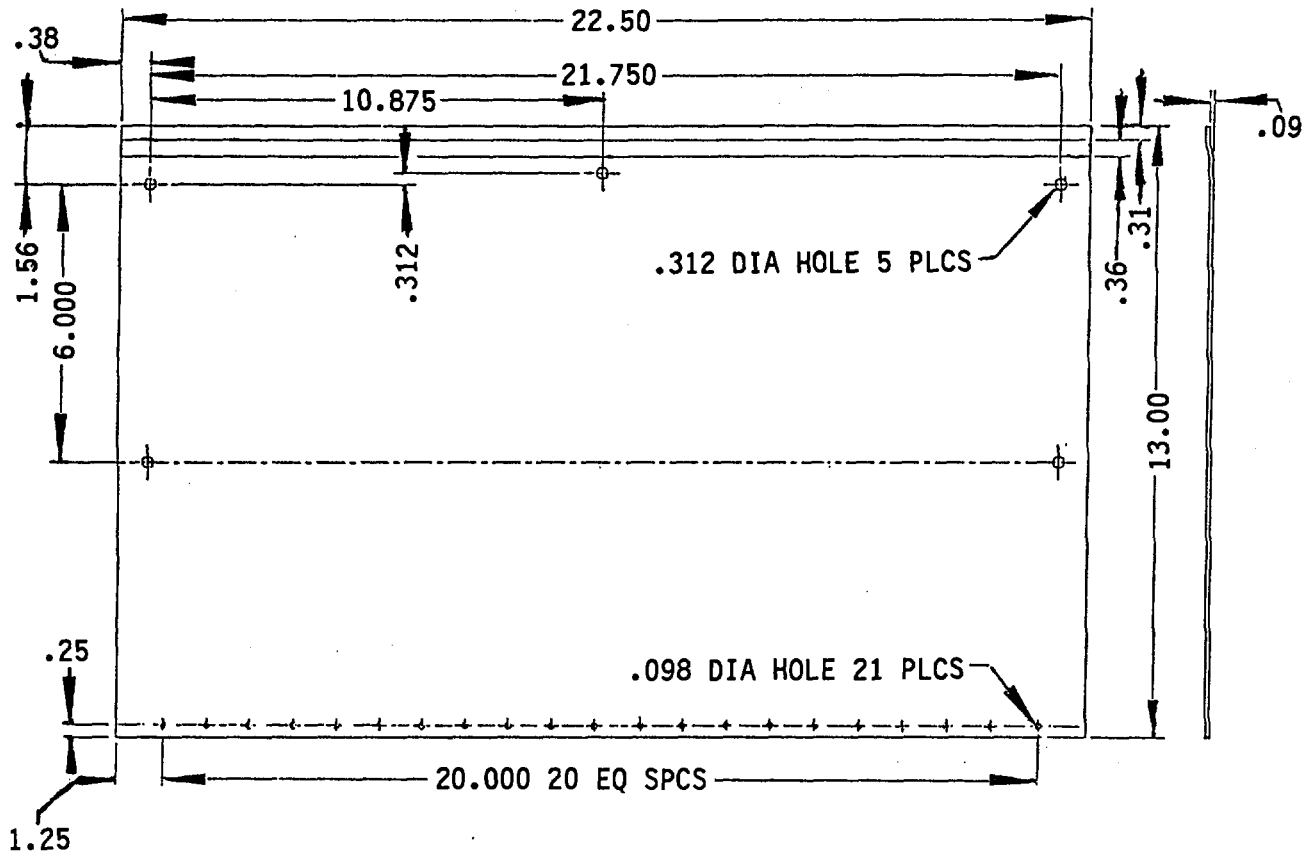


Figure E-15. Fabrication of Back Panel, P/N 85SDSCC-D-0007-125

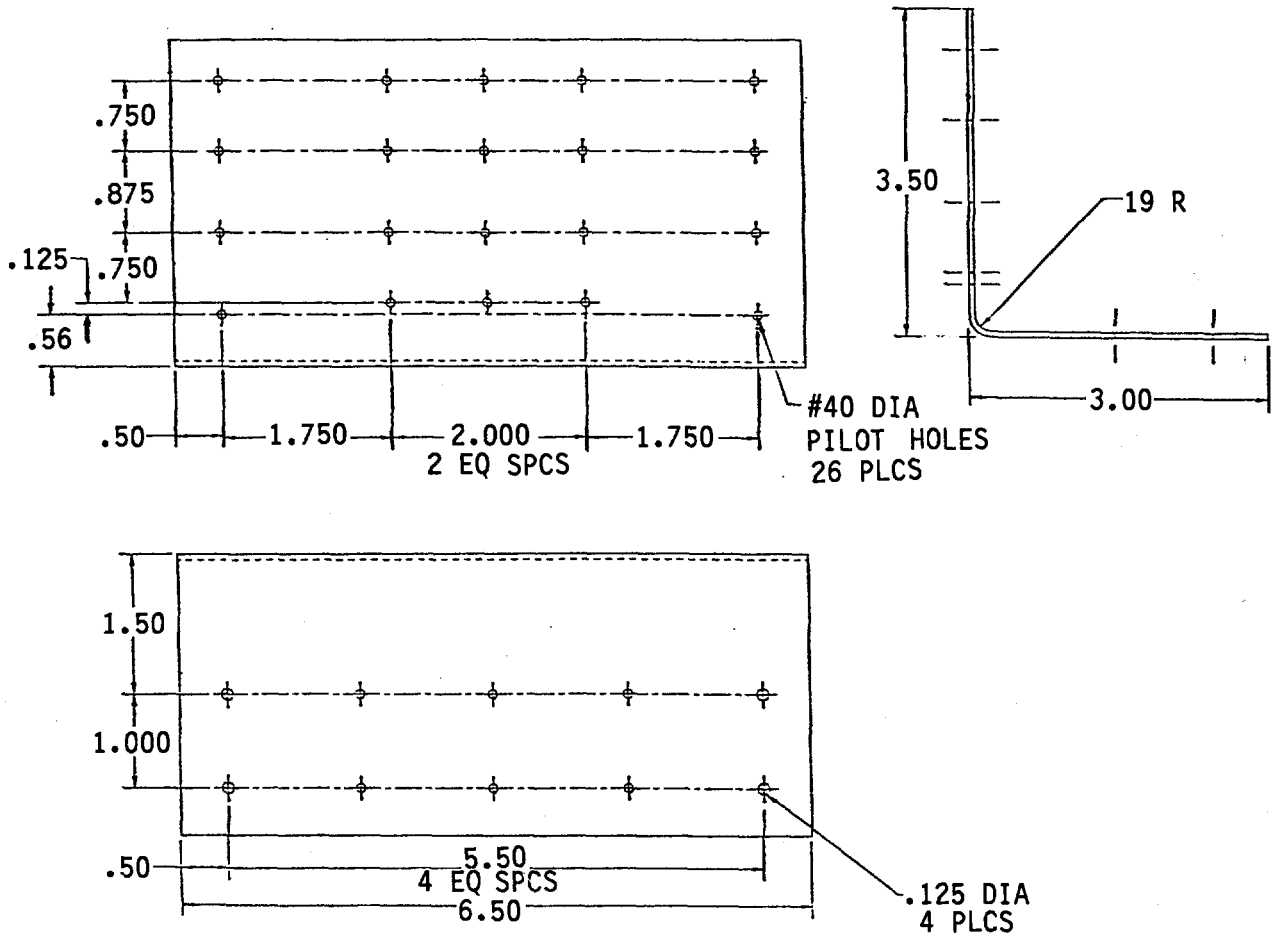


MATERIALS: FABRICATE FROM 2024-T3 AL ALLOY, STOCK SIZE 0.063 X 13.00 X 22.5 IN.

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.010

Figure E-16. Fabrication of Door, P/N 85SDSCC-D-0007-126

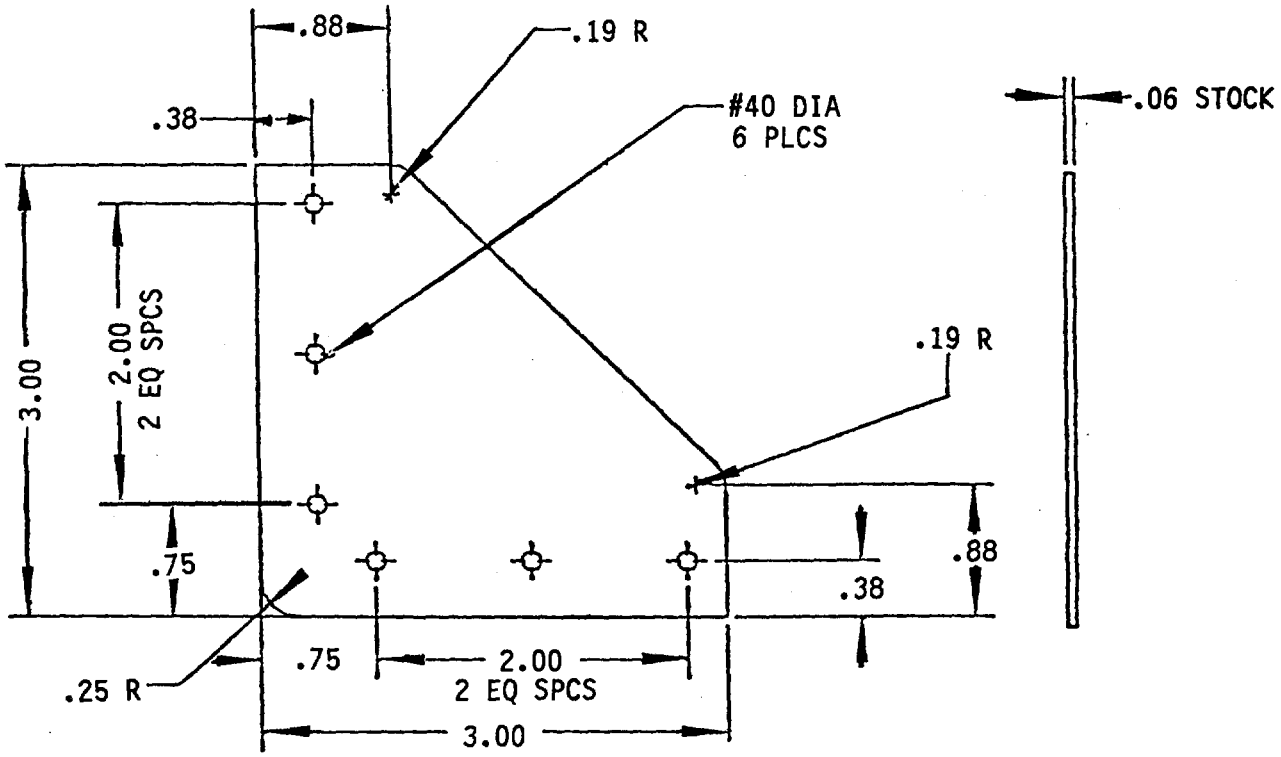


MATERIALS: 0.063 2024-T3 AL ALLOY

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-17. Fabrication of Doubler, P/N 85SDSCC-D-0007-127

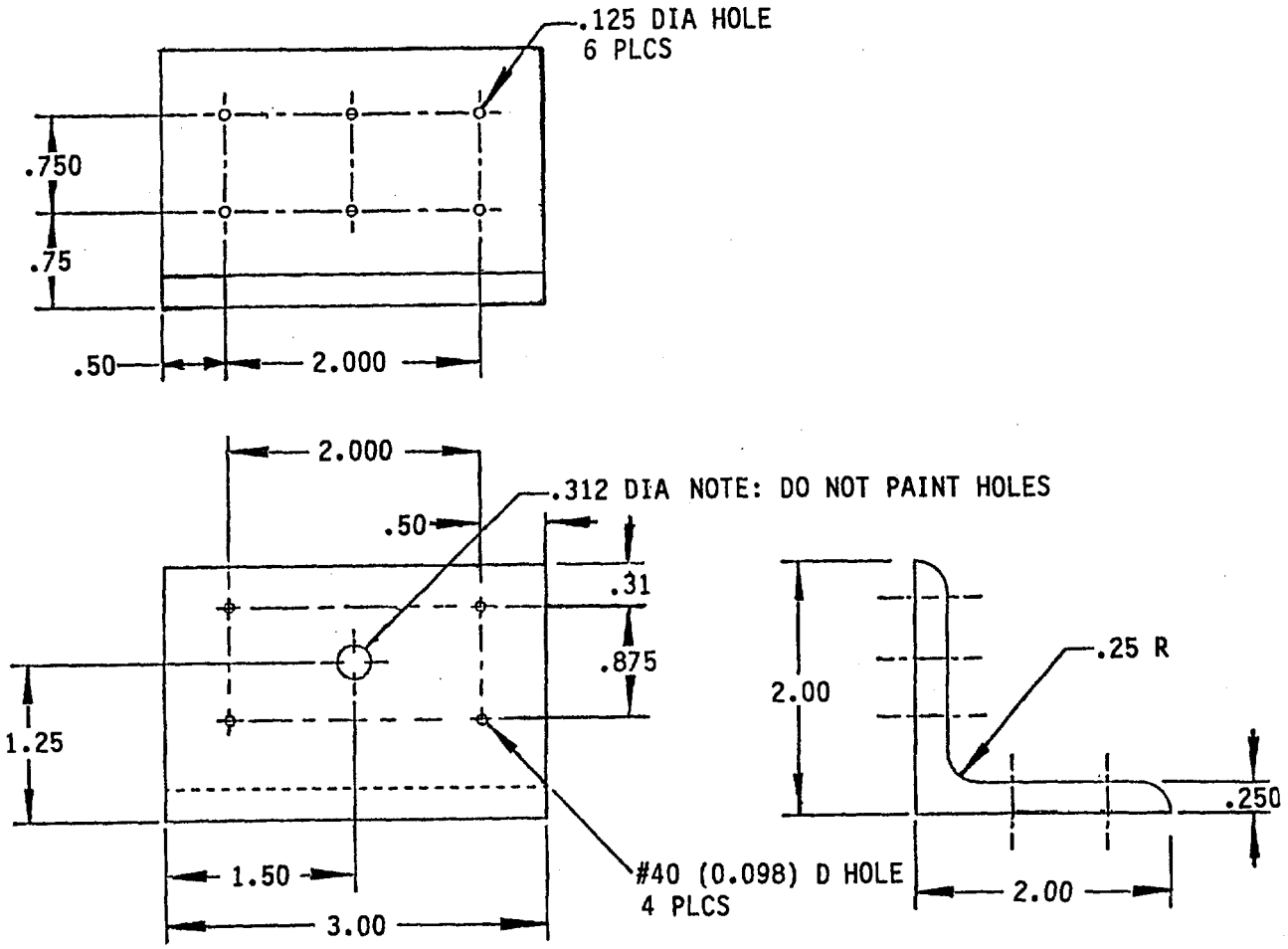


MATERIALS: 0.063 2024-T3 AL ALLOY.

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-18. Fabrication of Gusset, P/N 85SDSCC-D-0007-128

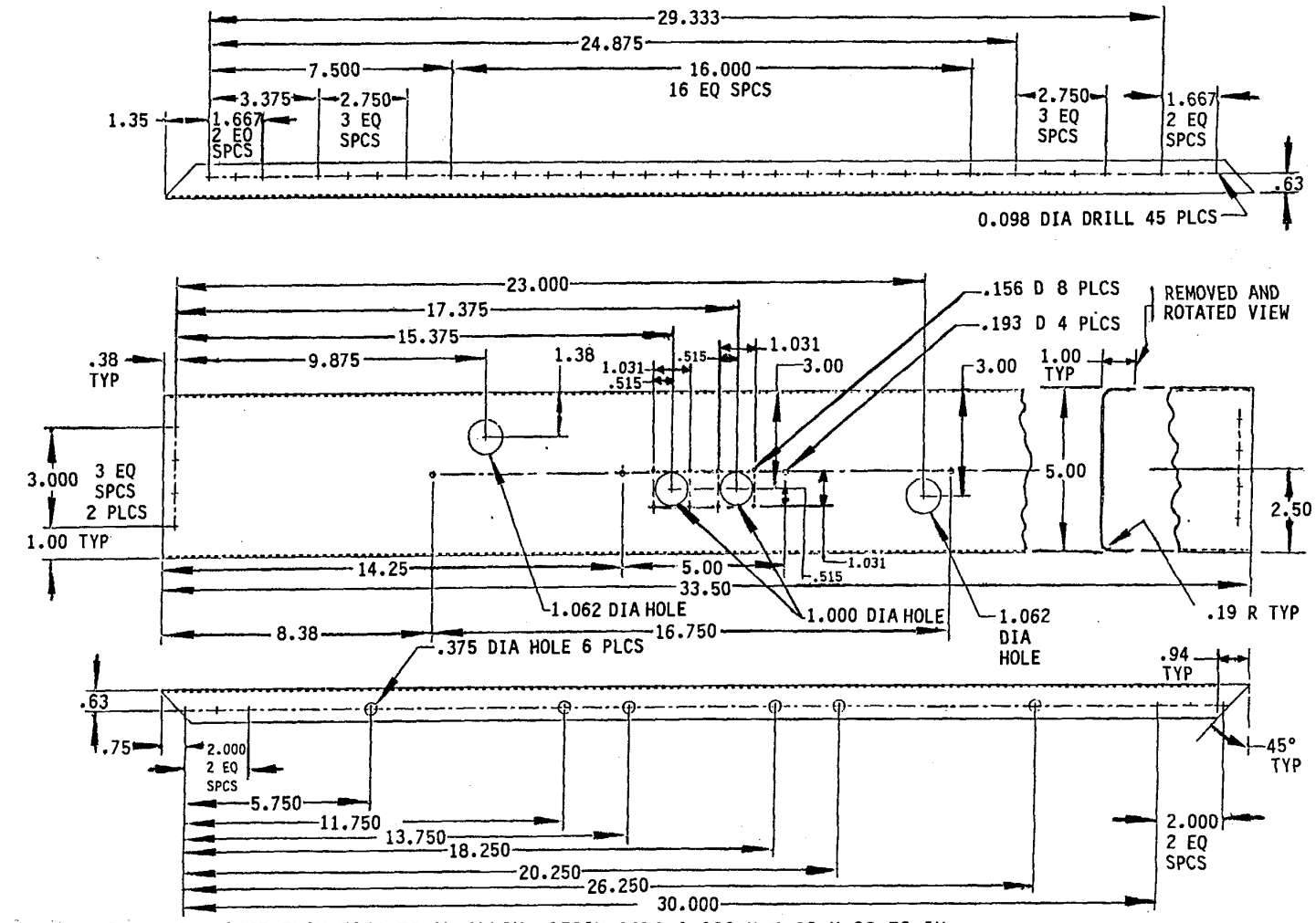


MATERIALS: 0.25 X 2.00 X 2.00 6061-T6511 EXTR

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-19. Fabrication of Mount, P/N 85SDSCC-D-0007-129

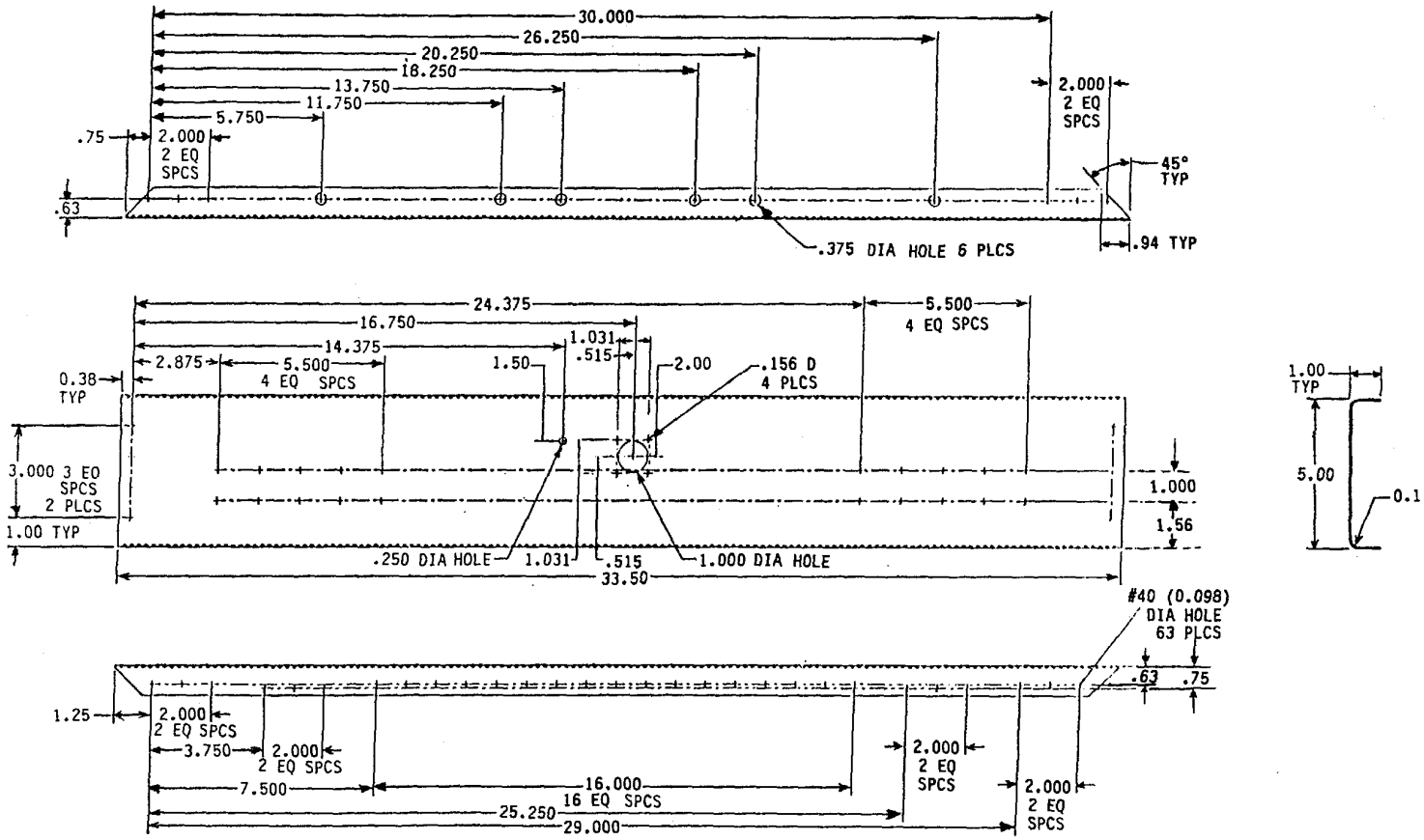


MATERIALS: FABRICATE FROM 2024-T3 AL ALLOY, STOCK SIZE 0.063 X 7.00 X 33.50 IN.

TOLERANCES: .X ±0.1
.XX ±0.03
.XXX ±0.010

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

Figure E-20. Fabrication of Bottom Panel, P/N 85SDSCC-D-0007-130

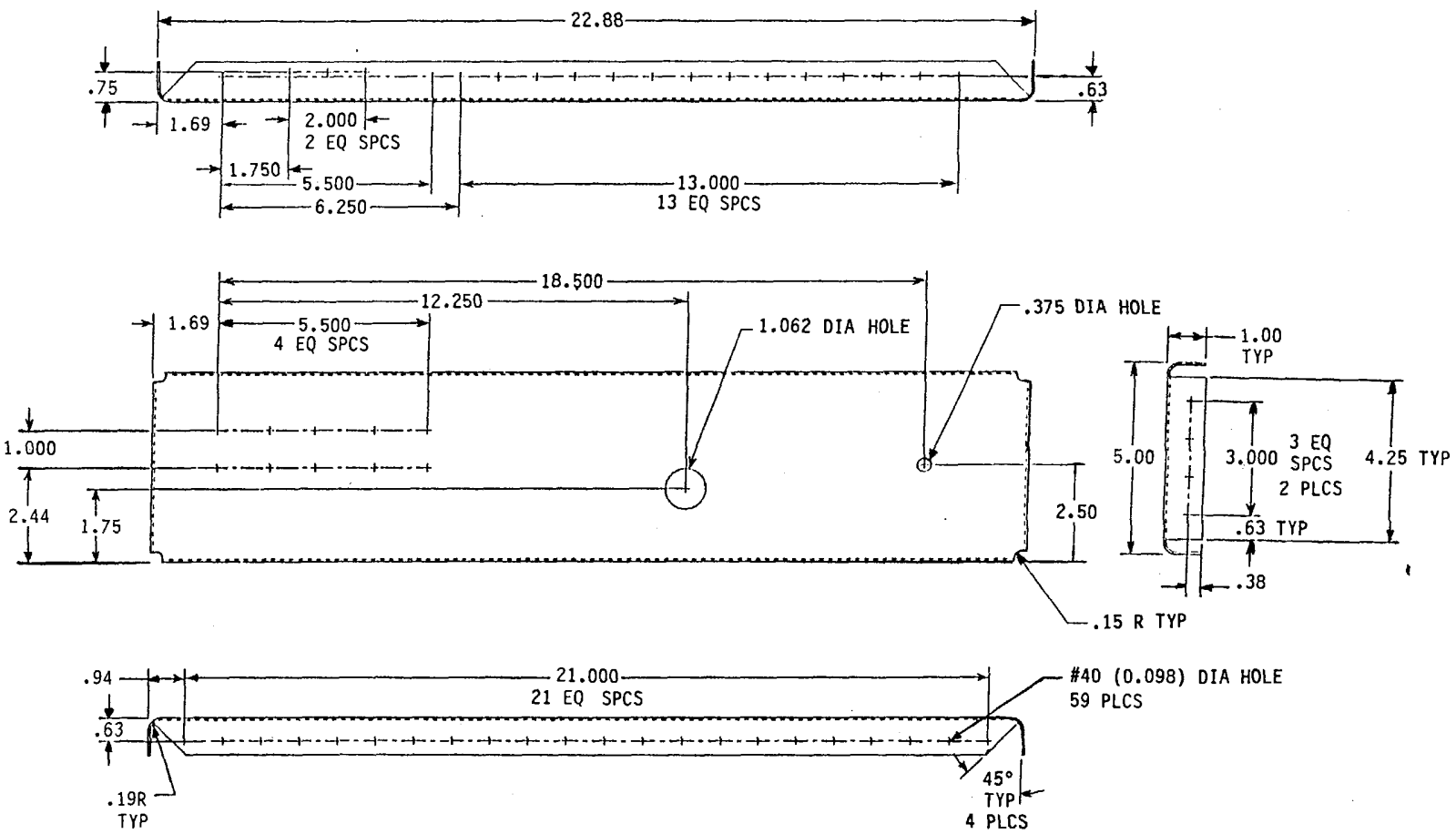


MATERIALS: 0.063 2024-T3 AL ALLOY

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-21. Fabrication of Top Panel, P/N 85DSCC-D-0007-131

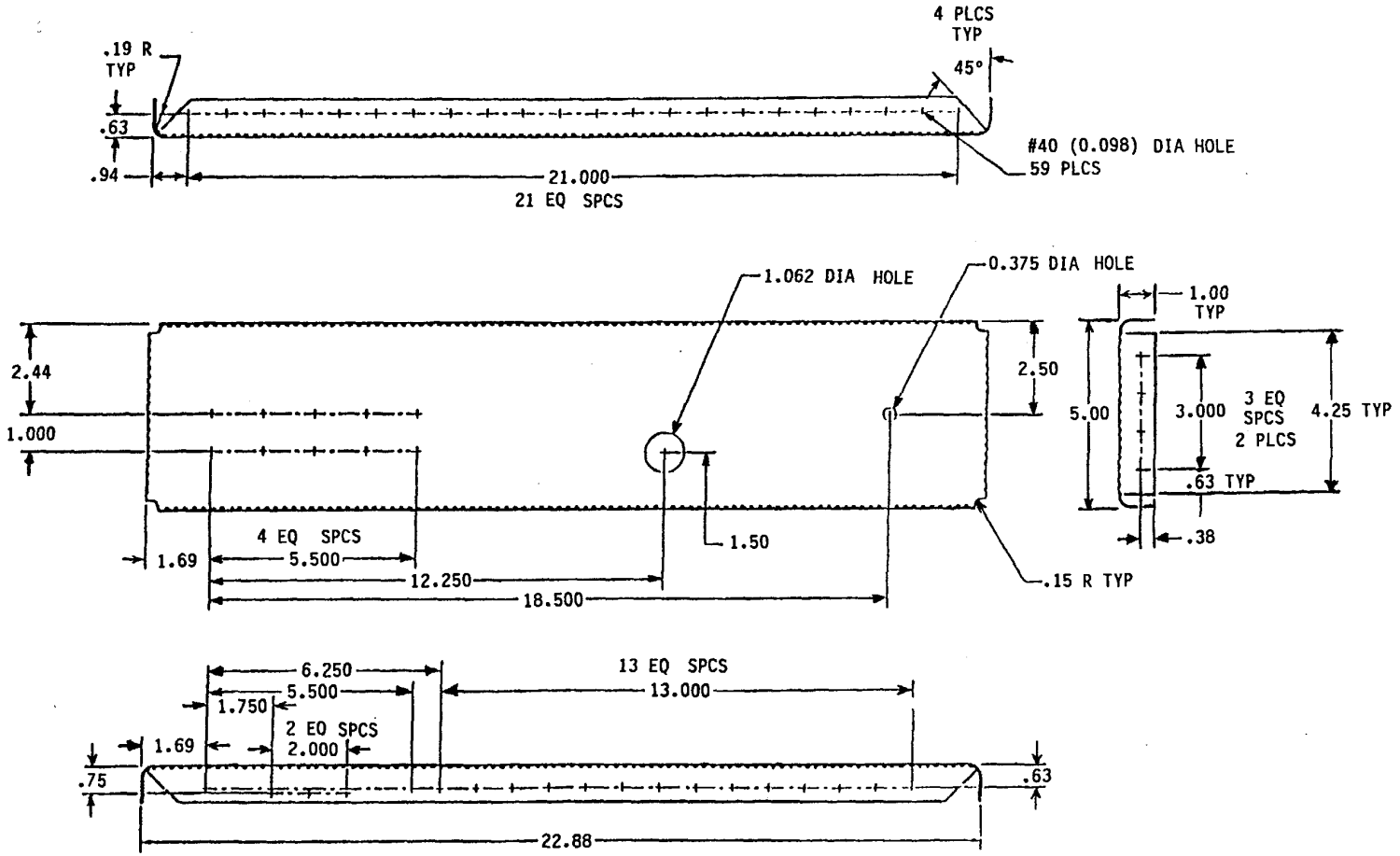


MATERIALS: 0.063 2024-T3 AL ALLOY

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-22. Fabrication of L/H Panel, P/N 85SDSCC-D-0007-132



MATERIALS: 0.063 2024-T3 AL ALLOY

FINISHES:
1. TREAT ALUMINUM WITH CHEMICAL CONVERSION COATING PER MIL-C-5541, CLASS 1A.
2. APPLY EPOXY PRIMER PER MIL-P-23377.
3. PAINT WITH CARC ACFT GREEN (COLOR NO. 34031, FED STD 595) PER MIL-C-46168.

TOLERANCES:
.X ±0.1
.XX ±0.03
.XXX ±0.005

Figure E-23. Fabrication of R/H Panel, P/N 85SDSCC-D-0007-133

APPENDIX F

TORQUE LIMITS

F-1. GENERAL. Standard torque values are not called out for individual maintenance procedures in this manual. Use the standard torque of Tables F-1 and F-2.

F-2. TORQUE DEFINITIONS.

a. Breakaway Torque. Breakaway torque (Table F-1) is defined as minimum torque required to start the movement of a nut on or off a bolt with no axial load on the nut and with the bolt completely through the nut.

b. Friction Torque. (Tare, Drag, Run on). The torque required to overcome the internal friction between a self-locking nut and bolt as the nut is being turned on the bolt, but before the nut contacts the washer (no axial load).

c. Final torque is the sum of the friction torque plus the applicable torque values from Table F-2 or friction torque plus torque from the applicable maintenance manual.

d. Break-loose torque is defined as the effort to break loose an axially loaded nut.

Table F-1. Breakaway Torque

MINIMUM BREAKAWAY TORQUE FOR USED ALL METALLIC AND NONMETALLIC SELF-LOCKING NUTS	
NUT SIZE	**MIN BREAKAWAY TORQUE (IN-LBS)**
FINE THREAD	
10-32	2.0
1/4-28	3.5
5/16-24	6.5
3/8-24	9.5
7/16-20	14.0
1/2-20	18.0
9/16-18	24.0
5/8-18	32.0
3/4-16	50.0
7/8-14	70.0
1-12	90.0
1 1/8-12	117.0
1 1/4-12	143.0
1 3/8-12	180.0
1 1/2-12	210.0
COARSE THREAD	
4-40	NOTE
6-32	NOTE
8-32	NOTE
10-24	NOTE
1/4-20	NOTE
5/16-18	7.5
3/8-16	12.0
7/16-14	16.5
1/2-13	24.0
9/16-12	30.0
5/8-11	40.0
3/4-10	60.0
7/8-9	82.0
1-8	110.0
1 1/8-7	137.0
1 1/4-7	165.0
1 3/8-6	200.0
1 1/2-6	230.0
1 3/4-5	300.0

NOTE: TEST NUT FOR MINIMUM BREAKAWAY TORQUE BY ATTEMPTING TO INSERT A MATCHING BOLT BY HAND. REUSE ONLY THOSE NUTS THAT CANNOT BE TIGHTENED DOWN WITH FINGERS AFTER THE LOCKING ACTION ENGAGES BOLT OR STUD. NUTS THAT DO NOT MEET THE MINIMUM BREAKAWAY TORQUE SHALL NOT BE USED.

Table F-2. Recommended Torque Values

	Size and Thread	Plain & Castellated Steel Hex Nuts Used with Bolts in Note (8) Tension Loading	Thin Plain & Castellated Steel Hex Nuts Used with Bolts in Note (8) Shear Loading
		Fine Thread	
		Average	**Average**
NO.	6-40	10.2-11.2	9.5-10.5
	8-36	12-15	7-9
	10-32	20-25	12-15
	1/4-28	50-70	30-40
	5/16-24	100-140	60-85
	3/8-24	160-190	95-110
	7/16-20	450-500	270-300
	1/2-20	480-690	290-410
	9/16-18	800-1000	480-600
	5/8-18	1100-1300	600-780
	3/4-16	2300-2500	1300-1500
	7/8-14	2500-3000	1500-1800
		Coarse Thread	
NO.	6-32	8.2-9.2	7.8-8.8
	8-32	12-15	7-9
	10-24	20-25	12-15
	1/4-20	40-50	25-30
	5/16-18	80-90	48-55
	3/8-16	160-185	95-100
	7/16-14	235-255	140-155
	1/2-13	400-480	240-290
	9/16-12	500-700	300-420
	5/8-11	700-900	420-540
	3/4-10	1150-1600	700-950
	7/8-9	2200-3000	1300-1800

NOTES:

1. THE ABOVE TORQUE LOADS MAY BE USED FOR ALL CADMIUM-PLATED STEEL NUTS OF THE FINE OR COARSE THREAD SERIES WHICH HAVE APPROXIMATELY EQUAL NUMBER OF THREADS AND EQUAL BEARING AREAS.
2. TORQUE VALUES ARE IN INCH-POUNDS.
3. TORQUE VALUES ARE NOMINAL AND MAY NOT AGREE WITH SPECIFIC AIRCRAFT OR ENGINE MAINTENANCE MANUALS. TORQUE VALUES CITED IN SPECIFIC MANUALS ARE CORRECT FOR INDIVIDUAL APPLICATION.
4. SIZE REFERS TO BOLT SHANK DIAMETER OR INSIDE DIAMETER OF NUT AND THREAD INDICATES NUMBER OF THREADS PER INCH.
5. TORQUE VALUES ARE DERIVED FROM OIL-FREE CADMIUM-PLATED THREADS.
6. ALL TORQUE VALUES ARE BASED ON USE OF 125 KSI BOLTS.
7. AVERAGE TORQUE VALUES IN SHEAR LOADING ARE APPROXIMATELY 60% OF AVERAGE TORQUE VALUE IN TENSION LOADING.
8. TORQUE VALUES ARE APPLICABLE TO SELF-LOCKING NUTS AS WELL. (REFERENCE TABLE F-1.)

GLOSSARY

APU	Auxiliary power unit. A small turbine powered combination electrical generator and hydraulic pump permanently installed in the aircraft.
BONNEY WRENCH	A thin head open end wrench with only one opening and short tapered handle. Normally used on hose and tube fittings.
CAM LEVER	A manually operated lever located on top of extended range fuel system (ERFS) fuel tank, linked mechanically to operate fuel dump valve located at bottom of tank.
CAMLOCK	A type of quick release latch or fastener.
COUPLING VALVES	Spring loaded discs built into hose couplings which close automatically when couplings are separated, thus preventing fuel spillage. Fuel is field captive in the lines.
CRASHWORTHY	The design of an aircraft's fuel system to sustain crash damage with fuel leakage.
CUT LINE	A line or mark on hose fittings used as a guide in establishing length bulk hose.
ECP	Electrical control panel.
ELECTRO OPTICAL	A design principle used by the ERFS low fuel pressure sensing system. Absence of fuel in pump lines causes a change in light pattern detected by optical sensor which is translated into an electrical output.
ERFS	Extended range fuel system.
EXTRUSION	A metal strip or bar formed with a consistent cross section during manufacturing.
FARE	Forward air refueling equipment.
FLASH POINT	Lowest temperature at which liquid will give off sufficient vapor to ignite upon application of flame or spark.
FMCP	Fuel management control panel.
HICHS	Helicopter internal cargo handling system.
KINK	An undesirable crimp, twist, or sharp bend in a hose causing restriction of fluid or gas flow.
LOCKNUT	The internally threaded end fitting of a hose or piece of rigid tubing.

GLOSSARY (Cont)

LOGIC TREE	A diagram of troubleshooting procedures.
OVERBOARD	Discharge or venting of fluids or gases including necessary plumbing connections to the outside of aircraft.
PRESSURE FILL	Filling of fuel tanks through a sealed plumbing system using controlled fuel pressure or venting.
PURGE	Emptying of fuel in liquid and gas form from fuel system tanks and lines.
REDUNDANT	Excess or duplication of a feature.
SHORING	Plywood sheets used for cargo floor decking.
SPLASH FILL	Filling of fuel tanks through an open fuel fill assembly.
TIEWRAPS	Plastic bands used to secure electrical cable bundles or flexible hoses.
TRIP	Automatic opening of an electrical circuit breaker causing disconnection of the circuit from power source due to faults or electrical overload.
UNI-SEX	Complete interchangeable hose coupling fittings that have no unique male or female end fittings.

ALPHABETICAL INDEX

ALPHABETICAL INDEX (Cont)

ALPHABETICAL INDEX (Cont)

By Order of the Secretary of the Army:

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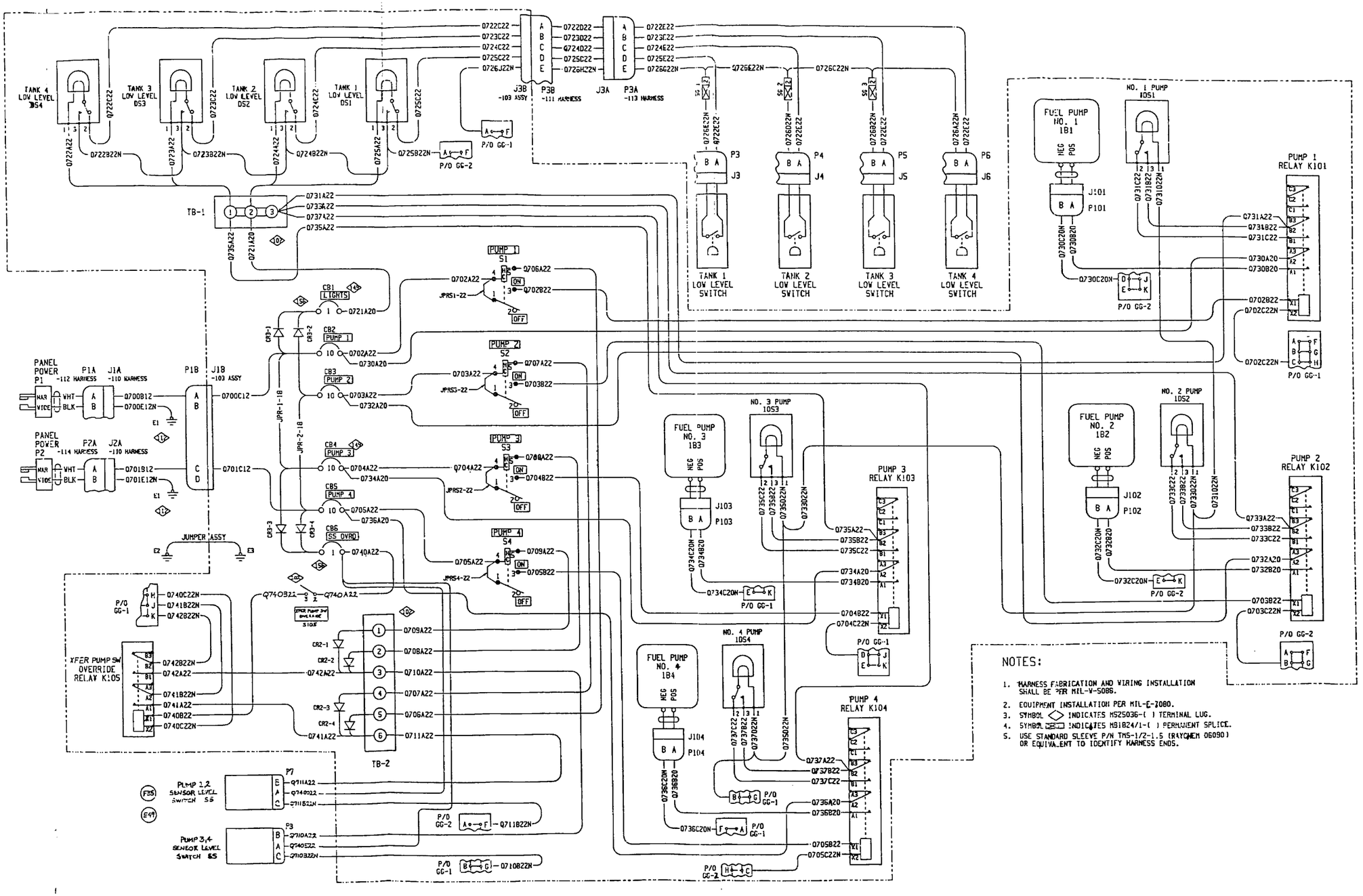


Figure FO-1. ERFS Wiring Diagram

FP-1/(FP-2 Blank)

2

WIRE CHART

DASH NO.	WIRE NO.	TYP	LG/IN	END 1	PIN	END 2	PIN
103	Q700C12	1	13	J1B	A	CB1	
103	Q701C12	1	8	J1B	C	C86	
103	Q702A22	1	12	CB2		S1	4
103	Q702B22	1	18	S1	3	K101	X1
103	Q702C22N	1	14	K101	X2	GG-1	C
103	Q703A22	1	9	CB3		S2	4
103	Q703B22	1	19	S2	3	K102	X1
103	Q703C22N	1	7	K102	X2	GG-2	B
103	Q704A22	1	11	CB4		S3	4
103	Q704B22	1	18	S3	3	K103	X1
103	Q704C22N	1	9	K103	X2	GG-1	D
103	Q705A22	1	9	CB5		S4	4
103	Q705B22	1	19	S4	3	K104	X1
103	Q705C22N	1	12	K104	X2	GG-2	C
103	Q706A22	1	28	S1	5	TB-2	5
103	Q707A22	1	28	S2	5	TB-2	4
103	Q708A22	1	28	S3	5	TB-2	2
103	Q709A22	1	28	S4	5	TB-2	1
103	Q710A22	1	48	TB-2	3	P8	B
103	Q711A22	1	48	TB-2	6	P7	B
103	Q710B22N	1	48	P8	C	GG-1	G
103	Q711B22N	1	48	P7	C	GG-2	F
103	Q721A20	1	14	CB1		TB-1	2
103	Q722A22	1	23	TB-1	1	DS4	1
103	Q722B22N	1	6	DS4	3	DS3	3
103	Q722C22	1	8	DS4	2	J3B	A
103	Q723A22	1	23	TB-1	1	DS3	1
103	Q723B22N	1	8	DS3	3	DS2	3
103	Q723C22	1	8	DS3	2	J3B	B
103	Q724A22	1	23	TB-1	2	DS2	1
103	Q724B22N	1	8	DS2	3	DS1	3
103	Q724C22	1	8	DS2	2	J3B	C
103	Q725A22	1	23	TB-1	2	DS1	1
103	Q725B22N	1	23	DS1	3	GG-2	A
103	Q725C22	1	9	DS1	2	J3B	D
103	Q726J22N	1	18	J3B	E	GG-1	A
103	Q730A20	1	12	CB2	CB2	K101	A2
103	Q730B20	1	48	K101	K101	P101	A
103	Q730C20N	1	48	P101	P101	GG-2	D
103	Q731A22	1	9	TB-1	TB-1	K101	B2
103	Q731B22	1	23	K101	K101	1DS1	3
103	Q731C22	1	23	K101	K101	1DS1	2
103	Q731D22N	1	6	1DS1	1DS1	1DS2	1
103	Q732A20	1	14	CB3	CB3	K102	A2
103	Q732BH20	1	48	K102	K102	P102	A
103	Q732C20N	1	48	P102	P102	GG-2	E
103	Q733A22	1	7	TB-1	TB-1	K102	B2
103	Q733B22	1	23	K102	K102	1DS2	3
103	Q733C22	1	23	K102	K102	1DS2	2
103	Q733D22N	1	8	1DS2	1DS2	1DS3	1
103	Q734A20	1	12	CB4	CB4	K103	A2
103	Q734B20	1	48	K103	A1	P103	A

2

WIRE CHART

DASH NO.	WIRE NO.	TYP	LG/IN	END 1	PIN	END 2	PIN
103	Q734C20N	1	48	P103	B	GG-1	E
103	Q735A22	1	13	TB-1	3	K103	B2
103	Q735B22	1	23	K103	B2	1DS3	3
103	Q735C22	1	23	K103	B1	1DS4	2
103	Q735D22N	1	6	1DS3	1	1DS4	1
103	Q736A20	1	14	CB5		K104	A2
103	Q736B20	1	48	K104	A1	P104	A
103	Q736C20N	1	48	P104	B	GG-1	F
103	Q737A22	1	11	TB-1	3	K104	B2
103	Q737B22	1	23	K104	B2	1DS4	3
103	Q737C22	1	23	K104	B1	1DS4	2
103	Q737D22N	1	26	1DS4	1	GG-1	B
103	Q740A22	1	6	CB6	2	S105	
103	Q740B22	1	16	S105	1	K104	X1
103	Q740C22N	1	8	K105	X2	GG-1	H
103	Q740D22	1	30	CB6	A	P7	
103	Q740E22	1	30	CB6	A	P8	
103	Q741A22	1	7	K105	A1	TB-2	6
103	Q741B22N	1	8	K015	A2	GG-1	J
103	Q742A22	1	6	K105	B1	TB-2	3
103	Q742B22N	1	8	K105	B2	GG-1	K
110	Q700B12	1	20	J1A	A	P1B	A
110	Q700E12N	1	6	J1A	B	GND	E1
110	Q701B12	1	20	J2A	A	P1B	C
110	Q701E12N	1	6	J2A	B	GND	E1
111	Q722D22	1	20	P3B	A	J3A	A
111	Q723D22	1	20	P3B	B	J3A	B
111	Q724D22	1	20	P3B	C	J3A	C
111	Q725D22	1	20	P3B	D	J3A	D
111	Q726H22N	1	20	P3B	E	J3A	E
112	WHITE	2	276	P1	NAR	P1A	A
112	BLACK	2	276	P1	WIDE	P1A	B
114	WHITE	2	180	P2	NAR	P2A	A
114	BLACK	2	180	P2	WIDE	P2A	B
113	Q722E22	1	228	P3A	A	P6	A
113	Q723E22	1	168	P3A	B	P5	A
113	Q724E22	1	108	P3A	C	P4	A
113	Q725E22	1	48	P3A	D	P3	A
113	Q726A22N	1	72	P6	B	SG3	
113	Q726B22N	1	12	P5	B	SG3	
113	Q726C22N	1	60	SG3		SG2	
113	Q726D22N	1	12	P4	B	SG2	
113	Q726E22N	1	60	SG2		SG1	
113	Q726F22N	1	12	P3	B	SG1	
113	Q726G22N	1	36	SG1		P2A	E

NOTES FOR WIRE CHART:

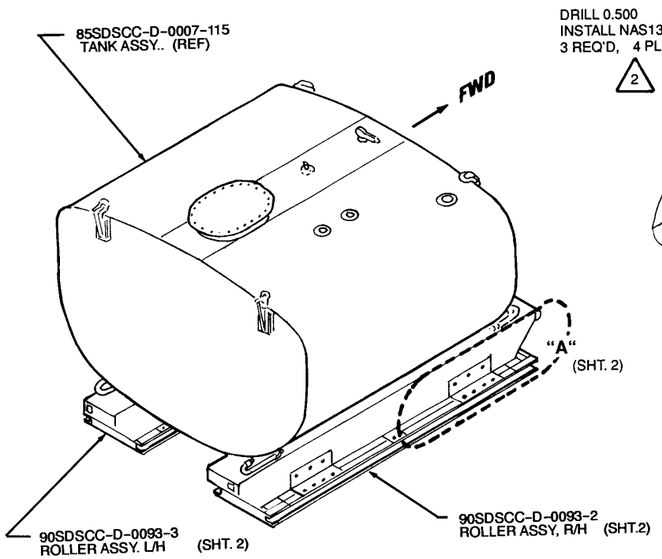
1. WIRE LENGTH TOLERANCE SHALL BE -0, +10 INCHES EXCEPT AS NOTED.

2. NUMBER IN TYPE COLUMN OF WIRE CHART INDICATES WIRE TYPE AS FOLLOWS:

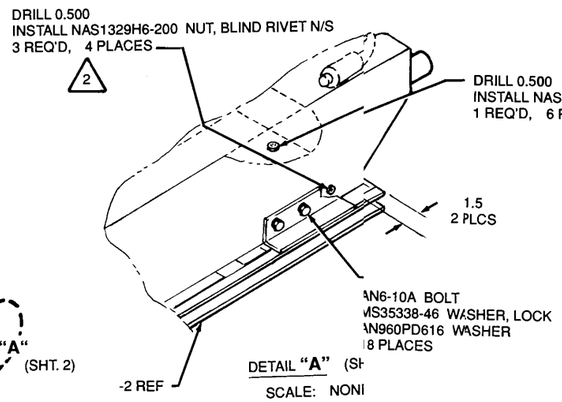
   1. DENOTES WIRE PER M22759/43.
   2. DENOTES CABLE PER MIL-C-3432.

Figure FO-2. Wire Chart for Wiring Diagram

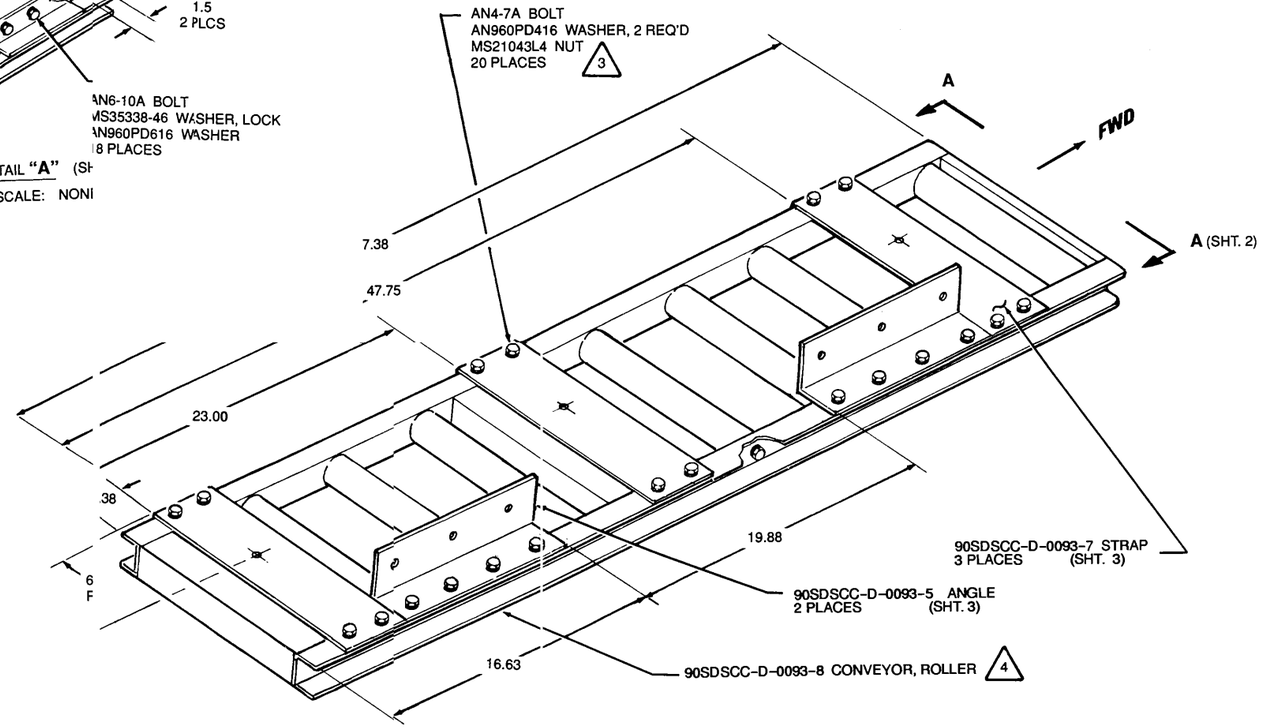
TM 55-1560-307-13&P

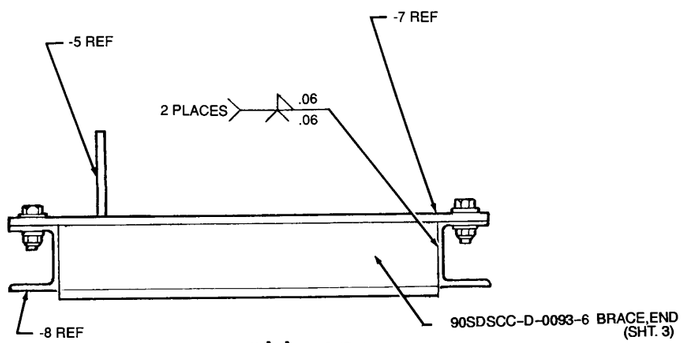


90SDSCC-D-0093-1 INSTALLATION
SCALE: NONE



DETAIL "A" (SH
SCALE: NONI

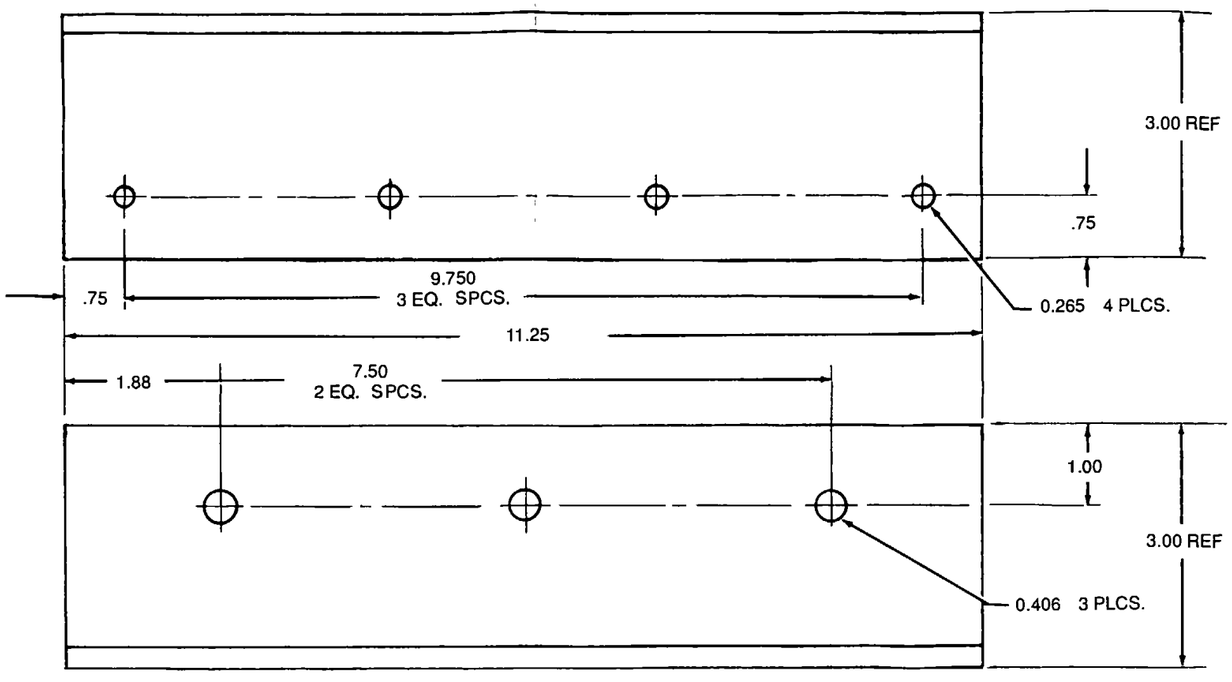




VIEW A-A (SHT 2)
SCALE: NONE

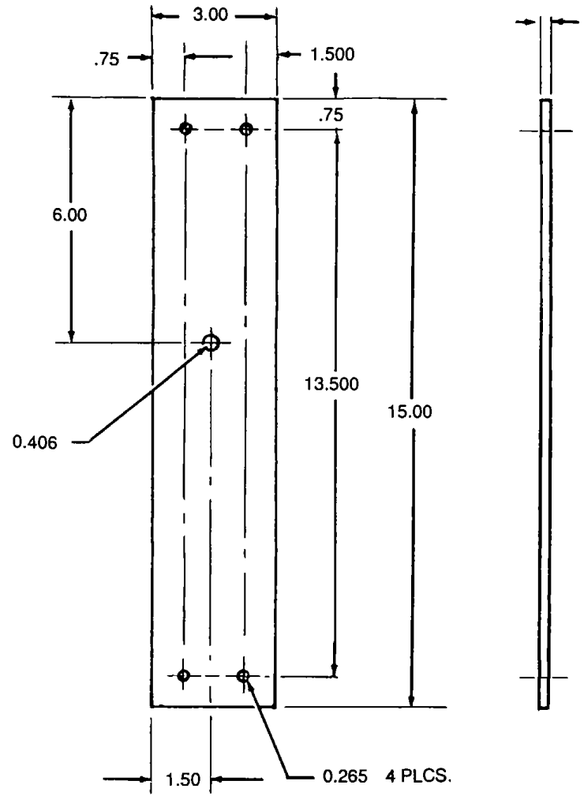
C-D-0093-2 ROLLER ASSEMBLY, R/H (SHN)
C-D-0093-3 ROLLER ASSEMBLY, L/H (OPP)
SCALE: NONE

Figure FO-3. Fabrication of Roller Assembly, P/N 90SDSCC-D-0093 (Sheet 1 of 3)



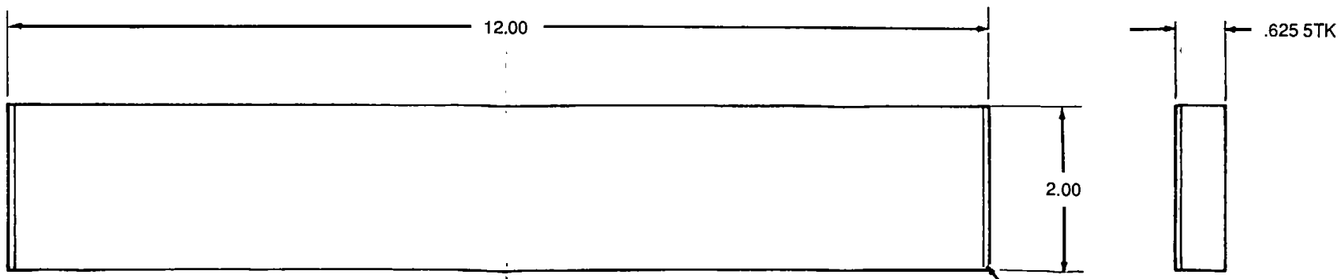
90SDSCC-D-0093-5 ANGLE (SHT. 2)

MATERIAL: AND10133-3002 6061-T651 EXTRN.
FINISH: NONE
SCALE: FULL



90SDSCC-D-0093-7 STRAP (SHT. 2)

MATERIAL: .250 2024-T3 ALUM
FINISH: NONE
SCALE: HALF



90SDSCC-D-0093-6 BRACE, END (SHT. 2)

MATERIAL: .625 6061-T6 ALUM
FINISH:
SCALE: FULL

Figure FO-3. Fabrication of Roller Assembly, P/N 90SDSCC-D-0093 (Sheet 2 of 3)

PART NUMBER	NSN	SMR	NOMENCLATURE	QTY
90SDSCC-D0093-1		XCOOO	INSTALLATION	
90SDSCC-D-0093-2		AOOOO	ROLLER ASSY, R/H	1
90SDSCC-D-0093-3		AOOOO	ROLLER ASSY, L/H	1
90SDSCC-D-0093-5		MOOZZ	ANGLE	4
90SDSCC-D-0093-6		MOOZZ	BRACE, END	2
90SDSCC-D-0093-7		MOOZZ	STRAP	6
90SDSCC-D-0093-8	(NOTE 4)	MOOZZ	CONVEYOR, ROLLER	2
AN4-7A	5306-00-	OZZ	BOLT	40
AN6-10A	5306-00-208-3636	PAOZZ	BOLT	18
AN960PD416	5310-00-187-2354	PAOZZ	WASHER	80
AN960PD616	5310-00-187-2400	PAOZZ	WASHER	18
MS35338-46	5310-00-537-9541	PAOZZ	WASHER, LOCK	18
MS21042L4	5310-00-807-1475	PAOZZ	NUT	40
NAS1329H6200	5310-01-010-2388	PAOZZ	NUT, BLIND RIVET	18

NOTES:

1. MARK PARTS PER MIL-STS-180.

2. TRANSFER HOLE LOCATIONS FROM -2 OR -3 ASSY. ON TO -115 TANK ASSY. AS SHOWN.

3. TRANSFER HOLE LOCATIONS FROM -5 STRAP AND -7 ANGLE TO # 11-1-589 CONVEYOR, ROLLER AS SHOWN.

4. # 11-1-589 CONVEYOR, ROLLER, NSN 3910-00-905-1303 HAS AN OVERALL LENGTH OF 117.0 INCHES. THIS ITEM SHALL BE MODIFIED TO DIMENSIONS GIVEN BEFORE ITEMS -5, -6, -7 AND RELATED HARDWARE ARE INSTALLED. # 11-1-592-1 COUPLING ASSY. WILL BE REMOVED AND NOT USED.

5. ALL WELDS PER MIL-W-8604.

6. ALL WELD SYMBOLS PER AWS A2.4-79.

Figure FO-3. Fabrication of Roller Assembly, P/N 90SDSCC-D-0093 (Sheet 3 of 3)

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The Metric System and Equivalents

Linear Measure

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

Weights

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

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

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

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