TM5-4930-237-10

TECHNICAL MANUAL

OPERATOR'S MANUAL

- INTRODUCTION
- OPERATING INSTRUCTIONS
- OPERATOR MAINTENANCE INSTRUCTIONS
- REFERENCES
- COMPONENTS OF END ITEM/BASIC ISSUE ITEMS
- ADDITIONAL AUTHORIZATION LIST
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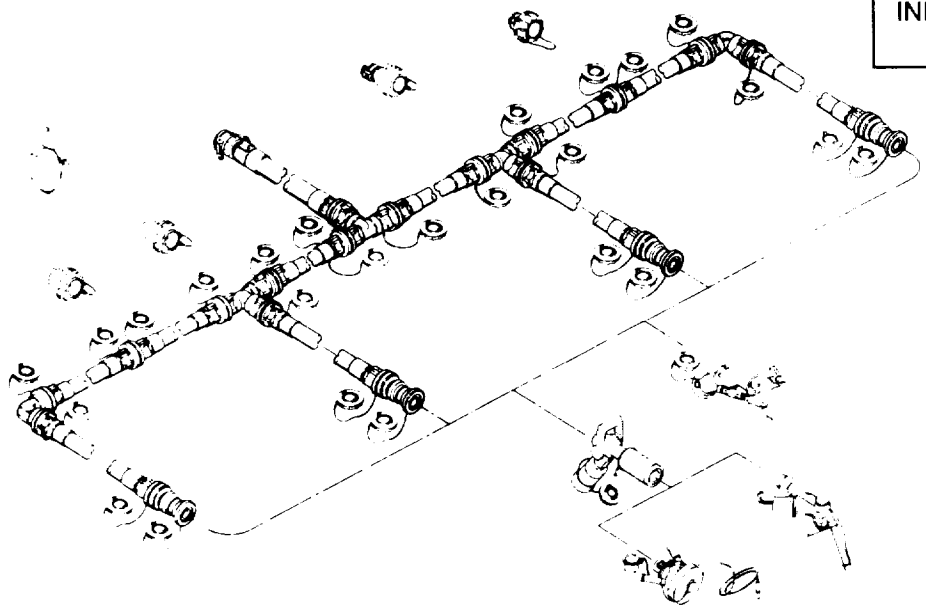
- INDEX

HEMTT TANKER AVIATION REFUELING SYSTEM (HTARS)

NSN 4930-01-269-2273

MODEL NUMBER 50-0051



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OPERATOR'S MANUAL

FOR

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MODEL NUMBER 50-0051

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OPERATOR'S MANUAL

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Operator's Manual

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MODEL NUMBER
50-0051

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2-5 through 2-16	2-5 through 2-16
----------	2-16.1/2-16.2
A-1/A-2	A-1/A-2
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WARNING PAGE

WARNING

Aviation fuel is highly flammable. No smoking or open flames are permitted during fueling operations or near refueling areas. Failure to comply can result in injury or death to personnel.

WARNING

Proper eye protection must be worn. Failure to comply can result in loss of eyesight.

WARNING

Ground clips and plugs must be connected before attaching nozzle to aircraft. Failure to comply can result in injury or death to personnel from static discharge.

WARNING

Do not force flow handle of Dry-Lot connectors to the open position. Damage to the interlocking mechanism can result in an inadvertent disconnect and subsequent fuel discharge during operation. Failure to comply can result in injury or death to personnel or damage to equipment.

TECHNICAL MANUAL

No. 5-4930-237-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 10 March 1989

Operator's Manual

HEMTT TANKER AVIATION REFUELING SYSTEM (HTARS)

NSN 4930-01-269-2273 MODEL NUMBER 50-0051

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual, If you find any mistakes. or if you know of a way to improve the procedures. please let us know. Mail your letter. DA form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual direct to: Commander, U.S. Army Tank-automotive and Armaments Command, ATTN: AMSTA-AC-NML, Rock Island, IL 61299-7630. A reply will be furnished to you. You may also provide DA Form 2028-2 information to TACOM via datafax or e-mail: TACOM's fax number is DSN 786-6323. TACOM's e-mail address is tacom-tech-pubs@cc.tacom.army.mil

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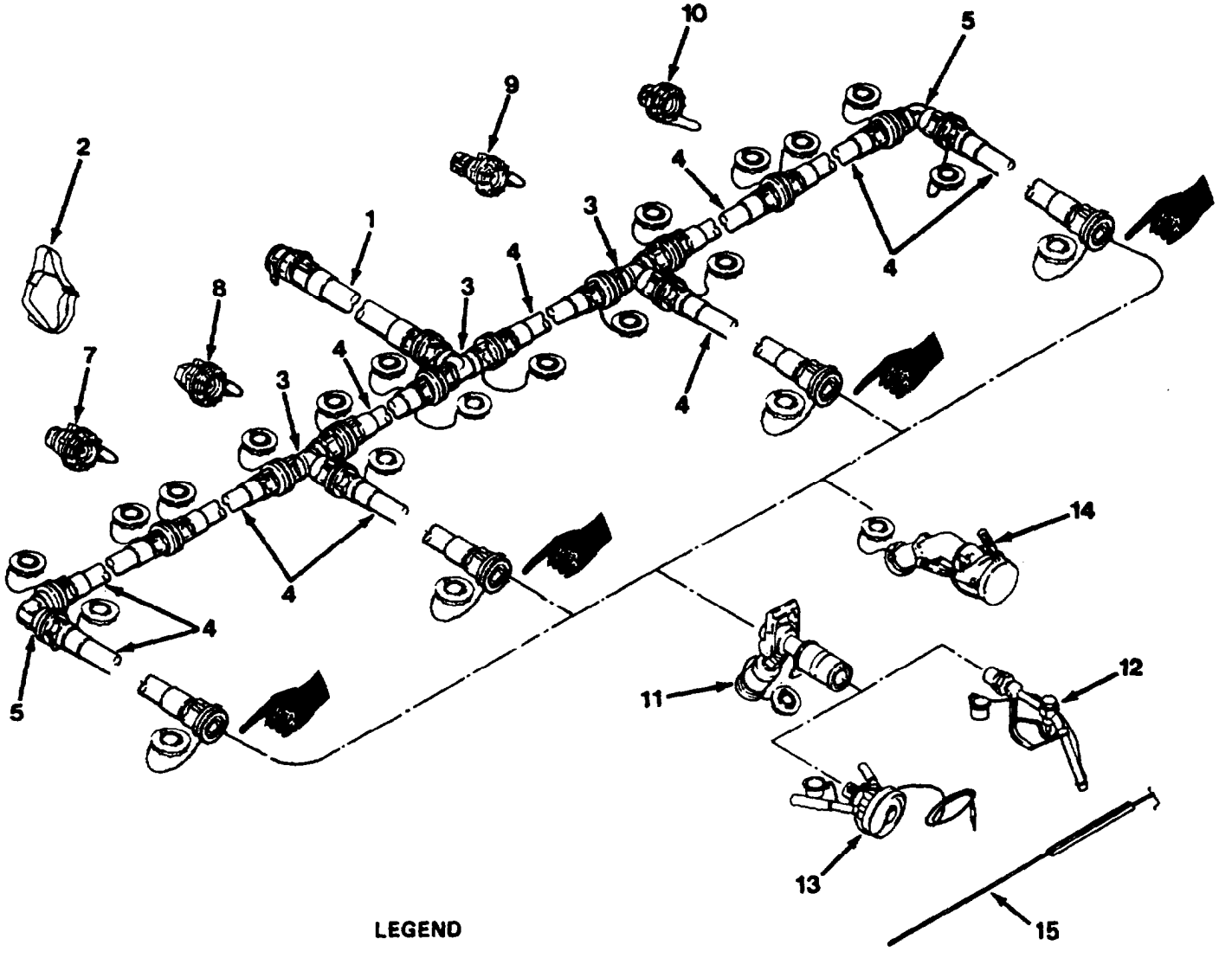
CHAPTER 1

INTRODUCTION

Section 1. GENERAL INFORMATION

1-1. Scope. This is an Operator's Manual and supports the Heavy Expanded Mobility Tactical Truck (HEMTT) Tanker Aviation Refueling System, model number 50-0051. The system is used to dispense aviation fuel to from one to four aircraft. Throughout this manual the HEMTT Tanker Aviation Refueling System (HTARS) shall be referred to as the equipment. (See Figure 1-1).



LEGEND

1. 3 INCH DISCHARGE HOSE
2. CARRYING STRAP
3. TEE CONNECTOR
4. 2 INCH DISCHARGE HOSE
5. ELBOW CONNECTOR
6. DELETED
7. ADAPTER - VALVED
8. ADAPTER - VALVED
9. ADAPTER - VALVED
10. SWIVEL ADAPTER
11. CCR NOZZLE
12. OVERWING NOZZLE
13. RECIRCULATION NOZZLE
14. D1 NOZZLE
15. GROUNDING ROD

Figure 1-1. HEMTT Tanker Aviation Refueling System (HTARS)

1-2. Maintenance Forms, Records, and Reports. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. Reporting Equipment Improvement Recommendations (EIR's). If your equipment needs improvement, let us know. Send an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, U.S. Army TACOM, ATTN: AMSTA-TR-E/MPA, Warren, MI 48395-5000. A reply will be furnished to you.

1-4. Warranty Information. Refer to TB5-4930-237-23, Technical Warranty Bulletin, for all warranty information.

1-5. Destruction of Army Material to Prevent Enemy Use. The equipment shall be destroyed in accordance with TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use.

1-6. Preparation for Storage or Shipment- Refer to Chapter 2, Section III, Operation Under Usual Conditions,

1-7. Quality Assurance/Quality Control (QA/QC). Refer to FM 55-0411, Aviation Maintenance Quality Assurance/ Quality Control, for appropriate QA/QC information.

1-8. Safety, Care, and Handling.

WARNING

Aviation fuel is highly flammable. No smoking or open flames are permitted during fueling operations or near refueling areas. Failure to comply can result in injury or death to personnel.

Ground clips and plugs must be connected before attaching nozzles to aircraft. Failure to comply can result in injury or death to personnel from static discharge.

a. Do not use any nozzle, part, or hose that is damaged and/or leaking fuel.

b. Keep equipment clean. Remove dirt, fuel, moisture, snow, or mud with a clean cloth (item 1, Appendix D).

c. Keep flow handles in closed (off) position when not in use.

d. Keep dust caps in place when not in use. Dust, dirt, moisture, or contaminants can cause damage to internal parts.

e. Hand-carry a!! equipment. Do not drag or throw on ground.

Section II. EQUIPMENT DESCRIPTION AND DATA

1-9. Equipment Characteristics, Capabilities, and Features.

a. Equipment is light-weight and can be carried to and from the aircraft.

b. All controls are manually operated.

c. Nozzles will not dispense fuel unless connected to aircraft receptacle (except overwing nozzle).

d. One nozzle or combination of nozzles will connect to aircraft receptacle without an adapter.

e. Valved and swivel adapters allow connection between camlock and sexless type fittings.

1-10. Location and Description of Major Components. Refer to Chapter 2, Section I, Description and Use of Operator's Controls and Indicators.

1-11. Equipment Data. (See Table 1-1.)

Table l-l. Equipment Data

Weight (Dry) :	
3 Inch Discharge Hose (50 feet)	69.0 pounds (31.3 kg)
Carrying Strap	0.5 pounds (0.2 kg)
Tee Connector	6.5 pounds (2.9 kg)
2 Inch Discharge Hose (60 feet)	38.5 pounds (17.4 kg)
Elbow Connector	3.5 pounds (1.6 kg)
DELETED	
Adapter -Valved	2.5 pounds (1.1 kg)
Adapter-Valved	3.0 pounds (1.4kg)
Adapter Valved	2.5 pounds (1.1 kg)
Swivel Adapter	1.5 pounds (0.7 kg)
Closed Circuit Refueling (CCR) Nozzle	8.0 pounds (3.6 kg)
Overwing Nozzle	2.5 pounds (1.1 kg)
Recirculation Nozzle	5.0 pounds (2.3 kg)
D1 Nozzle	9.5 pounds (4.3kg)
Grounding Rod	5.0 pounds (2.3kg)
Operating Temperature Range	-30 to + 180 degrees F (-34 to +82 degrees C)

Section III. PRINCIPLES OF OPERATION

Refer to Chapter 2, Section I, Description and Use of Operator's Controls and Indicators.

CHAPTER 2

OPERATING INSTRUCTIONS

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

2-1. Operator's Controls and Indicators. (See Figure 2-1.)

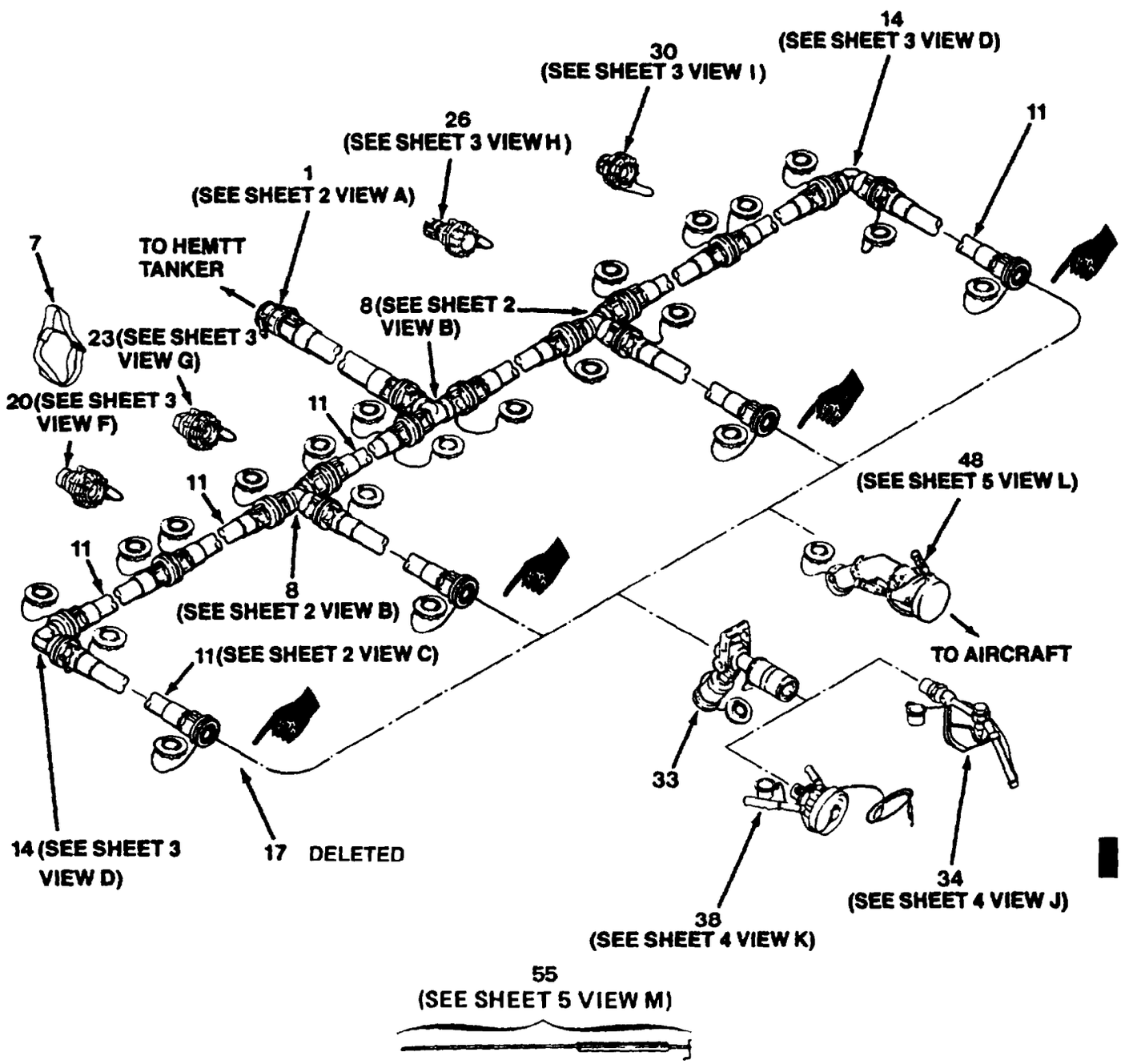


Figure 2-1. Operators Controls and Indicators (Sheet 1 of 8)

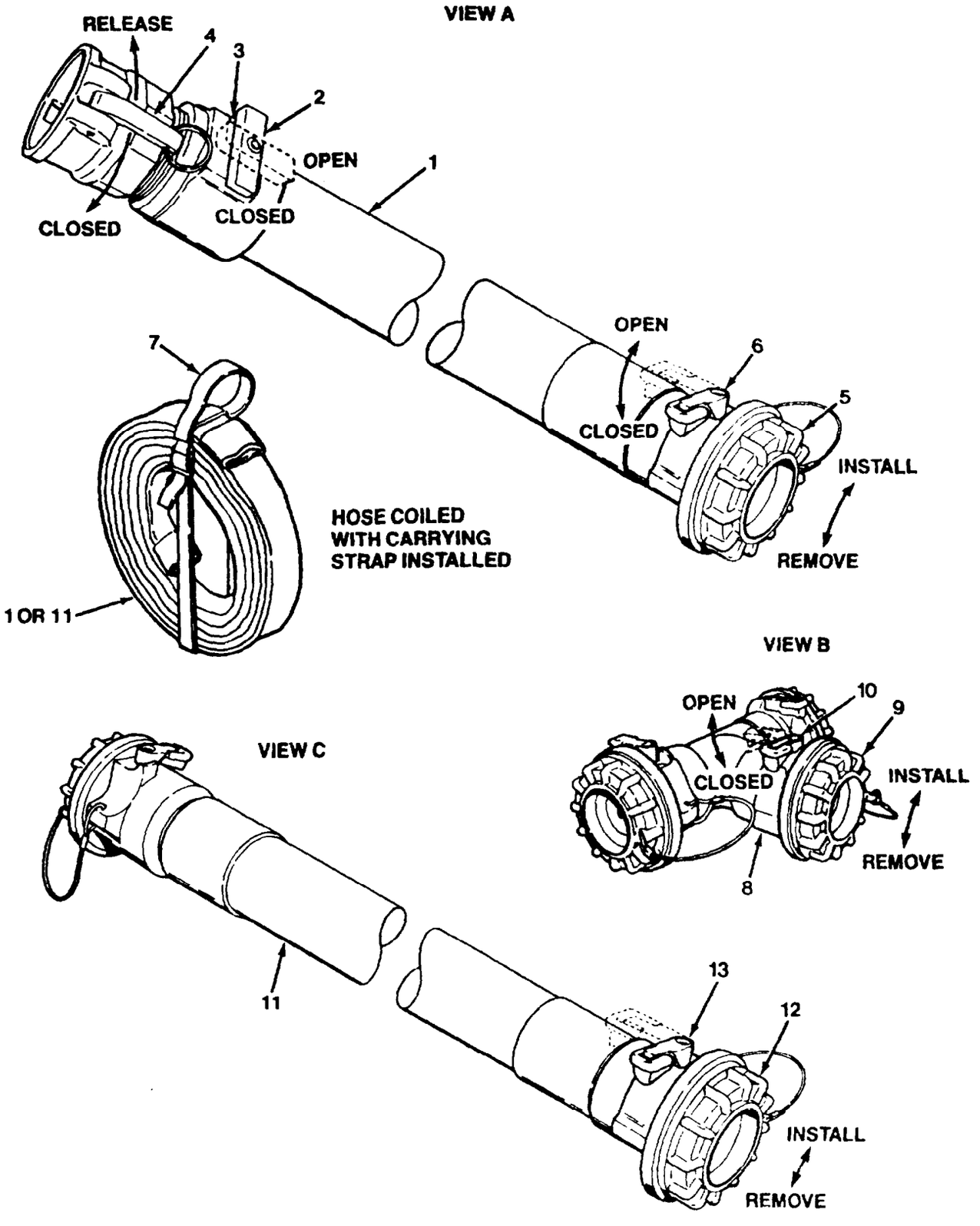


Figure 2-1. Operation Controls and Indicators (Sheet 2 of 8)

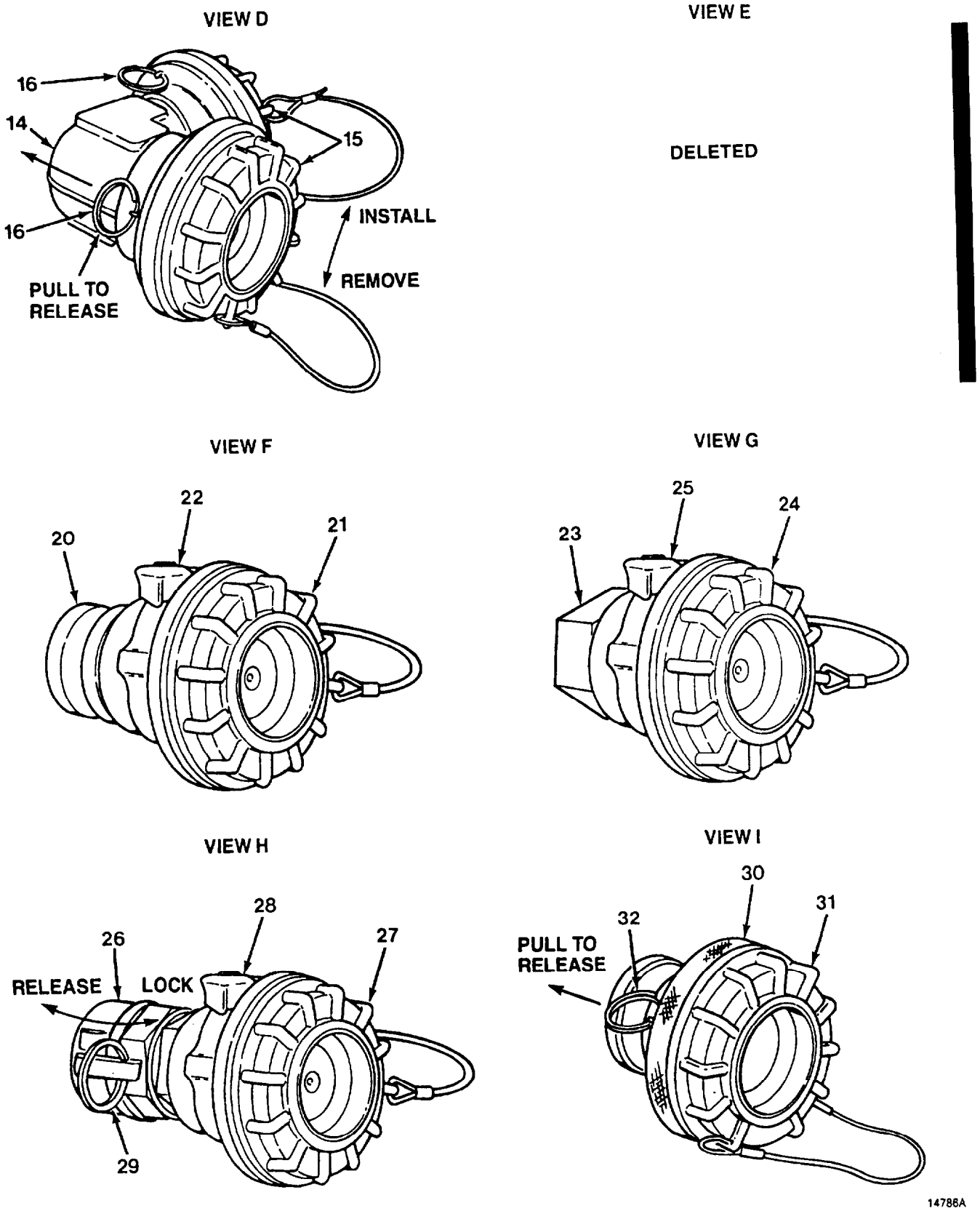


Figure 2-1. Operator's Controls and Indicators (Sheet 3 of 8)

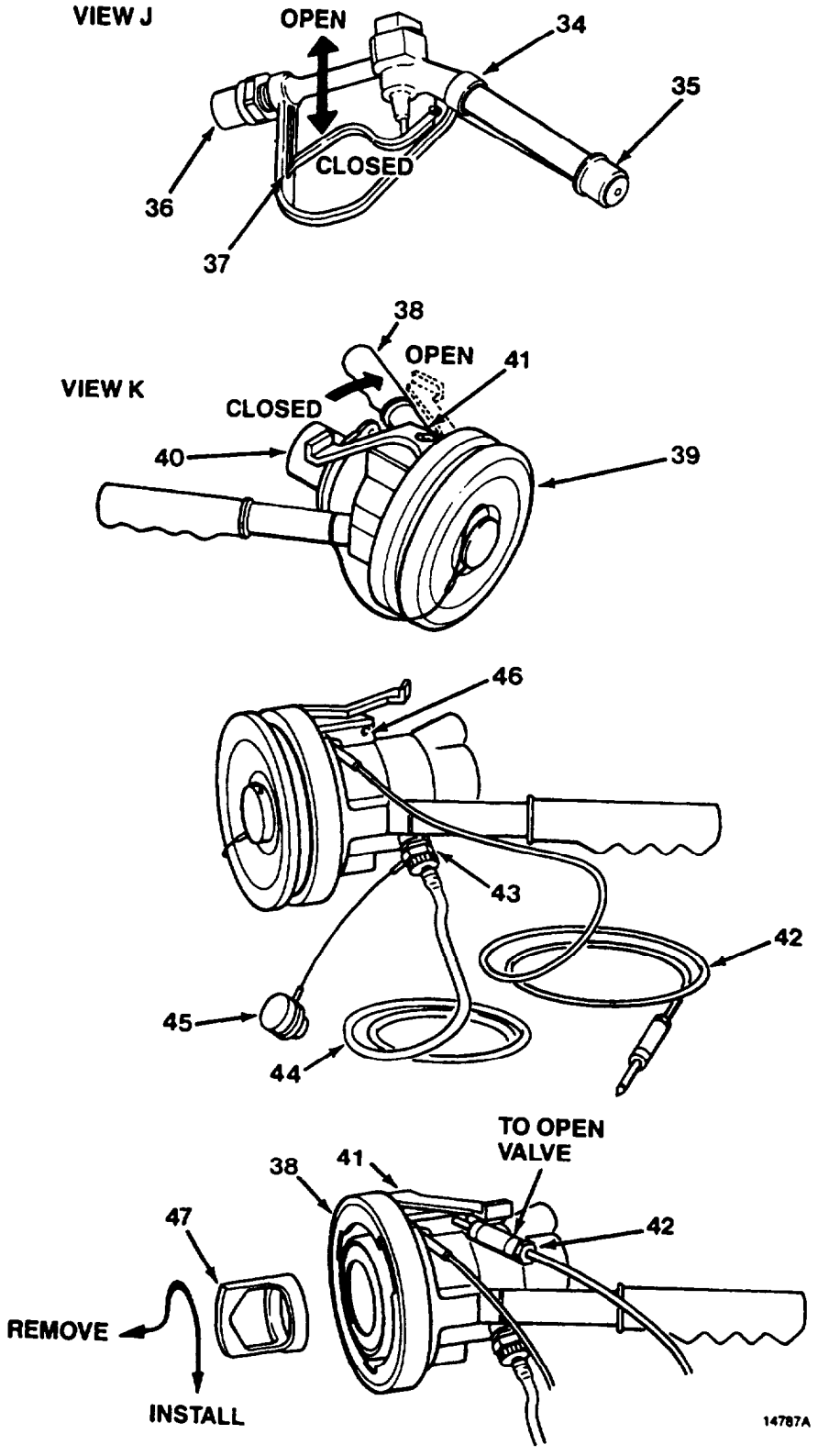


Figure 2-1. Operator's Controls and Indicators (Sheet 4 of 8)

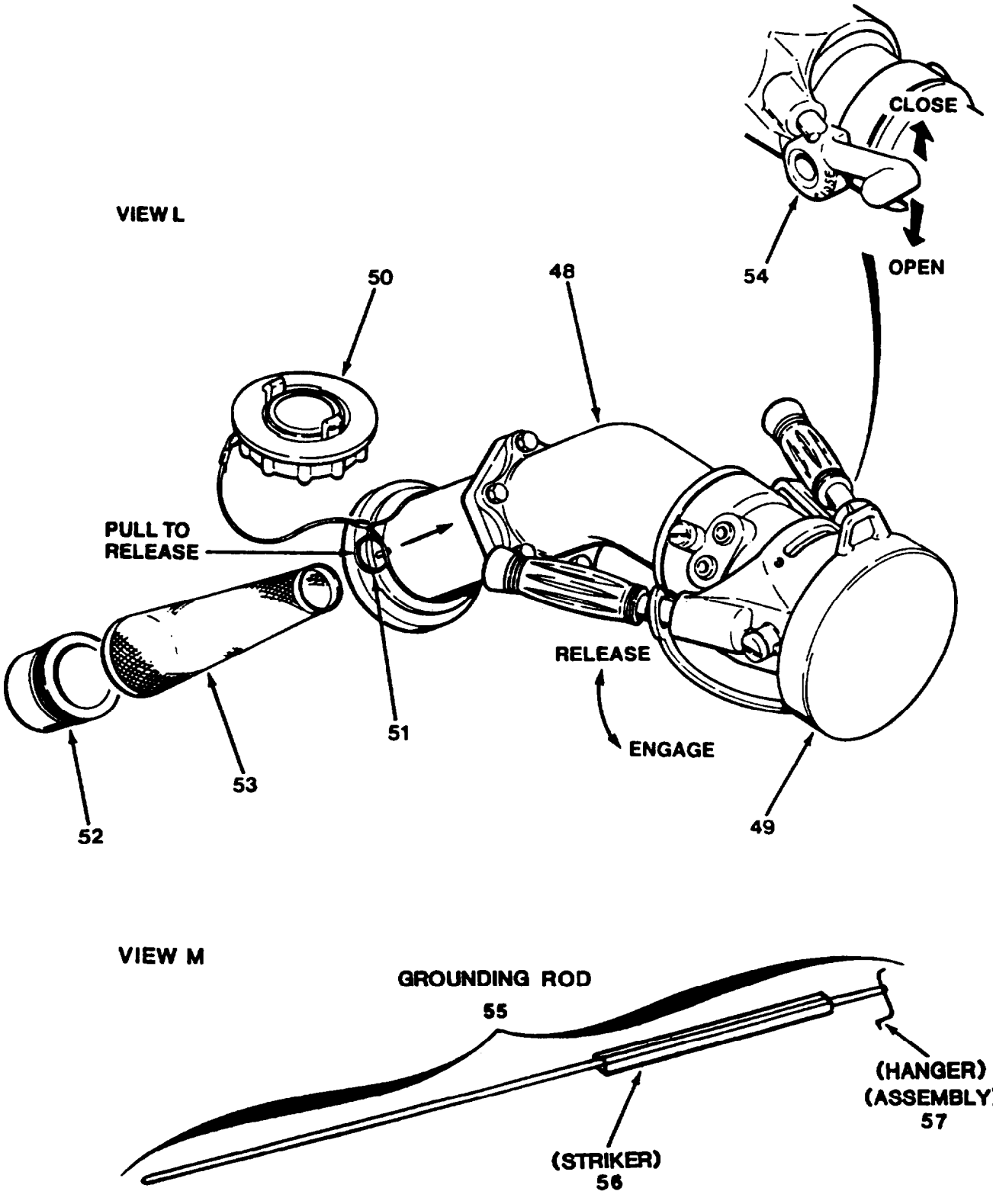


Figure 2-1. Operator's Controls and Indicators (Sheet 5 of 8)

Key	Control or Indicator	Function
1	3 Inch Discharge Hose	Connects HTARS to HEMTT tanker.
2	FLOW Handle	Opens and closes valve.
3	Detent Button	Locks FLOW Handle in flow or no flow position.
4	Cam Arm(s)	Secures hose to connector on HEMTT tanker.
5	Dust Cap	Keeps dirt and contaminants out of hose.
6	FLOW Handle	Opens and closes valve.
7	Carrying strap	Keeps hoses coiled for carrying or storage.
8	Tee Connector	Splits flow of fuel.
9	Dust Cap	Keeps dirt and contaminants out of tee connector.
10	FLOW Handle	Opens and closes valve.
11	2 Inch Discharge Hose	Transfers fuel from HEMTT tanker to aircraft.
12	Dust Cap	Keeps dirt and contaminants out of 2 Inch Discharge Hose.
13	FLOW Handle	Opens and closes valve.
14	Elbow Connector	Directs flow of fuel.
15	Dust Cap	Keeps dirt and contaminants out of elbow connector.
16	Interlock Pi	Locks elbow connector to hose.
17	DELETED	
18	DELETED	
19	DELETED	
20	Adapter - Valved	Allows connection of camlock and sexless parts.
21	Dust Cap	Keeps dirt and contaminants out of adapter.
22	FLOW Handle	Opens and closes valve.

Figure 2-1. Operator's Controls and Indicators (Sheet 6 of 8)

Key	Control or Indicator	Function
23	Adapter - Valved	Allows connection of threaded and sexless parts.
24	Dust Cap	Keeps dirt and contaminants out of adapter.
25	FLOW Handle	Opens and closes valve.
26	Adapter - Valved	Allows connection of camlock and sexless parts.
27	Dust Cap	Keeps dirt and contaminants out of adapter.
28	FLOW Handle	Opens and closes valve.
29	Cam Arm(s)	Secures adapter to connector.
30	Swivel Adapter	Allows connection of camlock and sexless parts.
31	Dust Cap	Keeps dirt and contaminants out of swivel adapter.
32	Interlock Pin	Locks swivel adapter to hose.
33	CCR Nozzle	Dispenses fuel to aircraft. See TM5-4930-235-13&P, Operators, Unit, and Intermediate Direct Suppport Maintenance Manual and Repair Parts and Special Tools List, for details on controls and indicators.
34	Overwing Nozzle	Dispenses fuel to aircraft.
35	Dust Cap	Keeps dirt and contaminants out of nozzle.
36	Dust cap	Keeps dirt and contaminants out of nozzle.
37	Flow Handle	Opens and closes valve.
38	Recirculation Nozzle	Dispenses fuel to aircraft.
39	Dust Cap	Keeps dirt and contaminants out of nozzle
40	Dust Cap	Keeps dirt and contaminants out of nozzle
41	FLOW Handle	Opens and closes valve.
42	Ground Plug	Connects to aircraft before connecting nozzle. Prevents static electric shock and fire hazard.
43	Fuel Sample Port	Port to connect fuel sampling hose.

Figure 2-1. Operator's Controls and Indicators (Sheet 7 of 8)

Key	Control or Indicator	Function
44	Fuel Sampling Hose	Used to obtain sample of fuel.
45	Plug	Closes fuel sample port when fuel sampling hose not connected.
46	Release Pin	Allows FLOW handle to open to inspect strainer housing.
47	Strainer Housing	Opens flow valve in aircraft.
48	D1 Nozzle	Dispenses fuel to aircraft.
49	Dust Cap	Keeps dirt and contaminants out of nozzle.
50	Dust Cap	Keeps ,dirt and contaminants out of nozzle.
51	Interlock Pin	Locks nozzle to hose.
52	Retainer	Holds strainer in nozzle.
53	Strainer	Prevents damage to nozzle and /or aircraft by removing dirt.
54	Flow Handle	Opens and closes valve.
55	Rod, Grounding	Grounds and bonds aircraft to HTARS System.
56	Striker	Part of the grounding rod.
57	Hanger Assembly	Part of the grounding rod.

Figure 2-1. Operator's Controls and Indicators (Sheet 8 of 8)

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-2. General.

a. Before you operate the equipment, perform your before (B) PMCS. Always keep in mind the WARNINGS and CAUTIONS.

b. While you operate the equipment, perform your during (D) PMCS. Always keep in mind the WARNINGS and CAUTIONS.

c. After you operate the equipment, perform your after (A) PMCS.

d. If your equipment fails to operate, troubleshoot with the proper equipment. Report any deficiencies using the proper forms. Refer to DA PAM 738-750, The Army Maintenance Management System.

2-3. PMCS Procedures. (See Table 2-1.)

a. The purpose of the PMCS table is to identify each component which requires inspection to insure operational readiness.

b. The service intervals have been selected to ensure all components are inspected regularly.

c. Item Number Column. Item numbers in this column shall be listed in the TM Item Number column on DA Form 2404 in recording results of PMCS. Items are listed regardless of interval.

d. Interval Column. These columns are headed "B" (before), "D" (during), "A" (after), "W" (weekly), and "M" (monthly. A dot (•) in the interval column indicates when the PMCS shall occur.

e. Item to be Inspected Column. This column lists the item to be inspected.

f. Procedures Column. This column describes what must be done to the item.

g. For Readiness Reporting, Equipment is Not Reedy/Available if: Column. This column contains conditions which would prevent the equipment from performing its primary function.

NOTE

- If equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.
- Within designated interval, these checks are to be performed in the sequential order listed.

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

B-Before D-During A-After W-Weekly M-Monthly

Item No.	Interval					Item to be Inspected	Procedures Check for and have Repaired or adjusted	For Readiness Reporting, Equip ment is Not Ready/Available If:
	B	D	A	W	M			
1	•	•	•	•		3 inch Discharge Hose	Check for damaged valve bodies on hose and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check camlock body for gasket damage or loss.	Gasket damaged or missing.
							Check cam arms for cracks or damage.	Outward signs of damage.
							Check sexless body for seals/ boot damage or loss.	Seals/boot damaged or missing.
							Check dust cap for damage or loss.	Dust cap damaged or missing,
							Open flow handle and check for interlocking pin extension on con- nector face.	Row handle doss not operate smoothly; pin doss not extend.
2	•		•	•		Carrying Strap	Check strap for damage. Check buckle for signs of distortion or cracks.	Outward signs of damage.
3	•	•	•	•		Tee Con- nector	Check for damaged body. and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check body for seals/boot dam- age or loss	Seals/boot damaged or missing.
							Check dust caps for damage or loss.	Dust cap damaged or missing.

Table 2-1. Preventive Maintenance Checks and Services (PMCS) (Cont.)

B-Before D-During A-After W-Weekly M-Monthly

Item No.	Interval					Item to be Inspected	Procedures Check for and have Repair or adjusted	or Readiness Reporting, Equipment is Not Ready/Available If:
	B	D	A	W	M			
4	•	•	•	•		2 Inch Discharge Hose	Check for damaged valve bodies on hose and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check camlock body for gasket damage or loss.	Gasket damaged or missing.
							Check cam arms for cracks or damage.	Outward signs of damage.
							Check sexless body for seals/boot damage or loss.	Seals/boot damaged or missing.
							Check dust cap for damage or loss.	Dust cap damaged or missing.
							Open flow handle and check for interlocking pin extension on connector face.	Flow handle does not operate smoothly; pin does not extend.
5	•	•	•	•		Elbow connector	Check for damaged body, and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check body for seals/boot damage or loss.	Seals/boot damaged or missing.
							Check dust caps for damage or loss.	Dust cap damaged or missing.
							Check interlock pin for damage or loss.	Interlock pin damaged or missing.
6						DELETED		
7	•	•	•	•		Adapters-Valved	Check for damaged body, and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check body for seals/boot damage or loss.	Seals/boot damaged or missing.
							Check dust caps for damage or loss.	Dust cap damaged or missing.
							Check camlock body for gasket damage or loss.	Gasket damaged or missing.
							Check cam arms for cracks or damage.	Outward signs of damage.

Table 2-1. *Preventive Maintenance Checks and Services (PMCS) – Continued*

NOTE: Within designated interval, these checks are to be performed in the sequential order listed.

B - Before D - During A - After W - Weekly M - Monthly

Item No.	Interval B	D	A	W	M	Item to be Inspected	Procedures Check For and Have Repaired or Adjusted	For Readiness Reporting, Equipment is Not Ready/Available if:
8	•	•	•	•		Swivel Adapter	Check for damaged body, and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check body for seals/boot damage or loss.	Seals/boot damaged or missing.
							Check dust caps for damage or loss.	Dust cap damaged or missing.
							Check interlock pin for damage or loss.	Interlock pin damaged or missing.
9	Ž	•	•			CCR Nozzle	Refer to TM 5-4930-235-13&P.	
10	•	•	•	•		Overwing Nozzle	Check for damaged body, and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check dust caps for dama~e or loss.	Dust cap damage or missing.
11	•	•	•	•		Recirculation Nozzle	Check for damaged body, and signs of leaks or cracks,	Outward signs of damage or leakage.
							Check body for seals/boot damage or loss.	Seals/boot damaged or missing.
							Check dust caps for damage or loss.	Dust cap damaged or missing,
							Check ground plug for loose/frayed cable and damage to plug or cable.	Outward signs of damage or missing parts.
							Check plug and hose for damage or loss.	Damaged or missing parts
12	•	•	Ž	•		D1 Nozzle	Check for damaged body, and signs of leaks or cracks.	Outward signs of damage or leakage.
							Check body for seals/boot damage or loss.	Seals/boot damaged or missing.
							Check dust caps for damage or loss.	Dust cap damaged or missing.
							Check strainer for damaged or dirty screen.	
13	•	•	•	•	•	Grounding Rod	Examine grounding rod for cracks in the striker and hanger assembly.	Cracks in striker or hanger assembly.

Section III. OPERATION UNDER USUAL CONDITIONS

WARNING

Aviation fuel is highly flammable. No smoking or open flames are permitted during fueling operations or near refueling areas. Failure to comply can result in injury or death to personnel.

Proper eye protection must be worn. Failure to comply can result in loss of eyesight.

Ensure tanker grounding rod is installed and tanker is grounded prior to assembling HTARS eystem. Failure to comply can result in injury or death to personnel.

NOTE

The following procedures are for operation of four refueling hoses. If fewer lines are required, the quantity of parts must be adjusted.

2-4. Connection of System Components. (See Figure 2-1.)

(1) To install the grounding rod (55) use the striker assembly (56) to drive the grounding rod (55) into the ground approximately 10 feet back from the refueling nozzle.

Table 2-2. Required Depths for Ground Rods.

NOTE

In cases where the conductivity of the soil is questionable, chemicals can be used to condition the soil and raise the conductivity. Refer to FM 10-68, Chapter 7, Section III, for specific procedures and chemicals required.

Type of soil	Depth of Ground Rod
Course ground, cohesionless sands, and gravels.	6 feet
Inorganic clay, claying gravels, gravel-sand-clay, claying sands, sandy clay, gravelly clay, and silty clay,	4 feet
Silty gravel, gravel-sand-silt, silty sand, sand, silt, peat, muck, and swamp soil.	3 feet

(2) Ensure that the grounding rod (55) is driven into the ground at least 3 feet, as shown in Table 2-2.

(3) Move the refueling nozzle and hose assembly back to the point where the refueling nozzle can be hung on the grounding rod (55).

(4) Hang the refueling nozzle on the hanger assembly **(57).**

(5) Loop the last 10 feet of hose back over itself. No portion of the hose should extend past the hanger assembly (57).

WARNING

Do not force handle of Dry-Loc connectors to the open position. Damage to the interlocking mechanism can result in an inadvertent disconnect and subsequent fuel discharge during operation. Failure to comply can result in injury or death to personnel or damage to equipment. If flow handle fails to operate smoothly or hose connectors fail to lock with flow handle in the open position, refer to table 3-1, Troubleshooting.

CAUTION

Do not throw or drag hose on ground. Do not walk on hose. All flow handles must be facing up, Failure to comply can result in damage to hose and end connectors. Ground tanker prior to assembling HTARS system.

Refer to TM 9-2320-279-10-1. operator's Manual for HEMTT tanker refueling procedures.

b. Connect 3 inch discharge hose (1) to suction hose on HEMTT tanker as follows:

(1) Remove carrying strap (7) from 3 inch discharge hose (1).

(2) Roll 3 inch discharge hose (1) out Rat and straight on ground behind truck.

(3) Pull cam arms (4) away from body.

(4) Slide end over camlock coupling.

(6) Push cam arms (4) against body.

c. Connect tee connectors (8), 2 inch discharge hose (11), and elbow connectors (14) as follows:

(1) Remove dust caps (9) from center of one tee connector (8).

(2) Connect tee connector (8) to 3 inch discharge how (1).

(3) Remove carrying straps (7) from two 2 inch discharge hoses (11).

(4) Roll both 2 inch discharge hoses (11) out flat and straight on ground on each side of tee connector (8).

(5) Remove dust caps (9 end 12) from tee connector (8) and both 2 inch discharge hoses (11).

(6) Connect both 2 inch discharge hoses (11) to tee connector (8).

(7) Remove dust caps (9) from two tee connectors (8).

(8) Cod one tee connector (8) to each 2 inch discharge hose (11).

(9) Remove carrying straps (7) from four 2 inch discharge hoses (11).

(10) Roll 2 inch discharge homes (11) out flat and straight near tee connectors (8).

(11) Remove dust caps (9 and 12) from tee connectors (8) end 2 inch discharge hoses (11).

(12) Connect both 2 inch discharge hoses (11) to tee connectors (8).

(13) Connect 2 inch discharge hoses (11) together.

(14) Remove one dust cap (15) from each elbow connector (14).

(16) Connect one elbow connector (14) to each 2 inch discharge hose (11).

(16) Remove carrying straps (7) from four 2 inch discharge hoses (11).

(17) Roll a 2 inch discharge hose (11) out on ground near tee and elbow connectors (8 and 14).

(18) Remove dust caps (9 and 15) from tee and elbow connectors (8 and 14).

(19) Remove dust caps (12) from 2 inch discharge hoses (11).

(20) Connect a 2 inch discharge hose (11) to each tee or elbow connector (8 and 14).

(21) Connect all dust caps.

d. DELETED

e. If required, attach adapters (20, 23, 26 or 30) as follows:

(1) Remove dust cap (15) from 2 inch discharge hone (11).

(2) Remove dust cap (21, 24, 27, or 31) from adapter (20, 23, 26, or 30).

(3) Connect from 2 inch discharge hose (11) to adapter (20, 23, 26, or 30).

(4) Install grounding rod (66) at each refueling point in the system.

f. Put FLOW handles (2, 6, 10, and 13) in flow position.

2-5. Connection of CCR Nozzle.

CAUTION

Immediately drain a substantial portion of the fuel from the nozzle whenever the valve on the hose attached to it is turned to off or the nozzle is removed from the system. The trapped fuel can create large internal pressure that can damage the nozzle when the temperature rises.

a. Remove dust cap (15) from 2 inch discharge hose (11).

b. Connect CCR nozzle (33) to 2 inch discharge hose (11). Refer to TM 5-4930-235-13&P for details.

c. Haag CCR Nozzle (33) on grounding rod hanger assembly (57).

d. As required, repeat steps a. and b. for each CCR nozzle (33).

e. Connect all dust caps.

2-6. Connection of Overwing Nozzle.

a. Remove dust cap (36) from overwing nozzle (34).

b. Remove outlet cap from CCR nozzle (33). Refer to TM 5-4930-235-13&P for details.

c. Insert inlet end of overwing nozzle (34) in outlet end of CCR nozzle (33).

d. As required, repeat steps a., b., and c. for each overwing nozzle (34).

2-7. Connection of Recirculation Nozzle.

a. Remove dust cap (40) from recirculation nozzle (38).

b. Remove outlet cap from CCR nozzle (33). Refer to TM 5-4930-235-13&P for details

c. Insert inlet end of recirculation nozzle (38) in outlet end of CCR nozzle (33).

2-8. Connection of D1 Nozzle.

a. Remove dust cap (15) from 2 inch discharge hose (11).

b. Remove dust cap (50) from D1 nozzle (48).

c. Connect D1 nozzle (48) to 2 inch discharge hose (11).

d. As required, repeat steps a., b., and c. for each D1 nozzle (48).

e. Connect all dust caps.

2-9. Operation of CCR Nozzle. Refer to TM 5-4930-235-13&P for details.

2-10. Operation of Overwing Nozzle.

a. Wipe around fuel receptacle with a clean cloth (Item 1, Appendix D) to remove dirt or dust.

b. Remove fuel cap from fuel receptacle.

c. Remove dust cap (35) and insert end of overwing nozzle (34) in fuel receptacle.

NOTE

Handle on CCR nozzle must be in FLOW position. Refer to TM 5-4930-235-13&P for details.

d. Pull 'handle (37) and hold open to dispense fuel to aircraft.

e. When fuel tank is full, release handle (37) and shut off fuel pump.

f. Remove overwing nozzle (34) from fuel receptacle and install dust cap (35).

g. Install fuel cap on fuel receptacle.

h. Wipe exterior of overwing nozzle (34) and fuel receptacle with a clean cloth (Item 1, Appendix D) to remove dust or fuel.

CAUTION

Do not leave nozzle laying on ground. Failure to comply can result in damage.

i. Place overwing nozzle (34) in storage container away from aircraft.

2-11. Operation of Recirculation Nozzle.

WARNING

Ground and bonding plugs must be connected before attaching nozzle to aircraft. Failure to comply can result in injury or death to personnel from static discharge.

a. Connect ground and bonding plugs (42) to aircraft.

b. Wipe around fuel receptacle with a clean cloth (Item 1, Appendix D) to remove dirt or dust.

c. Remove fuel cap from fuel receptacle.

CAUTION

Be sure plug (45) is installed in nozzle and hand-tight. Failure to comply can result in fuel leakage.

d. Remove dust cap (39).

e. Connect recirculation nozzle (38) to fuel receptacle as follows:

(1) Grasp handle grips and align inlet with fuel receptacle.

(2) Press recirculation nozzle (38) against fuel receptacle and turn to align pins.

(3) Push recirculation nozzle (38) against fuel receptacle and turn clockwise until nozzle stops.

NOTE

Handle on CCR nozzle must be in FLOW position. Refer to TM 6-4930-236-13&P for details.

f. Put FLOW handle (41) in flow position.

g. When fuel tank is full put FLOW handle (41) in closed position.

h. Turn counterclockwise and remove recirculation nozzle (38) from fuel receptacle and install dust cap (39).

2-12. Operation of D1 Nozzle.

a. Wipe around fuel receptacle with a clean cloth (Item 1, Appendix D) to remove dirt or dust.

b. Remove fuel cap from fuel receptacle.

c. Remove dust cap (49).

d. Connect D1 nozzle (48) to fuel receptacle as follows

(1) Grasp handle grips and align inlet with fuel receptacle.

(2) Press D1 nozzle (48) against fuel receptacle and turn to align pins.

(3) Push D1 nozzle (48) against fuel receptacle and turn clockwise until nozzle stops.

e. Turn flow handle (54) to full OPEN position.

f. When fuel tank is full turn flow handle (54) to CLOSED position.

g. Turn D1 nozzle (48) counterclockwise and remove from fuel receptacle.

h. Install dust cap (49).

i. Install fuel cap on fuel receptacle.

j. Wipe exterior of D1 nozzle (48) and fuel receptacle with a clean cloth (Item 1, Appendix D) to remove dust or fuel.

CAUTION

Do not leave nozzle laying on ground. Failure to comply can result in damage.

k. Place D1 nozzle (48) in storage container away from aircraft.

2-13. Disconnection of D1 Nozzle.

CAUTION

Immediately drain a substantial portion of the fuel from the nozzle whenever the valve on the hose attached to it is turned to off or the nozzle is removed from the system. The trapped fuel can create large internal pressure that can damage the nozzle when the temperature rises.

NOTE

A suitable container should be available to catch fuel spillage.

a. Close FLOW handle (13) on 2 inch discharge hose (11).

b. Pull interlock pin (51) and remove D1 nozzle (48) 2 inch discharge hose (11).

c. Install dust cap (50) on D1 nozzle (48).

d. Install dust cap (12).

2-14. Disconnection of Recirculation Nozzle.

NOTE

A suitable container should be available to catch fuel spillage.

a. Remove recirculation nozzle (38) from CCR nozzle (33). Refer to TM5-4930-235-13&P for details.

b. Install dust cap (40).

2-15. Disconnection of Overwing Nozzle.

NOTE

A suitable container should be available to catch fuel spillage.

a. Remove overwing nozzle (34) from CCR nozzle (33). Refer to TM5-4930-235-13&P for details.

b. Install dust cap (36).

2-16. Disconnection of CCR Nozzle.

a. Refer to TM5-4930-235-13&P for details.

b. Install dust cap (12).

2-17. Disconnection of System Components.

CAUTION

Do not throw or drag hose on ground. Do not walk on hose. Failure to comply can result in damage to hose and end connectors.

With FLOW handle in flow position, interlock pins bold components together. FLOW handles must be closed to disconnect components. Failure to comply can result in severe damage to parts.

NOTE

A suitable container should be available to catch fuel spillage.

a. If installed, disconnect adapters (20, 23, 26, or 30) as follows:

(1) **DELETED**

(2) Disconnect adapter (20, 23, 26, or 30) from 2 inch discharge hose (11).

(3) Install dust cap (21, 24, 27, or 31) on adapter (20, 23, 26, or 30).

(4) Install dust cap (12).

b. DELETED

c. Operate HEMTT tanker to evacuate fuel. Refer to TM9-2320-279-10-1 for details.

d. Disconnect 2 inch discharge hose (11) and elbow connector (14) as follows:

(1) Close FLOW handles (13).

(2) Pull interlock pin (16).

(3) Disconnect 2 inch discharge hose (11) from elbow connector (14).

(4) Install dust cap (12) on 2 inch discharge hose (11).

(5) Install dust cap (15) on elbow connector (14).

(6) Pull interlock pin (16) and disconnect elbow connector (14) from 2 inch discharge host (11).

(7) Install dust cap (15) on elbow connector (14).

(8) Repeat steps (1) through (7) for other 2 inch discharge hose (11) and elbow connector (14).

e. Disconnect 2 inch discharge hoses (11) and tee connectors (8) as follows:

(1) Close FLOW handles (10 and 1.3).

(2) Disconnect 2 inch discharge hose (11) from tee connector (8).

(3) Install dust cap (12) on 2 inch discharge hose (11).

(4) Install dustcap (9) on tee connector (8).

(5) Repeat steps (1) through (4) for other 2 inch discharge hoses (11) and tee connectors.

f. Disconnect tee connector (8) and 3 inch discharge hose (1) as follows:

(1) Close FLOW handles (2 and 6).

(2) Disconnect tee connector (8) from 3 inch discharge hose (1).

(3) Install dust cap (5) on 3 inch discharge hose (1).

(4) Install dust cap (9) on tee connector (8).

g. Disconnect 3 inch discharge hose (1) from suction hose on HEMTT tanker as follows:

(1) Pull cam arms (4) away from body.

(2) Slide end off camlock coupling on tanker.

(3) Push cam arms (4) against body.

CAUTION

Do not walk on hose to flatten or remove fuel residue. Failure to comply can result in damage to hose and end connectors.

NOTE

It maybe necessary to remove a dust cap and open a FLOW handle at one end to drain fuel residue.

h. Roll discharge hoses (1 or 11) into a tight coil and secure with carrying strap (7).

i. Wipe equipment with a clean cloth (Item 1, Appendix D) to remove dirt, dust, moisture, and fuel.

j. Store equipment in storage box on tanker. Refer to TM9-2320-279-10-1 for details.

2-18. Preparation For Storage or Shipment.

NOTE

The following procedures are for government storage and shipment between units. For shipping instructions on warranty repairs refer to TB5-4930-237-23.

a. Wipe equipment with a clean cloth (Item 1, Appendix D).

b. Inspect equipment for damaged or missing parts. Report any problems to your supervisor.

c. Place equipment in a water-vaporproof bag. Tape or seal bag.

d. Place cushioning material and equipment in fiberboard container.

e. Add cushioning material to fiberboard container to prevent movement of equipment.

f. Seal lid of fiberboard container with masking tape (item 2, Appendix D).

g. Mark the following information on outside of fiberboard container.

(1) Description.

(2) Part Number.

(3) National Stock Number.

(4) Serial Number.

(5) Date Packaged.

(6) Date repaired (if applicable).

h. Store fiberboard container in an area protected from extreme weather conditions such as; heat, rain, snow, humidity, sand, and direct sunlight.

2-19. Administrative Storage.

a. Placement of equipment in administrative storage should be for short periods of time when a shortage of maintenance effort exists. Items should be in mission readiness within 24 hours or within the time factors as determined by the directing authority. During the storage period appropriate maintenance records will be kept.

b. Before placing equipment in administrative storage, complete current maintenance services and equipment serviceable criteria (ESC) evaluation, correct shortcomings and deficiencies, and apply all modification work orders (MWO's).

c. Storage site selection. Inside storage is preferred for equipment selected for administrative storage. If inside storage is not available, use trucks, vans, conex containers, and other containers.

Section IV. OPERATION UNDER UNUSUAL CONDITIONS

2-20. Operation Under Unusual Conditions. Operating instructions under usual conditions are acceptable; however, the following shall be observed.

a. Operation in Unusual Weather, After use, equipment shall be wiped with a clean cloth (Item 1, Appendix D) to remove dust, dirt, fuel, moisture, snow, or mud. Store equipment in tanker storage box.

b. Dust Caps. Dust caps shall be installed when equipment is not in use. Equipment shall not be installed dirty or wet.

CHAPTER 3

OPERATOR MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

No lubrication is required for operation of this equipment.

Section II. TROUBLESHOOTING PROCEDURES

3-1. General. This manual cannot list all malfunctions that may occur, nor all tests or inspections and corrective actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supervisor.

3-2. Troubleshooting. Table 3-1 lists the common malfunctions which may occur during operation or maintenance of HTARS or it's components. Perform test/inspections and corrective actions in the order listed.

NOTE

Before using the table, be sure all applicable operating checks have been performed.

Table 3-1. Troubleshooting

Malfunction Test or Inspection Corrective Action
3 INCH DISCHARGE HOSE
1. FLOW HANDLE FAILS TO OPERATE SMOOTHLY.
Step 1. Inspect FLOW handle area for signs of dirt or other foreign matter.
Clean area around FLOW handle.
Step 2. Remove dust cap and inspect interior for dirt or other foreign matter.
Rinse in clean fuel while operating FLOW handle. If parts are missing or damaged, replace 3 inch discharge hose.

Table 3-1. Troubleshooting - Continued

Malfunction
Test or Inspection
Corrective Action

3 INCH DISCHARGE HOSE - *Continued*

2. LEAKAGE FROM CAMLOCK END.

Step 1. Disconnect hose from tee connector. Inspect inside for gasket. Inspect gasket for cuts, tears, or distortion.

If gasket is missing or damaged, replace 3 inch discharge hose.

Step 2. Inspect cam arms for damage or distortion.

If cam arms are damaged, replace 3 inch discharge hose.

3. LEAKAGE FROM SEXLESS END.

Step 1. Disconnect hose from tee connector. Inspect inside for dust seals. Inspect dust seals for cuts, tears, or distortion.

If dust seals are missing or damaged, install new dust seals.

Step 2. Inspect boot for cuts, tears, or distortion.

If boot is missing or damaged, replace 3 inch discharge hose.

4. LEAKAGE FROM HOSE.

Inspect hose for cracks, abrasions, or damage.

If damage extends through hose, replace 3 inch discharge hose.

5. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER (FLOW HANDLES IN OPEN POSITION).

Close FLOW handles and disconnect parts. Open FLOW handle (on hose) and see if interlock pin extends.

If interlock pin does not extend or is damaged, replace 3 inch discharge hose.

6. DUST CAP DAMAGED OR MISSING.

Inspect dust cap for cracks or distortion.

If dust cap is missing or damaged, replace 3 inch discharge hose.

Table 3-1. Troubleshooting - Continued

Malfunction
Test or Inspection
Corrective Action

TEE CONNECTOR

1. FLOW HANDLE(S) FAILS TO OPERATE SMOOTHLY.

Step 1. Inspect FLOW handle area for signs of dirt or other foreign matter.

Clean area around FLOW handle.

Step 2. Remove dust cap and inspect interior for dirt or other foreign matter.

Rinse in clean fuel while operating FLOW handle. If parts arc missing or damaged, replace tee connector.

2. LEAKAGE FROM END(S).

Step 1. Disconnect hose(s) from tee connector. Inspect inside for dust seals. Inspect dust seals for cuts, tears, or distortion.

If dust seals are missing or damaged, install new dust seals.

Step 2. Inspect boots for cuts, tears, or distortion.

If boots are missing or damaged, replace tee connector.

3. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER (FLOW HANDLES IN OPEN POSITION).

Close FLOW handles and disconnect parts. Open FLOW handle (on hose) and see if interlock pin extends.

If interlock pin does not extend or is damaged, replace tee connector.

4. DUST CAP(S) DAMAGED OR MISSING.

Inspect dust cap(s) for cracks or distortion.

If dust cap(s) is missing or damaged, replace tee connector.

Table 3-1. Troubleshooting - Continued

Malfunction
Test or Inspection
Corrective Action

2 INCH DISCHARGE HOSE

1. FLOW HANDLE(S) FAILS TO OPERATE SMOOTHLY.

Step 1. Inspect FLOW handle area for signs of dirt or other foreign matter.

Clean area around FLOW handle.

Step *2*. Remove dust cap and inspect interior for dirt or other foreign matter.

Rinse in clean fuel while operating FLOW handle. If parts are missing or damaged, replace 2 inch discharge hose.

2. LEAKAGE FROM END(S).

Step 1. Disconnect hose from tee or elbow connector. Inspect inside for dust seals. Inspect dust seals for cuts, tears, or distortion.

If dust seals are missing or damaged, install new dust seals.

Step *2*. Inspect boots for cuts, tears, or distortion.

If boots are missing or damaged, replace 2 inch discharge hose.

3. LEAKAGE FROM HOSE.

Inspect hose for cracks, abrasions, or damage.

If damage extends through hose, replace 2 inch discharge hose.

4. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER (FLOW HANDLES IN OPEN POSITION)

Close FLOW handles and disconnect parts. Open FLOW handle (on hose) and see if interlock pin extends.

If interlock pin does not extend or is damaged, replace 2 inch discharge hose.

5. DUST CAP(S) DAMAGED OR MISSING.

Inspect dust cap(s) for cracks or distortion.

If dust cap(s) is missing or damaged, replace 2 inch discharge hose.

Table 3-1. Troubleshooting - Continued

Malfunction	Test or Inspection	Corrective Action

ELBOW CONNECTOR

1. LEAKAGE FROM END(S).

Step 1. Disconnect hose(s) from elbow connector. Inspect inside for dust seals. Inspect dust seals for cuts, tears, or distortion.

If dust seals are missing or damaged, install new dust seals.

Step 2. Inspect boots for cuts, tears, or distortion.

If boots are missing or damaged, replace elbow connector.

2. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER (FLOW HANDLES IN OPEN POSITION).

Close FLOW handles and disconnect parts. Check interlock pin(s) for damage, distortion, or missing parts.

If interlock pin(s) is damaged or missing parts, replace elbow connector.

3. DUST CAP(S) DAMAGED OR MISSING.

Inspect dust cap(s) for cracks or distortion.

If dust cap(s) is missing or damaged, replace elbow connector.

Information on page 3-6 has been deleted.

Table 3-1. Troubleshooting - Continued

Malfunction	Test or Inspection	Corrective Action

ADAPTERS -VALVED

1. FLOW HANDLE FAILS TO OPERATE SMOOTHLY.

Step 1. Inspect FLOW handle area for signs of dirt or other foreign matter.

Clean area around FLOW handle.

Step 2. Remove dust cap and inspect interior for dirt or other foreign matter.

Rinse in clean fuel while operating FLOW handle. If parts are missing or damaged, replace adapter.

2. LEAKAGE FROM END.

Step 1. Disconnect adapter from 2 inch discharge hose (11). Inspect inside for dust seal. Inspect dust seal for cuts, tears, or distortion.

If dust seal is missing or damaged, install new dust seal.

Step 2. Inspect boot for cuts, tears, or distortion.

If hoot is missing or damaged, replace adapter.

3. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER (FLOW HANDLE IN OPEN POSITION).

Disconnect parts. Check interlock pin(s) for damage, distortion, or missing parts.

If interlock pin is damaged or missing parts, replace adapter.

4. DUST CAP DAMAGED OR MISSING.

Inspect dust cap for cracks or distortion.

If dust cap is missing or damaged, replace adapter.

Table 3-1. Troubleshooting - Continued

Malfunction	Test or Inspection	Corrective Action
SWIVELADAPTER		
1. LEAKAGE PROM END.		
	Step 1. Disconnect adapter from 2 inch discharge hose (11). Inspect inside for dust seal. Inspect dust seal for cuts, tears, or distortion.	If dust seal is damaged or distorted install new dust seal.
	Step 2. Inspect boot for cuts, tears, or distortion.	If boot is missing or damaged, replace swivel adapter.
2. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER.		
	Disconnect parts. Check interlock pin(s) for damage, distortion, or missing parts.	If interlock pin is damaged or missing parts, replace swivel adapter.
3. DUST CAP DAMAGED OR MISSING.		
	Inspect dust cap for cracks or distortion.	If dust cap is missing or damaged, replace swivel adapter.
CCR NOZZLE - Refer to TM5-4930-235-13&P for details.		

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Table 3-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action
OVERWING NOZZLE
1. FLOW HANDLE FAILS TO OPERATE SMOOTHLY.
Inspect flow handle area for signs of dirt or other foreign matter.
Clean area around flow handle.
2. LEAKAGE FROM OUTLET END.
Step 1. Check flow handle and pivot area for sticking or binding (this can hold valve open).
Clean flow handle and pivot area. If still leaking, replace overwing nozzle.
Step 2. Operate flow handle to see if valve is operating smoothly.
If valve is sticking or binding replace overwing nozzle.
3. INADEQUATE FUEL FLOW.
NOTE Before performing the following steps be sure CCR Nozzle is operating properly and strainer 'is clean. Refer to TM5-4930-235-13&P for details.
Step 1. Operate flow handle to see if valve is operating smoothly.
If valve is sticking or binding replace overwing nozzle.
Step **2.** Disconnect overwing nozzle from CCR nozzle. Press on inlet valve to be sure it operates without sticking or binding.
If inlet valve is sticking or binding replace overwing nozzle.

Table 3-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action

RECIRCULATION NOZZLE

1. FLOW HANDLE FAILS TO OPERATE SMOOTHLY.

Step 1. Inspect FLOW handle area for signs of dirt or other foreign matter.

Clean area around FLOW handle.

Step 2. Connect nozzle to aircraft receptacle. Operate FLOW handle several times to check for sticking or binding.

If FLOW handle is sticking or binding, replace recirculation nozzle.

2. LEAKAGE FROM OUTLET END.

Step 1. Remove dust cap and inspect inside for dust seal. Inspect dust seal for cuts, tears, or distortion.

If dust seal is missing or damaged, replace recirculation nozzle.

Step 2. Inspect boot for cuts, tears, or distortion.

If boot is missing or damaged, replace recirculation nozzle.

3. INADEQUATE FUEL FLOW.

NOTE

Before performing the following step be sure CCR Nozzle is operating properly and strainer is clean. Refer to TM5-4930-235-13&P for details.

Operate FLOW handle to see if valve is operating smoothly (use ground plug to release flow handle).

If valve is sticking or binding, replace recirculation nozzle.

4. RECIRCULATION NOZZLE WILL NOT DISPENSE FUEL.

Step 1. Put FLOW handle in flow position. Inspect for strainer housing. Remove strainer housing and inspect for damage or distortion.

If strainer housing is missing or damaged, replace recirculation nozzle.

Table 3-1. Troubleshooting - Continued

Malfunction
Test or Inspection
Corrective Action

D1 NOZZLE

1. FLOW HANDLE FAILS TO OPERATE SMOOTHLY.

Step **1.** Inspect flow handle area for signs of dirt or other foreign matter.

Clean area around flow handle.

Step 2. Connect nozzle to aircraft receptacle. Operate flow handle several times to check for sticking or binding,

If flow handle is sticking or binding, replace D1 nozzle.

2. LEAKAGE FROM OUTLET END.

Step 1. Remove dust cap and inspect inside for seal. Inspect seal for cuts, tears, or distortion.

If seal is missing or damaged, replace D1 nozzle.

Step 2. Inspect three interlock pins for damage or distortion. Press on end of each to check for sticking or binding.

If interlock pins are missing or damaged, replace D1 nozzle.

3. INADEQUATE FUEL FLOW.

Step 1. Remove dust cap, retainer, and strainer. Check strainer for dirt or other foreign matter.

Clean strainer by removing all dirt and foreign matter.

Step 2. With nozzle installed on receptacle, check flow handle is fully opened.

If flow handle will not move or stay at full open position, replace D1 nozzle.

4. SEXLESS COMPONENTS WILL NOT LOCK TOGETHER.

Disconnect parts. Check interlock pin(s) for damage, distortion, or missing parts.

If interlock pin is damaged or missing parts, replace D1 nozzle.

Table 3-1. Troubleshooting - Continued

Malfunction Test or Inspection Corrective Action
D1 NOZZLE - *Continued*
5. DUST CAP DAMAGED OR MISSING.
Inspect dust cap for cracks or distortion.
If dust cap is missing or damaged, replace D1 nozzle.

Section III. MAINTENANCE PROCEDURES

3-3. General. This section contains maintenance procedures which are the responsibility of the operator.

3-4. Dust Seal. (See Figure 3-1.)

INITIAL SETUP

This task covers: Removal, Cleaning, Inspection, and Installation

Tools

None Required.

Materials/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix D)

a. Removal.

NOTE

A suitable container should be available to catch fuel spillage.

(1) Remove dust cap (1) from body (2).

(2) Remove a dust seal (3) from body (2) and dust cap (1).

b. Cleaning. Wipe dust cap (1), body (2), and dust seal (3) with a clean cloth to remove dust, dirt, or fuel.

c. *Inspection*.

(1) Inspect dust seal (3) for cuts, tears, or distortion.

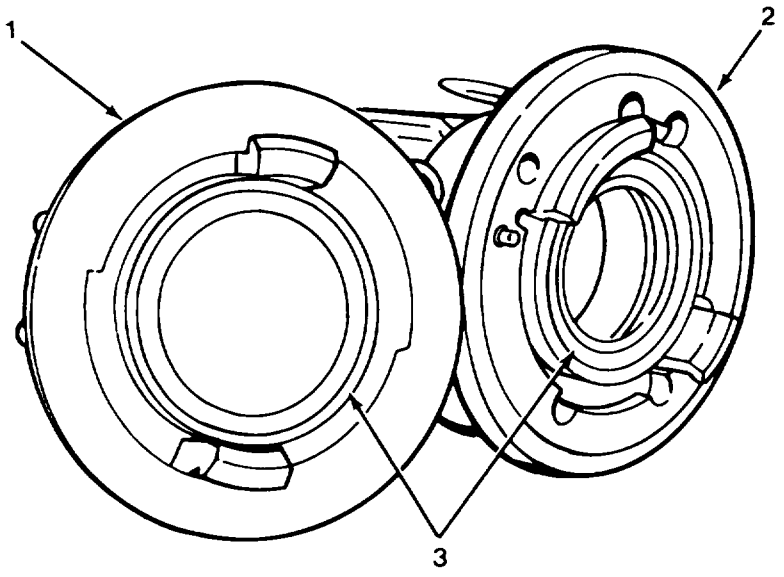
(2) Dust seal (3) Shall be replaced if damaged.

d. *Installation*.

(1) Insert a dust seal (3) in groove of body (2) and dust cap (1).

(2) Using a fingertip, push around outside edge to seat dust seal (3) in groove.

(3) Install dust cap (1) on body (2).



LEGEND

1. DUST CAP
2. BODY (TYPICAL)
3. DUST SEAL

14791A

Figure 3-1. Dust Seal Replacement

3-5. D1 Nozzle Strainer. (See Figure 3-2.)

INITI.AL SETUP

This task covers: Removal, Cleaning, lnspection. and Installation

Tools

None Required.

Material/Parts

Lint-Free Cloth, MIL-C-85043 (Item 1, Appendix D)

a. Removal.

NOTE

A suitable container should be available to catch fuel spillage.

(1) Remove dust cap (1) from D1 nozzle (2),

(2) Remove retainer (3) and strainer (4) from D1 nozzle (2).

b. Cleaning. Wipe retainer (3) and strainer (4) with a clean cloth to remove dust, dirt, or fuel residue.

c. *Inspection.*

(1) Inspect retainer (3) and strainer (4) for cracks or distortion.

(2) If retainer (3) or strainer (4) are damaged D1 nozzle shall be replaced.

d. Installation.

(1) Install strainer (4) and retainer (3) in D1 nozzle (2).

(2) Using fingertips, push against end of retainer to seat parts in D1 nozzle (2).

(3) Install dust cap (1) on body (2).

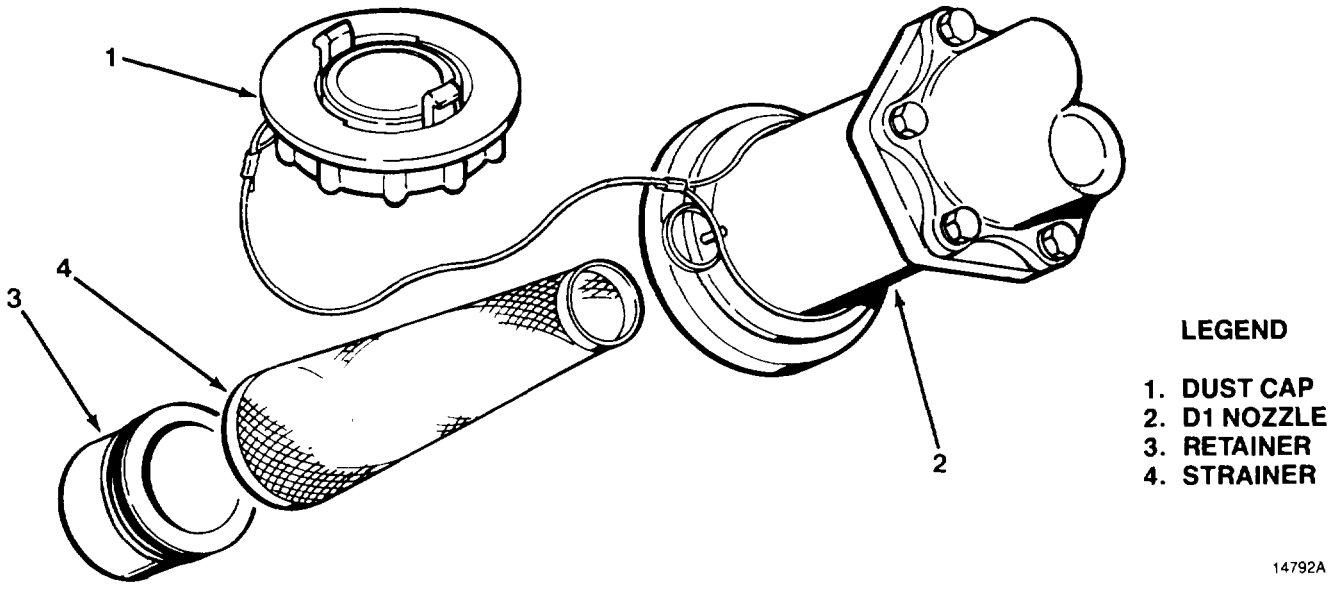


Figure 3-2. D1 Nozzle Strainer Inspection

APPENDIX A

REFERENCES

A-1. Scope. This appendix lists all forms, field manuals, technical publications, and miscellaneous publications referenced in this manual.

A-2. Forms.

Equipment Daily or Monthly Log . . . . . DA Form 2408-1
Equipment inspection and Maintenance Work Sheet . . . . . DA Form 2404
Maintenance Request . . . . . DA Form 2407
Material Inspection and Receiving Report . . . . . DD Form 250
Quality Deficiency Report . . . . . SF 368
Recommended Changes to DA Publications and Blank Forms . . . . . DA Form 2028-2
Uncorrected Fault Record . . . . . DA Form 2408-14
Component Removal and Repair/Overhaul Record . . . . . DA Form 2408-16

A-3. Technical Manuals.

Procedures For Destruction of Army Equipment to Prevent Enemy Use . . . . . TM 750-244-3
The Army Maintenance Management System (TAMMS) . . . . . DA PAM 738-750
Operators, Unit, and Intermediate Direct Support Maintenance . . . . . TM 5-4930-235-13&P
Manual and Repair Parts and Special Tools List (CCR Nozzle Assembly)
Operator's Manual (Volume No. 1 for M978 Series, 8 x 8 Heavy . . . . . TM 9-2320-279-10-1
Expanded Mobility Tactical Trucks (HEMTT))

A-4. Field Manuals.

Aircraft Refueling . . . . . FM 10-68
Aviation Maintenance Quality Assurance/Quality Control . . . . . FM 55-411

A-5. Technical Bulletins.

Warranty Technical Bulletin . . . . . TB 5-4930-237-23

A-6. Miscellaneous Publications.

Expendable/Durable Items . . . . . CTA 50-970
Report of Discrepancy (ROD) SF-364

APPENDIX B

COMPONENTS OF END ITEM/BASIC ISSUE ITEMS

Section I. INTRODUCTION

B-1. Scope. This appendix lists components of end item and basic issue items for HTARS to help you inventory items required for safe and efficient operation.

B-2. General. The Components of End Item/Basic Issue Items List is divided into the following sections:

a. Section II. - Components of End Item. This listing is for informal purposes only and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts, Illustrations are furnished to assist you in identifying the items.

b. Section III - Basic Issue Items. These are the minimum essential items required to place the equipment in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the equipment during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request or requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns. The following provides an explanation of columns found in the tabular listings.

a. Column (1) - Illustration Number (Illus Number). This column indicates the number of the illustration in which the item is shown.

b. Column (2) - National Stock Number. Indicates the National Stock Number assigned to the item and will be used for requisitioning purposes.

c. Column (3) - Description. Indicates the Federal item name and, if required, a minimum description to identify and locate the item, The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g. ea, in, pr).

e. Column (5) - Quantity Required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

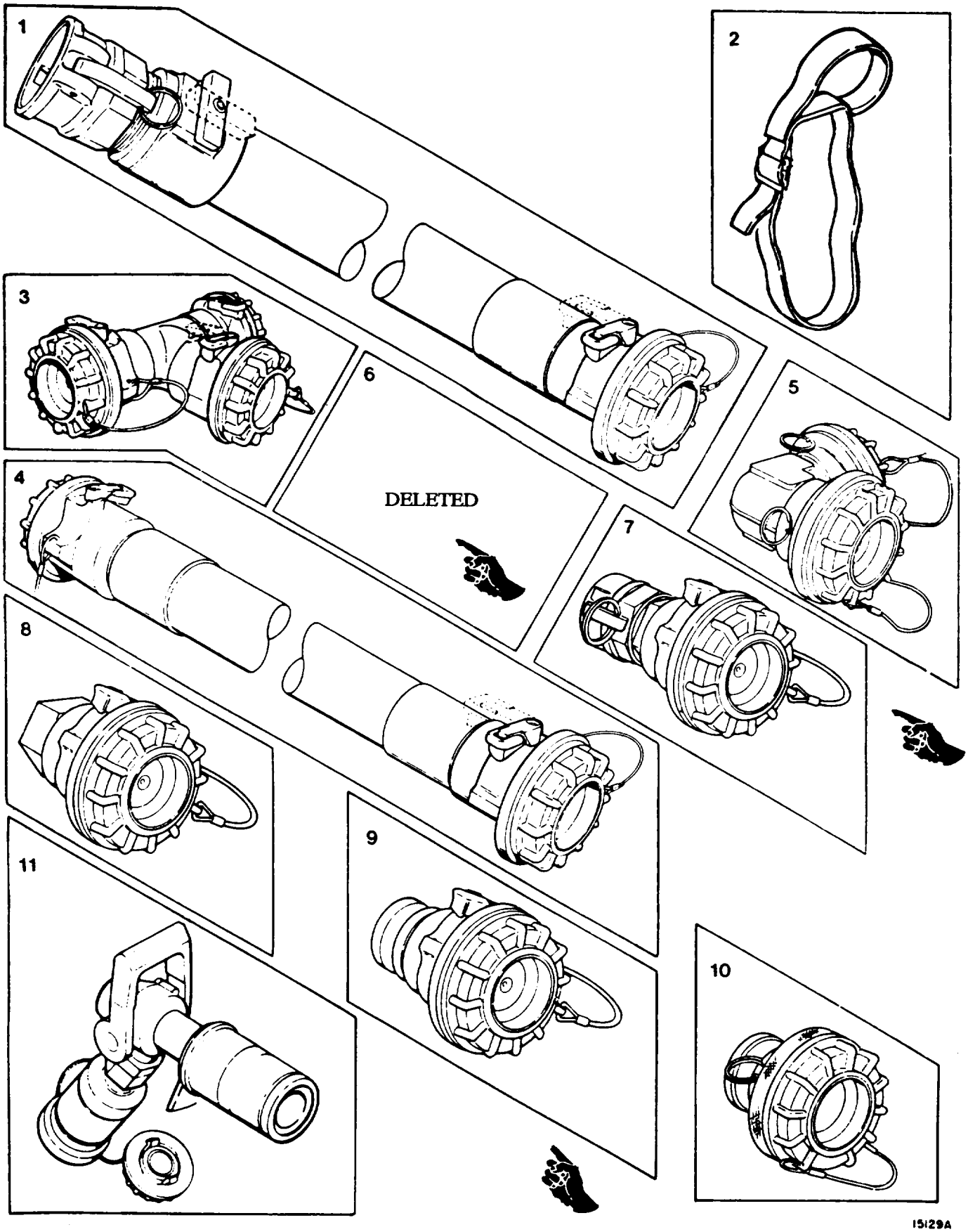
Not Applicable

Section III. BASIC ISSUE ITEMS

(1) ILLUS/ ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGE AND PART NUMBER	Usable On Code	(4) U/M	(5) QTY RQR
1	4720-01-299-5983	3 Inch Discharge Hose 65154 50-0050	N/A	EA	1
2	5340-01-298-9787	Carrying Strap 00624 AE27389-004	N/A	EA	11
3	4730-01-297-6812	Tee Conbnector 00624 AE88033R	N/A	EA	3
4	4720-01-298-0732	2 Inch Discharge Hose 65154 50-0049	N/A	EA	10
5	4730-01-297-3766	Elbow Connector 00624 AE88036R	N/A	EA	2
6		**DELETED**			
7	4730-01-298-0151	Adapter - Valved 00624 AE88050R	N/A	EA	1
8	4730-01-297-3765	Adapter - Valved 00624 AE88011P	N/A	EA	1
9	4730-01-298-0150	Adapter - Valved 00624 AE88038R	N/A	EA	1
10	4730-001-296-9462	Swivel Adapter 00624 AE86667R	N/A	EA	1
11	4930-01-289-2606	CCR Nozzle (with sexless adapter) 19099 125-0505	N/A	EA	4
12	4930-00-516-0839	Overwing Nozzle 00624 AE86100Z	N/A	EA	4
13	4930-01-297-3776	Recirculation Nozzle 00624 AE88013R	N/A	EA	1
14	4930-01-297-3777	D1 Nozzle (with sexless adapter) 65154 50-0052	N/A	EA	4

Section III. BASIC ISSUE ITEMS - Continued

(1) ILLUS/ ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION CAGE AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY RQR
N/A	4720-01-278-8973	HTARS Overpack Spares 19099 PD-HTARS-KIT	N/A	EA	1
		NOTE **The following parts are in the HTARS Overpack Spares.**			
3	4720-01-297-6812	Tee Connector 00624 AE88033R	N/A	EA	1
4	4730-01-298-0732	2 Inch Discharge Hose 65154 50-0049	N/A	EA	1
15		**DELETED**			
2	4730-01-298-9787	Carrying Strap 00624 AE27389-004	N/A	EA	1
16	4930-01-237-3655	DUSt Seal 00624 AE 18900-076	N/A	EA	10
17	5340-01-285-5385	Dust Cap 00624 AE82155R	N/A	EA	2
18	5975-01-050-5707	Rod, Grounding		EA	4
N/A	N/A	Technical Manual TM 5-4930-237-10		EA	1
N/A	N/A	Technical Warranty Manual TB 5-4930-237-23		EA	1



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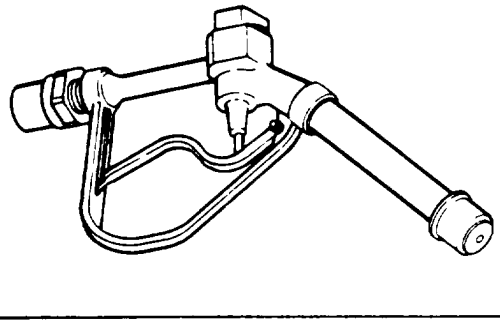

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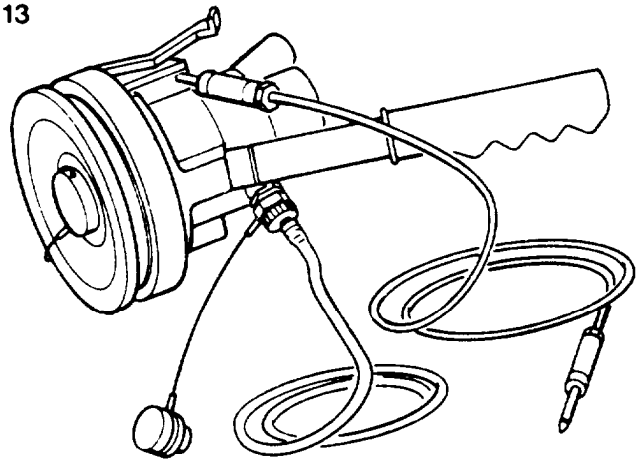

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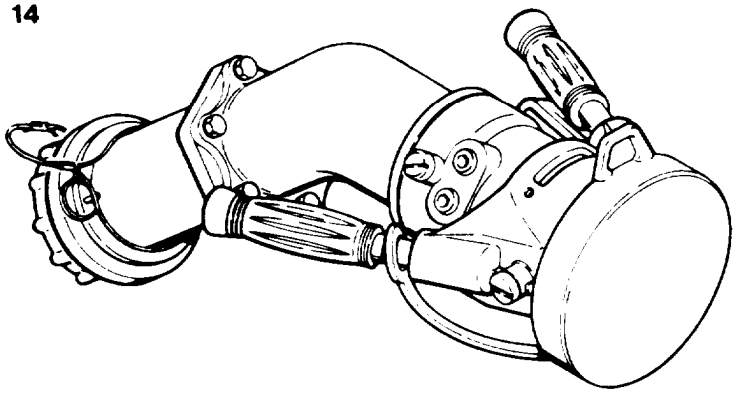

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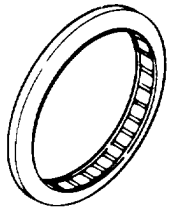

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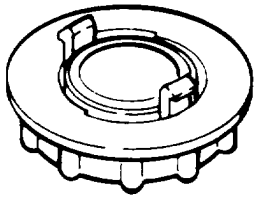

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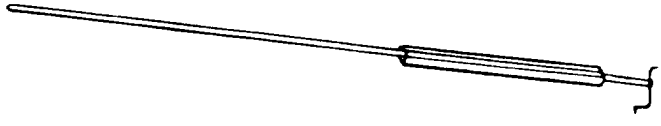

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APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. Scope. This appendix lists additional items you are authorized for support of the equipment.

C-2. General. The list identifies items that do not have to accompany the equipment and do not have to be turned in with it. These items are all authorized to you by CAT, MTOE, TDA, or JTA.

C-3. Explanation of Listing.

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

b. If the item you require differs between serial numbers of the model, effective serial numbers are shown in the last line of the description. If item required differs for different models of this equipment, the model is shown under the "Usable On Code" heading in the description column.

Section II. ADDITIONAL AUTHORIZATION LIST

Not Applicable

APPENDIX D

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope. This appendix lists expendable/durable supplies and materials needed to operate and maintain the equipment. These items are authorized by CTA 50-970, Expendable Items (except Medical, Class V, Repair Parts in Heraldic Items).

D-2. Explanation of Columns.

a. *Column (1) - Item Number.* The number is assigned to the entry in the listing and is referenced in the listed item. These are as follows:

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

C - Operator/Crew
O - Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance
D - Depot Maintenance

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

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

e. *Column (5) - Unit of Measure (U/M).* Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit that will satisfy the requirements.

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

(1) Item Number	(2) National Stock Level	(3) Number	(4) Description	(5) U/M
1	O	7920-00-044-9281	Cloth, Lint-free MIL-C-85043	1 PK
2	O		Tape, Masking	1 RL

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Callout 16 on Figure 4-3 is pointing at a bolt. In key to Figure 4-3, Item 16 is called a shim. Please correct one or the other.

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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 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

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

Square Measure

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

Cubic Measure

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

Approximate Conversion Factors

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