

TECHNICAL MANUAL

**OPERATOR'S, UNIT, AND DIRECT SUPPORT
MAINTENANCE MANUAL INCLUDING REPAIR**

PARTS AND SPECIAL TOOLS LIST

**D-1 PRESSURE NOZZLE,
FUEL SERVICING,
ARCTIC SERVICE**

P/N 13228E1821

NSN: 4930-01-396-6230

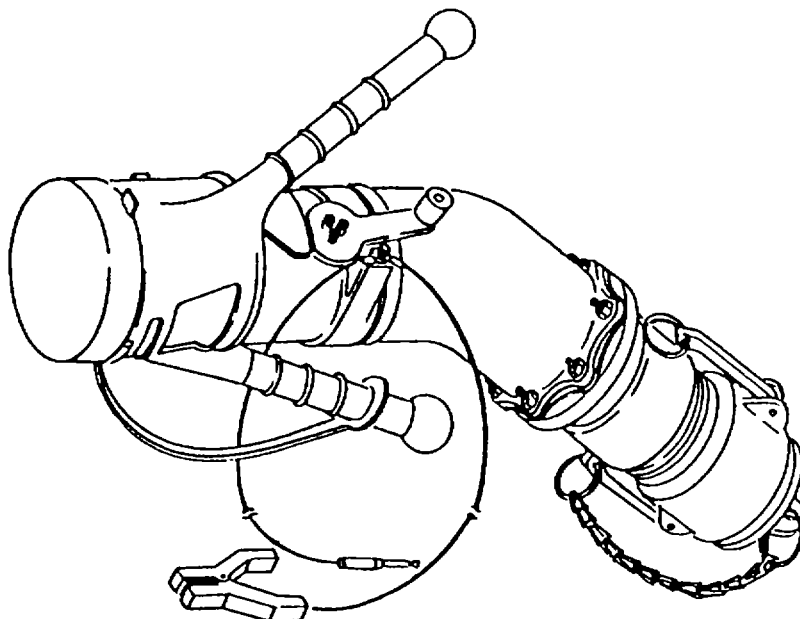
OPERATING INSTRUCTIONS	2-1	
-----------------------------------	------------	--

UNIT MAINTENANCE	4-1	
-----------------------------	------------	--

UNIT TROUBLESHOOTING	4-4	
---------------------------------	------------	--

DIRECT SUPPORT MAINTENANCE	5-1	
---	------------	--

REPAIR PARTS AND SPECIAL TOOLS LIST APPENDIX	C-1	
---	------------	--



Distribution Statement A: Approved for public release; distribution is unlimited.

**HEADQUARTERS, DEPARTMENT OF THE ARMY
31 MARCH 1996**

WARNINGS

DEATH or serious injury may result if personnel fail to observe safety precautions.

FLAMMABLE FUEL

Fuel is flammable and toxic to eyes, skin, and respiratory tract. Skin/eye protection required. Avoid repeated/prolonged contact. Use only in well ventilated areas. Keep away from open flames or other sources of ignition. Post FUEL FLAMMABLE/NO SMOKING signs around the area. Suitable fire extinguisher must be present.

Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on your clothes, leave the refueling area as soon as possible and wet clothes with water before taking them off. In extreme cold conditions, clothes should not be wet; instead, ground yourself to a piece of grounded equipment by taking hold of it before taking off the clothes. Wash skin with warm soapy water

Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Stop refueling immediately if fuel spill occurs.

FROSTBITE

Touching cold metal with exposed skin will cause skin to bond to metal. Gloves are required when touching cold metal objects. Do not touch cold metal parts with bare hands.

SOLVENT HAZARD

Drycleaning solvent, AA 711, Types I and II, used to clean parts, is potentially dangerous to personnel and property. Eye protection required. Avoid repeated and prolonged skin contact by wearing rubber or nonporous gloves when handling solvents or material wet with drycleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat. Flash point of solvent is 138°F. Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.

COMPRESSED AIR HAZARD

Compressed air can blow dust into the eyes. Wear eye protection. Do not exceed 30 psig working pressure.

FIRST AID instructions are given in FM 21-11, First Aid For Soldiers.

WARNINGS (Continued)

STATIC DISCHARGE

A static discharge between the vehicle and D-1 Nozzle could ignite the fuel or cause an explosion of fuel vapors. Do not operate the nozzle until it has first been properly grounded to vehicle.

ARCING

Radio transmitters can cause an arc at antennas. Do Not ground nozzle to a radio antenna.

OPERATOR'S, UNIT, AND DIRECT SUPPORT
MAINTENANCE MANUAL INCLUDING
REPAIR PARTS AND SPECIAL TOOLS LIST
**D-1 PRESSURE NOZZLE,
FUEL SERVICING,
ARCTIC SERVICE
P/N 13228E1821
NSN : 4930-01-369-6230**
(Current as of 7 September 1995)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798 You may also submit your recommended changes by E-mail directly to <mpmt%avma28@st-louis-emh7.army.mil>. A reply will be furnished directly to you.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited

TABLE OF CONTENTS

	PAGE
HOW TO USE THIS MANUAL	iii
CHAPTER 1 INTRODUCTION	1-1
Section I General Information	1-1
Section II Equipment Description and Data	1-2
Section III Principles of Operations	1-4
CHAPTER 2 OPERATING INSTRUCTIONS	2-1
Section I Description and Use of Operator's Controls and Indicators	2-1
Section II Operator Preventive Maintenance Checks and Services (PMCS).....	2-2
Section III Operation Under Usual Conditions	2-10
Section IV Operation Under Unusual Conditions	2-13
CHAPTER 3 OPERATOR MAINTENANCE INSTRUCTIONS	3-1
Section I Lubrication Instructions	3-1
Section II Operator Troubleshooting	3-1
Section III Operator Maintenance Procedures	3-1
CHAPTER 4 UNIT MAINTENANCE INSTRUCTIONS	4-1
Section I Repair Parts and Special Tools List.....	4-1

	PAGE
Section II Unit Preventive Maintenance Checks and Services (PMCS)	4-1
Section III Unit Troubleshooting Procedures	4-1
Section IV Unit Maintenance Procedures	4-4
Section V Preparation for Storage or Shipments	4-6
CHAPTER 5 DIRECT SUPPORT MAINTENANCE	5-1
Section I Direct Support Troubleshooting Procedures	5-1
Section II Direct Support Maintenance Instructions	5-1
 APPENDICES	
APPENDIX A References	A-1
APPENDIX B Maintenance Allocation Chart.....	B-1
APPENDIX C Repair Parts and Special Tools List	C-1
APPENDIX D Components of End Item and Basic Issue Items List	D-1
APPENDIX E Additional Authorization List	E-1
APPENDIX F Expendable Durable Supplies and Materials List	F-1
APPENDIX G Illustrated List of Manufactured Items	G-1
APPENDIX H Mandatory Replacement Parts	H-1
GLOSSARY	Glossary-1
INDEX	Index-1

HOW TO USE THIS MANUAL

Be sure to read all Warnings before using your equipment

This manual contains instructions for operation and maintenance of the D-1 Nozzle

MANUAL OVERVIEW

a. Index Tabs.

Notice the front cover index of this manual. It lists the most important areas of the manual and guides you to those sections. Follow the black mark on the cover index edge through the pages to the edge mark on the section you want. The subjects on the front cover index are also highlighted in the table of contents by boxes. A detailed alphabetical index is located at the back of this manual.

b. Contents

The following gives you a summary of each chapter and appendix. Before beginning a maintenance task, you must familiarize yourself with the entire procedure.

Chapter 1 Introduces you to the equipment and gives you information such as weight, dimensions, abbreviations used and information on how the unit works.

Chapter 2 Provides information necessary to identify and use the equipment. Operating Instructions in this chapter tell you how to use the equipment in both usual and unusual weather conditions.

Chapter 3 Provides operator troubleshooting procedures for identifying equipment malfunctions and maintenance procedures for performing operator maintenance tasks as authorized by the Maintenance Allocation Chart.

Chapter 4 Provides unit maintenance personnel with troubleshooting procedures for identifying equipment malfunctions and maintenance procedures for repairing defective equipment as authorized by the Maintenance Allocation Chart.

Chapter 5 Provides direct support maintenance personnel with maintenance Instructions for performing repairs on equipment as authorized by the Maintenance Allocation Chart.

Appendix A Provides a list of frequently used forms and publications referenced or used in this manual.

Appendix B The Maintenance Allocation Chart identifies repairable components and the maintenance level authorized to perform the repairs.

Appendix C If you find that a part or component is damaged and must be replaced, you can identify the part needed by referring to the illustrations and parts lists found in this Repair Parts and Special Tools List.

Appendix D Lists components that are not mounted on the equipment, but are required to make the unit functional.

Appendix E- Lists additional equipment authorized for your unit for use with the D-1 nozzle.

Appendix F- Provides you with information about expendable supplies such as sealants, lubricants, chemicals, etc. That are used when operating or maintaining the equipment.

Appendix G- Provides a list of items and instructions on how to make certain tools and devices required to perform some of the maintenance tasks contained in this manual.

Appendix H- Provides a list of parts that must be replaced during maintenance of the equipment.

Glossary - Lists terms and abbreviations used in this manual and their definitions

Index - Lists subject matter contained in manual In alphabetical order.

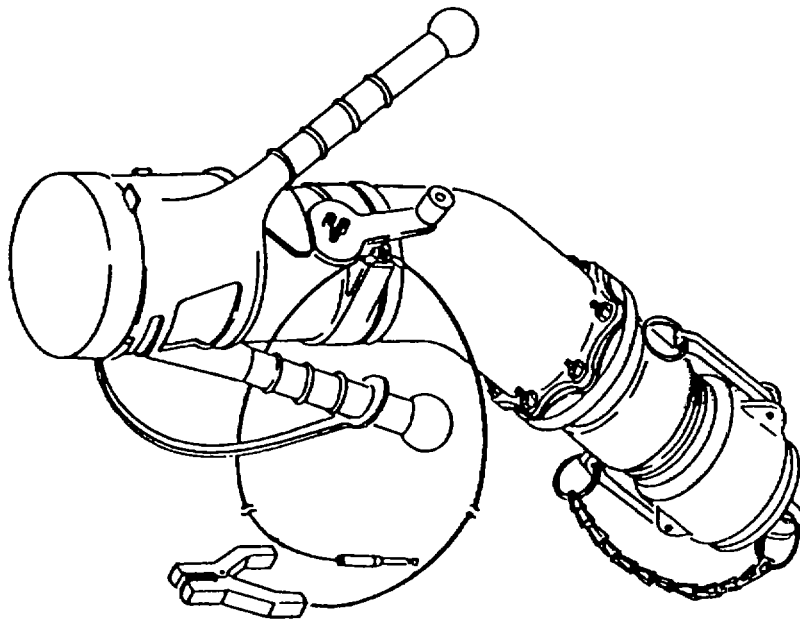


Figure 1-0. D-1 Pressure Fuel Nozzle

CHAPTER 1 INTRODUCTION

Section I. GENERAL INFORMATION

1-1 SCOPE.

This manual is for use by personnel responsible for the operation and maintenance of D- 1 Pressure Nozzle

- a. Type of Manual. Operators, Unit, Direct Support, and General Support Maintenance.
- b. Equipment Model Number and Name. [Model #. D- 1] D- 1, Pressure Nozzle, Fuel
- c. Purpose of Equipment. To mate with adapters conforming to MS24484 or equivalent and permit fuel servicing in arctic conditions.

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. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Instructions for destruction of the equipment to prevent enemy use are in TM 750-244-3.

1-4. CORROSION PREVENTION AND CONTROL (CPC).

a. Corrosion Prevention and Control of Army Materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

b. While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem.

c. If a corrosion problem is identified, it can be reported using Standard Form 368. Product Quality Deficiency Report. Using key words such as "rust", "deterioration", or "cracking" will insure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA Pam 738-750.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs).

If your fuel nozzle needs improvements let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to us at: Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MDO, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. We will send you a reply.

1-6. NOMENCLATURE CROSS REFERENCE LIST.

Common Name

Official Nomenclature

D-1 Nozzle, Pressure

Nozzle, Fuel and Oil Servicing
Type D - 1
Arctic Service

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

- a. The D- 1 pressure fueling nozzle has been designed for arctic service and mates with adapters conforming to MS24484 or equivalent. The D-1 is intended for use at ambient temperatures between -65°F and +95°F for underwing aircraft fuel servicing. The D-1 incorporates several safety interlock features to prevent:
 - (1) Accidentally opening the poppet of a disengaged nozzle.
 - (2) Accidentally disengaging a nozzle with the poppet open.

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

Major components of the D-1 pressure fueling nozzle are shown in figure 1-1.

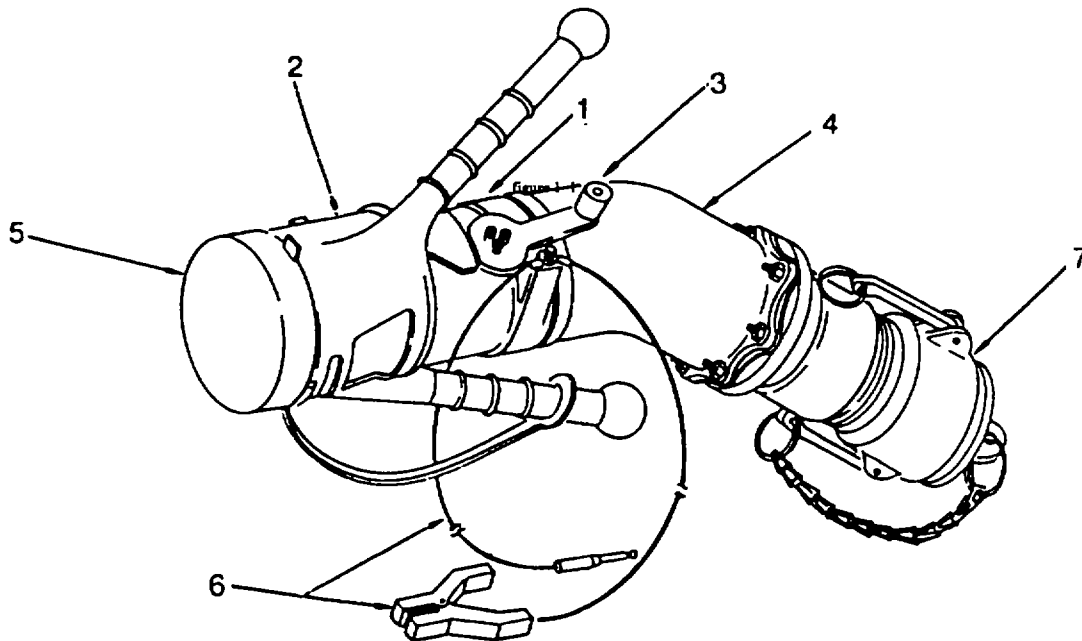


Figure 1-1. D-1 Pressure Fueling Nozzle Major Components

- a. Nozzle Body. The nozzle body (1) contains the poppet assembly and fuel strainer.
- b. Nozzle Collar. The nozzle collar (2) mates with the aircraft receptacle. The bumper on face of collar and the internal slots allow positioning of the nozzle before poppet valve can be opened.
- c. Handle Assembly. The handle assembly (3) allows the poppet valve assembly to be opened and closed.
- d. Elbow Swivel. The swivel elbow (4) rotates with the nozzle engaged allowing the hose to be positioned free of kinks or twists.
- e. Cover. A cover (5) is furnished to cover the nozzle outlet when not connected to a system for servicing.
- f. Ground Cable. A ground cable (6) is provided for grounding the nozzle to the aircraft prior to connection. A ground plug is provided for inserting into the aircraft ground receptacle, a clip type ground is used where a ground plug receptacle is not available.
- g. Coupling Assembly. The coupling assembly (7) allows the nozzle assembly to be connected and disconnected from a fuel serving source.

1-9. EQUIPMENT DATA.

a. General Information.

Part Number (P/N) 13228E1821

National Stock Number (NSN)..... 4930-01-396-6230

b. Dimensions.

Length 19.75 in (50.1 cm)

Width across grips 11.75 in. (29.8 cm)

Diameter of servicing inlet..... 2.5 in. (6.4 cm)

c. Weight.: 8.8lb. (4.0kg)

d. Operating Temperature Range: -65°F to +95°F (-54°C to +35°C)

Section III. PRINCIPLES OF OPERATION

1-10. SYSTEM TECHNICAL PRINCIPLES OF OPERATION.

The D-1 Nozzle mates with the aircraft adapter for fuel servicing. The clip and plug ground cable connections provide for grounding the nozzle to the aircraft prior to connection and during servicing. The nozzle must align with the aircraft adapter before nozzle collar is turned and secured. The poppet handle assembly can now be turned to the open position. The nozzle assembly is now firmly attached and cannot be removed. After servicing is complete, the poppet handle assembly is returned to the closed position and the collar turned releasing the nozzle from the aircraft. The collar also prevents the poppet handle from being turned to the open position when not attached to an adapter.

CHAPTER 2
OPERATING INSTRUCTIONS

PARAGRAPH	TITLE	PAGE
Section I.	Description and Use of Operator's Controls and Indicators	2-1
2-1.	D-1 Pressure Nozzle	2-1
Section II.	Operator Preventive Maintenance Checks and Services	2-2
2-2.	General	2-2
2-3.	PMCS Table Column Headings	2-2
2-4.	Cleaning Agents.....	2-4
2-5.	Leakage Definitions for Operator PMCS	2-4
2-6.	Operator's PMCS Table	2-5
Section III.	Operation Under Usual Conditions	2-10
2-7.	Assembly and Preparation for Use	2-10
2-8.	Operating Procedures	2-10
2-9.	Decals and Instruction Plates	2-13
Section IV.	Operation Under Unusual Conditions	2-13
2-10.	Unusual Environmental/Weather Conditions	2-13
2-11.	Emergency Procedures.....	2-15
2-12.	Nuclear, Biological, and Chemical (NBC) Decontamination Procedures	2-15

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

2-1. D-1 PRESSURE NOZZLE.

- a. Collar (1), when aligned with the aircraft adapter is turned clockwise to ensure correct connection is obtained and unlocks the poppet assembly.
- b. Poppet handle (2), when moved to the open position, locks the collar in the ON position and opens the poppet to allow for fuel servicing.

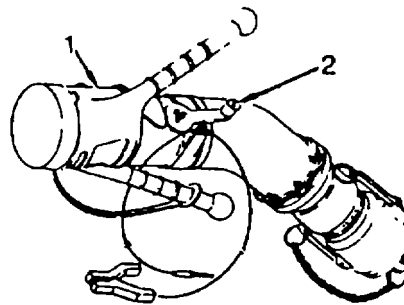


Figure 2-1. D-1 Nozzle Operator Controls

Section II. OPERATORS PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-2. GENERAL.

Preventive Maintenance Checks and Services (PMCS) means systematic caring, inspecting, and servicing of equipment to keep it in good condition and to prevent breakdowns. As the equipment operator, your mission is to:

- a. Be sure to perform your PMCS each time you operate the equipment. Always do your PMCS in the same order, so it gets to be a habit. Once you've had some practice, you'll quickly spot anything wrong.
- b. Do your BEFORE (B) PMCS just before you operate the equipment. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- c. Do your DURING (D) PMCS while you operate the equipment. During operation means to monitor the equipment and its related components while it is actually being operated. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- d. Do your AFTER (A) PMCS right after operating the equipment. Pay attention to WARNINGS, CAUTIONS, and NOTES.
- e. Do your WEEKLY (W) PMCS once a week.
- f. Do your MONTHLY (M) PMCS once a month.
- g. Use DA Form 2404 (Equipment Inspection and Maintenance Worksheet) to record any faults that you discover before, during, or after operation, unless you can fix them. You DO NOT need to record faults that you fix.
- h. Be prepared to assist unit maintenance when they lubricate the equipment. Perform any other services when required by unit maintenance.

2-3. PMCS TABLE COLUMN HEADINGS.

- a. Your Preventive Maintenance Checks and Services, Table 2-1, lists inspections and care required to keep your equipment in good operating condition. It is set up so you can make your BEFORE (B) OPERION checks as you walk around the equipment. The "ITEM" column of Table 2-1 is a numerical listing of the sequence m which services and inspections are performed.
- b. The "INTERVAL" column of Table 2-1 tells you when to do a certain check or service.
- c. The "PROCEDURE" column of Table 2-1 tells you how to do required checks and services. Carefully follow these instructions. If you do not have tools. or if the procedure tells you to, notify your supervisor.

2-3. PMCS TABLE COLUMN HEADINGS - continued.**NOTE**

Terms "ready/available" and "mission capable" refer to same status: Equipment is on hand and ready to perform its combat missions (See DA Pam 738-750)

- d. The "EQUIPMENT IS NOT READY/AVAILABLE IF:" column in Table 2-1 tells you when your equipment is non-mission capable and why the equipment cannot be used.
- e. If the equipment does not perform as required, refer to Chapter 3, Section II, Troubleshooting.
- f. If anything looks wrong and you can't fix it, write it on your DA Form 2404. IMMEDIATELY. report it to your supervisor.
- g. When you do your PMCS, you will always need a rag or two. Following are checks that are common to the entire nozzle:
 - (1) Keep It Clean. Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use dry cleaning solvent (AA-711) on all metal surfaces. Use soap and water when you clean rubber or plastic material.
 - (2) Rust and Corrosion. Check equipment for rust and corrosion. If any bare metal or corrosion exists, clean, and apply a thin coat of oil. Report it to your supervisor.
 - (3) Bolts, Nuts, and Screws Check them all for obvious looseness, missing, bent, or broken condition. You can't try them all with a tool, but look for chipped paint, bare metal, or rust around bolt heads. If you find a bolt, nut or screw you think is loose, tighten it or report it to your supervisor
 - (4) Welds. Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to your supervisor.
 - (5) Electric Wires and Connectors. Look for cracked, frayed, or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors. Report any damaged wires to your supervisor.
 - (6) Hoses and Fluid Lines Look for wear, damage, and leaks, and make sure clamps and fittings are tight. Wet spots show leaks, but a stain around a fitting or connector can also mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to your supervisor.
- h. When you check for "operating condition", you look at the component to see if it's serviceable.

2-4. CLEANING AGENTS.

WARNINGS

- DO NOT use diesel fuel, gasoline, or benzene (benzol) for cleaning.
- DO NOT SMOKE when using cleaning solvent. NEVER USE IT NEAR AN OPEN FLAME. Be sure there is a fire extinguisher nearby and use cleaning solvent only in well-ventilated places. Flash point of solvent is 138°F (60°C).
- USE CAUTION when using cleaning solvents. Cleaning solvents evaporate quickly and can irritate exposed skin if solvents contact skin. In cold weather, contact of exposed skin with cleaning solvents can cause frostbite.

- a. Cleaning Rust or Grease. When cleaning grease buildup or rusty places, use a cleaning solvent. Then apply a thin coat of light oil to affected area.

2-5. LEAKAGE DEFINITIONS FOR OPERATOR PMCS.

It is necessary for you to know how fluid leakage affects the status of the equipment. Following are types/classes of leakage an operator needs to know to be able to determine the status of the equipment. Learn these leakage definitions and remember - when in doubt, notify your supervisor.

WARNING

Do not operate the D- 1 nozzle if any leaks are present. Stop operation and report all classes of leaks to your supervisor.

- a. CLASS I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.
- b. CLASS II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked/inspected.
- c. CLASS III - Leakage of fluid great enough to form drops that fall from item being checked/inspected.

2-6. OPERATOR'S PMCS TABLE.

Table 2-1 contains a tabulated listing of preventive maintenance checks and services which must be performed by the operator daily. Illustrations are provided to identify the items.

Table 2-1. Operator Preventive Maintenance Checks and Services.

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

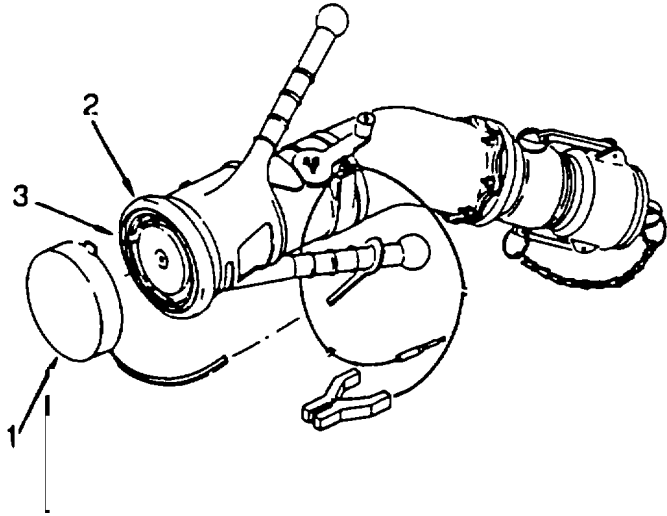
Item No.	Interval	Location Item to Check/Service	Crew -member Procedure	Not Fully Mission Capable If:
1	Before	D-1 NOZZLE ASSEMBLY Dust Cover	Remove dust cover from nozzle discharge end and inspect for wear, cracks and security.	Cracked, torn or missing Cover fails to stay on nozzle.
2	Before	Bumper Collar	Inspect for wear, tears, cuts and deformity.	
				
3	Before	Nozzle Discharge End	Check for foreign matter.	

Table 2-1. Operator Preventive Maintenance Checks and Services.

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

Item No.	Interval	Location Item to Check/Service	Crew -member Procedure	Not Fully Mission Capable If:
4	Before	D-1 NOZZLE ASSEMBLY Indexing Pins	Inspect discharge end of nozzle to verify the three indexing pins are intact. Inspect for bent, broken or worn pins. of tabs on pins. Check position All three should be turned in toward the retainer.	Missing or damaged pins
5	Before	Lock Pins	Inspect the discharge end of nozzle to verify the three lock pins are intact. Inspect for bent, broken or worn pins. Visually check that lock pins are in the UP position. If they are not, squeeze the handle grips and push down on collar, while observing the lock pins. The lock pins should 'spring' into cutouts and collar should not turn.	Missing or damaged pins. Pins fail to return to the UP position.

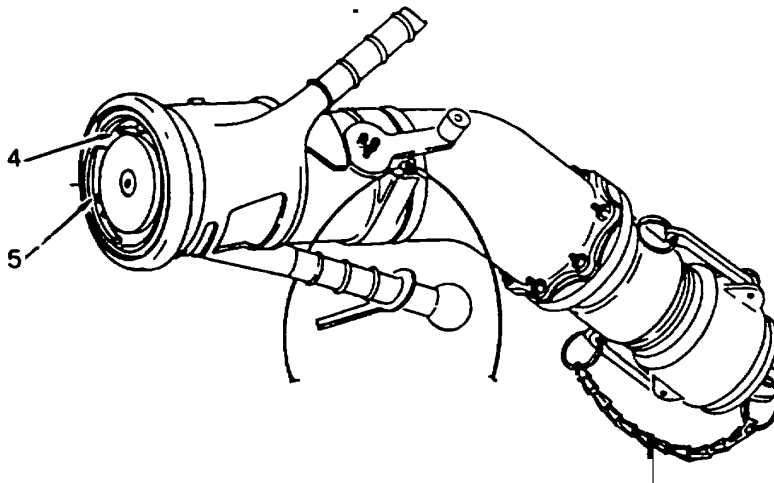


Table 2-1. Operator Preventive Maintenance Checks and Services.

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

Item No.	Interval	Location Item to Check/Service	Crew -member Procedure	Not Fully Mission Capable If:
6	Before	D-1 NOZZLE ASSEMBLY Elbow	Inspect for damage, cracks or leaks. Check freedom of movement.	Damage, cracks or any leaks found.
7	Before	Ground Cable Assembly	Inspect for frayed or broken wires, bent, broken or distorted clip or plug.	Broken or frayed wires. Broken or distorted clip or plug.

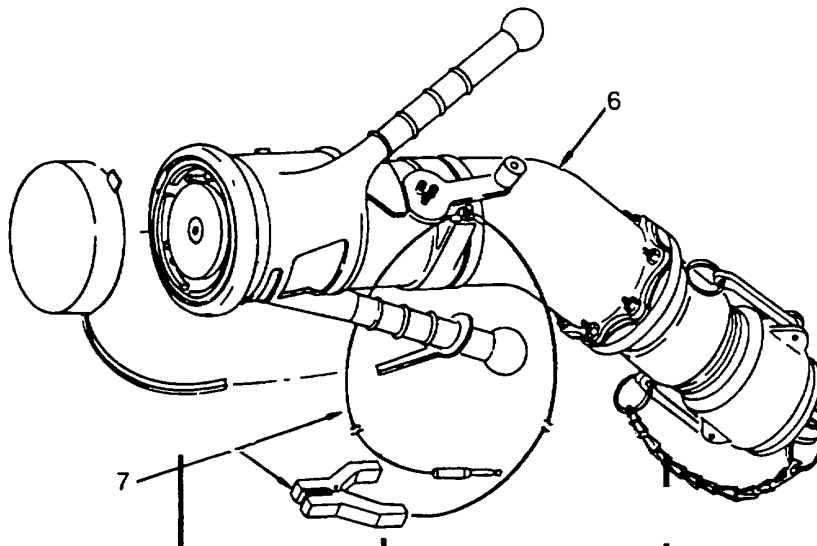


Table 2-1. Operator Preventive Maintenance Checks and Services

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

Item No.	Interval	Location Item to Check/Service	Crew -member Procedure	Not Fully Mission Capable If:
8	During	D-1 NOZZLE ASSEMBLY Safety Locking Device	Connect the nozzle to the aircraft adapter and move the poppet handle to the open position. Check collar and poppet handle for damage. Visually check to ensure the collar when turned (approx. 1/4") comes in contact with the poppet handle.	Damaged collar or poppet handle. Collar and handle fail to make contact with each other.
9	During	Nozzle	Check for leaks.	Any leak found.

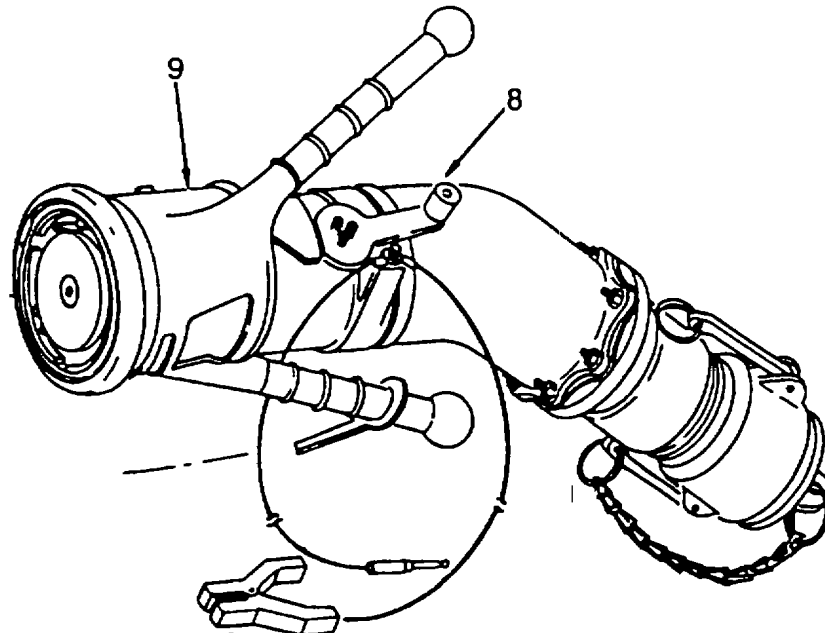
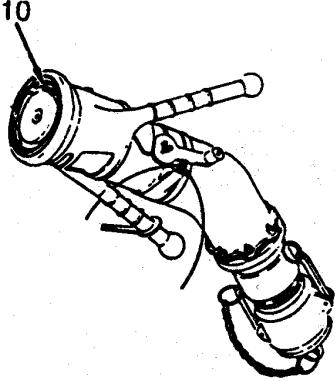
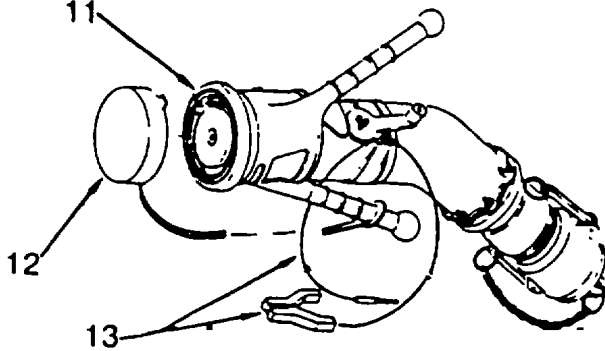


Table 2-1. Operator Preventive Maintenance Checks and Services.

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

Item No.	Interval	Location Item to Check/Service	Crew -member Procedure	Not Fully Mission Capable If:
10	After	D-1 NOZZLE ASSEMBLY Indexing and Lock Pins 	Inspect discharge end of nozzle to check the three indexing and three lock pins are present and not damaged. Inspect for bent, broken or worn pins. Visually check that lock pins are in the UP position. If they are not, squeeze the handle grips and push down on collar, while observing the lock pins. The lock pins should 'spring' into cutouts and collar should not turn.	Damaged or missing pins. Lock pins fail to return to the UP position
11	After	Bumper Collar	Inspect for cuts, tears, or deformity.	
12	After	Dust Cover	Inspect cover for cracks, tears and security. Cover should fit snugly on discharge end of nozzle.	Cracked, torn, non-secured cover. Cover fails to stay on nozzle.
13	After	Ground Cable Assembly 	Inspect for frayed or broken wires, bent, broken or distorted clip or plug.	Frayed or broken wires. Bent, broken or distorted clip or plug.

Section III. OPERATION UNDER USUAL CONDITIONS.

2-7. ASSEMBLY AND PREPARATION FOR USE.

1. Remove the dust plug from D-1 Nozzle fuel inlet coupler. Connect the coupler to the fuel supply hose.
2. Remove dust cover from discharge end of nozzle before using to dispense fuel.

2-8. OPERATING PROCEDURES.

a. Nozzle Connection.

- (1) Remove dust cover (1).
- (2) Perform "Before" checks according to Table 2-1.

WARNINGS

- A static discharge between the vehicle and Nozzle could ignite the fuel or cause an explosion of fuel vapors. Do not operate the nozzle until it has first been properly grounded to vehicle.
- Radio transmitters can cause an arc at antennas. Do Not ground nozzle to a radio antenna.

NOTE

Additional information on grounding may be obtained from FM 10-68, Aircraft Refueling.

- (3) Connect ground cable assembly (2) to aircraft grounding receptacle.
- (4) Grasp collar grips (3) and align the outlet end with the aircraft adapter.

NOTE

Press the nozzle against the adapter while slightly rotating the nozzle to align the nozzle index pins with adapter slots (if necessary).

- (5) While pressing the nozzle, rotate the collar (4) to the right until collar is fully engaged against the mechanical stop.

WARNING

Poppet handle rotation to less than full open position is unsafe and can result in a flowing fuel disconnect and dangerous fuel spill.

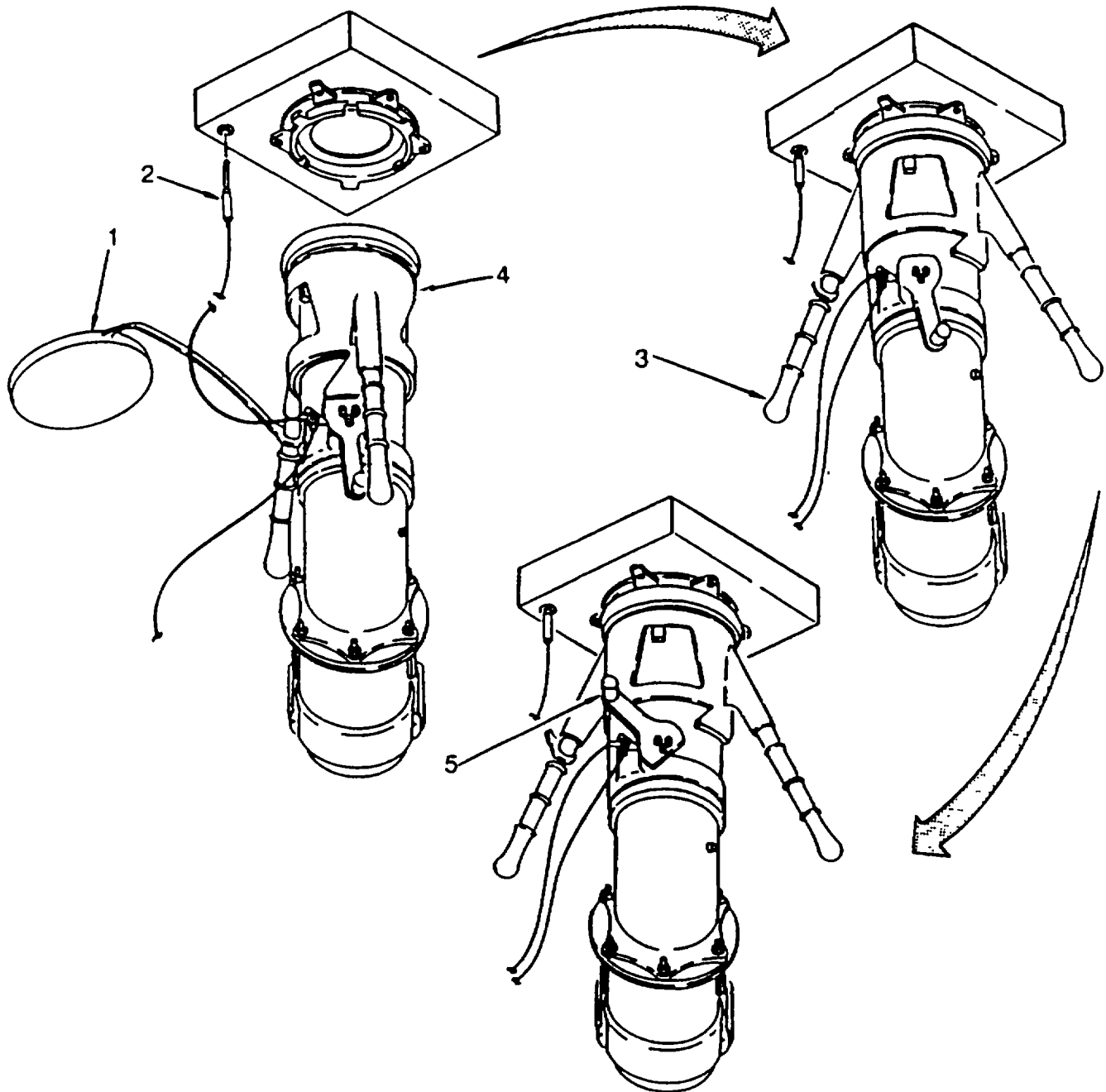
- (6) Rotate the poppet handle (5) to the full OPEN (over center) position against an internal mechanical stop.

2-8. OPERATING PROCEDURES, continued.

CAUTION

If handle is not in the full open (over center) position, the adapter 50 lb. poppet spring may partially close the poppet, increasing refueling time and causing unnecessary wear on both nozzle and aircraft adapter.

(7) Before starting fuel flow, verify that the base of the poppet handle (5) prevents rotation of the collar (4) to the disengaged position.

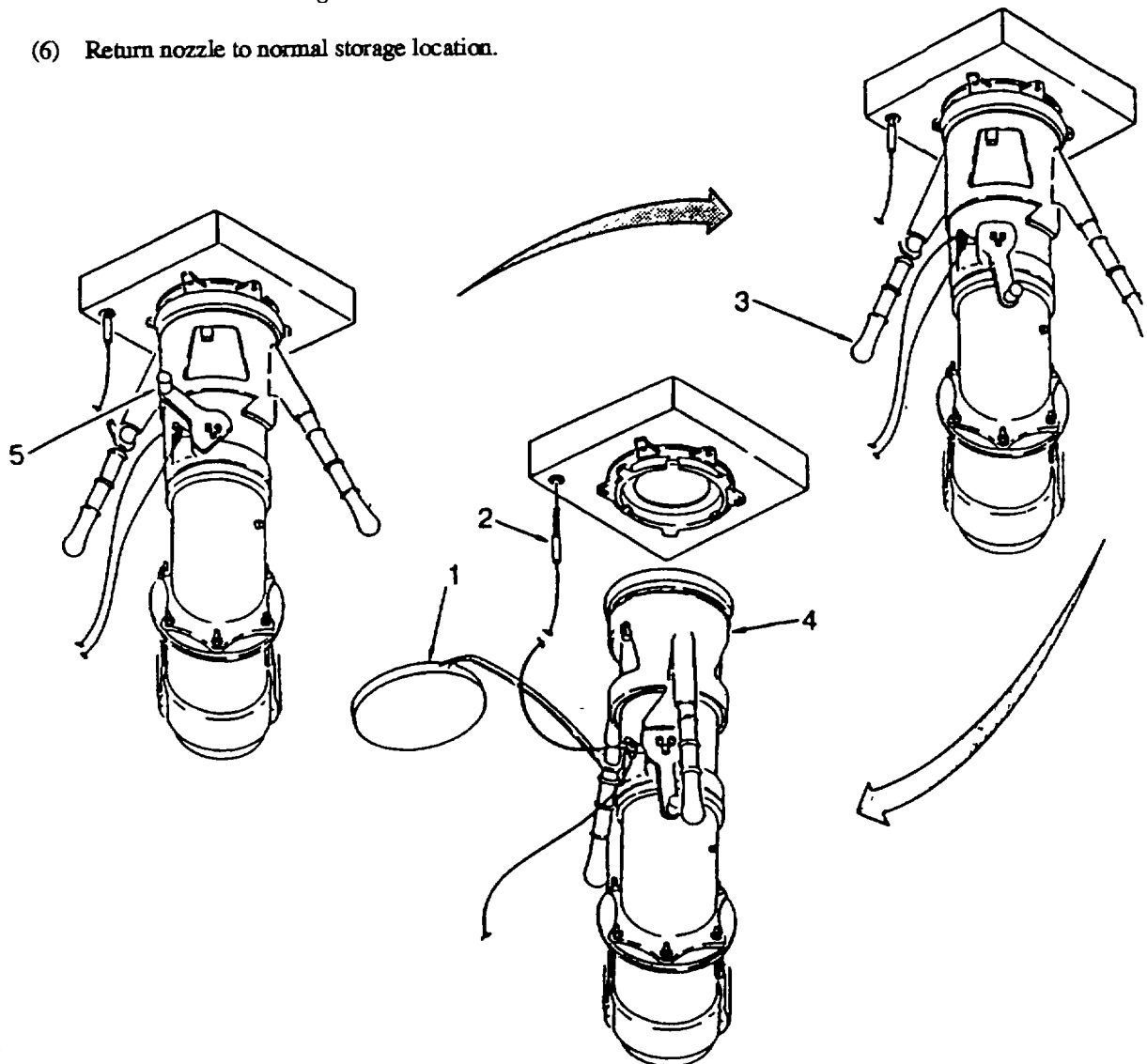


12-8. OPERATING PROCEDURES - continued.

b. Nozzle Disconnection.**CAUTION**

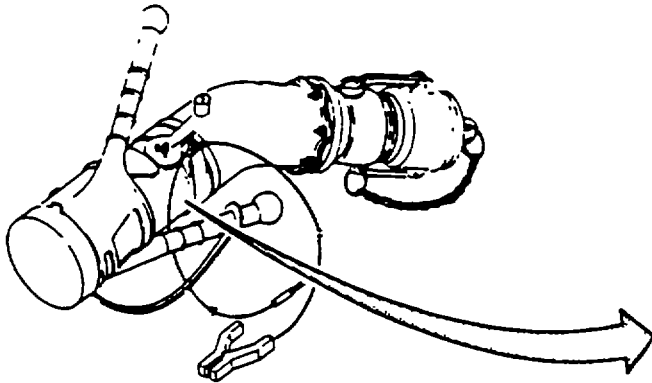
If poppet handle is not against the internal closed stop, the linkage is not over center and internal pressure will force the poppet in the OPEN position

- (1) Rotate the poppet handle (5) to the CLOSED position until it is against the internal mechanical stop.
- (2) Grasp the collar grips (3) and rotate the collar (4) to the left until it releases from the adapter.
- (3) Disconnect ground cable assembly (2) from aircraft receptacle.
- (4) Perform "After" checks according to Table 2-1.
- (5) Install nozzle cover (1).
- (6) Return nozzle to normal storage location.

(6) Return nozzle to normal storage location.

2-9. DECALS AND INSTRUCTION PLATES.

Decals and Instructions plates used in the D-1 nozzle are shown below.



**NOZZLE
PRESSURE FUEL SERVICING
MFR'S CODE FSCM 0DT23
61629CDGH**

Section IV. OPERATION UNDER UNUSUAL CONDITIONS.

2-10. UNUSUAL ENVIRONMENTAL/WEATHER CONDITIONS.

- a. Operating The D-1 Nozzle in Arctic Conditions.

WARNING

Touching cold metal with exposed skin will cause skin to bond to metal. Gloves are required when touching cold metal objects. Do not touch cold metal parts with bare hands.

- (1) Always wear arctic mittens when handling nozzles and other equipment.
- (2) Be careful when handling the nozzle when connected to a hose to avoid cracking them

CAUTION

Accumulated ice and snow can cause damage to nozzle assembly.

- (3) Remove snow, sleet, or ice from the nozzle before connecting to the adapter
- (4) Always keep dust cap on nozzle when not in use
- (5) Perform operating procedure according to paragraph 2-8

2-10. UNUSUAL ENVIRONMENTAL/WEATHER CONDITIONS, continued.b. Operating the D-1 Nozzle in Strong Winds and Sandy or Dusty Conditions.

(1) Strong Winds.

(a) Should not affect the performance or handling of the nozzle.

(b) Perform operating procedures according to paragraph 2-8.

(2) Sandy or Dusty Conditions.

(a) Remove any sand or dust from the nozzle before installing to either hose or adapter.

(b) Keep the dust cap installed when not in use.

(3) Perform operating procedure according to paragraph 2-8.

c. Operating the D - 1 Nozzle in Extreme Heat.

(1) The D-1 Nozzle's designed operating range is -65°F to +95°F.

CAUTION

Do not operate the arctic D-1 Nozzle when ambient temperature is above 95°F. Damage to seals, gaskets and preformed packing can result.

(2) The D-1 Nozzle should not be used when the ambient temperature is above 95°F.

(3) Perform operating procedures according to paragraph 2-8.

2-11. EMERGENCY PROCEDURES.**WARNING**

- Spilled fuel creates a flammable, vapor-air mixture and fire can take place. Stop refueling immediately if fuel spill occurs. Refer to FM 10-68 Petroleum Supply Point Equipment and Operations.
 - Fuel on clothing can be fatal if ignited by a static discharge. If fuel gets on your clothes, leave the refueling area as soon as possible and wet clothes with water before taking them off. In extreme cold conditions, clothes should not be wet; instead ground yourself to a piece of grounded equipment by taking hold of it before taking off the clothes. Wash skin with warm soapy water.
- a. If spillage of fuel occurs, immediately stop fuel servicing operations.
 - b. Notify your supervisor.

**2-12. NUCLEAR, BIOLOGICAL, AND CHEMICAL (NBC)
DECONTAMINATION PROCEDURES.****NOTE**

Detailed decontamination procedures can be found in FM 3-3, FM 34, and FM 3-5.

- a. General. The following emergency procedures can be followed until field NBC decontamination facilities are available Assigned operators will assist the supporting NBC unit.
- b. Emergency Procedure. If NBC attack is known or suspected, mask at once and perform the following:
 - (1) Stop dispensing of fuel.
 - (2) Do not connect or disconnect the nozzle from the fuel system.
 - (3) Have fuel tested for contamination before resuming operation.

**CHAPTER 3
OPERATOR MAINTENANCE INSTRUCTIONS**

Section I. LUBRICATION INSTRUCTIONS

Lubrication is not required for the D-1 pressure nozzle.

Section II. OPERATOR TROUBLESHOOTING

Troubleshooting is not required for the D-1 pressure nozzle.

Section III. OPERATOR MAINTENANCE PROCEDURES

Operator maintenance consists of inspection of components (See Table 2-1).

CHAPTER 4 UNIT MAINTENANCE INSTRUCTIONS

Section I. REPAIR PARTS AND SPECIAL TOOLS LIST

4-1. COMMON TOOLS AND EQUIPMENT.

For authorized common tools and equipment refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

Refer to the Maintenance Allocation Chart contained in Appendix B for maintenance tasks authorized at unit level and for the TMDE and support equipment required to perform these tasks.

4-3. REPAIR PARTS.

Repair parts are listed and illustrated in Appendix C, Unit and Direct Support Repair Parts and Special Tools List (RPSTL).

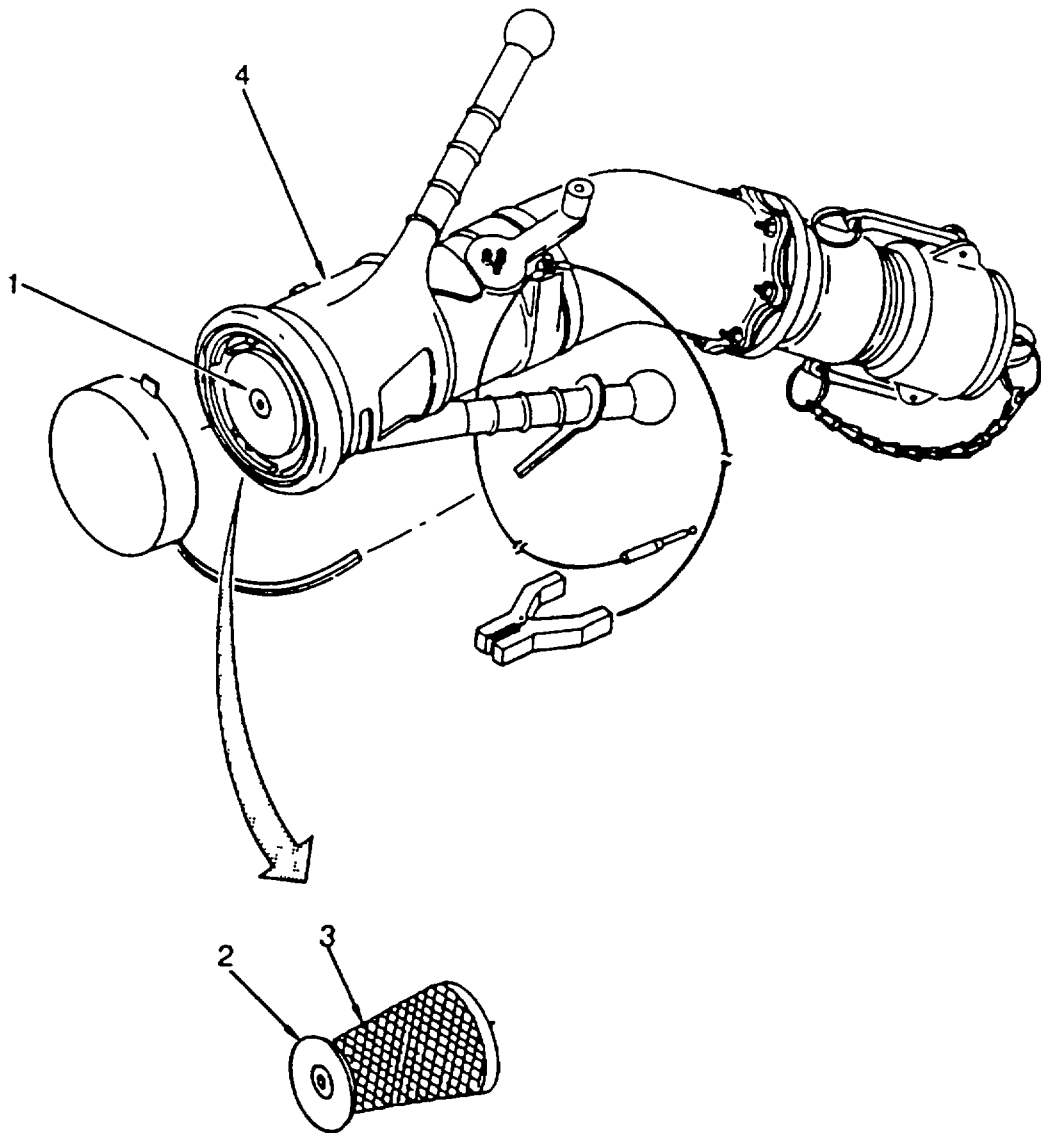
Section II. UNIT PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-4. GENERAL.

To ensure that the D-I Nozzle is ready for use at all times, it must be inspected systematically so that defects may be discovered and corrected before they result in serious damage or equipment failure. The necessary preventive maintenance services to be performed are listed and described in Table 4-1. Defects discovered during operation of the unit should be corrected as soon as possible. All deficiencies and shortcomings will be recorded, together with the corrective actions taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet) at the earliest possible opportunity.

Table 4-1. Unit Preventive Maintenance Checks and Services

Item No.	Interval	Location Item to Check/Service	Crew -member Procedure	Not Fully Mission Capable If:
1	Every 2 Weeks	<p>D-1 NOZZLE ASSEMBLY</p> <p>Strainer</p>	<p>Check for foreign matter and holes. Proceed as follows:</p> <ol style="list-style-type: none"> a. Loosen screw (1) and remove poppet (2) and strainer (3) from nozzle assembly (4). b. Clean as required. c. Insert strainer (3) and poppet (2) into nozzle assembly (4) d. lighten screw (1). <p>Note: If strainer has holes, reassemble per steps (c) and (d) and notify Direct Support Maintenance for replacement.</p>	Holes in strainer.



Section III. UNIT TROUBLESHOOTING PROCEDURES

Troubleshooting is not required for the D- 1 pressure nozzle.

Section IV. UNIT MAINTENANCE PROCEDURES

4-5. GENERAL.

This section contains instructions for performing unit level maintenance on the Pressure Fueling Nozzle, Type D-1, Arctic Service.

4-6. PERSONNEL SAFETY.

Personnel must remove all items of jewelry (rings, bracelets, watches, necklaces, etc.) and loose clothing before working on equipment. Jewelry and loose fitting clothing can get caught in moving equipment and result in injury to personnel.

When performing maintenance of the D-I Nozzle, keep in mind the purpose of the equipment is to distribute fuel. Cleaning fluids, lubricants, preservatives, paint or other chemicals must not be allowed to contaminate the fuel.

Operate the equipment after performing maintenance to ensure repairs have been performed correctly and equipment can be returned to service.

4-7. PROPER EQUIPMENT.

Obtain proper equipment before starting maintenance. This includes hand tools and/or special tools, receptacles for storing small parts and expendable materials required by the maintenance task.

4-8. GROUND CABLE ASSEMBLY REPLACEMENT.

This task consists of: a. Removal b. Installation

INITIAL SET-UP:

Tools:

General mechanic's tool kit. (Item 1, App B)

Equipment Condition:

D- 1 Nozzle removed from fuel system (Reference System TM)

General Safety Requirements:

WARNING

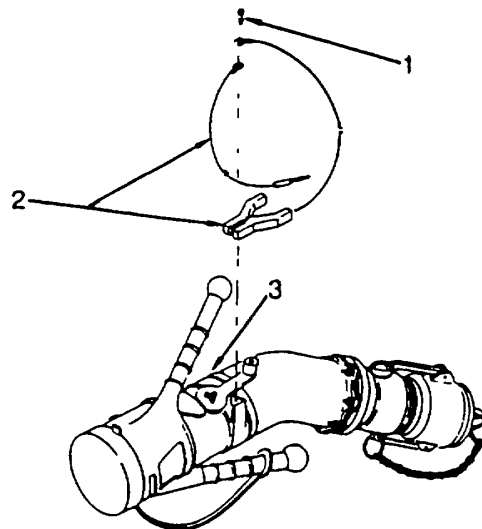
- Fuels are toxic and flammable. Do not get fuel on person or clothing. Do not use near open flame. Area should be well ventilated.
- Fuel Flammable/No Smoking

a. Removal.

- (1) Remove screw (1) from nozzle body (3).
- (2) Remove ground cable assembly (2).

b. Installation.

- (1) Position ground cable assembly (2) on nozzle or body (3).
- (2) Install screw (1) into nozzle body (3).



Section V. PREPARATION FOR STORAGE OR SHIPMENT**4-9. SECURITY PROCEDURES.**

Refer to AR 190-11 or AR 190-13.

4-10. PREPARATION FOR MOVEMENT.**NOTE**

For disposal of contaminated fuel refer to FM 10-20, Organizational Maintenance of Military Petroleum Pipelines, Tanks and Related Equipment.

- a. Drain residual fuel from nozzle.
- b. Install cover on nozzle outlet.
- c. Place a protector cover over elbow inlet.

NOTE

The nozzle is now ready to be placed in a suitable container. For additional information on Packaging of Army Material for Shipment and Storage refer to AR 746-1.

4-11. ADMINISTRATIVE STORAGE.

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.

Before placing the equipment in administrative storage, current preventive maintenance checks and services (PMCS) evaluations should be completed, shortcomings and deficiencies should be corrected, and all Modification Work Orders (MWO) should be applied.

Storage site selection. Inside storage is preferred for items selected for administrative storage. If inside storage is not available, trucks, vans, conex containers, and other containers may be used.

CHAPTER 5
DIRECT SUPPORT MAINTENANCE

PARAGRAPH	TITLE	PAGE
Section I.	Troubleshooting	5-1
Section II.	Maintenance Instructions	5-2

Section I. DIRECT SUPPORT TROUBLESHOOTING PROCEDURES

Troubleshooting is not required on the D-1 pressure nozzle.

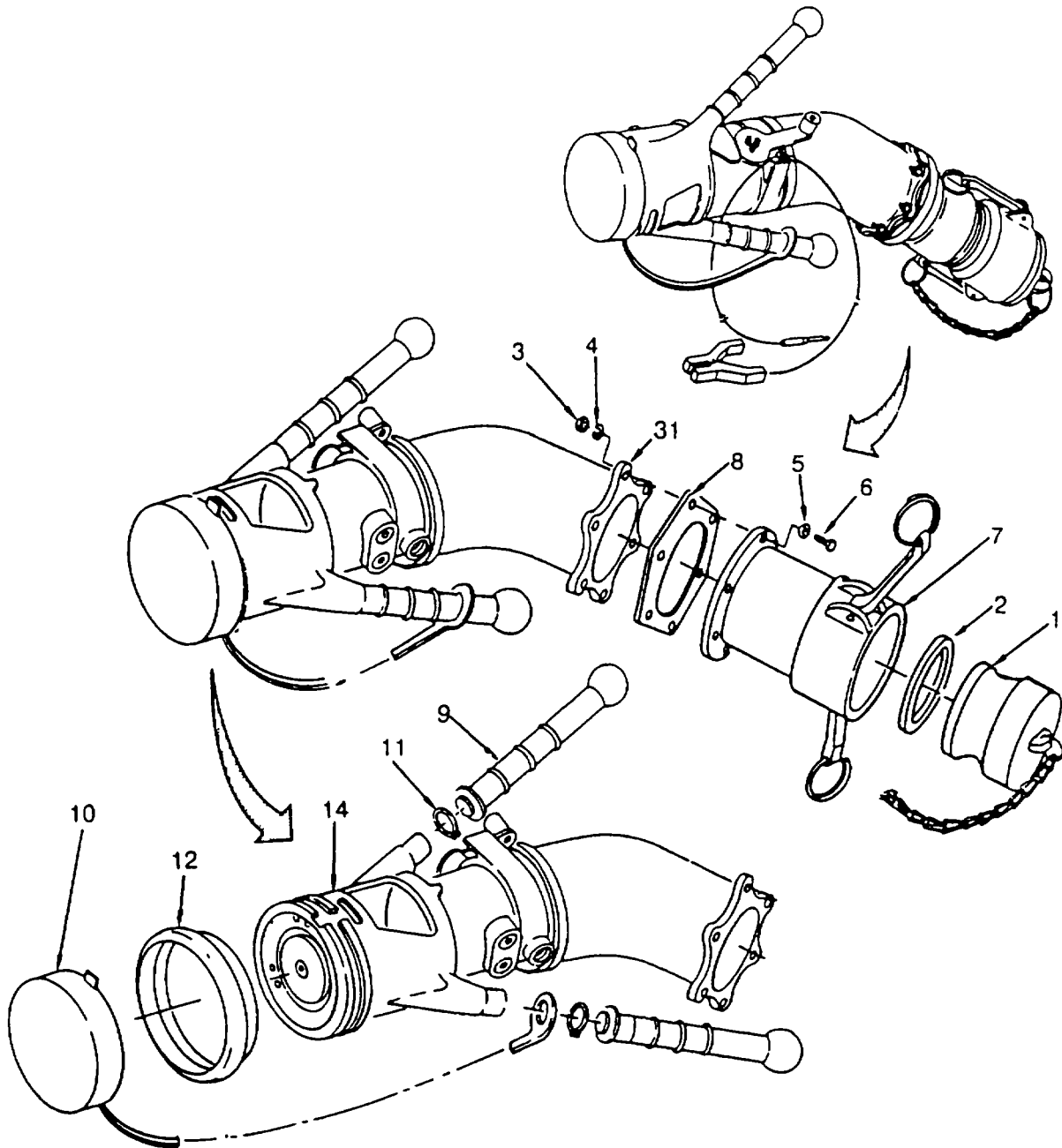
Section II. DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

5-1. INTRODUCTION.

This chapter contains procedures for Direct Support level maintenance on the D-1 Arctic Nozzle. Maintenance consists of repair by replacement of defective components, then testing to ensure correction of a malfunction.

5-2. D-1 FUELING NOZZLE REPAIR - continued.

- (4) Remove gasket (8) from coupling (7).
- (5) Remove two grips (9) and dust cover (10) from nozzle collar (14) by clamping the ball end of grips (9) in a vise and twist and pull nozzle assembly. Remove snap rings (11).
- (6) Cut collar bumper (12) from nozzle collar (14) and discard.

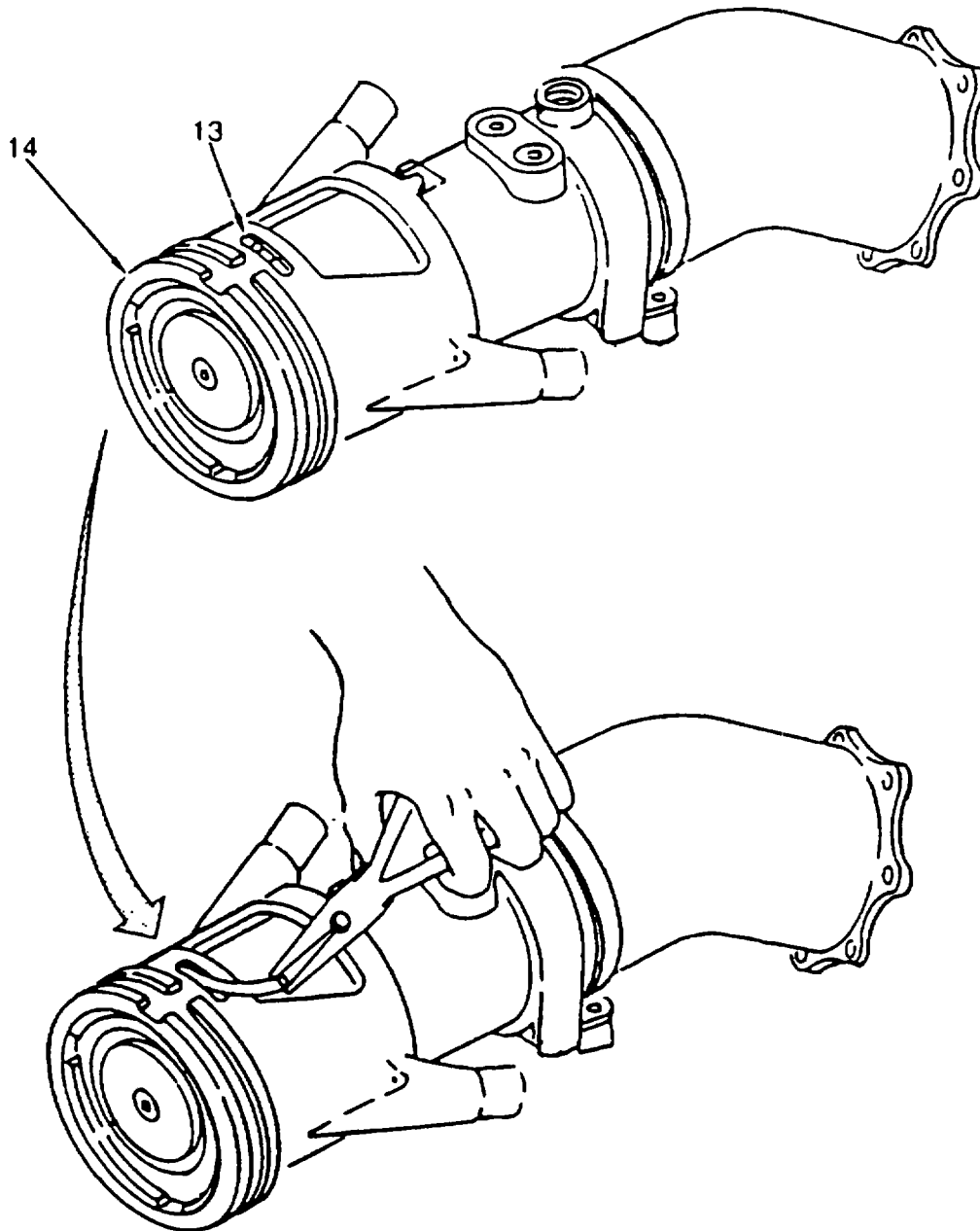


5-2. D-1 FUELING NOZZLE REPAIR - continued.

NOTE

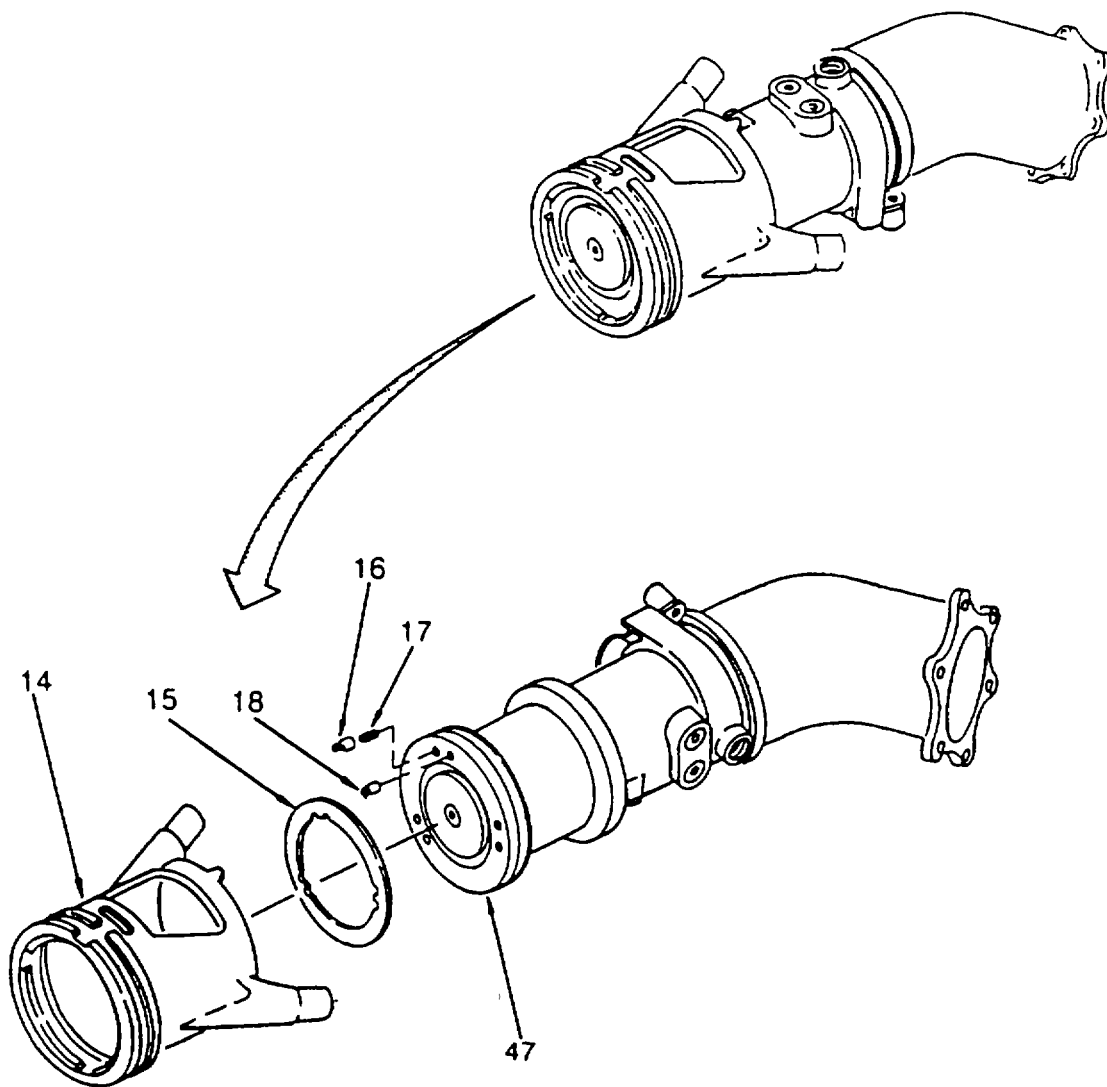
If bearing is difficult to remove, recommend outlet end of nozzle collar be soaked in light motor oil to assist in removal. (Do not engage nozzle onto an adapter, this will create a load on bearing.)

- (7) Push one end of collar bearing (13) to cause the other end to protrude from collar bearing slot on nozzle collar (14). Using pliers, pull the collar bearing out of groove and discard.



5-2. D-1 FUELING NOZZLE REPAIR - continued.

- (8) Remove nozzle collar (14) from nozzle body (47).
- (9) Remove pin retainer plate (15), three collar lock pins (16), three collar lock pin springs (17). Rotate three indexing pins (18) to remove from nozzle body (47).



5-2. D-1 FUELING NOZZLE REPAIR - continued.

(10) Turn handle assembly (47) to open poppet (19).

NOTE

Screw is retained on poppet by retaining ring

(11) Loosen screw (23) to disengage it from nozzle shaft (38).

(12) Remove poppet (19) and strainer (20) from body (47).

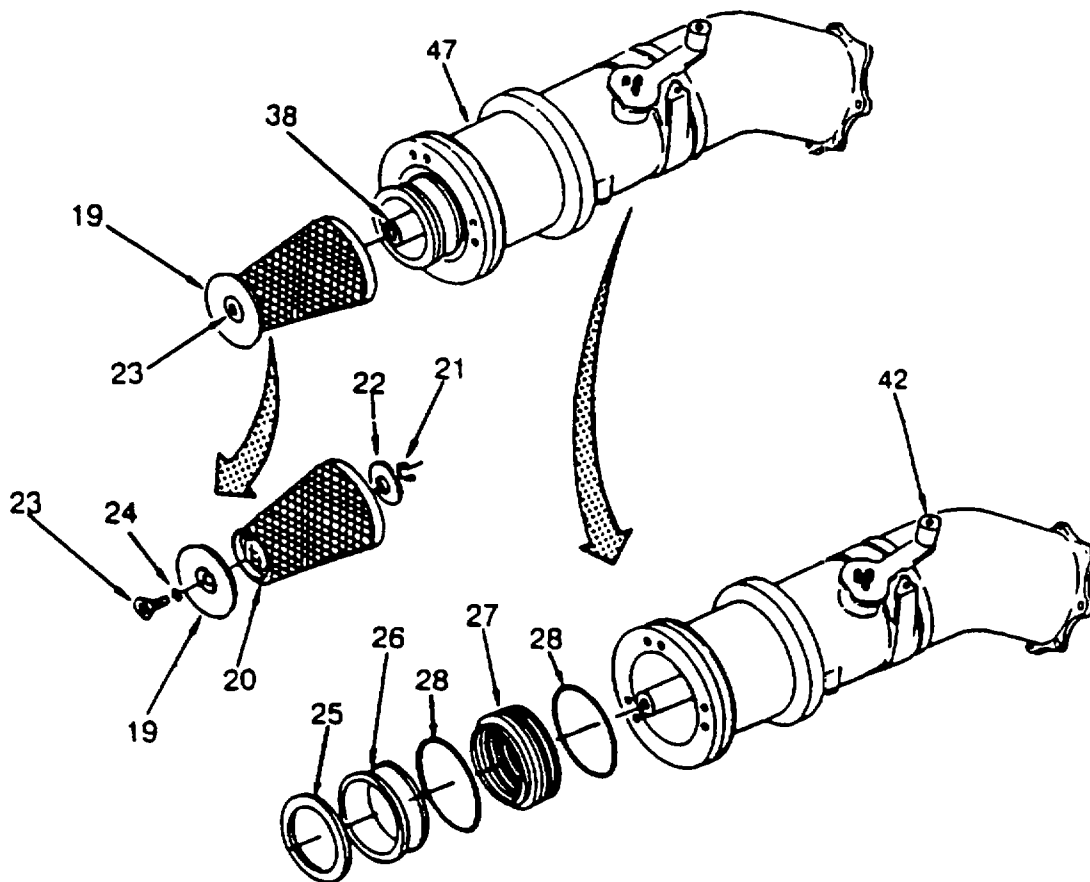
(13) Align welded seam of strainer (20) with the closed side of retaining ring (21). Remove retaining ring (21).

(14) Remove strainer (20) and washer (22) from screw (23).

(15) Remove screw (23) and one packing (24) from poppet (19).

(16) Remove one packing (24) from screw (23) and discard.

(17) Remove nose seal (25), retainer (26), bellows (27), two packings (28) from nozzle body (47). Discard nose seal (25) and two packings (28).



5-2. D-1 FUELING NOZZLE REPAIR - continued.

- (18) Remove screw (29) and second packing (24). Discard packing.
- (19) Rotate nozzle body (47) and remove 39 ball bearings (30) from body (47).
- (20) Pull elbow (31) from nozzle body (47)

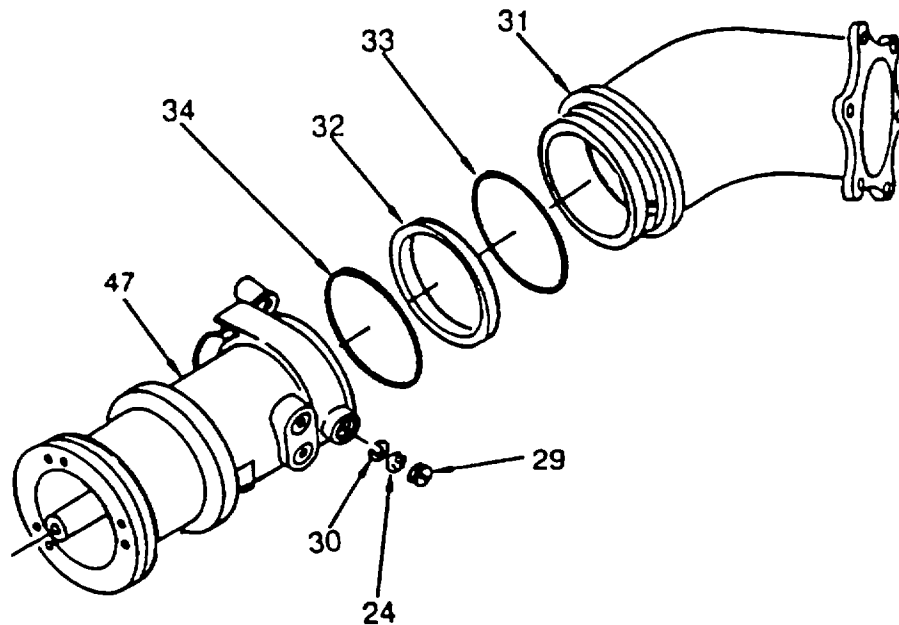
CAUTION

Scoring can cause component to leak. Do not score elbow when removing slip ring or packing

NOTE

Slip ring and packing should not be removed unless damaged and replacement is needed

- (21) Cut slip ring (32) from elbow (31) and discard.
- (22) Remove packing (33) from elbow (31) and discard.
- (23) Remove packing (34) from nozzle body (47) and discard.



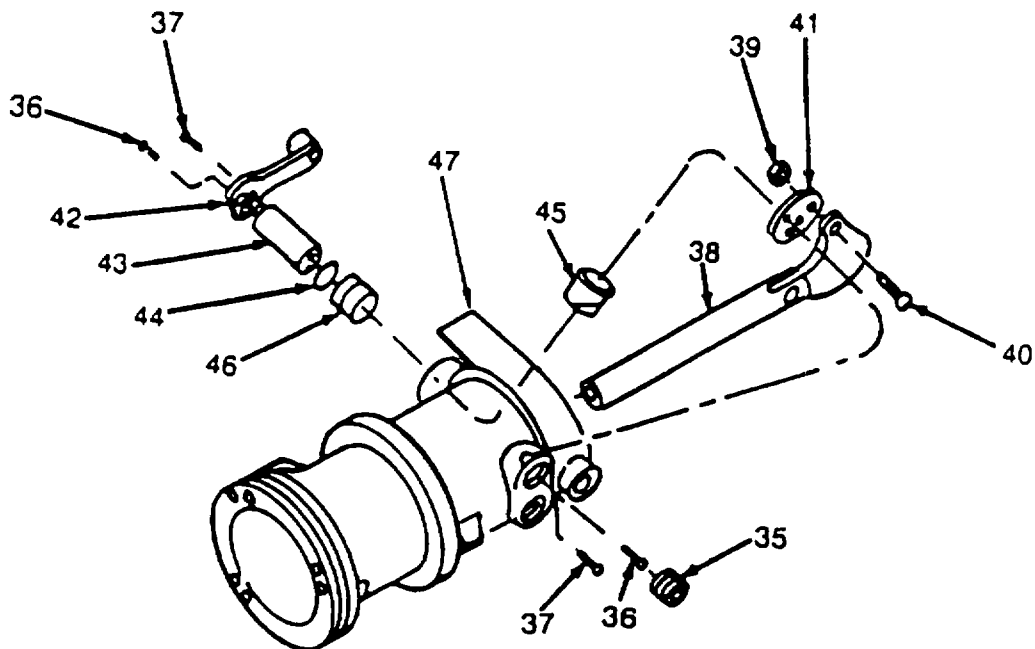
5-2. D-1 FUELING NOZZLE REPAIR - continued.

- (24) Position nozzle body (47) with plugs (35) visible. Remove the top plug (35) only.
- (25) Remove two screws (36) and screw (37) through plug opening in nozzle body.
- (26) Remove nozzle shaft assembly (38) through bottom of nozzle body (47)

NOTE

Do not disassemble nut, screw and cam plate from nozzle shaft assembly unless replacement is required.

- (27) Remove nut (39), screw (40) and cam plate (41) from nozzle shaft (38).
- (28) Remove handle assembly (42) from nozzle body (47).
- (29) Remove two screws (36) and screw (37) from handle assembly (42) to remove crank shaft (43).
- (30) Remove packing (44) and inner bearing (45) from nozzle body (47).
- (31) Remove outer bearing (46) by pushing it into nozzle body (47).



5-2. D-1 FUELING NOZZLE REPAIR - continued.

- b. Repair.

WARNING

Drycleaning solvent, AA 711, Types I and II, used to clean parts, is potentially dangerous to personnel and property. Eye protection required. Avoid repeated and prolonged skin contact by wearing rubber or nonporous gloves when handling solvents or material wet with dry-cleaning solvent. Wash hands immediately after exposure with soap and water and use a lanolin based skin cream to prevent skin drying. Do not use near open flame or excessive heat. Flash point of solvent is 138°F. Do not work with solvent in a closed room. Be sure there is good ventilation or the solvent vapors will build up in the air and become a poisonous mixture which can cause physical injury or even death.

- (1) Wash all parts with cleaning solvent, federal specification AA 711.

WARNING

Compressed air can blow dust into the eyes. Wear eye protection. Do not exceed 30 psig working pressure.

- (2) Dry thoroughly with a clean cloth or compressed air.
- (3) Inspect parts visually for cracks, wear, cuts, tears or holes.
- (4) Inspect springs for distortion or broken coils.
- (5) Inspect for bent or broken pins or locks.
- (6) Inspect threaded surfaces for damaged or stripped threads.
- (7) Inspect mating parts for scoring, nicks or wear.
- (8) Replace defective components.

5-2. D-1 FUELING NOZZLE REPAIR - continued.

c. Assembly

- (1) Install inner bearing (45) in nozzle body (47) from the inside
- (2) Install outer bearing (46) in nozzle body (47) from the outside.
- (3) Position crank shaft (43) on handle assembly (42) and install screw (37), and two screws (36), hand tighten only.
- (4) Lubricate packing (44) with silicone compound and install into groove in nozzle body (47).
- (5) Carefully slide crank shaft (43) into nozzle body (47) so that inner bearing (45) is not pushed out

NOTE

If the camplate, screw and nut were removed from the nozzle shaft during maintenance, assemble following steps (6) thru (8). If the parts were not removed, proceed to step (9).

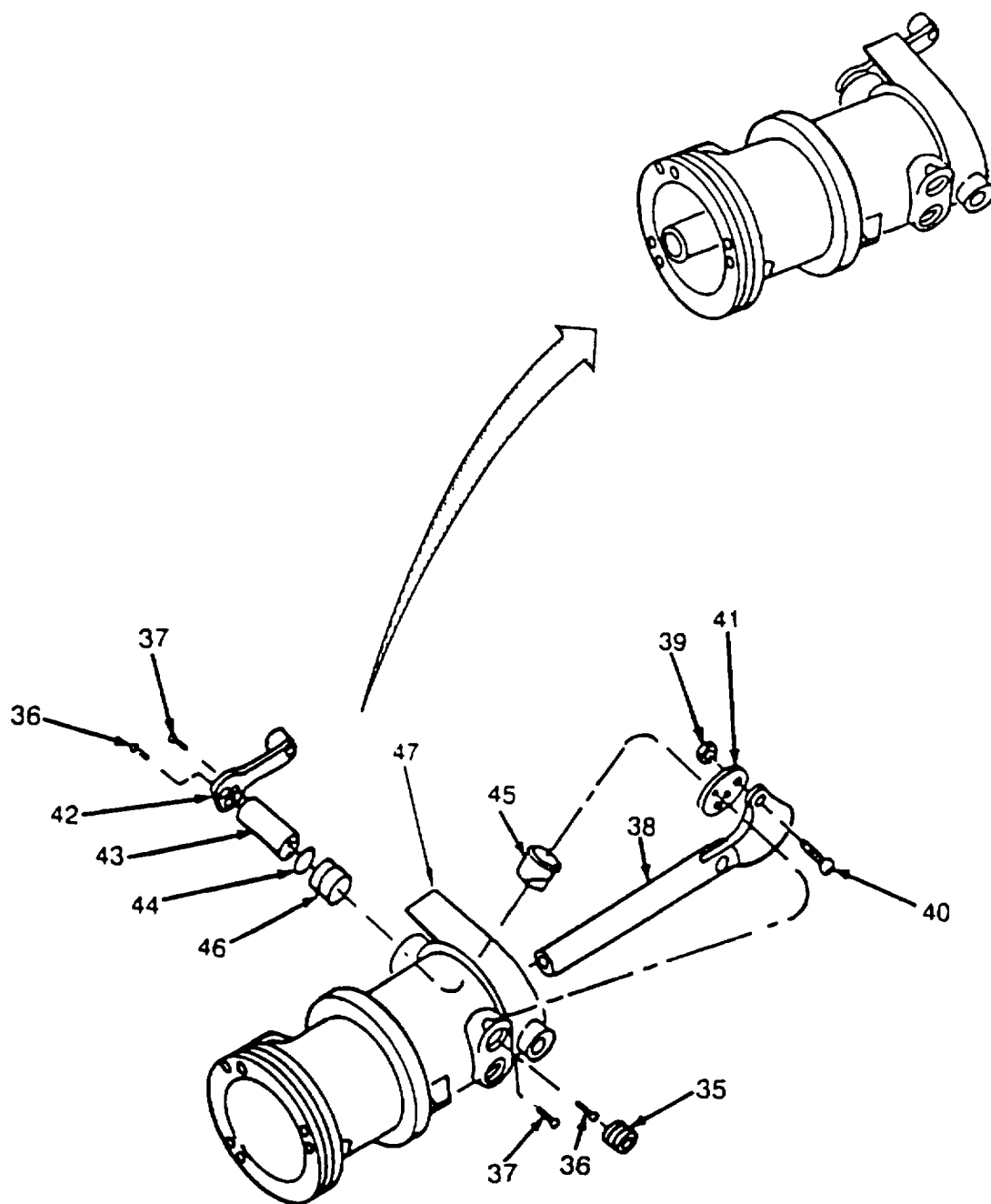
- (6) Install screw (40) through the nozzle shaft (38) from the left side.
- (7) Position camplate (41) on the right side of nozzle shaft (38) over screw (40).
- (8) Install nut (39) on screw (40) and torque nut (39) to 80-125 m-lb
- (9) Install nozzle shaft assembly (38) through bottom of nozzle body (47). Camplate (41) should be between crankshaft (43) and shaft assembly (38).
- (10) Install screw (37) and two screws (36) through opening in nozzle body (47) to secure cam -plate (41) to crank shaft (43), hand tighten only.
- (11) Torque two screws (37) to 40 in-lb.
- (12) Torque four screws (36) to 50 m-lb

CAUTION

Excessive tape could lead to cracking the nozzle body DO. NOT exceed 1 1/2 wraps of tape. Use new teflon tape on installation. Apply teflon in the same direction as threads

- (13) Apply teflon tape on plug (35) and install plug into nozzle body (47).

5-2. D-1 FUELING NOZZLE REPAIR - continued.



5-2. D-1 FUELING NOZZLE REPAIR - continued.

NOTE

Make sure packing is seated in the bottom of the groove on inlet elbow.

- (14) If packing (33) and slip ring (32) were removed during disassembly, lubricate packing (33) with silicone compound and install into groove on inlet elbow (31).

NOTE

The slipring must set on top of the packing installed in step (14).

- (15) Lubricate slipring (32) with silicone compound and install on inlet elbow (31) into the same groove as packing (33).
- (16) Lubricate packing (34) with silicone compound and install into outer groove in body (47).

NOTE

Use care when installing inlet elbow into body so packing is not cut.

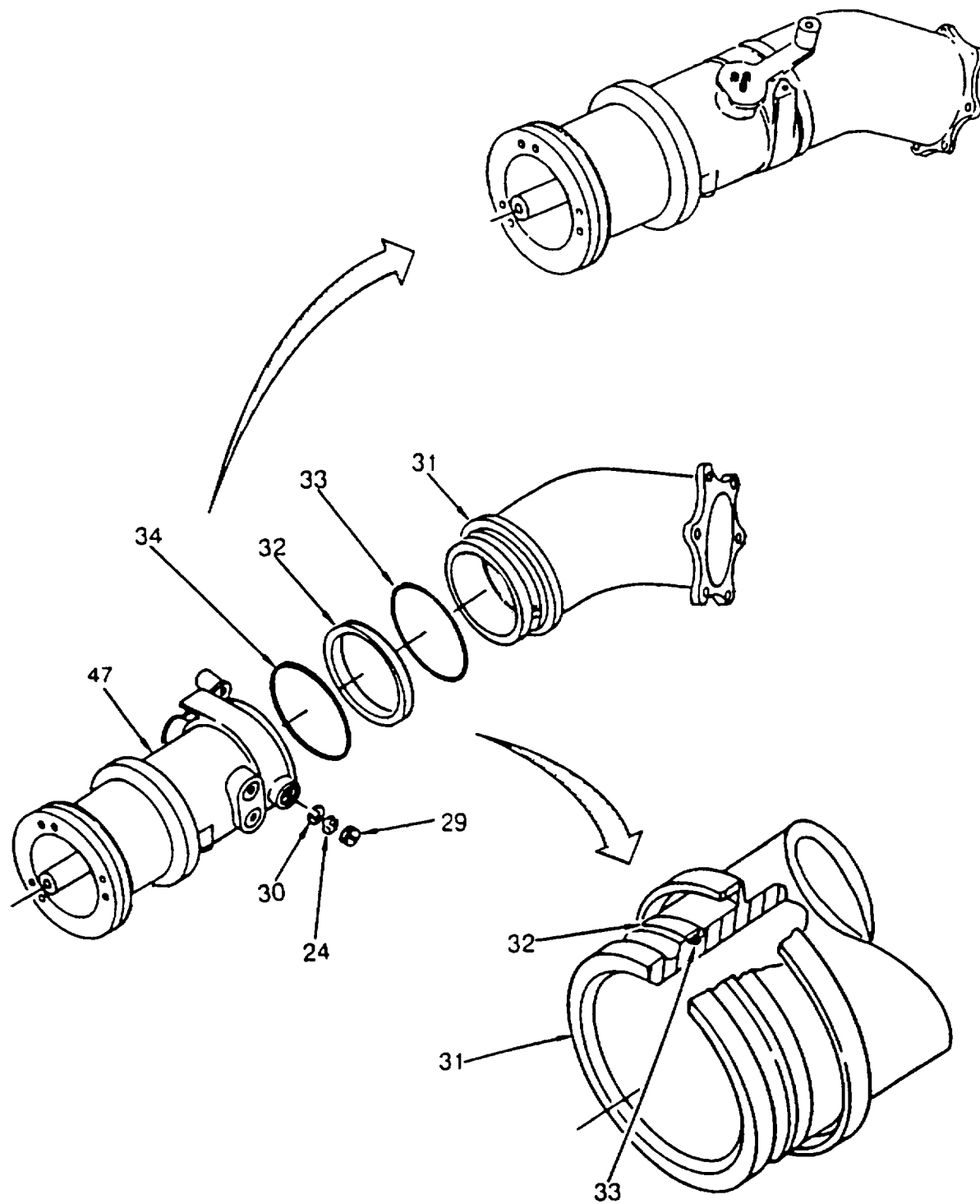
- (17) Install inlet elbow (31) into bottom of nozzle body (47).

CAUTION

Grease on ball bearings makes assembly difficult. DO NOT use any form of grease on ball bearings

- (18) Insert 39 ball bearings (30) into body (47).
- (19) Lubricate one packing (24) with silicone compound and install on screw (29) and install into nozzle body (47).

5-2. D-1 FUELING NOZZLE REPAIR - continued.



5-2. D-1 FUELING NOZZLE REPAIR - continued.

- (20) Place nozzle in soft faced vise.
- (21) Lubricate one packing (28) with silicone compound and insert into groove in body (47) Apply additional silicone compound to packing.

WARNING

Personal injury may occur when handling bellows. Bellows has sharp edges. Handle bellows with care.

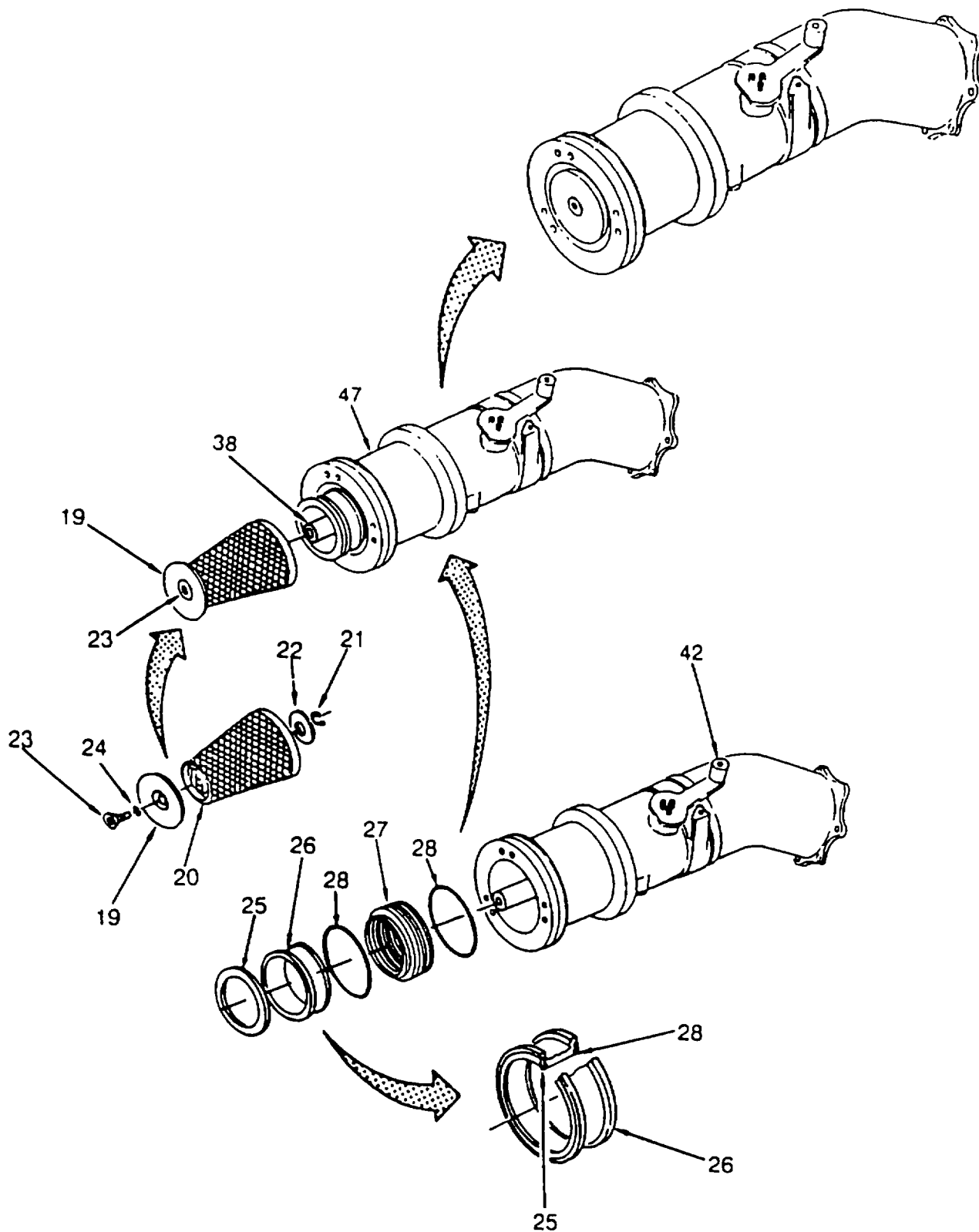
- (22) Lubricate lip of bellows (27) with silicone compound and gently press and turn into body (47)
- (23) Lubricate second packing (28) with silicone compound and insert into beveled end of retainer (26).
- (24) Lubricate nose seal (25) and install into retainer (26). Be sure nose seal is completely seated in retainer.
- (25) Lubricate lip of bellows (27) and install retainer (26) on bellows by gently pushing and turning.
- (26) Lubricate second packing (24) with silicone compound and install on screw (23).
- (27) Insert screw (23) into poppet (19).
- (28) Position strainer (20) on poppet (19) and install washer (22) on screw (23).

NOTE

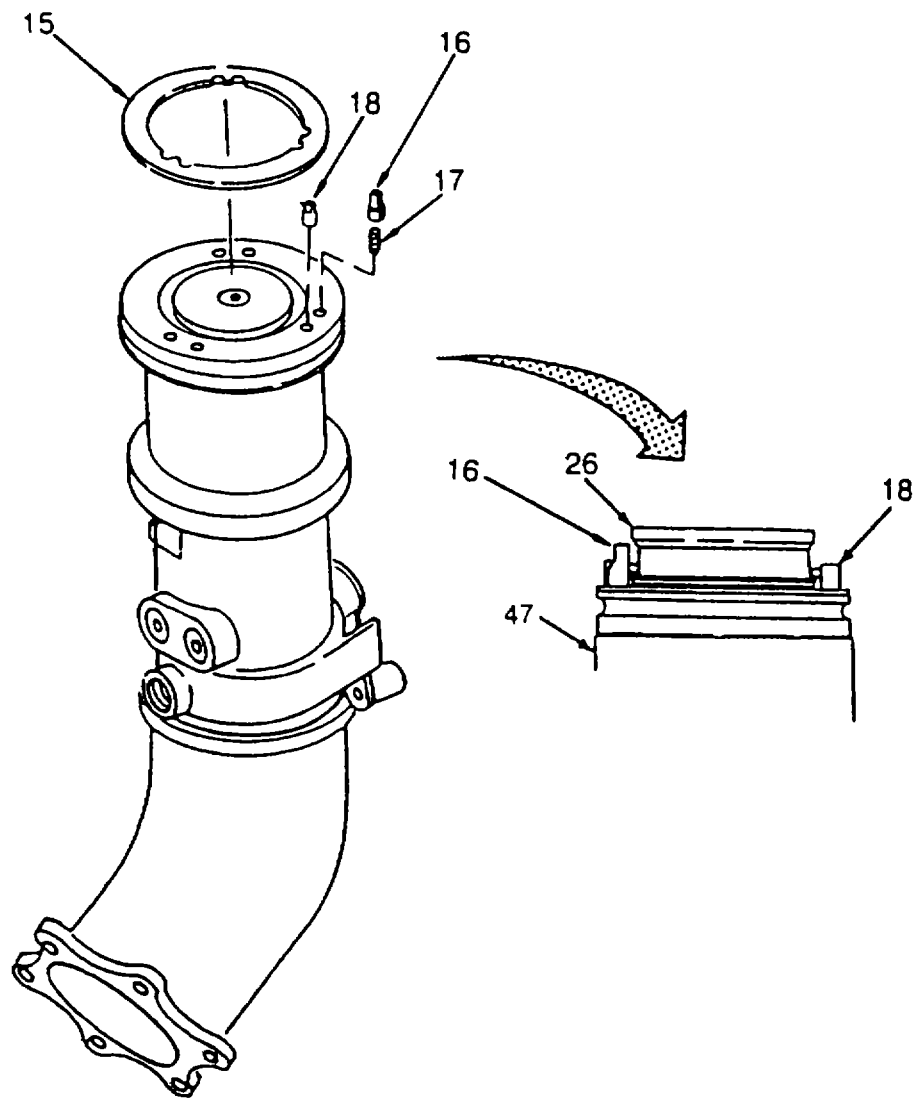
When installing retaining ring, align closed end with welded seam of screen before pressing retaining ring onto screw.

- (29) Install retaining ring (21) on screw (23).
- (30) Move handle assembly (42) to the open position and install poppet (19) and strainer (20) into body (47) and tighten screw (23) into nozzle shaft (38).
- (31) Move handle assembly (42) to the closed position.

5-2. D-1 FUELING NOZZLE REPAIR - continued.

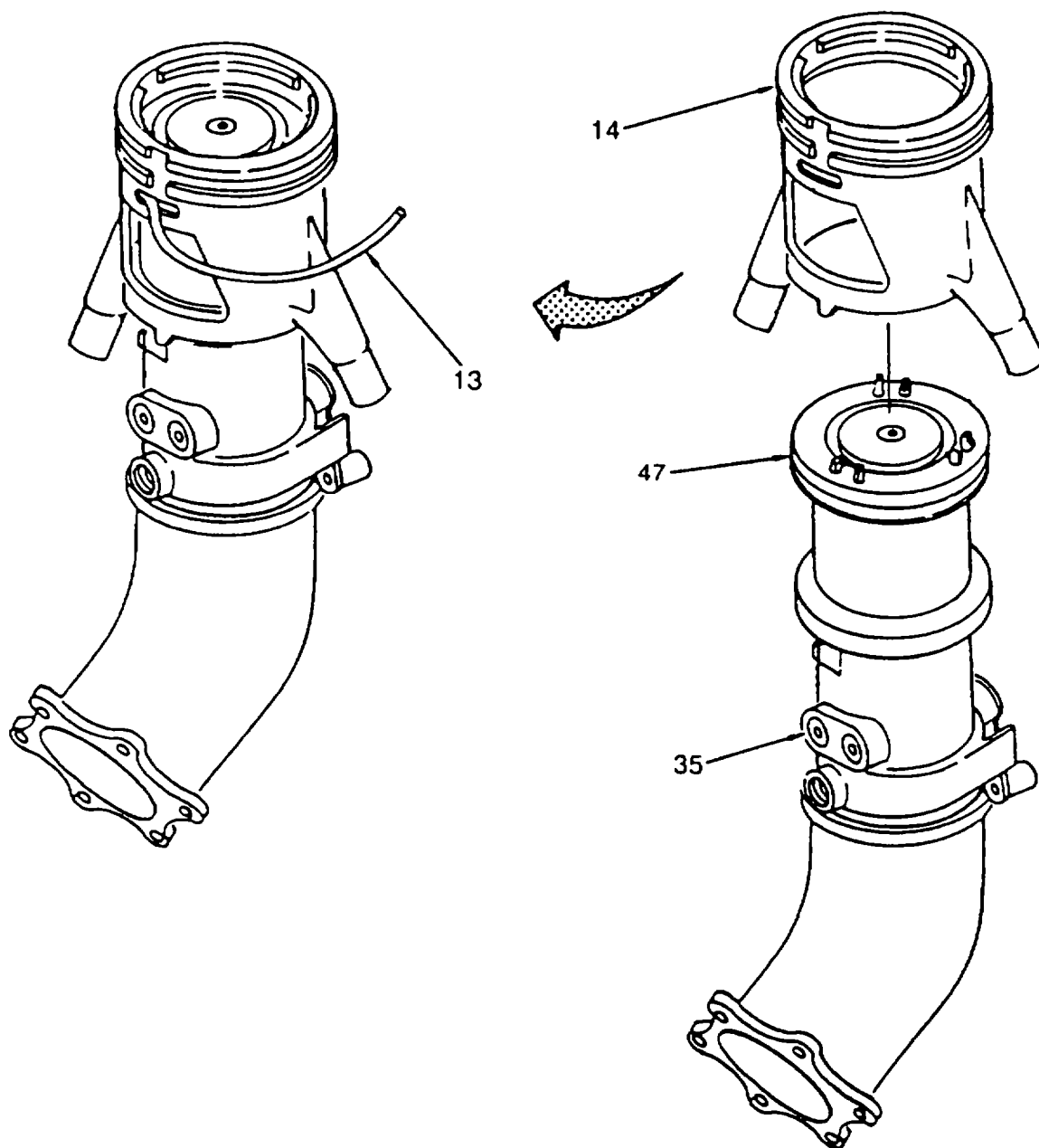


5-2. D-1 FUELING NOZZLE REPAIR - continued.



- (32) Install three lock pin springs (17) and three lock pins (16) into nozzle body (47). Flat side of lock pins face out
- (33) Install three indexing pins (18) into nozzle body (47) with the tab facing outward.
- (34) Turn the three indexing pins tabs (18) until they are between the two lips on retainer (26).
- (35) Install pin retainer plate (15) on nozzle body (47).

5-2. D-1 FUELING NOZZLE REPAIR - continued.

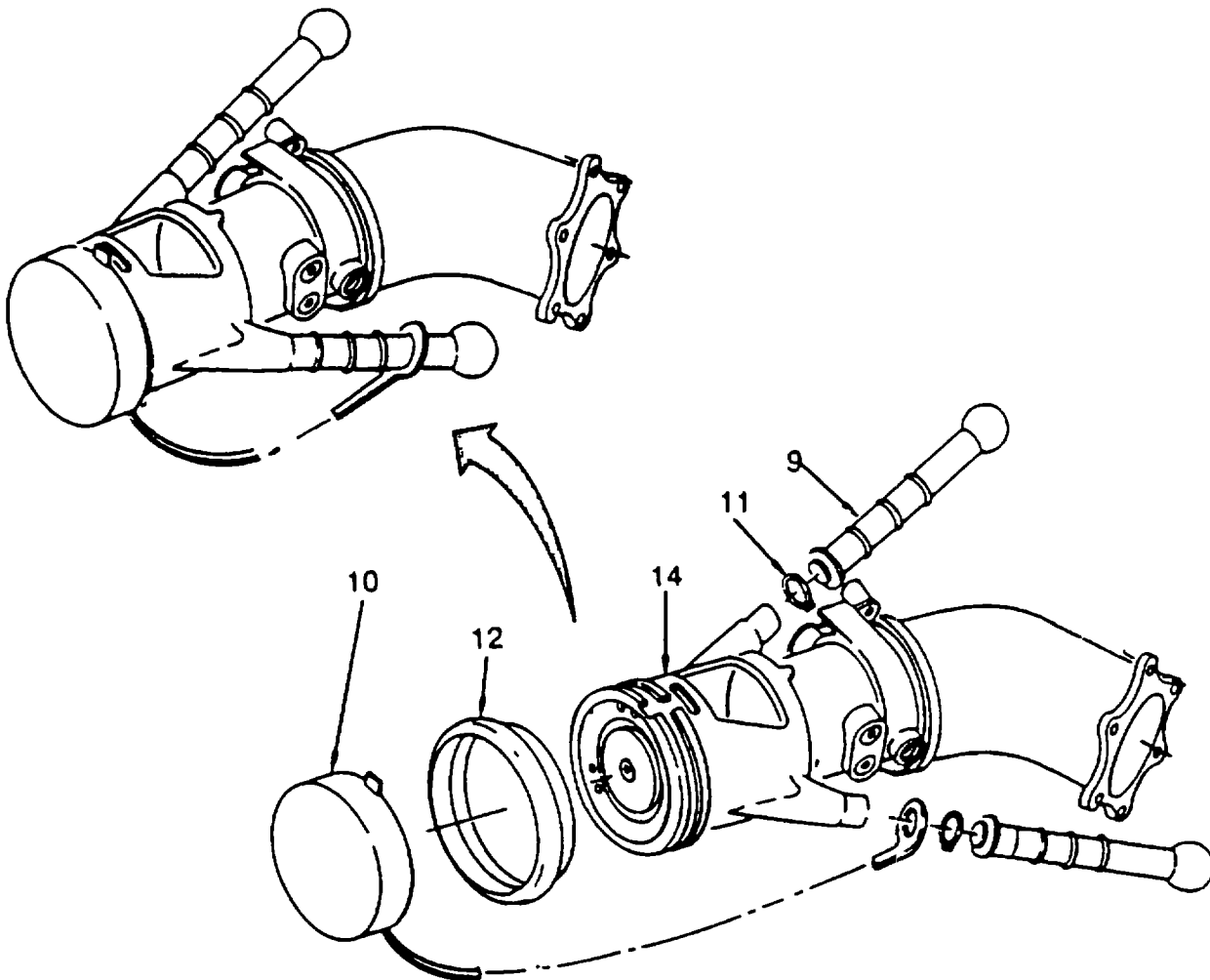


- (36) Install collar (14) on nozzle body (47) by aligning the stop closest to the handle on the collar with the stop above the two plugs (35) on the nozzle body.
- (37) Install collar bearing (13) into nozzle collar (14) and nozzle body (47).

5-2. D-1 FUELING NOZZLE REPAIR - continued.**NOTE**

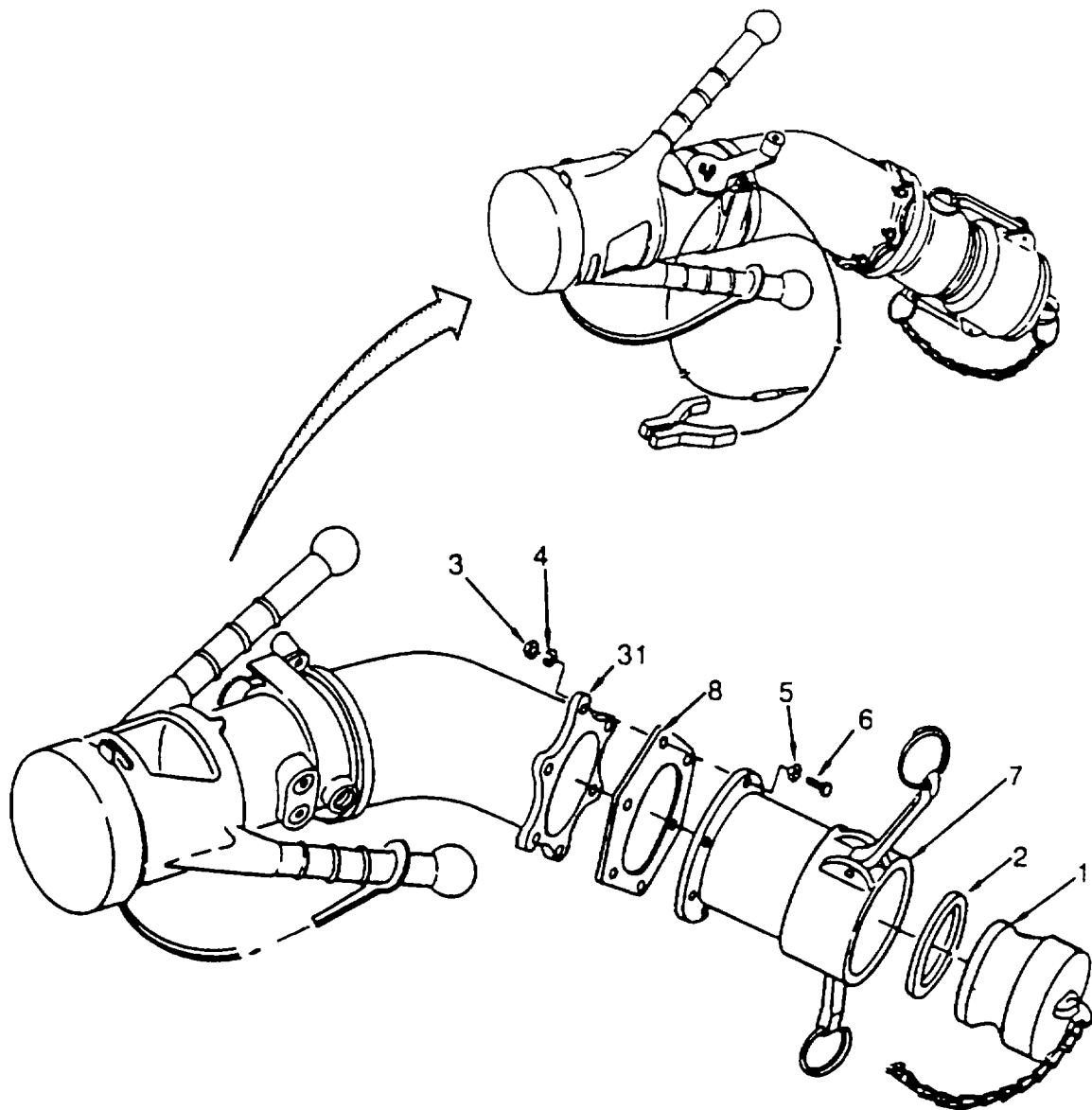
Bumper collar must be warmed to soften before installing onto nozzle collar.

- (38) Install bumper collar (12) onto nozzle collar (14) using a soft head hammer.
- (39) Slide the looped end of dust cover (10) over one of the handles on collar (14).
- (40) Mount one grip (9) over the handle on collar (14) and secure the grip and dust cover (10) with one retaining ring (11).
- (41) Mount the remaining grip (9) on collar (14) and secure with the second retaining ring (11).
- (42) Place the dust cover (10) over bumper collar (12).



5-2 D-1 FUELING NOZZLE REPAIR - continued.

- (43) Position gasket (8) on coupling (7).
- (44) Align coupling (7), gasket (8) and elbow (31).
- (45) Install six flat washers (5), six screws (6), six lockwashers (4) and six nuts (3) to attach coupling (7) and elbow (31).
- (46) Install gasket (2) into coupling (7).
- (47) Install coupling plug (1) into coupling (7) and lock.
- (48) Install ground cable assembly (paragraph 4-8).



5-2. D-1 FUELING NOZZLE REPAIR - continued.

CAUTION

Failure of any test is cause for rejection of nozzle assembly until fault is corrected.

If strainer housing or coupling threads leak, tighten one thread. Do not over tighten. Failure to comply can result in damage to parts.

- d. Test. After repair and prior to release for aircraft refueling. test nozzle in an operating, pressurized refueling system to ensure no leakage occurs.

APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referenced in this manual. Also listed are publications that should be consulted for additional information.

A-2. FORMS

Recommended Changes to DA Publications and Blank Forms	DA Form 2028
Recommended Changes to DA Publications	DA Form 2028-2
Equipment Inspection and Maintenance Worksheet	DA Form 2404
Maintenance Request.....	DA Form 2407
Equipment Log Assembly (Records)	DA Form 2408-9
Product Quality Deficiency Report	STD Form 368

A-3. FIELD MANUALS

NBC Contamination Avoidance	FM 3-3
NBC Protection	FM 3-4
NBC Decontamination.....	FM 3-5
Organizational Maintenance of Military Petroleum Pipelines, Tanks and Related Equipment	FM 10-20
Aircraft Refueling	FM 10-68
Petroleum Supply Point Equipment and Operations	FM 10-69
Rigging .Loading and Dropping Procedures	FM 10-564
First Aid for Soldiers	FM 21-11
Basic Cold Weather Manual	FM 31-70
Northern Operations.....	FM 31-71

A-4. TECHNICAL MANUALS

Destruction of Army Material to Prevent Enemy Use	TM 750-224-3
---	--------------

A-5. MISCELLANEOUS

The Army Maintenance Management System	DA PAM 738-750
Security Procedures	AR 190-11, AR 190-13
Packing of Army Material for Shipment and Storage	AR 746-1

Appendix B. MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. THE ARMY MAINTENANCE SYSTEM MAC.

a. This introduction (section I) provides a general explanation of all maintenance and repair functions authorized at various maintenance levels under the standard Army Maintenance System concept.

b. The Maintenance Allocation Chart (MAC) in section II designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component will be constant with the capacities and capabilities of the designated maintenance levels, which are shown in the MAC in column (4) as:

Unit - includes two subcolumns, C (operator/crew) and O (unit) maintenance.

Direct Support - includes an F subcolumn

General Support - includes an H subcolumn.

Depot - includes an D subcolumn.

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

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

B-2. MAINTENANCE FUNCTIONS. MAINTENANCE FUNCTIONS WILL BE LIMITED TO AND DEFINED AS FOLLOWS:

a. Inspect. To determine the serviceability of an Item by company its physical, mechanical, and/or electrical characteristics with established standards through examination (i e. , by sight, sound, or feel).

b. Test. To verify serviceability by measuring the mechanical 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 decontamination, when required), to preserve, 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 equipment 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 3rd position code of the SMR code.

i. Repair. The application of maintenance services¹ including fault location/troubleshooting², removal/installation, and disassembly/assembly³ procedures, 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), and 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 service/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 material 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 and components.

B-3. EXPLANATION OF COLUMNS IN THE MAC. SECTION II.

a. Column 1 - Group Number Column 1 lists functional group code numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the next higher assembly.

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

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

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

- C Operator or Crew
- O Unit Maintenance
- F Direct Support Maintenance
- H General Support Maintenance
- D Depot Maintenance

¹Service - Inspect, test, service, adjust, align, calibrate, and/or replace.

²Fault location/troubleshooting - 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).

³Disassembly/assembly - The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned as SMR code for the level of maintenance under consideration (i.e., identification as maintenance significant).

⁴Actions - Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

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

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

B-4. EXPLANATION OF COLUMNS IN TOOL AND TEST EQUIPMENT REQUIREMENTS. SECTION III.

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

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

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

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

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

B-5. EXPLANATION OF COLUMNS IN REMARKS. SECTION IV.

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

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

Section II. MAINTENANCE ALLOCATION CHART

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	D-1 PRESSURE NOZZLE ASSEMBLY								
01	NOZZLE ASSEMBLY	INSPECT TEST REPLACE REPAIR	0.5	0.5 0.5	0.5 3.5			1 2,3,4,5	

Section III. TOOLS AND TEST EQUIPMENT REQUIREMENTS

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F	Tool Kit, General Mechanic's Automotive	5180-00-177-7033	SC-5180-94-CL-N 26
2	F	Shop Equipment, Automotive Maintenance and Repair: Field Maintenance, Basic, Less Power	4910-00-754-0705	SC-4910-95-CL-A 31
3	F	Adapter, Pressure		6958CG
4	F	Adapter, Bayonet		S204451
5	F	Adapter, Male	4730-01-051-0322	MS27022-1

Section IV. REMARKS

REFERENCE CODE	REMARKS
A	Repair Limited to Replacement of Defective Components.

APPENDIX C

UNIT, AND DIRECT SUPPORT MAINTENANCE
REPAIR PARTS AND SPECIAL TOOLS LIST

Section I. INTRODUCTION

C-1. SCOPE. This RPSTL lists and authorizes spares and repair parts, special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of unit and direct support maintenance of the D-1 Pressure Nozzle, Fuel Servicing, Arctic Service. It authorizes the requisitioning, issue, and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

C-2. GENERAL. In addition to this section, 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. This list also includes parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Bulk materials are listed in item name sequence. Items are shown in the associated illustration(s)/figure(s).

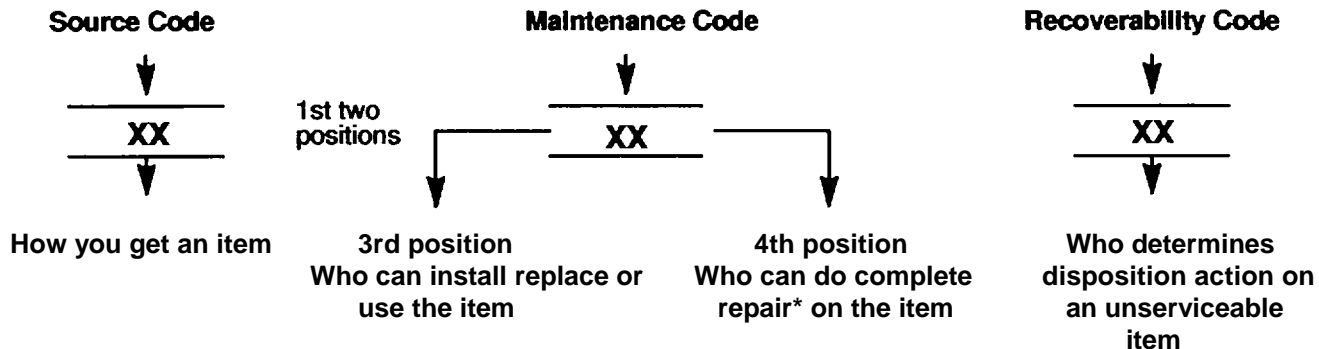
b. Section III. Special Tools List. A list of special tools, special TMDE, and other special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in DESCRIPTION AND USABLE ON CODE column) for the performance of maintenance.

c. Section IV. Cross-Reference Index. A list, in National Item Identification Number (NIIN) sequence, of all National stock numbered items appearing in the listing, followed by a list in alphanumeric sequence of all part numbers appearing in the 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, CAGEC and part number.

C-3. EXPLANATION OF COLUMNS (SECTIONS II AND III).

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

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



* Complete Repair: Maintenance 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.

(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:

Source Code	Explanation
PA PB PC PD PE PF PG	<p>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.</p> <p style="text-align: right;">**NOTE: Items coded PC are subject to deterioration.</p>
KD KF KB	<p>Items with these codes are not to be requested/requisitioned individually. They are part of a kit which is authorized to the maintenance category indicated in the 3rd position of the SMR code. The complete kit must be requisitioned and applied.</p>
MO (Made at Unit/AVUM Level) MF (Made at S/AVM Level) MH (Made at GS Level) ML (Made at Specialized Repair Activity (SRA)) MD (Made at Depot)	<p>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 indicates it is made at a higher level, order the item from the higher level of maintenance.</p>
AO (Assembled by Unit/AVUM Level) AF (Assembled by DS/AVIM Level) A AL (Assembled by SRA) AD (Assembled by Depot)	<p>Items with these codes are not to be requested/ requisitioned individually. The parts that make up the assembled item must be requisitioned or fabricated and assembled at the level of maintenance indicated by the source code. If the 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.</p>
XA	Do not requisition 'XA'-coded item. Order its next higher assembly. (Refer to the NOTE below.)
XB	If an "XB item is not available from salvage, order it using the CAGEC and part number given.
XC	Installation drawing, diagram, instruction sheet, field service drawing, that is Identified manufacturer's part number.
XD	Item is not stocked. Order an 'XD'-coded item through normal supply channels using the CAGEC 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 codes tell 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 the following levels of maintenance.

Maintenance Code	Application/Explanation
C	- Crew or operator maintenance done within unit/AVUM maintenance
O	- Unit level/VAVUM maintenance can remove, replace, and use the item.
F	- Direct support/AVIM maintenance can remove, replace, and use the item
H	- General support maintenance can remove, replace, and use the item
L	- Specialized repair activity can remove, replace, and use the item
D	- Depot 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 an item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart and SMR codes.

Maintenance Code	Application/Explanation
O	- Unit/AVUM is the lowest level that can do complete repair of the item
F	- Direct support/AVIM 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 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.

Maintenance Code	Application/Explanation
Z	- Nonreparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in 3d position of SMR Code.
O	- Repairable item. When not economically repairable, condemn and dispose of the item at unit or AVUM level.
F	- Repairable item. When uneconomically repairable, condemn and dispose of the item at the direct support or AVIM level.
H	- Repairable item. When uneconomically repairable, condemn and dispose of the item at the general support level.
D	- Repairable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item not authorized below depot level.

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

c. CAGEC (Column (3)). The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

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

NOTE

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

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

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

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

(3) The statement "SEND 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 (6)). The QTY (quantity per figure) column indicates the quantity of the item used in the breakout shown on the illustration/figure, which is prepared for a functional group, subfunctional group, or an assembly. A S'V appearing in this column instead of a quantity indicates that the quantity is variable and may vary from application to application.

C-4. EXPLANATION OF INDEX FORMAT AND COLUMNS (SECTION IV).

a. NATIONAL STOCK NUMBER (NSN) INDEX.

(1) STOCK NUMBER Column. This column lists the NSN in national item identification number (NIIN) sequence. The NIIN consists of the last nine digits of the NSN, i.e.

NSN
5305-01-574-1467
NIIN

When using this column to locate an item, ignore the first four digits of the NSN. Use the complete NSN (13 digits) when requisitioning 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) CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency/activity 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 CAGEC 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 Section III.

(5) ITEM Column. The item number is that number assigned to the item as it appears in the figure referenced in 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 Section 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) CAGEC Column. The Commercial and Government Entity Code (CAGEC) is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency/activity 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.

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 last line of the applicable item description/nomenclature. Uncoded items are applicable to all models. Identification of the usable on codes used in this RPSTL are:

Code	Used On
------	---------

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 entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in APPENDIX G.

c. INDEX NUMBER. 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.

d. ASSOCIATED PUBLICATIONS. The publications listed below pertain to the D-1 Pressure Nozzle, Fuel Servicing, Arctic Service and its components.

<u>Publication</u>	<u>Short Title</u>
--------------------	--------------------

TM 10-4930-242-13&P

Operator, Unit and Direct Support Maintenance Manual Including Repair Parts and Special Tools List

C-6. HOW TO LOCATE REPAIR PARTS.a. When National Stock Numbers or Part Numbers are NOT Known.

(1) First Using the table of contents, determine the assembly 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 of National Stock Number and Part Number Indexes find the pertinent National Stock Number or Part Number. The NSN index is in National Item Identification Number (NIIN) sequence (see paragraph 4.a.). The part numbers in the Part Number index are listed in ascending alphanumeric sequence (see paragraph 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 used in this manual are listed in MIL-STD-12.

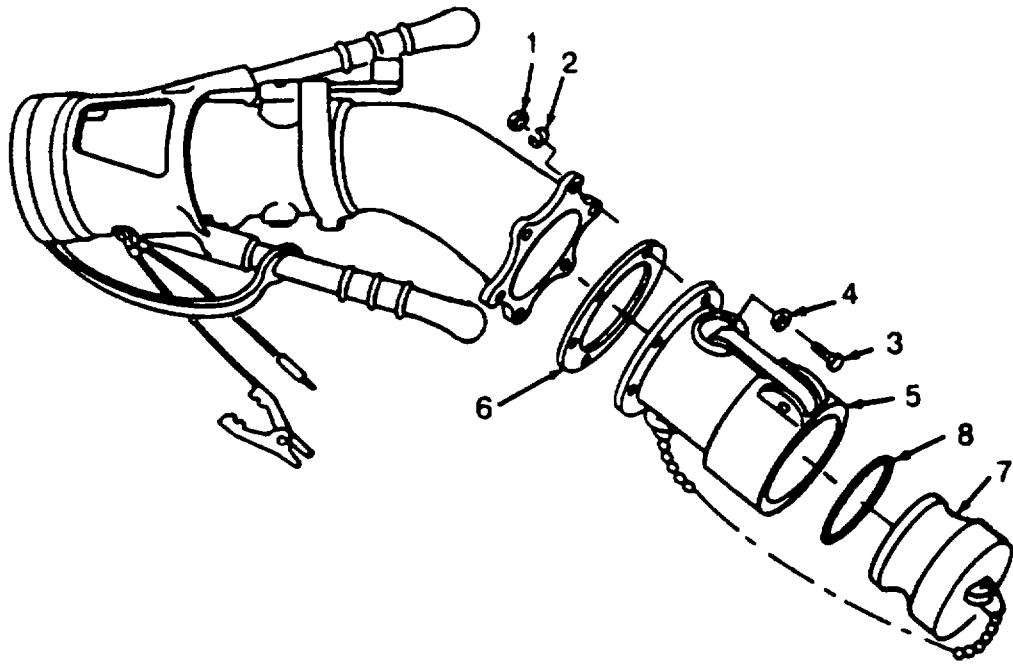


Figure C-1. D-1 Pressure Nozzle and Coupling

(C-7 Blank)/C-8

SECTION II

TM 10-4930-242-13&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
GROUP 01 NOZZLE ASSEMBLY					
FIG.1 D-1 PRFSSURE NOZZLE AND COUPLING					
1	PAFZZ	96906	MS35649-2312	NUT, PLAIN, HEXAGON	6
2	PAFZZ	96906	MS35338-45	WASHER, LOCK	6
3	PAFZZ	80204	B182113H031C150N	BOLT, MACHINE	6
4	XBFZZ	80205	NAS1070-516	WASHER, FLAT	6
5	PAFZZ	96906	MS70091-11	COUPLING HALF, QUICK	1
6	PCFZZ	97403	13228E1020	GASKET	1
7	PAFZZ	96906	MS27029-11	PLUG, QUICK DISCONE	1
8	PCOZZ	97403	13228E1768-6	GASKET	1

END OF FIGURE

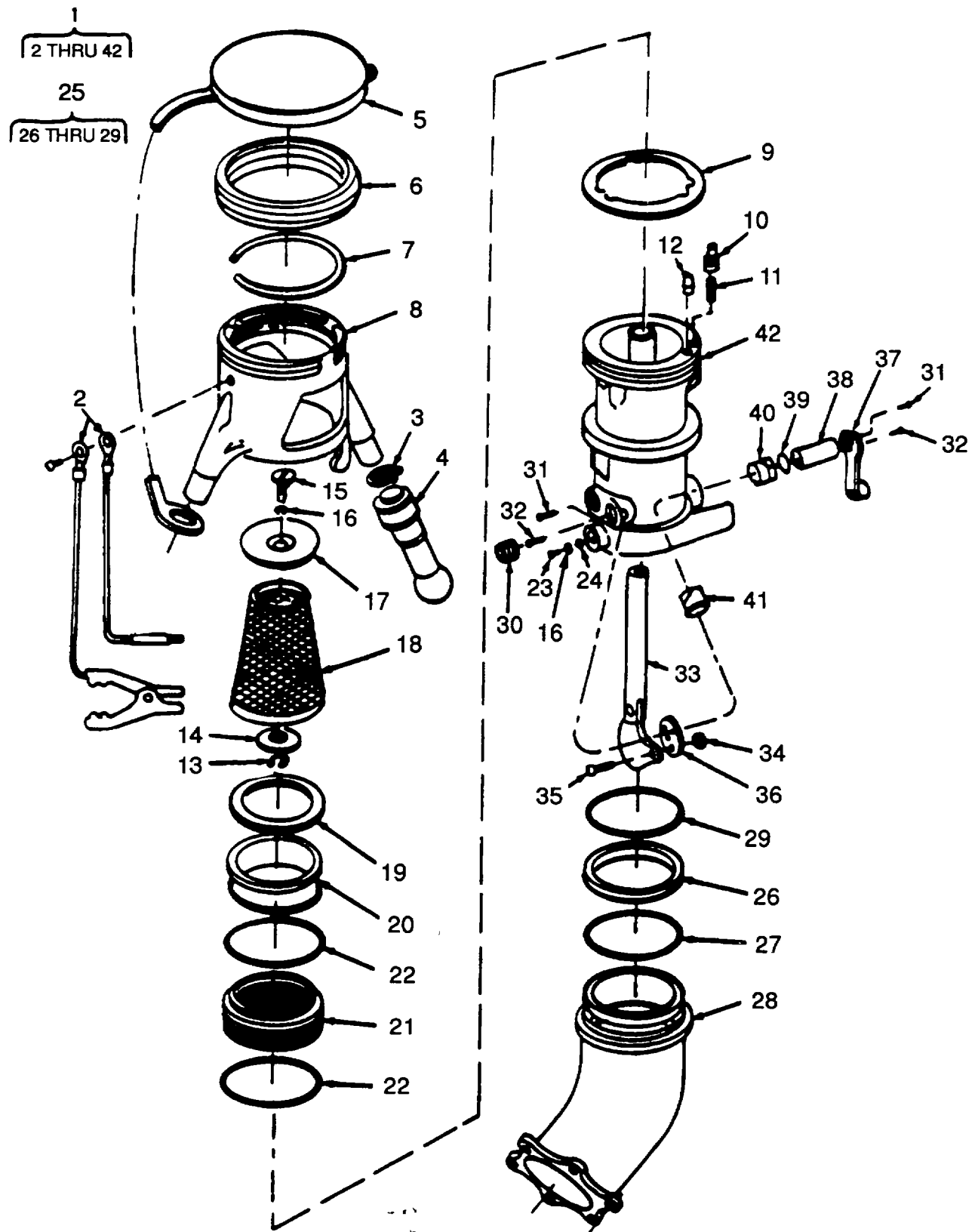


Figure C-2. D-1 Pressure Nozzle

SECTION II

TM 10-4930-242-13&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
GROUP 01 NOZZLE ASSEMBLY					
FIG. 2 D-1 PRESSURE NOZZLE					
1	XBFFF	ODT23	61629CDGH	NOZZLE, ASSEMBLY	1
2	PAOZZ	ODT23	47028	.CABLE ASSEMBLY,SPEC COMES WITH ATTACHING HARDWARE	1
3	XBFZZ	ODT23	RS-106-S	.RING, RETAINING	2
4	XBFZZ	ODT23	220051	.GRIP	2
5	XBFZZ	ODT23	220203	.COVER	1
6	KFFZZ	ODT23	23622	.BUMPER ,COLLAR PART OF KIT P/N KD61629	1
7	KFFZZ	ODT23	23620	.BEARING,COLLAR PART OF KIT P/N KD61629	1
8	XBFZZ	ODT23	220176	.COLLAR,NOZZLE	1
9	XBFZZ	ODT23	220177	.PLATE,PIN RETAINER	1
10	XBFZZ	ODT23	220195	.PIN,COLLAR LOCK.....	3
11	XBFZZ	ODT23	220186	.SPRING,LOCKPIN	3
12	XBFZZ	ODT23	47039	.PIN,INDEXING	3
13	XBFZZ	ODT23	RS-25-S	.RING,RETAINING	1
14	XBFZZ	ODT23	220189	.WASHER	1
15	XBFZZ	ODT23	220188	.SCREW	1
16	KFFZZ	ODT23	220050-011	.PACKING,PREFORMED PART OF KIT P/N 47046 PART OF KIT P/N KD1629	2
17	XBFZZ	ODT23	220181	.POPPET,NOZZLE	1
18	XBFZZ	ODT23	220190-100	.SCREEN,100 MESH	1
19	KFFZZ	ODT23	220183	.SEAL,NOSE PART OF KIT P/N KD61629	1
20	XBFZZ	ODT23	220187	.RETAINER,SEAL	1
21	XBFZZ	ODT23	220184	.BELLOWS	1
22	KFFZZ	ODT23	220050-037	.PACKING,PREFORMED PART OF KIT P/N KD61629	2
23	KFFZZ	ODT23	GF35206-292	.SCREW,PAN HEAD PART OF KIT P/N 47046	1
24	KFFZZ	ODT23	82123	.BEARING,BALL SWIVEL PART OF KIT P/N 47046	39
25	XBFFF	ODT23	47017	.ELBOW ASSEMBLY	1
26	XBFZZ	ODT23	207807	..SLIP RING	1
27	KFFZZ	ODT23	220050-235	..PACKING, PREFORMED PART OF KIT P/N KD61629	1
28	XBFZZ	ODT23	207873	..ELBOW,INLET	1
29	KFFZZ	ODT23	220050-040	PACKING,PREFORMED PART OF KIT P/N 47046 PART OF KIT P/N KD61629	1
30	XBFZZ	ODT23	210388	.PLUG	2
31	XBFZZ	ODT23	GF16996-9	.SCREW, SOCKET HEAD.....	4
32	XBFZZ	ODT23	GF16995-26	.SCREW, SOCKET HEAD.....	2
33	XBFZZ	ODT23	47038	.SHAFT,NOZZLE ASSY	1
34	XBFZZ	ODT23	GF21042-4	.NUT ,HEX LOCK	1
35	XBFZZ	ODT23	220196	.PIN,CRANK.....	1
36	XBFZZ	ODT23	220178	.CAM PLATE	1
37	XBFZZ	ODT23	47041	.HANDLE ASSEMBLY	1
38	XBFZZ	ODT23	220193	.SHAFT,CRANK	1

SECTION II

TM 10-4930-242-13&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY
39	KFFZZ	ODT23	220050-208	.PACKING,PREFORMED PART OF KIT P/N KD61629	1
40	XBFZZ	ODT23	220192	.BEARING,OUTER	1
41	XBFZZ	ODT23	220191	.BEARING,INNER	1
42	XBFZZ	ODT23	220185	.BOD Y,NOZZLE	1
	PAFZZ	ODT23	47046	BALL AND SCREW KIT	1
				BEARING,BALL SWIVEL (39) 2-24	
				PACKING,PREFORMED (2) 2-16	
				PACKING,PREFORMFD (1) 2-29	
				SCREW,PAN HEAD (1) 2-23	
	PAFZZ	ODT23	KD61629	MAINTENANCE KIT,NOZ	1
				BEARING,COLLAR (1) 2-7	
				BUMPER,COLLAR (1) 2-6	
				PACKING,PREFORMED (2) 2-16	
				PACKING,PREFORMED (2) 2-22	
				PACKING,PREFORMED (1) 2-27	
				PACKING,PREFORMED (1) 2-29	
				PACKING,PREFORMED (1) 2-39	
				SEAL ,NOSE (1) 2-19	

END OF FIGURE

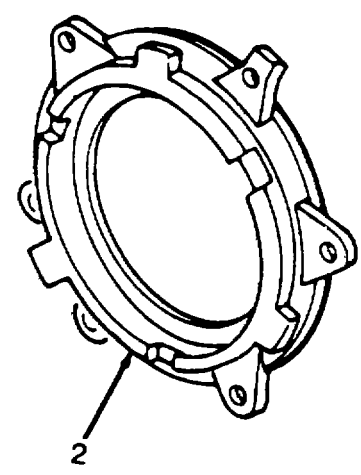
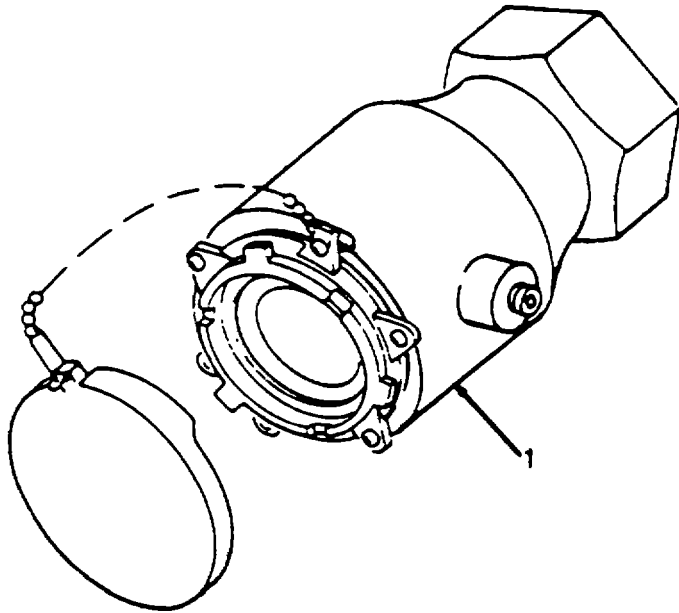


Figure C-3. Special Tools

(C-13 Blank)/C-14

SECTION III

TM 10-4930-242-13&P

(1)	(2)	(3)	(4)	(5)	(6)
ITEM NO	SMR CODE	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES(UOC)	QTY

GROUP 02 SPECIAL TOOLS

FIG.3. SPECIAL TOOLS

1	PFFZZ	ODT23	6958CG	ADAPTER,PRESSURE FU	
2	PFFZZ	ODT23	S204451	ADAPTER, BAYONET.....	

END OF FIGURE

C-15/(C-16 Blank)

SECTION IV

TM 10-4930-242-13&P

CROSS REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
5305-00-226-4831	1	3			
5310-00-407-9566	1	2			
5310-00-829-9981	1	1			
4730-00-915-5127	1	7			
4930-01-192-8459	3	1			
6150-01-392-0442	2	2			
4730-01-412-9565	1	5			
5330-01-413-2120	1	6			
5330-01-413-2126	1	8			
4930-01-415-2531	2				
3120-01-415-6965	2				

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
80204	B1821BH031C150N	5305-00-226-4831	1	3
ODT23	GF16995-26		2	32
ODT23	GF16996-9		2	31
ODT23	GF21042-4		2	34
ODT23	GF35206-292		2	23
ODT23	KD61629	4930-01-415-2531	2	
96906	MS27029-11	4730-00-915-5127	1	7
96906	MS35338-45	5310-00-407-9566	1	2
96906	MS35649-2312	5310-00-829-9981	1	1
96906	MS70091-11	4730-01-412-9565	1	5
80205	NAS1070-516		1	4
ODT23	RS-106-S		2	3
ODT23	RS-25-S		2	13
ODT23	S204451		3	2
97403	13228E1768-6	5330-01-413-2126	1	8
97403	13228E1820	5330-01-413-2120	1	6
ODT23	207807		2	26
ODT23	207873		2	28
ODT23	210388		2	30
ODT23	220050-011		2	16
ODT23	220050-037		2	22
ODT23	220050-040		2	29
ODT23	220050-208		2	39
ODT23	220050-235		2	27
ODT23	220051		2	4
ODT23	220176		2	8
ODT23	220177		2	9
ODT23	220178		2	36
ODT23	220181		2	17
ODT23	220183		2	19
ODT23	220184		2	21
ODT23	220185		2	42
ODT23	220186		2	11
ODT23	220187		2	20
ODT23	220188		2	15
ODT23	220189		2	14
ODT23	220190-100		2	18
ODT23	220191		2	41
ODT23	220192		2	40
ODT23	220193		2	38
ODT23	220195		2	10
ODT23	220196		2	35
ODT23	220203		2	5
ODT23	23620		2	7
ODT23	23622		2	6
ODT23	47017		2	25
ODT23	47028	6150-01-392-0442	2	2
ODT23	47038		2	33
ODT23	47039		2	12
ODT23	47041		2	37
ODT-23	47046	3120-01-415-6965	2	

CROSS-REFERENCE INDEXES

PART NUMBER INDEX

CAGEC	PART NUMBER	STOCK NUMBER	FIG.	ITEM
ODT23	61629CDGH		2	1
ODT23	6958CG	4930-01-192-8459	3	1
ODT23	82123		2	24

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
1	1	5310-00-829-9981	96906	MS35649-2312
1	2	5310-00-407-9566	96906	MS35338-45
1	3	5305-00-226-4831	80204	B1821BH031C150N
1	4		80205	NAS1070-516
1	5	4730-01-412-9565	96906	MS70091-11
1	6	5330-01-413-2120	97403	13228E1820
1	7	4730-00-915-5127	96906	MS27029-11
1	8	5330-01-413-2126	97403	13228E1768-6
2		3120-01-415-6965	ODT23	47046
2		4930-01-415-2531	ODT23	KD61629
2	1		OD123	61629CDGH
2	2	6150-01-392-0442	ODT23	47028
2	3		ODT23	RS-106- S
2	4		ODT23	220051
2	5		OD123	220203
2	6		ODT23	23622
2	7		ODT23	23620
2	8		ODT23	220176
2	9		ODT23	220177
2	10		ODT23	220195
2	11		ODT23	220186
2	12		ODT23	47039
2	13		ODT23	RS-25-S
2	14		ODT23	220189
2	15		ODT23	220188
2	16		ODT23	220050-011
2	17		ODT23	220181
2	18		ODT23	220190-100
2	19		ODT23	220183
2	20		ODT23	220187
2	21		ODT23	220184
2	22		ODT23	220050-037
2	23		ODT23	GF35206-292
2	24		ODT23	82123
2	25		ODT23	47017
2	26		ODT23	207807
2	27		ODT23	220050-235
2	28		ODT23	207873
2	29		ODT23	220050-040
2	30		ODT23	210388
2	31		ODT23	GF16996-9
2	32		ODT23	GF16995-26
2	33		ODT23	47038
2	34		ODT23	GF21042-4
2	35		ODT23	220196
2	36		ODT23	220178
2	37		ODT23	47041
2	38		ODT23	220193
2	39		ODT23	220050-208
2	40		ODT23	220192
2	41		ODT23	220191

CROSS-REFERENCE INDEXES

FIGURE AND ITEM NUMBER INDEX

FIG.	ITEM	STOCK NUMBER	CAGEC	PART NUMBER
2	42		ODT23	220185
3	1	4930-01-192-8459	ODT23	6958CG
3	2		ODT23	S204451

C-21/(C-22 Blank)

APPENDIX D

COMPONENTS OF END ITEM (COEI) AND
BASIC ISSUE ITEMS (BII) LISTS

Section I. INTRODUCTION

D-1. SCOPE.

This appendix lists components of end item and basic issue items for the D-1 arctic Nozzle to help you inventory items required for safe and efficient operation.

D-2. GENERAL.

The Components of End Item and Basic Issue Items List are divided into the following sections:

a. Section II. Components of End Item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the 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 D-1 Nozzle in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the D-1 Nozzle 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/requisition replacement BII, based on TOE/MTOE authorization of the end item.

D-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listing:

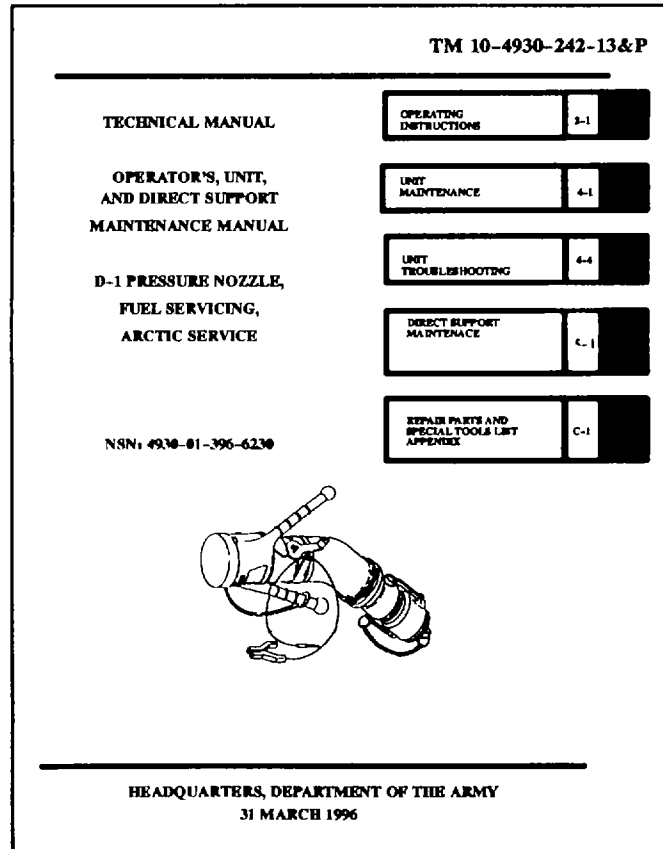
- a. ITEM NUMBER Column 1. This column indicates the number of the item as shown in the illustration.
- b. NATIONAL STOCK NUMBER Column 2. Indicates the national stock number assigned to the item and will be used for requisitioning purposes.
- c. DESCRIPTION. CAGE CODE AND PART NUMBER Column 3. Indicates the Federal item and name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the CAGE Code (in parentheses) followed by the part number.
- d. UNIT OF ISSUE (U/I) Column 4. Indicates how the item is issued for the National Stock Number shown on column 2.
- e. QUANTITY REQUIRED (QTY REQD) Column 5. Indicates the quantity of the item authorized to be used with/on the equipment.

Section II. COMPONENTS OF END ITEM

Order NSN4930-01-396-6230 to receive D-1 Pressure Nozzle Fuel Servicing, Arctic Service

D-2

Section III. BASIC ISSUE ITEMS



ITEM NUMBER	NATIONAL STOCK NUMBER	DESCRIPTION CAGE CODE AND PART NUMBER	U/I	QTY REQD
1	N/A	Operator's Unit, and Direct Support Maintenance Manual Including Repair Parts and Special Tools List TM 10-4930-242-13&P	EA	1

D-3/D-4 (blank)

APPENDIX E**ADDITIONAL AUTHORIZATION LIST**

Section I. Introduction.**E-1. SCOPE.**

This appendix lists additional items you are authorized for the support of the D- 1 Nozzle.

E-2. GENERAL.

This list identifies items that do not have to accompany the D- 1 Nozzle and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

E-3. EXPLANATION OF LISTING.

National stock number, 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. If the item you require differs between serial numbers of the same 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" heading in the description column.

Section II. Additional Authorization Items List

Not Applicable

E-1/(E-2 blank)

APPENDIX F

EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

F-1. SCOPE.

This appendix lists expendable/durable supplies and materials you will need to operate and maintain the Pressure Fueling Nozzle, Type D1, Arctic Service. This listing is for informational purpose only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (Except Medical, Class V, Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

F-2. EXPLANATION OF COLUMNS.

a. Column 1 Item Number. This number is assigned to the entry in the listing and is referenced in the task Initial Setup instructions to identify the material; e.g., "Drycleaning solvent (App E)

b. Column 2 Category. This column identified the lowest category of maintenance that requires the listed item

C - Operator/Crew

O - Unit Maintenance

F - Direct Support Maintenance

G - General Support Maintenance

c. Column 3 National Stock Number. This is the national stock number assigned to the item. Use it to request or requisition the items.

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 part number followed by the Commercial And Government Entity (CAGE) Code for Manufacturer in parentheses, if applicable

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 rest of the issue, requisition the lowest unit of issue that will satisfy your requirements

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Item Number	Category	Stock Number	Description	U/M
1	0	6850-00-281-1985	Cleaning Solvent, Federal Specification AA711	GL
2	0	7920-00-205-1711	Rags, wiping (58536) A-A-531	LB
3	F	8030-00-899-3535	Tape, Anti-seize MIL-T-27730-SZ2 (80244)	RL
4	F	9150-00-119-9291	Silicone Compound (81349) MIL-G4343	TU
5	F	8415-01-129-6535	Gloves, Heat protective (1S655)	PR

APPENDIX G
ILLUSTRATED LIST OF MANUFACTURED ITEMS

Not Applicable

G- 1/(G-2 blank)

APPENDIX H

MANDATORY REPLACEMENT PARTS

ITEM NO.	NOMENCLATURE	PART NUMBER
1	Bumper, Collar	23622
2	Bearing, Collar	23620
3	Packing, Preformed	220050-011
4	Packing, Preformed	220050-037
5	packing, Preformed	220050-235
6	Packing, Preformed	220050-208
7	Lock Washer	MS35338
8	Nose Seal	220183
9	Packing, Preformed	220050-040
10	Slip Ring	207807
11	Gasket, Nozzle	13228E1820

H-1/(H-2 blank)

GLOSSARY

Section I. ABBREVIATIONS

App	Appendix
BT	Bottle
F.....	Fahrenheit
GL	Gallon
m lb	Inch Pounds
In	Inch
PL.....	Pound
PN	Part Number
PR	Pair
psig	Pound-force per Square Inch, Gage
RL	Roll
TU.....	Tube

Section II. DEFINITIONS OF UNUSUAL TERMS

Packing: O-Ring seals.

INDEX

SUBJECT, PARAGRAPH

-A-

Abbreviations, Glossary, 1
 Additional Authorization List, E-1
 Administrative Storage, 4-11
 Arctic Conditions, Operating In, 2-10
 Assembly and Preparation for Use, 2-7

-B-

Basic Issue Items, D-3

-C-

Characteristics, Capabilities and Features, 1-7
 Checks and Services, Preventive Maintenance, 4-4
 Common Tools and Equipment, 4-1
 Components of End Item and Basic Issue Items List, D-1
 Corrections, 1-5
 Corrosion Prevention and Control, 1-4
 Coupling Assembly, 1-8
 Cover, 1-8
 Cross Reference List, Nomenclature, 1-6

-D-

D-1 Fueling Nozzle Repair, 5-2
 D-1 Pressure Nozzle, 2-1
 Decals and Instruction Plates, 2-9
 Decontamination Procedures, NBC. 2-12
 Description of Major Components, 1-8
 Destruction of Army Materiel To Prevent Enemy Use, 1-3
 Dimensions, 1-9

SUBJECT, PARAGRAPH

-E-

Elbow, Swivle, 1-8
 Emergency Procedures, 2-11
 Equipment Characteristics, Capabilities and Features, 1-7
 Equipment Data, 1-9
 Equipment Improvement Recommendations, Reporting, 1-5
 Expendable/Durable Supplies and Materials List, F- 1
 Extreme Heat, Operating In, 2-10

-F-

Forms and Records, Maint, 1-2

-G-

General Information, 1-9
 Glossary, Glossary- 1
 Ground Cable, 1-8
 Ground Cable Assembly Replacement, 4-8

-H-

Handle Assembly, 1-8
 How To Use Manual, iii

-I-

Illustrated List of Manufactured Items, G-1
 Instruction Plates, and Decals, 2-10

-J-

-K-

-L-

Leakage Definitions, 2-5
 List of Abbreviations, Glossary 1
 Location and Description of Major Components, 1-8

INDEX

SUBJECT, PARAGRAPH

SUBJECT, PARAGRAPH

-M-

Maintenance Allocation Chart, B-1
 Maintenance Forms and Records, 1-2
 Maintenance Functions, B-2
 Maintenance, Unit, 4-1
 Mandatory Replacement Parts, H-1
 Movement, Preparation for, 4-10

-N-

Nomenclature Cross Reference List, 1-6
 Nozzle Body, 1-8
 Nozzle Collar, 1-8
 Nuclear, Biological and Chemical (NBC)
 Decontamination Procedures, 2-12

-O-

Operating Procedures, 2-8
 Operating Temperature Range, 1-9
 Operation Under Unusual Conditions, 2-10
 Operation Under Conditions, 2-18
 Operator Preventive Maintenance
 Checks and Services, 2-3

-P-

Parts, Repair, 4-3
 Personnel Safety, 4-6
 PMCS, 4-4
 Preparation for Movement, 4-10
 Prevention and Control, Corrosion, 1-4
 Preventive Maintenance Checks
 and Services, 4-4
 Proper Equipment, 4-7
 Principles of Operation, 1-10

-Q-

-R-

References, A-1
 Repair, D-1 Nozzle, 5-2
 Repair Parts, 4-3
 Reporting Equipment Improvement
 Recommendations, 1-5
 Replacement Ground Cable Assembly, 4-8

-S-

Safety, Personnel, 4-6
 Sandy or Dusty Conditions, Operating In, 2-10
 Scope, 1-1
 Security Procedures, 4-9
 Special Tools, TMDE, and Support
 Equipment, 4-2
 Strong Winds, Operating In, 2-10
 System Technical Principles of Operation, 1-10

-T-

Temperature Range, Operating, 1-9
 Tools and Test Equipment Requirements, B-4

-U-

Unit Maintenance Procedures, 4-6
 Unusual Conditions, Operation Under, 2-10
 Usual Conditions, Operation Under, 2-8

-V-

-W-

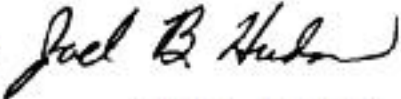
Warnings, a
 Weight, 1-9

-X-

-Y-

-Z-

By Order of the Secretary of the Army:

Official: 

JOEL B. HUDSON
*Acting Administrative Assistant to the
Secretary of the Army*
01552

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

DISTRIBUTION:

To be distributed in accordance with DA Form 12-25-E, block no. 6338, requirements for TM 10-4930-242-13&P.

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27

From: "Whomever" <whomever@avma27.army.mil>


To: mpmt%avma28@st-louis-emh7.army.mil

Subject: DA Form 2028

1. **From:** Joe Smith
2. Unit: home
- 3 **Address:** 4300 Park
4. **City:** Hometown
5. **St:** MO
6. **Zip:** 77777
7. **Date Sent:** 19-OCT-93
8. **Pub** no: 55-2840-229-23
9. **Pub** Title: TM
10. **Publication** Date: 04-JUL-85
11. Change Number: 7
12. Submitter Rank: MSG
13. **Submitter FName:** Joe
14. Submitter MName: T
15. **Submitter LName:** Smith
16. **Submitter Phone:** 123-123-1234
17. **Problem:** 1
18. Page: 2
19. Paragraph: 3
20. Line: 4
21. NSN: 5
22. Reference: 6
23. Figure: 7
24. Table: 8
25. Item: 9
26. Total: 123
27. **Text:**

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

 <div style="border: 1px solid black; border-radius: 15px; padding: 5px; margin: 10px auto; width: 80%; text-align: center;"> <p><i>THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.</i></p> </div>		SOMETHING WRONG WITH PUBLICATION	
		FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)	
		DATE SENT	
PUBLICATION NUMBER		PUBLICATION DATE	PUBLICATION TITLE
IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.			
BE EXACT PIN-POINT WHERE IT IS			
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER		SIGN HERE	

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
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

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

Approximate Conversion Factors

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

Temperature (Exact)

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

