

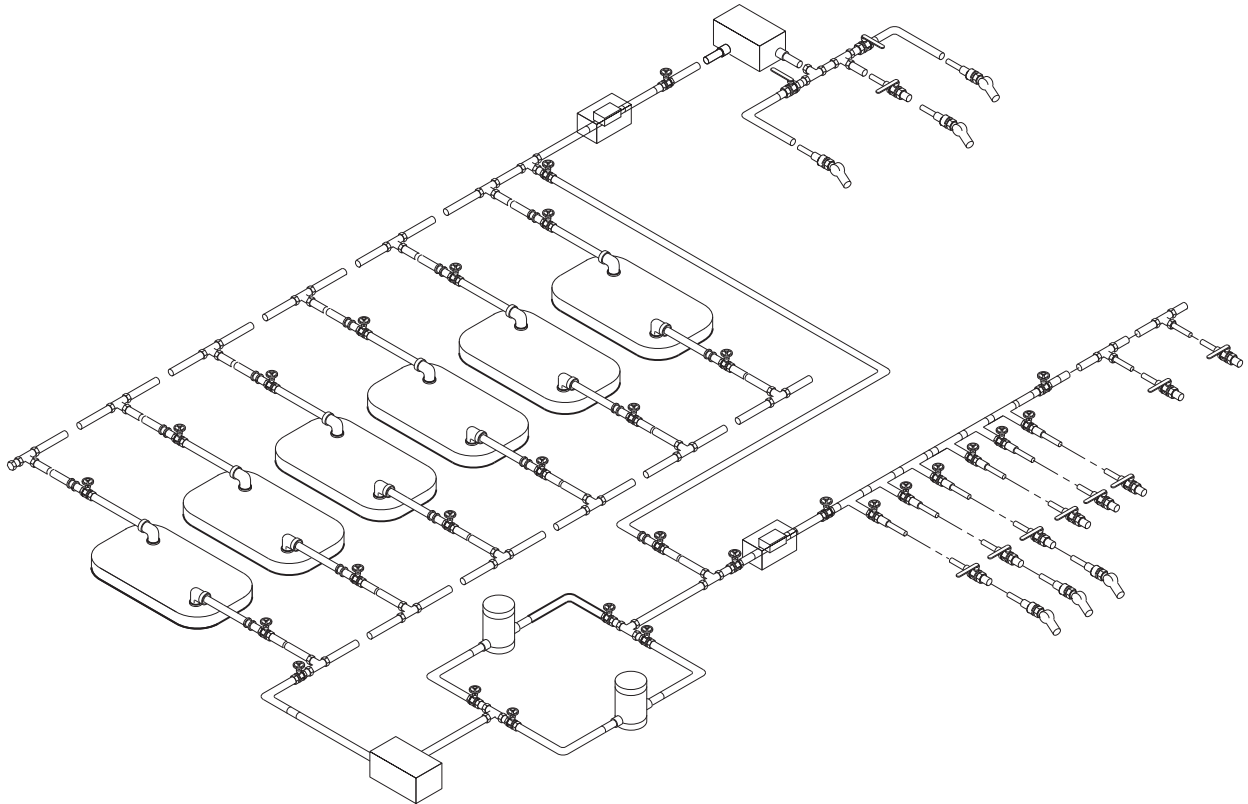
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TECHNICAL MANUAL

OPERATOR'S, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL FOR FUEL SYSTEM SUPPLY POINT (FSSP)

120,000 GALLON SYSTEM
MODEL M106 (FSP)
NSN 4930-01-517-7009

300,000 GALLON SYSTEM
MODEL M107 (FSS)
NSN 4930-01-517-6981



DISTRIBUTION STATEMENT A. - Approved for public release; distribution is unlimited.

HEADQUARTERS, DEPARTMENT OF THE ARMY
MARCH 2008

WARNING SUMMARY

This warning summary contains general safety warnings and hazardous materials warnings that must be understood and applied during operation and maintenance of this equipment. Failure to observe these precautions could result in serious injury or death to personnel. Also included are explanations of safety and hazardous materials icons used within the technical manual.

FUELING OPERATIONS

Death or severe injury can occur from fire and explosion of fuels ignited by static electric discharge. Before operating the FSSP, ensure all components are properly grounded. To avoid fire and explosion during operation of the FSSP:

- Do not allow any flame producing material within 100 feet of the FSSP.
- Do not smoke or allow smoking during refueling operations.
- Do not allow fuel to drip onto hot surfaces.
- Do not refuel equipment while its engine is running.
- Do not allow fuel to come into contact with exposed skin. ALWAYS wear gloves when refueling or cleaning up a fuel spill.
- Do not allow spilled fuel to get into eyes. ALWAYS wear goggles when refueling or cleaning up any fuel spill.
- Personnel must wear chemical resistant gloves when handling fuels of system components. Promptly wash exposed skin and change fuel-soaked clothing.

SPILLS

Small Priming Spills

A small priming spill is not usually dangerous. Use the spill kits bag of granular sorbent to spread over the spill. Dig up the sorbent and contaminated soil using the two-piece non-sparking shovel and place the sorbent and soil into plastic disposal bags. Use tie strips to seal the bags. Store and transport the bags in the 55 gallon drums marked with the "Hazardous Material" caution plate. A fireguard should stand by the spill area with a fire extinguisher until the cleanup operation is completed.

Death or severe injury can occur from fire and explosion of fuels. Spilled fuel can ignite or explode and cause serious injury or death to operating personnel. Do not use rags to clean up the spill if fluid is a low flash point fuel, such as AVGAS or JP-4.

Small Spills

Stop operation at the spill site and post a fireguard with a fire extinguisher by the spill. First use the spill kits 10 foot long enclosed oil sorbents, which are filled with loose sorbent material, to contain the spill by forming a dike around it.

Once contained, spread the granular sorbent over the spill. The kits 16.5 in. wide X 20 in. long sorbent pads may also be used to absorb the spill. If low flash point fuel such as AVGAS or JP-4 has been spilled, dig up the sorbent and contaminated soil using the two-piece non-sparking shovel and place them either in the kits 5 gallon pails or plastic disposal bags sealed with the tie strip. Store and transport the pails or bags in the 55 gallon drums.

Death or severe injury can occur from fire and explosion of fuels. Spilled fuel can ignite or explode and cause serious injury or death to operating personnel.

Large Spills

The first thing to do is stop the flow of fuel if possible. At a permanent installation or large temporary refueling point where there is a fire department or fire brigade, call the fire fighters immediately and stop operations in the area. As soon as the fire assistance has been called, the actions described below should be performed as necessary.

Personnel. It may be necessary to have all personnel leave a vehicle if the spill is at or near it. No one other than authorized personnel should move through the spill area. If anyone gets fuel on any clothing, they should take them off and wash them with soap and water. Any person whose clothes are on fire should roll or be rolled on the ground to put out the fire or be wrapped in a blanket to smother the flames.

Mobile Refueling Equipment. This equipment may be the largest single source of fuel near the spill. If the fuel spill has not caught fire, starting the engine of a refueler or other vehicle could supply the spark that would ignite the spill or vapors. The decision on what procedure is least hazardous, driving the refueler away or not starting the engine, must be made on the spot by the person in charge. If the vehicle engine is running, normal practice is to drive the vehicle away from the spill unless this would pose an unacceptable risk to the driver.

Aircraft. If an aircraft in the spill area has its engine running at the time of the spill, usually it should lift off out of the spill area. The heat of the engines can cause the spill to ignite. The rotor or prop wash from an aircraft can spread the vapor hazard to an area where ignition sources may be present, thus increasing the danger. It can also cause problems by dissipating fire fighting agents.

JEWELRY

Remove rings, bracelets, wristwatches, dog tags and neck chains before working around or on a unit.

FATIGUE

Soldiers who participate in the setup or teardown of an FSSP should only participate in one (either setup or teardown) per 24 hour period. Failure to comply may result in injury to personnel.

Soldiers who participate in the setup or teardown of and FSSP should not be involved in any repeated lifting activity that requires more than 40% of their maximum lifting of 37 lbs is a reasonable approximation of the 40% limit. Failure to comply may result in injury to personnel.

FIRST AID

First aid instructions are given in FM 4-25.11, First Aid.

HEAVY OBJECTS

Handling heavily weighted objects can cause bodily injury. Do not lift materials or equipment over 50 lbs without using appropriate material handling equipment.

The fuel spill control kit must always be lifted by four personnel. Failure to comply may result in injury to personnel.

The 3 in. X 50 ft. discharge hose assembly must always be lifted with rugged handles by four personnel. If handles cannot be fixed to hose assembly or are not supplied, it should be lifted, lowered, and otherwise transported using a mechanical lifting device. Failure to comply may result in injury to personnel. Failure to comply may result in injury to personnel.

Tee assemblies should always be lifted by two personnel. Failure to comply may result in injury to personnel.

The 2 in. X 50 ft. valved dry-break hose assembly should always be lifted with rugged handles by three personnel. If rugged handles are not supplied or cannot be attached to the hose assembly, it may be transported in a case provided the case weight does not exceed 101 lbs. Failure to comply may result in injury to personnel.

The displacement and evacuation kit should always be lifted with rugged handles by two personnel. If handles cannot be fixed to the displacement and evacuation kit, it may be transported in cases providing the case does not exceed 74 lbs. Failure to comply may result in injury to personnel.

Carrying cases weighing between 37-74 lbs should always be carried by two personnel. Failure to comply may result in injury to personnel.

HAZARD REPORTING

Report all hazards. It is your responsibility to report hazards through your chain-of-command.

NUCLEAR, BIOLOGICAL OR CHEMICAL

In the event equipment has been exposed to nuclear, biological or chemical warfare, the equipment shall be handled with extreme caution and decontaminated in accordance with FM 3-5, NBC Decontamination. Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If equipment is exposed to radioactive, biological or chemical agents, personnel must wear protective mask, hood, protective overgarments, chemical gloves and chemical boots in accordance with the MOPP level prescribed by the OIC or NCOIC.

NOISE

All operational and support personnel are required to wear Army approved hearing protection devices (HPDs). Failure to comply may result in hearing loss and injury to personnel.

All personnel within 17 feet of a 350 GPM pump are required to wear Army approved hearing protection devices (HPDs). Failure to comply may result in hearing loss and injury to personnel.

COLLAPSIBLE FUEL TANKS

Never attempt to enter a collapsed fuel tank for cleaning or other purpose; death or serious injury to personnel could occur.

D1 NOZZLES

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

SAFETY WARNINGS ICONS



EAR PROTECTION

EAR PROTECTION – Headphones over ears shows that noise level will harm ears.



ELECTRICAL

ELECTRICAL – Electrical wire to hand with electricity symbol running through hand shows that shock hazard is present.



ELECTRICAL

ELECTRICAL 2 – Electrical wire to arm with electricity symbol running through body shows that shock hazard is present.



EYE PROTECTION

EYE PROTECTION – Person with goggles shows that the material will injure the eyes.



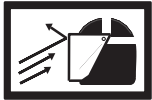
FALLING PARTS

FALLING PARTS – Arrow bouncing off human shoulder and head shows that falling parts present a danger to life or limb.



FLYING PARTICLES

FLYING PARTICLES – Arrows bouncing off face shows that particles flying through the air will harm face.



FLYING PARTICLES

FLYING PARTICLES 2 – Arrows bouncing off face with faceshield shows that particles flying through the air will harm face.



HEAVY OBJECT

HEAVY OBJECTS – Human figure stooping over heavy object shows physical injury potential from improper lifting technique.



HEAVY PARTS

HEAVY PARTS – Foot with heavy object on top shows that heavy parts can crush and harm.



HEAVY PARTS

HEAVY PARTS 2 – Hand with heavy object on top shows that heavy parts can crush and harm.

SAFETY WARNINGS ICONS - CONTINUED



HEAVY PARTS

HEAVY PARTS 3 – Heavy object on human figure shows that heavy parts present a danger to life or limb.



HEAVY PARTS

HEAVY PARTS 4 – Heavy object pushed up against human figure shows that heavy parts present a danger to life or limb.



HELMET PROTECTION

HELMET PROTECTION – Arrow bouncing off head with helmet shows that falling parts present a danger.



HIGH PRESSURE

HIGH PRESSURE – Arrow penetrating hand shows that skin may be penetrated by air or fuel.



HOT AREA

HOT AREA – Hand over object radiating heat shows that part is hot and can burn.



MOVING PARTS

MOVING PARTS – Hand with fingers caught between gears shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS

MOVING PARTS 2 – Hand with fingers caught between rollers shows that the moving parts of the equipment present a danger to life or limb.



MOVING PARTS

MOVING PARTS 3 – Human figure with an arm caught between gears shows that the moving parts of the equipment present a danger to life or limb.



SHARP OBJECT

SHARP OBJECT – Pointed object in foot shows that a sharp object presents a danger to limb.



SHARP OBJECT

SHARP OBJECT 2 – Sharp object on hand shows that a sharp object presents a danger to limb.

SAFETY WARNINGS ICONS - CONTINUED**SLICK FLOOR**

SLICK FLOOR – Wavy line on floor with legs prone shows that slick floor presents a danger or falling.

HAZARDOUS MATERIALS WARNING ICONS**BIOLOGICAL**

BIOLOGICAL – Abstract symbol bug shows that a material may contain bacteria or viruses that represent a danger to life or health.

**CHEMICAL**

CHEMICALS – Drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.

**CRYONGENIC**

CRYOGENICS – Hand in block of ice shows that the material is extremely cold and can injure human skin or tissue.

**EXPLOSION**

EXPLOSION – Rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.

**FIRE**

FIRE – Flame shows that a material may ignite and cause burns.

**POISON**

POISON – Skull and crossbones shows that a material is poisonous or is a danger to life.

**RADIATION**

RADIATION – Three circular wedges shows that the material emits radiative energy and can injure human tissue.

**VAPOR**

VAPOR – Human figure in a cloud shows that material vapors present a danger to life or health.

HAZARDOUS MATERIALS DESCRIPTION



CHEMICAL



EYE PROTECTION

ANTISEIZE COMPOUND, MIL-T-5544

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area. First aid for ingestion: do not induce vomiting. Seek medical attention advice. First aid for skin contact: if hot antiseize compound strikes the skin, drench or immerse the area in water to assist cooling. If available, apply iced water or ice packs to the burned area. Do not use ice water or cold packs if the burned area covers more than 10% of the body, as this may contribute to shock. Do not try to remove antiseize compound from a burn after it has cooled. Seek medical attention. If cool antiseize compound contacts skin, wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with plenty of water for 15 minutes while holding eyelids open. Seek medical attention. First aid for inhalation: move to fresh air. If breathing is difficult, give oxygen. Seek medical attention.



CHEMICAL



EYE PROTECTION



POISON



VAPOR

FUEL ADDITIVES

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal. First aid for ingestion: do not induce vomiting. If large quantities are swallowed and victim is conscious, drink lukewarm water. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin with soap and water and rinse thoroughly. Launder contaminated clothing and shoes. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 20 to 30 minutes, hold eyelids open. If symptoms persist, seek medical attention. First aid for inhalation: remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If coughing or respiratory discomfort occurs, seek medical attention.

HAZARDOUS MATERIALS DESCRIPTION - CONTINUED

CHEMICAL



EYE PROTECTION



VAPOR



FIRE

JP-8 FUEL

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. Launder contaminated clothing immediately and discard contaminated leather goods. If symptoms persist, seek medical attention. First aid for eye contact: immediately flush eyes with plenty of water for at least 15 minutes, retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Serious harm may result if treatment is delayed. Seek immediate medical attention and continue to flush eyes while awaiting medical attention. Monitor the eye daily as advised by a physician. First aid for inhalation: move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek immediate medical attention.



CHEMICAL



EYE PROTECTION

BALL AND ROLLER BEARING GREASE, DOD-G-24508

When working with ball and roller bearing grease, DOD-G-24508, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use only with adequate ventilation. Injection under skin can cause local necrosis. Accidental ingestion of this material may cause irritation of digestive tract. First aid for ingestion: do not induce vomiting. Seek medical attention or advice. First aid for skin contact: remove contaminated clothing. Wipe off excess and then wash skin thoroughly with soap and water or waterless hand cleaner. If injected under skin, seek immediate medical attention. Contaminated clothing should be laundered immediately. Discard any contaminated leather goods. If symptoms persist, seek medical attention. First aid for eye contact: flush eyes with clean water for 15 minutes. Seek medical attention. First aid for inhalation: move to fresh air. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

HAZARDOUS MATERIALS DESCRIPTION - CONTINUED**CHEMICAL****EYE PROTECTION****FIRE****ISOPROPYL ALCOHOL, TECHNICAL, 2200200**

When working with technical isopropyl alcohol, 2200200, avoid contact with eyes or skin. Wear protective rubber gloves, chemical splash goggles or faceshield and protective clothing. Use in a well ventilated area. An eye wash station should be available. Isopropyl alcohol is extremely flammable. Keep away from open flame, heat, sparks and hot surfaces. Overexposure may cause eye and respiratory irritation. Prolonged or repeated overexposure can cause nerve damage, digestive tract irritation, central nervous system problems, unconsciousness and even death. First aid for ingestion: do not induce vomiting. Have victim rinse mouth out with water, then drink sips of water to remove taste from mouth. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Seek immediate medical attention. First aid for skin contact: wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with large quantities of water for 15 minutes while holding eyelids open. Rest eyes for 30 minutes. If redness, burning, blurred vision or swelling persists, seek immediate medical attention. First aid for inhalation: move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, if artificial respiration was provided or if breathing is difficult, seek immediate medical attention.

**CHEMICAL****EYE PROTECTION****SEALING COMPOUND, 24231**

When working with sealing compound, 24231, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use with adequate ventilation. First aid for ingestion: do not induce vomiting. Keep individual calm. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. Wash clothing before reuse. If symptoms occur, seek medical attention. First aid for eye contact: flush with large amounts of water, preferably, lukewarm water for at least 15 minutes, holding eyelids open all the time. Seek medical attention. First aid for inhalation: move to fresh air. If symptoms persist, seek medical attention.

**CHEMICAL****EYE PROTECTION****SEALING COMPOUND, 567**

When working with sealing compound, 567, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Avoid breathing vapors. Use with adequate ventilation. First aid for ingestion: do not induce vomiting. Keep individual calm. Seek medical attention. First aid for skin contact: remove contaminated clothing and shoes. Wash skin thoroughly with soap and water. Launder contaminated clothing before reuse. First aid for eye contact: flush eyes with large amounts of water, preferably lukewarm, for at least 15 minutes, holding eyelids open all the time. Seek medical attention. First aid for inhalation: move to fresh air. If symptoms persist, seek medical attention.

HAZARDOUS MATERIALS DESCRIPTION - CONTINUED

CHEMICAL



EYE PROTECTION



POISON

SOLVENT CLEANING COMPOUND, MIL-PRF-680

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

LIST OF EFFECTIVE PAGES / WORK PACKAGES

NOTE: Zero in the "Change No." column indicates an original page or work package.

Date of issue for the original manual is:

Original 01 31 MARCH 2008

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AND TOTAL NUMBER OF WORK PACKAGES IS: 215
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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 31 MARCH 2008

TECHNICAL MANUAL

**OPERATOR'S, UNIT, DIRECT SUPPORT AND
GENERAL SUPPORT MAINTENANCE MANUAL FOR**

FUEL SYSTEM SUPPLY POINT (FSSP)

**120,000 GALLON SYSTEM
MODEL M106 (FSP)
NSN 4930-01-517-7009**

**300,000 GALLON SYSTEM
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NSN 4930-01-517-6981**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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HOW TO USE THIS MANUAL

This manual contains certain features to improve the convenience of using this manual and increase the user's efficiency. These features include:

A. ACCESSING INFORMATION

Information is accessed by referring to the Table of Contents, located in the front of this manual, or by looking in the Alphabetical Index, located in the back of this manual.

B. ILLUSTRATIONS

Various methods are used to locate, operate and Maintenance or replace components. Locator illustrations in Controls and Indicators tables, PMCS tables, exploded views and cut-away diagrams make the information in the manual easier to understand and follow.

C. USING THIS MANUAL

When using this manual, read and understand the entire operator or maintenance action before performing the task. Also, read and understand all warnings, cautions and notes, as well as general safety precautions, that apply to the task to be performed. The warning summary will inform personnel of hazards associated with the equipment to be worked on. However, the summary is not all inclusive and personnel should be aware at all times of hazardous conditions that may arise.

Prior to starting the procedures in this manual, read the initial setup requirements located directly above each procedure. The information is given to ensure all materials, expendables, tools and any other equipment necessary are readily available for use. The initial setup will be accomplished prior to starting the actual steps of each operator or maintenance procedure.

LOCATING MAJOR COMPONENTS

Obtain the manual for the system to be worked on. Open to the Table of Contents located in the front of this manual. Find Chapter 1, *General Information, Equipment Description and Theory of Operation*. Under the chapter title you will find the work package titled *Equipment Description and Data*. Turn to the work package indicated. This work package will give a brief description of the major components, and show an illustration of what the component looks like and its location.

The Alphabetical Index, located in the back of this manual, contains an alphabetical list of all sections of this manual. Equipment Description and Data is found in section E. The work package is found on the right side of the title where the Equipment Description and Data is located. Turn to the work package indicated to find the description and data of each component.

OPERATOR INSTRUCTIONS

The Table of Contents or Alphabetical Index may be used to locate sections within this manual. To locate a particular operating procedure, open the manual to the Table of Contents located in the front of this manual. Find Chapter 2, *Operator Instructions*. Under this section, find the work package for the component you are trying to operate. To the right side of the procedure will be a work package number. Turn to the work package indicated and follow the steps to perform the procedure. The procedures list the how to set up the equipment, how to program the equipment and how to operate the equipment. Follow the procedures indicated to complete the task. At the top of the task you will have a section called INITIAL SETUP. There are six basic headings listed under INITIAL SETUP.

Test Equipment: Test equipment does not pertain to operator troubleshooting work packages.

Tools: Lists all tools (standard or special) required to perform the task. Tools are identified with an item number from the Components of the End Item (COEI) and Basic Issue Items (BII) work package located in Chapter 12, *Supporting Information*.

Materials/Parts: Lists all parts or materials necessary to perform the task. Expendable and durables are identified with an item number from the Expendable and Durable Items List (EDIL) work package located in Chapter 12, *Supporting Information*. Mandatory replacement parts are identified with an item number from the Mandatory Replacement Parts List (MRPL) work package located in Chapter 12, *Supporting Information*.

Personnel Required: Lists all personnel necessary to perform the task.

Equipment Condition: Notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number.

OPERATOR INSTRUCTIONS - CONTINUED

References: Includes any other manuals necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference manuals are contained in the Reference work package in Chapter 12, *Supporting Information*.

TROUBLESHOOTING PROCEDURES

The Table of Contents or Alphabetical Index may be used to locate troubleshooting procedures within this manual. To locate a particular troubleshooting procedure, open the manual to the Table of Contents located in the front of this manual. Locate the chapter which pertains to your level of maintenance; Chapter 3, *Operator Maintenance Troubleshooting Procedures*, Chapter 5, *Unit Maintenance Troubleshooting Procedures*, Chapter 7, *Direct Support Maintenance Troubleshooting Procedures* or Chapter 9, *General Support Maintenance Troubleshooting Procedures*. Under this section, find a work package titled *Troubleshooting Procedures Index*. Turn to the work package indicated, which lists all of the troubleshooting procedures. Look down the list until you find the appropriate work package for the problem you are trying to solve. To the right side of the procedure will be a work package number. Turn to the work package indicated and follow the steps to complete the troubleshooting procedure. The procedures list the symptom, malfunction and the corrective action. The corrective action will indicate which maintenance procedure to go to for the Maintenance of the symptom. Follow the procedures indicated to complete the task. At the top of the task you will have a section called INITIAL SETUP. There are six basic headings listed under INITIAL SETUP.

Test Equipment: Lists all test equipment (standard or special) required to troubleshoot, test and inspect the equipment covered in this manual. The test equipment is identified with an item number and work package number from the *Maintenance Allocation Chart* located in Chapter 12, *Supporting Information*.

Tools: Lists all tools (standard or special) required to perform the task. Tools are identified with an item number and work package number from the *Maintenance Allocation Chart* located in Chapter 12, *Supporting Information*.

Materials/Parts: Lists all parts or materials necessary to perform the task. Expendable and durables are identified with an item number from the Expendable and Durable Items List (EDIL) work package located in Chapter 12, *Supporting Information*. Mandatory replacement parts are identified with an item number from the Mandatory Replacement Parts List (MRPL) work package located in Chapter 12, *Supporting Information*.

Personnel Required: Lists all personnel necessary to perform the task.

Equipment Condition: Notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number.

References: Includes any other manuals necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference manuals are contained in the Reference work package in Chapter 12, *Supporting Information*.

MAINTENANCE INSTRUCTIONS

To locate a maintenance procedure, open the manual to the Table of Contents located in the front of this manual. Locate the chapter which pertains to your level of maintenance; Chapter 4 for *Operator Maintenance Instructions*, Chapter 6 for *Unit Maintenance Instructions*, Chapter 8 for *Direct Support Maintenance Instructions*, Chapter 10 for *General Support Maintenance Instructions* or Chapter 11 for *General Maintenance Instructions*. Look down the list and find the maintenance procedure to be accomplished. On the right side of the maintenance procedure will be a work package number. Turn to the work package indicated. Before beginning the maintenance task, look through the procedure to familiarize yourself with the entire maintenance procedure. At the top of the task you will have a section called INITIAL SETUP. There are six basic headings listed under INITIAL SETUP.

MAINTENANCE INSTRUCTIONS - CONTINUED

Test Equipment: Lists all test equipment (standard or special) required to troubleshoot, test and inspect the equipment covered in this manual. The test equipment is identified with an item number and work package number from the *Maintenance Allocation Chart* located in Chapter 12, *Supporting Information*.

Tools: Lists all tools (standard or special) required to perform the task. Tools are identified with an item number and work package number from the *Maintenance Allocation Chart* located in Chapter 12, *Supporting Information*.

Materials/Parts: Lists all parts or materials necessary to perform the task. Expendable and durables are identified with an item number from the Expendable and Durable Items List (EDIL) work package located in Chapter 12, *Supporting Information*.

Personnel Required: Lists all personnel necessary to perform the task.

Equipment Condition: Notes the conditions that must exist before starting the task. The equipment condition will also include any prerequisite maintenance tasks to be performed with reference to the work package number or to the TM number.

References: Includes any other manuals necessary to complete the task. When there are no references listed, all steps necessary to complete the task are contained within this manual. A listing of reference manuals are contained in the Reference work package in Chapter 12, *Supporting Information*.

REPAIR PARTS AND SPECIAL TOOLS LIST

Refer to Chapter 12, *Supporting Information*, when requisitioning parts, special tools and equipment.

Identify the mandatory Maintenance parts required to perform this task listed at the top of the work package in the INITIAL SETUP. Using the item number provided, refer to the mandatory replacement parts work package in Chapter 12. Using TM 10-4930-361-24P, look up the part number in the part number cross reference part number column and identify the figure and item number where the part is located. Turn to the figure in TM 10-4930-361-24P and locate the item number listed.

CHAPTER 1

GENERAL INFORMATION, EQUIPMENT DESCRIPTION AND THEORY OF OPERATION FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
GENERAL INFORMATION, EQUIPMENT DESCRIPTION, AND THEORY OF OPERATION
GENERAL INFORMATION**

SCOPE

This manual contains descriptions and instructions for the FSSP facility, which is used to support and improve the operational readiness of the fuel system supply point.

Type of Manual: Operator, Unit, Direct Support and General Support.

Model Number and Equipment Names: Model Numbers M106 (120,000 gallon FSS) and M107 (300,000 gallon FSP).

Purpose of Equipment: The FSSP covered by this manual is a specially assembled group of components designed to be used by forward area personnel to receive, dispense and store automotive gasoline, aviation gasoline, jet fuel and diesel fuel.

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If any component in your system needs improvement, 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 the address specified in DA PAM 750-8, or as specified by the contracting activity. We will send you a reply.

HAND RECEIPT (HR) MANUALS

There is no hand receipt manual for the FSSP.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) 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.

Corrosion specifically occurs with metals. It is an electrochemical process that causes the degradation of metals. It is commonly caused by exposure to moisture, acids, bases or salts. An example is the rusting of iron. Corrosion damage in metals can be seen, depending on the metal, as tarnishing, pitting, fogging, surface residue and/or cracking.

Plastics, composites and rubbers can also degrade. Degradation is caused by thermal (heat), oxidation (oxygen), solvation (solvents) or photolytic (light, typically UV) processes. The most common exposures are excessive heat or light. Damage from these processes will appear as cracking, softening, swelling and/or breaking.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

The procedures for destruction of Army materiel to prevent enemy use are contained in TM 750-244-6.

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviation/Acronym	Name
AEPS	Army Electronic Product Support
AL	Adaptor Length
AOAP	Army Oil Analysis Program
AR	Army Regulation
AT	Applied Torque
BII	Basic Issue Items
C	Centigrade
CAGEC	Commercial and Government Entity Code
CCW	Counterclockwise
CI	Corrosion Inhibitor
CLR	Clear
cm	Centimeters
COEI	Components of End Item
CPC	Corrosion Prevention and Control
CPR	Cardiopulmonary Resuscitation
CW	Clockwise
DA	Department of the Army
Deg	Degrees
DT	Desired Torque
EIR	Equipment Improvement Recommendations
ESD	Electrostatic Discharge
F	Fahrenheit
F	Female
FGC	Functional Group Code
fl	Fluid
FM	Field Manual
FNC	Function
FSII	Fuel System Icing Inhibitor
FSSP	Fuel System Supply Point
ft	Feet/Foot
ft lb	Foot Pounds
FWD	Forward
gal	Gallon
GND	Ground
GPH	Gallons Per Hour
GPM	Gallons Per Minute
H	Height
HP	Horse Power
Hz	Hertz
IAW	In Accordance With
ID	Identification
in.	Inches
in. lb	Inch Pounds
INTL	International
ISO	International Standards Organization
k	Thousand
kg	Kilograms

LIST OF ABBREVIATIONS/ACRONYMS - CONTINUED

kHz	Kilohertz
L	Length
L	Liter
lb	Pounds
LPM	Liters per minute
LT	Length of Torque Wrench
M	Male
M	Meters
MAC	Maintenance Allocation Chart
min	Minute
mL	Milliliters
MTO&E	Modified Table of Organization and Equipment
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological or Chemical
NHA	Next Higher Assembly
N·m	Newton-Meters
NSN	National Stock Number
OC	On Condition
ODS	Ozone Depleting Substance
oz	Ounces
PMCS	Preventive Maintenance Checks and Services
PSI	Pounds Per Square Inch
RPSTL	Repair Parts and Special Tools List
SAE	Society of Automotive Engineers
SDA	Static Discharge Additive
SMR	Source Maintenance and Recoverability
sw	Switch
TAMMS	The Army Maintenance Management System
TEMP	Temperature
TM	Technical Manual
TMDE	Test, Measurement and Diagnostic Equipment
TO&E	Table of Organization and Equipment
TRICON	Triple Container
U/M	Unit of Measure
W	Width
WP	Work Package

QUALITY OF MATERIAL

Material used for replacement, repair or modification must meet the requirements of this manual (TM 10-4930-361-14). If quality of material requirements are not stated in this manual (TM 10-4930-361-14), the material must meet the requirements of the drawings, standards, specifications or approved engineering change proposals applicable to the subject equipment.

SAFETY, CARE, AND HANDLING

The FSSP may be used to pump various fuels. It must be assumed that residual fuel and fuel vapors are present in the FSSP at all times, even after draining or purging. Therefore the equipment must always be handled with the same degree of caution as actual fuel. One or more fully charged fire extinguishers must be present at all times, not only during operation. In addition, fuels may contain toxic additives. Rubber gloves should always be worn when handling FSSP components which are in regular contact with fuel.

A static electric charge is always present in all fuels. The charge increases when the fuel is being pumped, stirred, shook or splashed. Any physical movement of the fuel will increase the static charge. If the charge is allowed to build sufficiently it will discharge, causing a spark which will ignite fuel vapors. The buildup of a static electric charge is controlled by bonding and grounding of all fuel handling equipment. Ground rods and grounding cable assemblies are provided with the FSSP and must be inspected, maintained and used consistently and conscientiously to prevent fuel ignition due to electrostatic discharge.

Fuels are dangerous under all conditions. Always observe fuel handling safety precautions.

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Operating Instructions and Maintenance Guide, Hammonds 4T-4A Fuel Additive Injector

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
EQUIPMENT DESCRIPTION AND DATA**

FUEL SYSTEM SUPPLY POINT (FSSP)

The FSSP is designed to store and dispense various types of fuels and is capable of receiving fuel from tank trucks, by rail, by pipeline or hoseline. The FSSP can store a maximum of 300,000 gallons of fuel using any combination of fuel tanks such as the 20K or the 50K. Fuel is dispensed by pumping the fuel from the storage tanks to the nozzles at the dispensing points. Fuel can also be dispensed by bypassing the storage tanks and pumping the fuel directly from the receiving points to the distribution points.

DIFFERENCES BETWEEN MODELS

Model M106, 120,000 gallon system and M107, 300,000 gallon system differ in that the number of components provided differ according to configuration.

USABLE ON CODES (UOC)

Identification of the usable on codes used in this manual are:

MODEL NUMBER	UOC
M106	FSS
M107	FSP

TRIPLE CONTAINERS (TRICON)

The FSSP is stored and transported in Triple Containers (TRICONS) by fixed-wing aircraft, rail transport, ground vehicles, marine vessels and material handling equipment. Three TRICONS can be attached together with DURALOC connectors for transportations purposes. Three TRICONS attached together is equivalent to one ISO container.

350 GPM PUMP (TRICONS 1 AND 7)

Packaging of FSSP components requires special tiedowns or fabrication and constructions of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the 350 GPM Pump Assembly containerization.

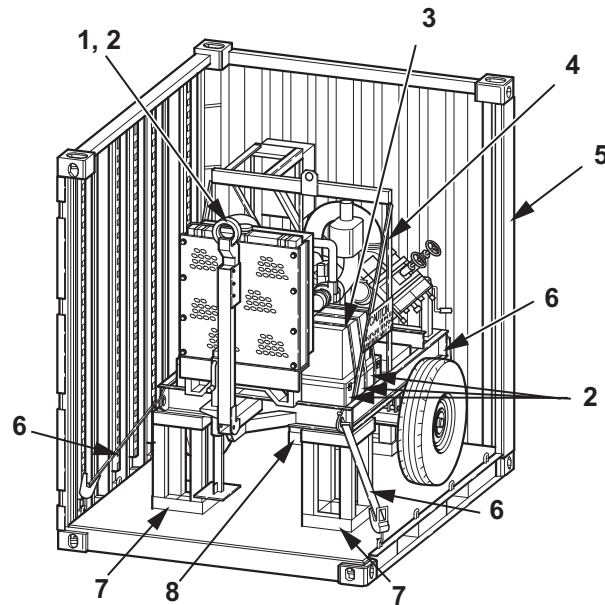


Table 1. 350 GPM Pump Assembly Containers 1 and 7.

ITEM NUMBER	DESCRIPTION
1	Quick Berm
2	Web, Tiedown, Nylon, 1-Inch Wide x 48-inch long, with spring buckle
3	Battery Acid Overpack, ATPD 2206, Type I Batteries (Short Term Storage Only)
4	350 GPM Pump
5	TRICON Container
6	Web, Tiedown, Nylon, 10,000 pounds, 2-inch wide with ratchet and winch
7	Front Pump Riser
8	Rear Pump Riser

HOSES/MISCELLANEOUS FITTINGS (TRICON 2)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of the FSSP components requires special tiedowns or fabrication and constructions of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the 120K and 300K System, Receipt Sector Hoses, Inline Flow Meter Assembly, Valves, and Tees containerization.

HOSES/MISCELLANEOUS FITTINGS (TRICON 2) - CONTINUED

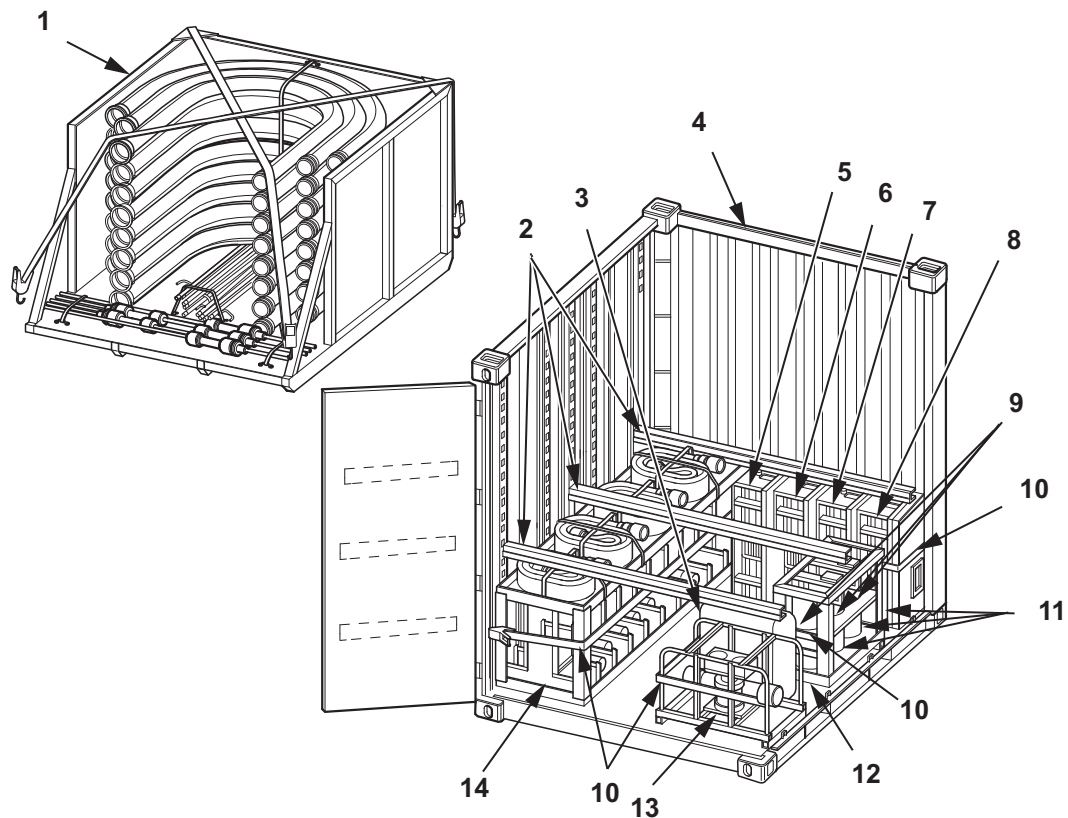


Table 2. Receipt Sector Hoses and Miscellaneous Fittings — Container 2.

ITEM NUMBER	DESCRIPTION
1	Hose Pallet — Container 2
2	Shoring Beam
3	Quick Berm
4	TRICON Container
5	Intermediate Case 4
6	Intermediate Case 1
7	Intermediate Case 2
8	Intermediate Case 3
9	Extinguisher, Fire, 20 LB
10	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch
11	Clip, Tiedown
12	Fire Extinguisher Holder
13	Flow Meter Assembly, Inline
14	Valve/Tee Rack

HOSES/MISCELLANEOUS FITTINGS (TRICON 2) - CONTINUED

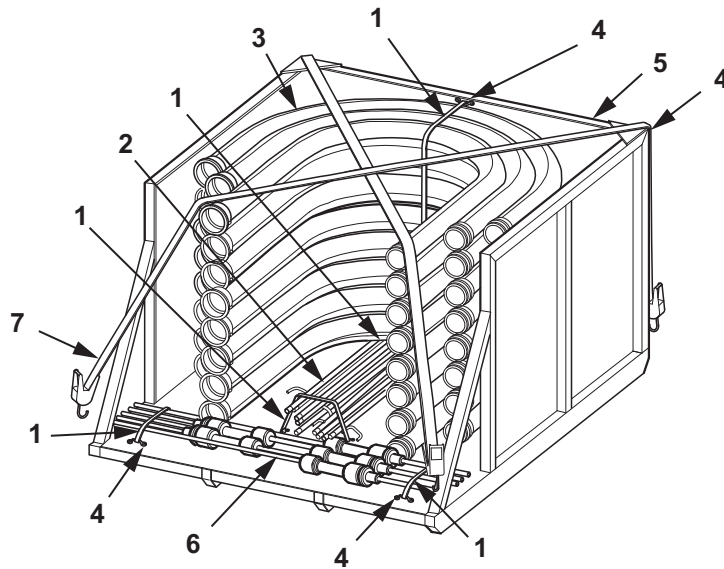


Table 3. Hose Pallet — Container 2.

ITEM NUMBER	DESCRIPTION
1	Web, Tiedown, Nylon, 1-inch wide x 48-inch long, with spring buckle
2	Stand Assembly, Nozzle and Valve
3	Hose Assembly, Suction, 4-inch x 10-feet
4	Loop, Footman
5	Hose Pallet — Container 2
6	Ground Rod Assembly, Self Driving
7	Web, Tiedown, Nylon, 10,000 pounds, 2-Inch Wide, with Ratchet and Winch

Attach each footman loop (Item 4) to hose pallet (Item 5) using the following:

Quantity	DESCRIPTION
2	Screw, Machine, Flat Head, Zinc Plated, Steel, 1/4-20 UNC X 1.00 Inch Long (CAGE/PN: 2V507/90272A542, or equivalent)
2	Washer, Flat, 1/4 Inch, Zinc Plated, Steel (CAGE/PN: 2V507/91090A105, or equivalent)
2	Nut, Lock, Nylon Insert, 1/4 Inch, Zinc Plated (CAGE/PN: 2V507/95615A120, or equivalent)
2	Washer, Lock, 1/4 Inch, Zinc Plated, ASME B18.21.1 (CAGE/PN: 2V507/91104A029, or equivalent)

HOSES/MISCELLANEOUS FITTINGS (TRICON 2) - CONTINUED

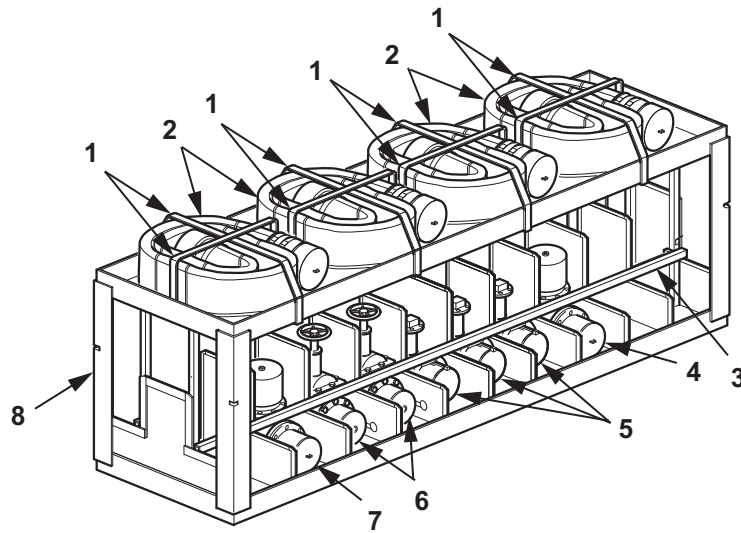


Table 4. Valve/Tee Rack — Container 2.

ITEM NUMBER	DESCRIPTION
1	Web, Tiedown, Nylon, 1-inch wide x 48-inch long, with spring buckle
2	Hose Assembly, Discharge, 4-inch x 10-feet
3	Valve/Tee Rack Hold Down Bar
4	Tee Assembly, Female 4-inch x Male 4-inch x Female 4-inch
5	Valve Assembly, Butterfly, 4 x 4-inch
6	Valve Assembly, Gate, Female 4-inch x Male 4-inch
7	Tee Assembly, Female 4-inch x Female 4-inch x Male 4-inch
8	Valve/Tee Rack

HOSES/MISCELLANEOUS FITTINGS (TRICON 2) - CONTINUED

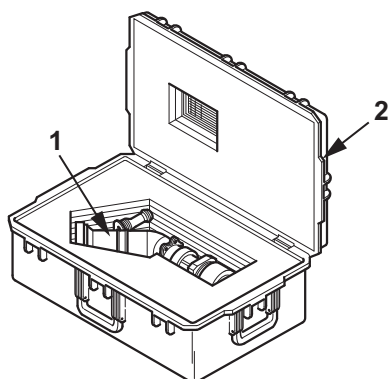


Table 5. Intermediate Case 1, 2, and 3 — Container 2.

ITEM NUMBER	DESCRIPTION
1	Aircraft Pressure Refueling Nozzle, D1, with 4-inch Camlock
2	Intermediate Case 1, 2, and 3 — Container 2

HOSES/MISCELLANEOUS FITTINGS (TRICON 2) - CONTINUED

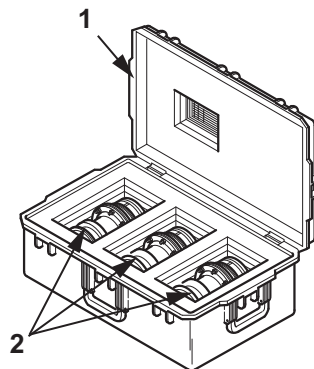


Table 6. Intermediate Case 4 — Container 2.

ITEM NUMBER	DESCRIPTION
1	Intermediate Case 4 — Container 2
2	Strainer Assembly, 4-inch Coupling

FUEL SPILL CONTROL KIT AND FUEL ADDITIVE INJECTOR ASSEMBLY (TRICON 3)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and constructions of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the Fuel Spill Control Kit and Fuel Additive Injector Assembly containerization.

FUEL SPILL CONTROL KIT AND FUEL ADDITIVE INJECTOR ASSEMBLY (TRICON 3) - CONTINUED

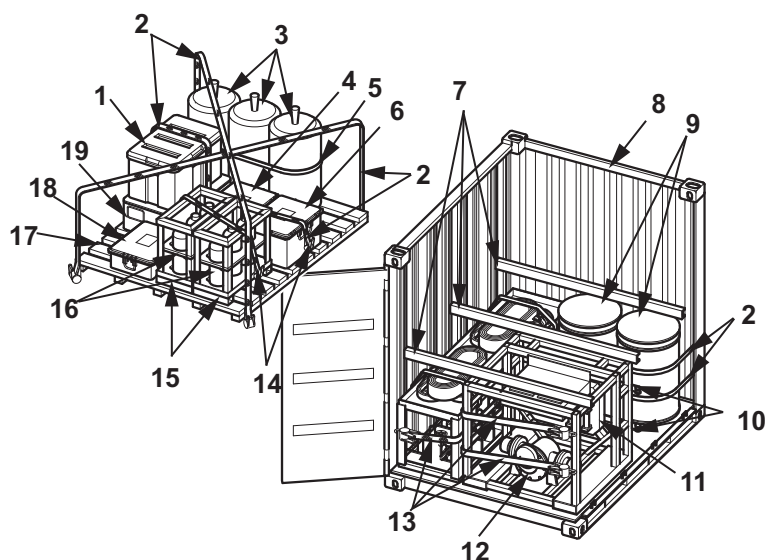


Table 7. Fuel Spill Control Kit and Fuel Additive Injector Assembly — Container 3.

ITEM NUMBER	DESCRIPTION
1	Intermediate Case 4 — Container 3
2	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch (Total: 10)
3	Bagged Loose Particulate (P/O Fuel Spill Control Kit)
4	Intermediate Case 1 — Container 3
5	Web, Tiedown, Nylon, 1-inch Wide, with spring buckle (Total: 1)
6	Intermediate Case 2 — Container 3
7	Shoring Beam
8	TRICON Container
9	Fuel Spill Control Kit
10	Clip, Tiedown (Total: 2)
11	Quick Berm
12	Fuel Additive Injector Assembly
13	Valve/Tee Rack — Container 3
14	Eyescrew, 3/8-inch x 1-1/2-inch x 2-3/4-inch, Workload Limit 1200 LBS (Total: 6)
15	Fire Extinguisher Holder
16	Extinguisher, Fire, 20 LB, Hand Held
17	Plastic Pallet
18	Intermediate Case 3 — Container 3
19	Evacuation and Displacement Kit

FUEL SPILL CONTROL KIT AND FUEL ADDITIVE INJECTOR ASSEMBLY (TRICON 3) – CONTINUED

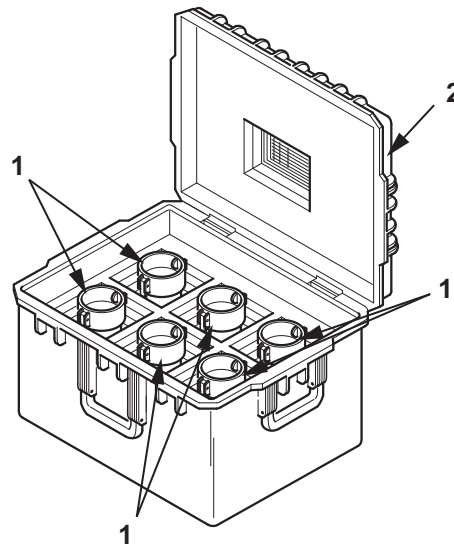


Table 8. Intermediate Case 1 — Container 3.

ITEM NUMBER	DESCRIPTION
1	Adapter, Double, Female x Female, 3-inch Nominal Size
2	Intermediate Case 1 — Container 3

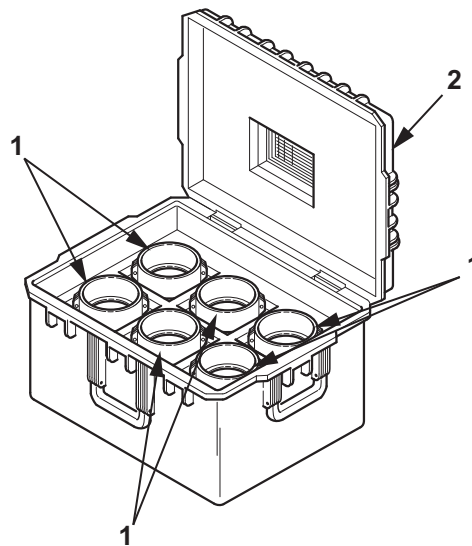


Table 9. Intermediate Case 2 — Container 3.

ITEM NUMBER	DESCRIPTION
1	Adapter, Double, Female x Female, 4-inch Nominal Size
2	Intermediate Case 2 — Container 3

FUEL SPILL CONTROL KIT AND FUEL ADDITIVE INJECTOR ASSEMBLY (TRICON 3) - CONTINUED

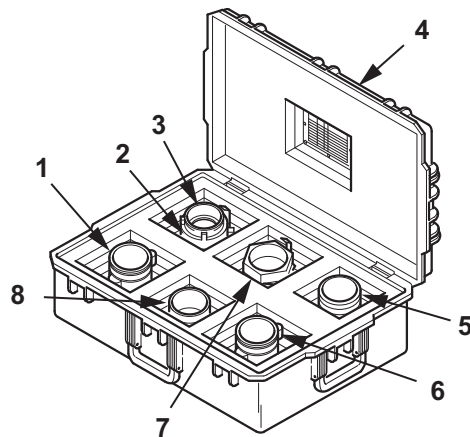


Table 10. Intermediate Case 3 — Container 3.

ITEM NUMBER	DESCRIPTION
1	NATO Adapter, Hose Coupling
2	NATO Coupling, Female, Tank Truck
3	NATO Coupling, Male, Tank Truck
4	Intermediate Case 3 — Container 3
5	NATO Coupling Half, Cam-Locking, Male 3-inch
6	NATO Adapter
7	NATO Adapter
8	NATO Coupling Half, Cam-Locking, Female 3-inch

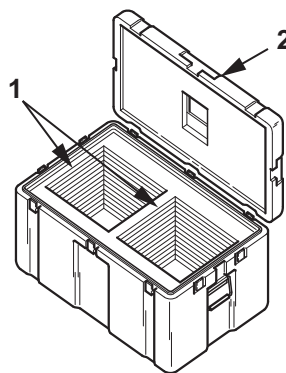


Table 11. Intermediate Case 4 — Container 3.

ITEM NUMBER	DESCRIPTION
1	Coupling, Rail Tanker, NATO
2	Intermediate Case 4 – Container 3

FUEL SPILL CONTROL KIT AND FUEL ADDITIVE INJECTOR ASSEMBLY (TRICON 3) - CONTINUED

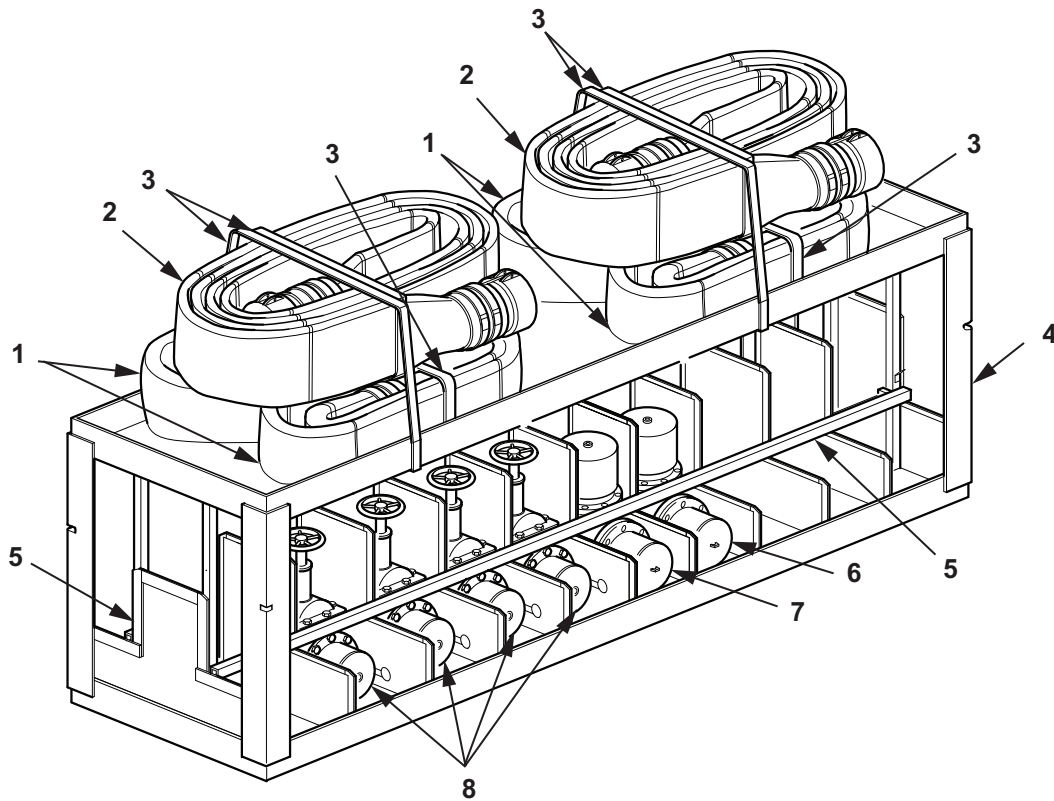


Table 12. Valve/Tee Rack — Container 3.

ITEM NUMBER	DESCRIPTION
1	Hose Assembly, Discharge, 4-inch x 10-feet
2	Hose Assembly, Discharge, 4-inch x 25-feet
3	Web, Tiedown, Nylon, 1-inch wide, with spring buckle
4	Valve/Tee Rack
5	Valve/Tee Rack Hold Down Bar
6	Tee Assembly, Female 4-inch x Male 4-inch x Male 4-inch
7	Tee Assembly, Female 4-inch x Male 4-inch x Female 4-inch
8	Valve Assembly, Gate, Female 4-inch x Male 4-inch

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the Inline Meter, Valves, Tees, and Fitting containerization.

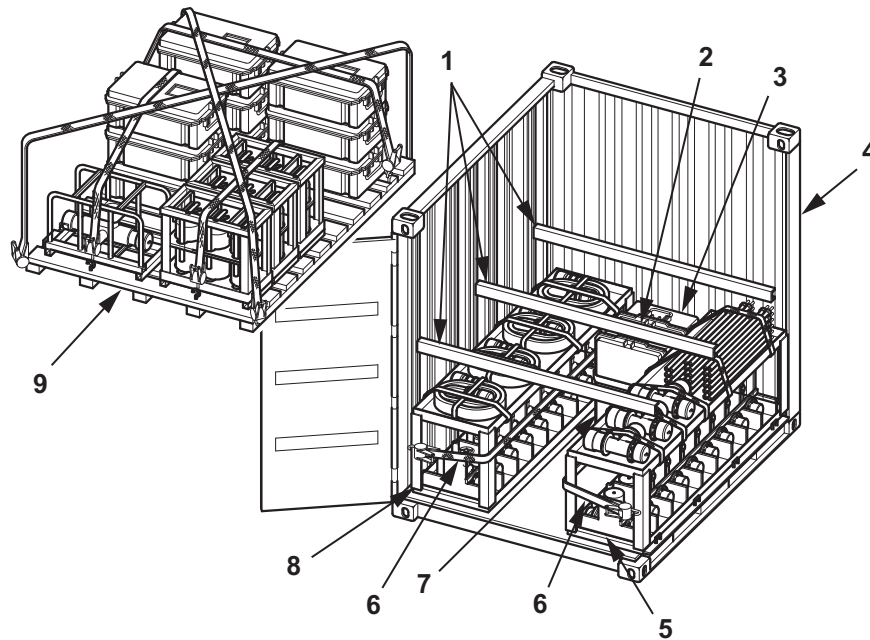


Table 13. Inline Meter, Valves, Tees, and Fittings — Container 4.

ITEM NUMBER	DESCRIPTION
1	Shoring Beam
2	Intermediate Case 9 — Container 4
3	Intermediate Case 4 — Container 4
4	TRICON Container
5	Right Valve/Tee Rack — Container 4
6	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch (Total: 2)
7	Web, Tiedown, Nylon, 1-inch Wide, with spring buckle (Total: 1)
8	Left Valve/Tee Rack — Container 4
9	Loaded Pallet — Container 4

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4) - CONTINUED

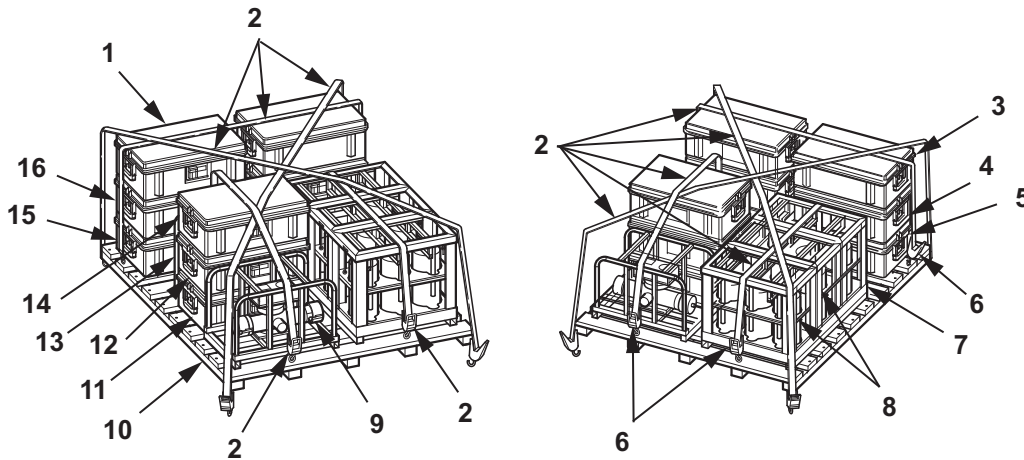


Table 14. Loaded Pallet — Container 4.

ITEM NUMBER	DESCRIPTION
1	Intermediate Case 1 — Container 4
2	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch (Total: 5)
3	Intermediate Case 5 — Container 4
4	Intermediate Case 6 — Container 4
5	Intermediate Case 7 — Container 4
6	Eyescrew, 3/8-inch x 1-1/2-inch x 2-3/4-inch, Workload Limit 1200 LBS (Total: 6)
7	Fire Extinguisher Holder, 20 LB, Hand Held (Total: 2)
8	Fire Extinguisher Holder, 20 LB, Hand Held (Total: 3)
9	Flow Meter Assembly, Inline
10	Plastic Pallet
11	Intermediate Case 10 — Container 4
12	Intermediate Case 8 — Container 4
13	Quick Berm
14	Intermediate Case 11 — Container 4
15	Intermediate Case 3 — Container 4
16	Intermediate Case 2 — Container 4

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4) - CONTINUED

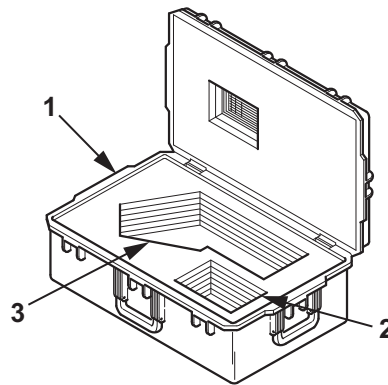


Table 15. Intermediate Case 1, 2, and 3 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Intermediate Case 1, 2, and 3 — Container 4
2	Reducer, Male 4-inch x Female 3-inch
3	Aircraft Pressure Refueling Nozzle, D-1, with 4-inch Female Camlock

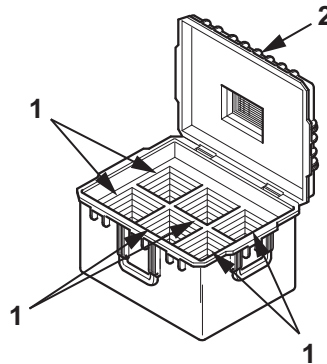


Table 16. Intermediate Case 4 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Reducer, Female 4-inch x Male 3-inch
2	Intermediate Case 4 — Container 4

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4) - CONTINUED

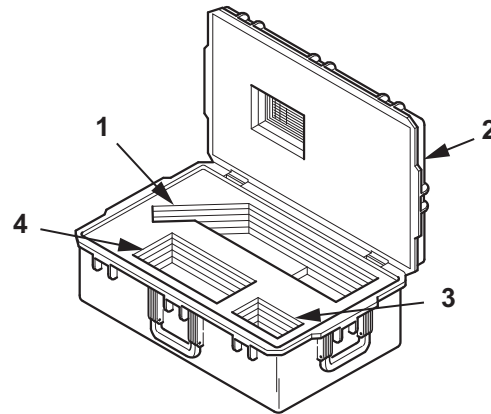


Table 17. Intermediate Case 5 and 6 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Nozzle Assembly, Fuel and Oil Servicing, 1-inch
2	Intermediate Case 5 and 6 — Container 4
3	Reducer, Female 2-inch x Male 1.5-inch
4	Ball Valve Assembly, 2-inch Quick Disconnect

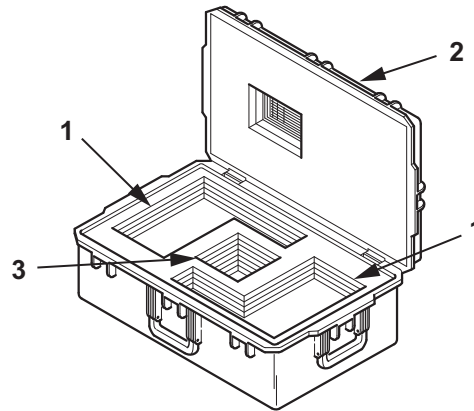


Table 18. Intermediate Case 7 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Nozzle Assembly, Fuel and Oil Servicing, 1.5-inch
2	Intermediate Case 7 — Container 4
3	Reducer, Female 4-inch x Male 2-inch

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4) - CONTINUED

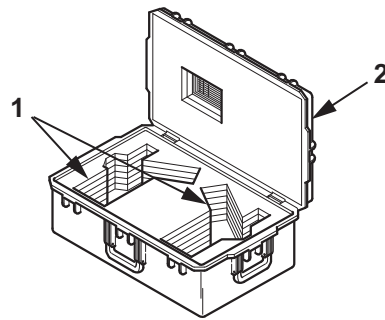


Table 19. Intermediate Case 8 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Nozzle Assembly, D1 Refueling, Standard
2	Intermediate Case 8 — Container 4

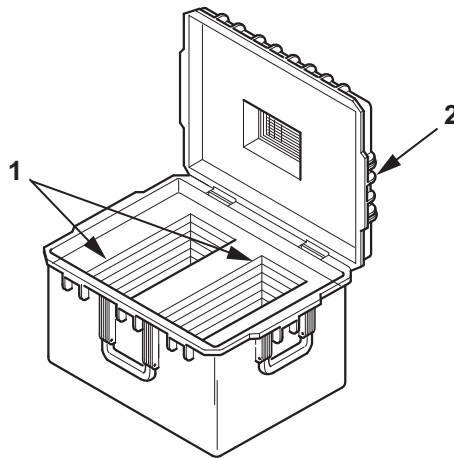


Table 20. Intermediate Case 9 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Tee Assembly, 2-inch, Valved Dry Break
2	Intermediate Case 9 — Container 4

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4) - CONTINUED

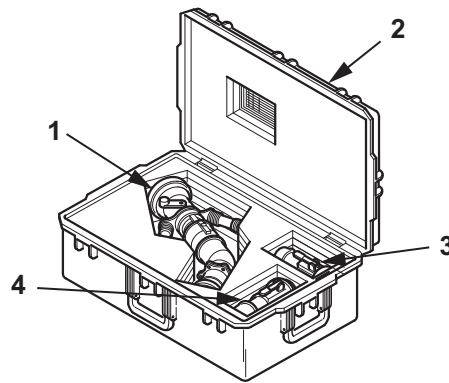


Table 21. Intermediate Case 10 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Aircraft Pressure Refueling Nozzle, D1, with 2-inch Non-Valved Dry Break
2	Intermediate Case 10 — Container 4
3	Adapter, Male 2-inch Quick Disconnect x 2-inch Non-Valved Dry Break
4	Adapter, Female 2-inch Quick Disconnect x 2-inch Valved Dry Break

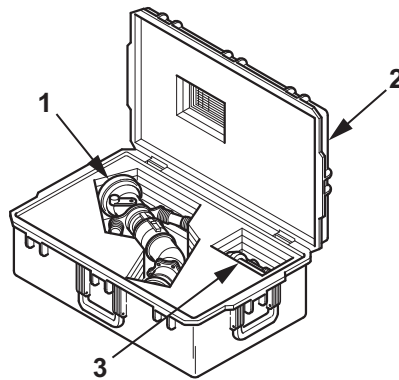


Table 22. Intermediate Case 11 — Container 4.

ITEM NUMBER	DESCRIPTION
1	Aircraft Pressure Refueling Nozzle, D1, with 2-inch Non-Valved Dry Break
2	Intermediate Case 11 — Container 4
3	Adapter, Male 2-inch Quick Disconnect x 2-inch Non-Valved Dry Break

INLINE METER, VALVES, TEES, AND FITTING CONTAINERIZATION (TRICON 4) - CONTINUED

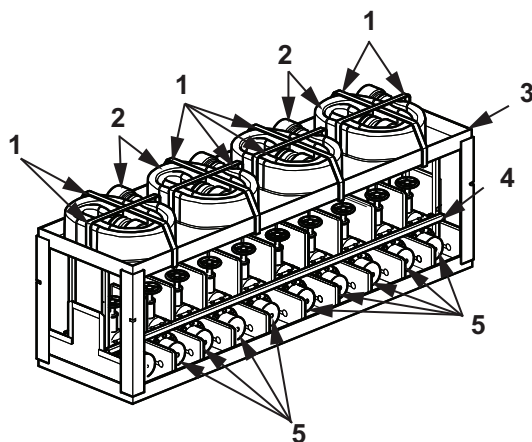


Table 23. Left Valve/Tee Rack — Container 4.

ITEM NUMBER	DESCRIPTION
1	Aircraft Pressure Refueling Nozzle, D1, with 2-inch Non-Valved Dry Break
2	Intermediate Case 11 — Container 4
3	Adapter, Male 2-inch Quick Disconnect x 2-inch Non-Valved Dry Break

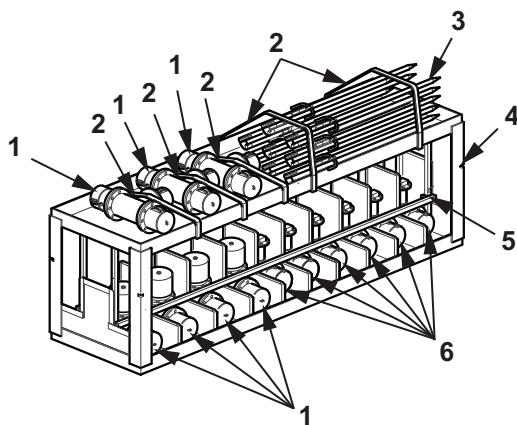


Table 24. Right Valve/Tee Rack — Container 4.

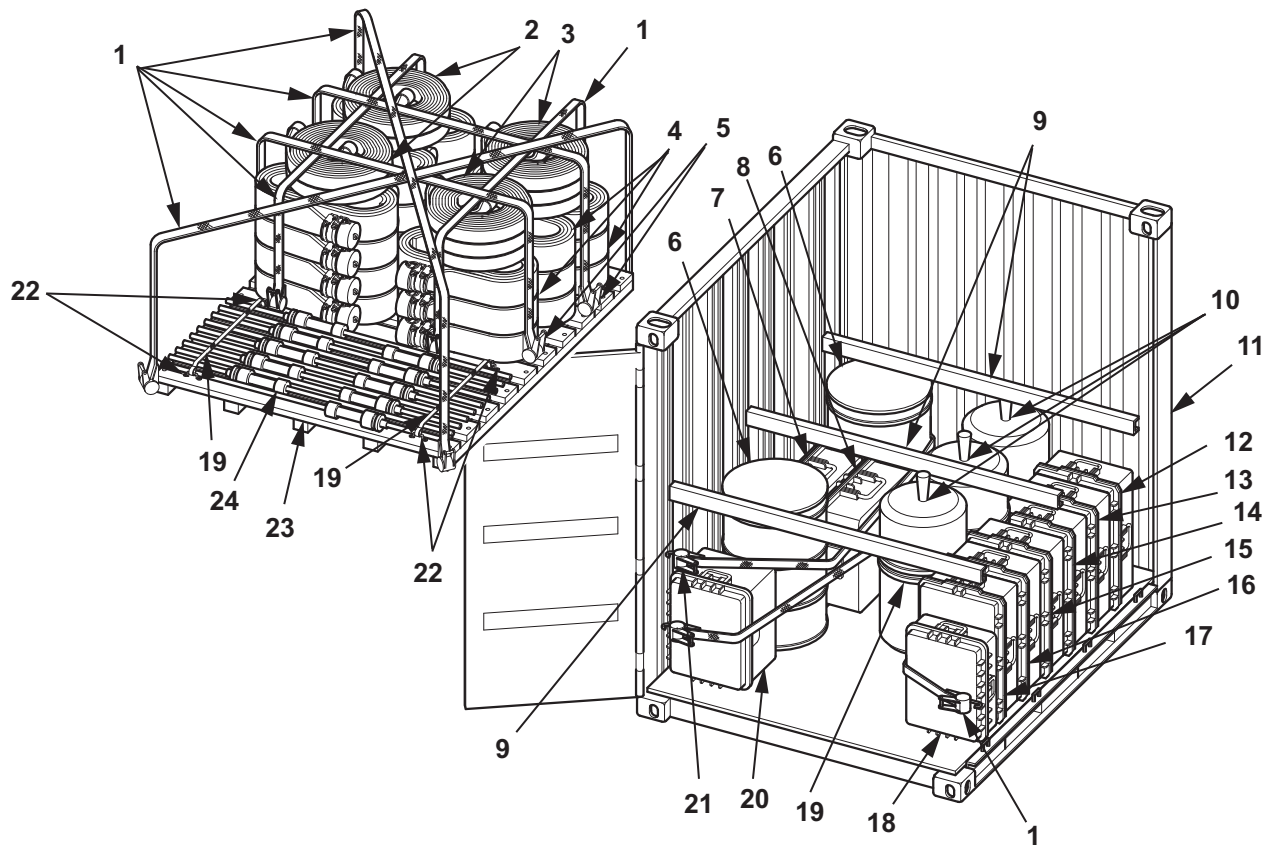
ITEM NUMBER	DESCRIPTION
1	Tee Assembly, Female 4-inch x Male 4-inch x Male 4-inch
2	Web, Tiedown, Nylon, 1-inch Wide, with spring buckle
3	Stand Assembly, Nozzle and Valve
4	Right Valve/Tee Rack — Container 4
5	Valve/Tee Rack Hold Down Bar
6	Valve Assembly, Butterfly, 4 x 4-inch

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the Wet Wing Defueling Assembly, Hoses, and Fittings containerization.



WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

Table 25. Wet Wing Defueling Assembly, Hoses, and Fittings — Container 5.

ITEM NUMBER	DESCRIPTION
1	Web, Tiedown, Nylon, 10,000 pounds, 2-inch wide with ratchet and winch (Total: 9)
2	Hose Assembly, Discharge, 2-inch x 50-feet
3	Hose Assembly, Discharge, 3-inch x 50-feet, P/O Wet Wing Defueling Assembly
4	Hose Assembly, Discharge, 2-inch x 25-feet
5	Eyescrew, 3/8-inch x 1-1/2-inch x 2-3/4-inch, Workload Limit 1200 LBS (Total: 8)
6	Fuel Spill Control Kit
7	Intermediate Case 3 — Container 5
8	Intermediate Case 4 — Container 5
9	Shoring Beam
10	Bagged Loose Particulate (P/O Fuel Spill Control Kit)
11	TRICON Container
12	Intermediate Case 2 — Container 5
13	Intermediate Case 10 — Container 5
14	Intermediate Case 9 — Container 5
15	Intermediate Case 8 — Container 5
16	Intermediate Case 7 — Container 5
17	Intermediate Case 1 — Container 5
18	Intermediate Case 6 — Container 5
19	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with ratchet and winch (Total: 9)
20	Intermediate Case 5 — Container 5
21	Clip, Tiedown (Total: 1)
22	Loop, Footman (Total: 4)
23	Plastic Pallet
24	Ground Rod Assembly, Self Driving

Attach each footman loop (Item 22) to plastic pallet (Item 23) using the following:

Quantity	DESCRIPTION
2	Screw, Wood, Zinc Chromate Steel, #14 x 1/2-inch long (CAGE/PN: 2V507/90031A319, or equivalent)

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

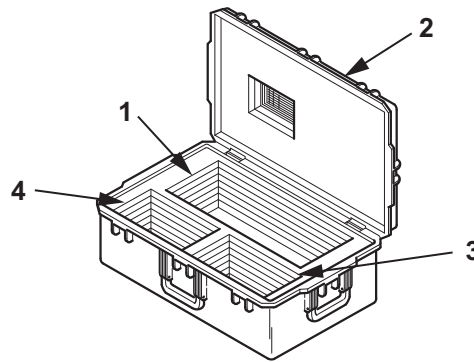


Table 26. Intermediate Case 1 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Extinguisher, Fire, Dry Chemical (Hand Portable) P/O Wet Wing Defueling Assembly
2	Intermediate Case 1 — Container 5
3	Adapter, 4-inch Female Camlock x 3-inch Valved Dry Break P/O Wet Wing Defueling Assembly
4	Adapter, 4-inch Male Camlock x 3-inch Valved Dry Break P/O Wet Wing Defueling Assembly

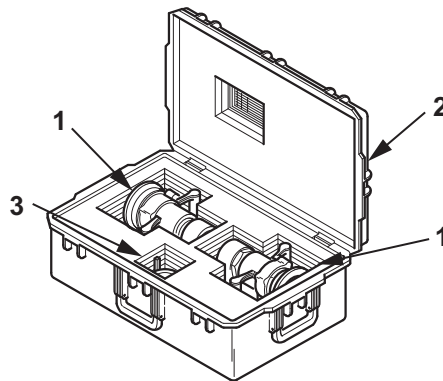


Table 27. Intermediate Case 2 — Container 5.

ITEM NUMBER	DESCRIPTION
1	NATO Standard Connector or Hose Unit (Female Half)
2	Intermediate Case 2 — Container 5
3	Coupling Half, Cap, Dust, 1.5-inch

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

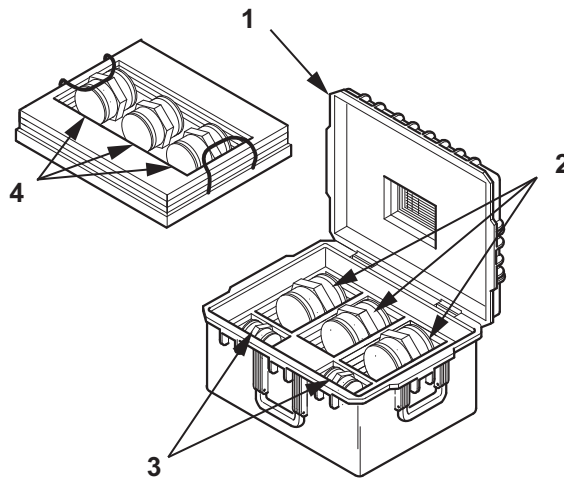


Table 28. Intermediate Case 3 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Intermediate Case 3 — Container 5
2	Adapter, Double, Male x Male, 3-inch Nominal Size
3	NATO Standard Adapter or Tank Unit (Male Half)
4	Adapter, Double, Male x Male, 4-inch Nominal Size

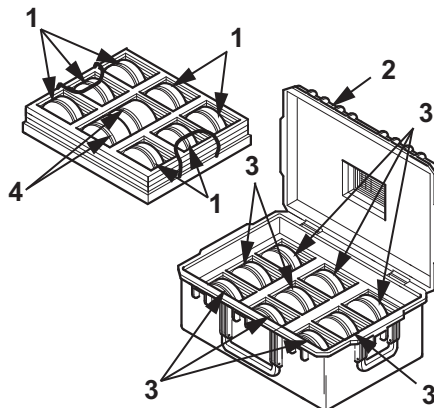


Table 29. Intermediate Case 4 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Coupling Half, Dust, Plug, 4-inch
2	Intermediate Case 4 — Container 5
3	Coupling Half, Dust, Plug, 3-inch
4	Coupling Half, Cap, Dust, 3-inch

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

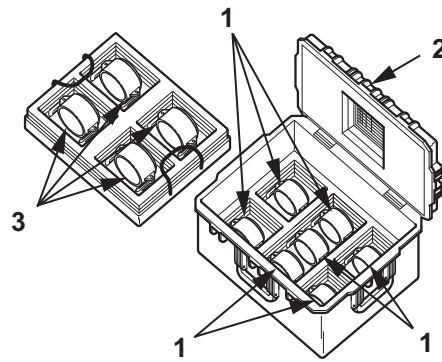


Table 30. Intermediate Case 5 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Aircraft Pressure Refueling Nozzle, D1, with 2-inch Non-Valved Dry Break
2	Intermediate Case 11 — Container 4
3	Adapter, Male 2-inch Quick Disconnect x 2-inch Non-Valved Dry Break

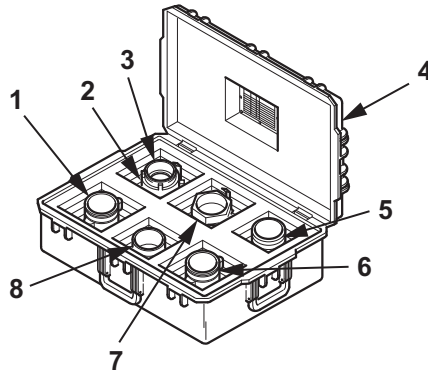


Table 31. Intermediate Case 6 — Container 5.

ITEM NUMBER	DESCRIPTION
1	NATO Adapter, Hose Coupling
2	NATO Coupling, Female, Tank Truck
3	NATO Coupling, Male, Tank Truck
4	Intermediate Case 6 — Container 5
5	NATO Coupling Half, Cam-Locking, Male 3-inch
6	NATO Adapter
7	NATO Adapter
8	NATO Coupling Half, Cam-Locking, Female 3-inch

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

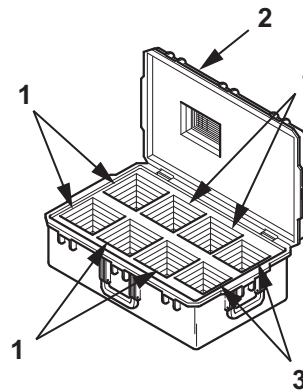


Table 32. Intermediate Case 7 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Splice, Discharge Hose, 4-inch
2	Intermediate Case 7 — Container 5
3	Splice, Discharge Hose, 3-inch

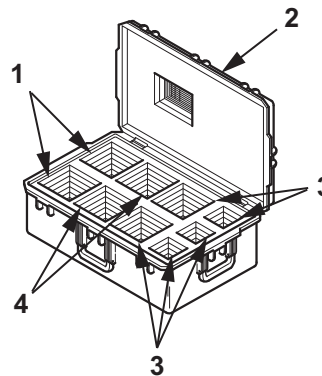


Table 33. Intermediate Case 8 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Splice, Discharge Hose, 4-inch
2	Intermediate Case 8 — Container 5
3	Splice, Discharge Hose, 2-inch
4	Splice, Suction Hose, 4-inch

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

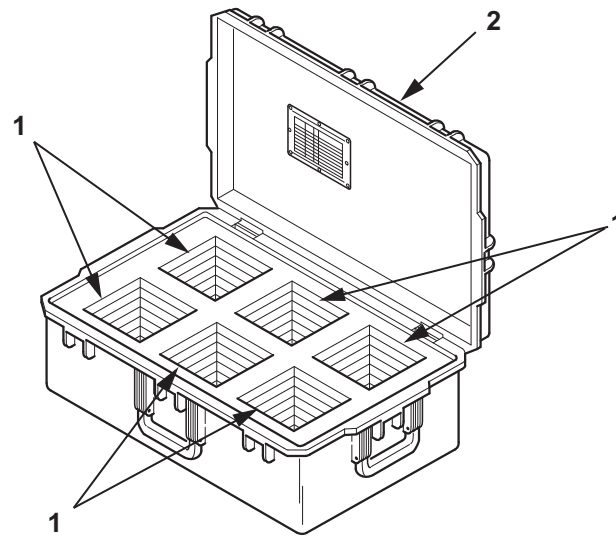


Table 34. Intermediate Case 9 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Splice, Suction Hose, 4-inch
2	Intermediate Case 9 — Container 5

WET WING DEFUELING ASSEMBLY, HOSES, AND FITTINGS CONTAINERIZATION (TRICON 5) - CONTINUED

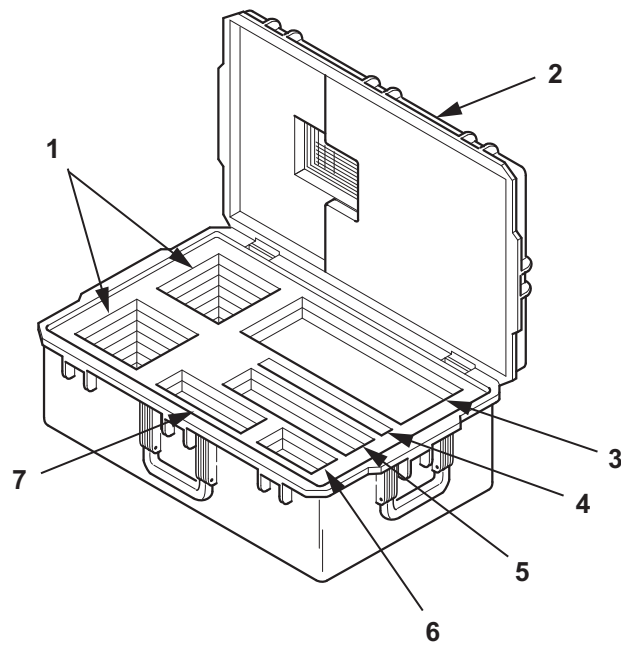


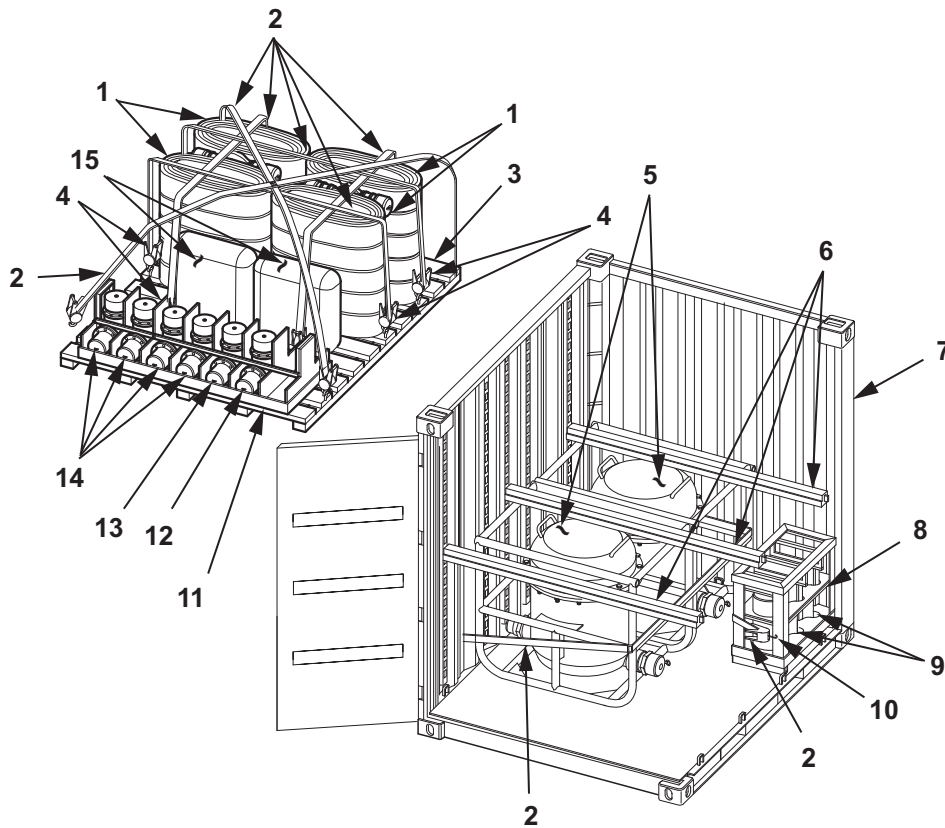
Table 35. Intermediate Case 10 — Container 5.

ITEM NUMBER	DESCRIPTION
1	Splice, Suction Hose, 4-inch
2	Intermediate Case 10 — Container 5
3	Frame, Hacksaw
4	Blade, Hacksaw
5	Wrench, Adjustable, 10-inch
6	Pliers, Round Nose
7	Knife, Craftsmans

FILTER SEPARATOR AND HOSES CONTAINERIZATION (TRICON 6)**WARNING**

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the Filter Separator and Hoses containerization.



FILTER SEPARATOR AND HOSES CONTAINERIZATION (TRICON 6) - CONTINUED

Table 36. Filter Separator and Hoses — Container 6.

ITEM NUMBER	DESCRIPTION
1	Hose Assembly, Discharge, 4-inch x 25-feet
2	Web, Tiedown, Nylon, 10,000 pounds, 2-inch wide with ratchet and winch (Total: 8)
3	Plastic Pallet
4	Eyescrew, 3/8-inch x 1-1/2-inch x 2-3/4-inch, Workload Limit 1200 LBS
5	Filter Separator, Liquid Fuel, Frame Mounted, 350 GPM Capacity
6	Shoring Beam
7	TRICON Container
8	Fire Extinguisher Holder
9	Extinguisher, Fire, Dry Chemical, 20 LB
10	Clip, Tiedown (Total: 1)
11	Valve Rack
12	Tee Assembly, Female 4-inch x Female 4-inch x Male 4-inch
13	Tee Assembly, Male 4-inch x Male 4-inch x Female 4-inch
14	Valve Assembly, Gate Female 4-inch x Male 4-inch
15	Quick Berm

Attach each valve rack (Item 11) to plastic pallet (Item 3) using the following:

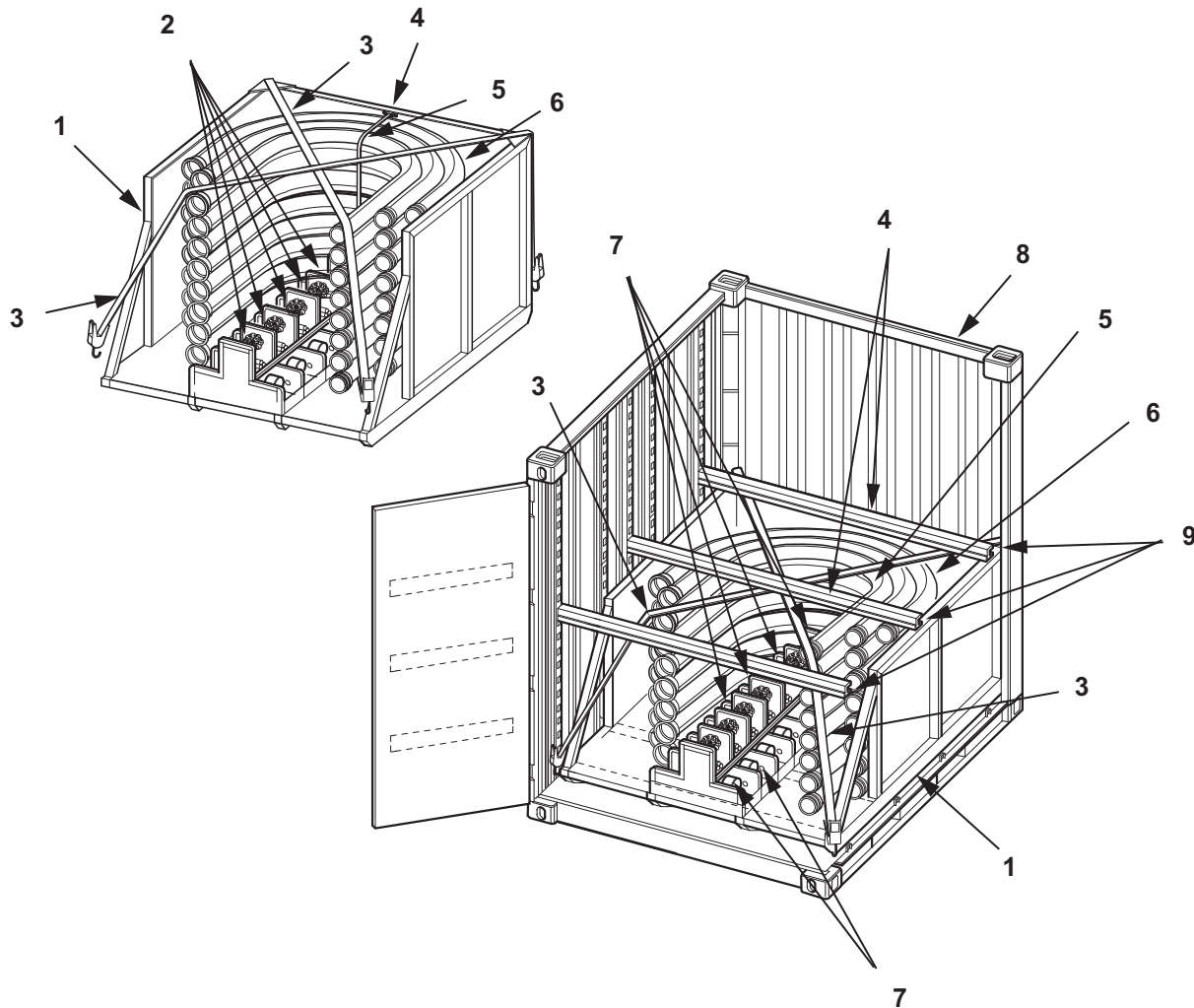
Quantity	DESCRIPTION
6	Screw, Lag, Hex Head, Zinc Chromate Steel, 3/8-inch x 2-1/2-inch long (CAGE/PN: 2V507/91478A634, or equivalent)
6	Washer, Flat, 3/8-inch (CAGE/PN: 2V507/94744A265, or equivalent)

HOSES, VALVES, AND TEES CONTAINERIZATION (TRICON 8)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figure show the requirements for the Hoses, Valves, and Tees containerization.



HOSES, VALVES, AND TEES CONTAINERIZATION (TRICON 8) - CONTINUED**Table 37. Filter Separator and Hoses — Container 8.**

ITEM NUMBER	DESCRIPTION
1	Hose Rack, Short
2	Tee Assembly, Female 4-inch x Male 4-inch x Female 4-inch
3	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch (Total: 4)
4	Loop, Footman (Total: 4)
5	Web, Tiedown, Nylon, 1-inch Wide, with spring buckle (Total: 2)
6	Hose Assembly, Suction, 4-inch x 10-feet long
7	Valve Assembly, Gate, Female 4-inch x Male 4-inch
8	TRICON Container
9	Shoring Beam

Attach each footman loop (Item 4) to hose rack (Item 1) using the following:

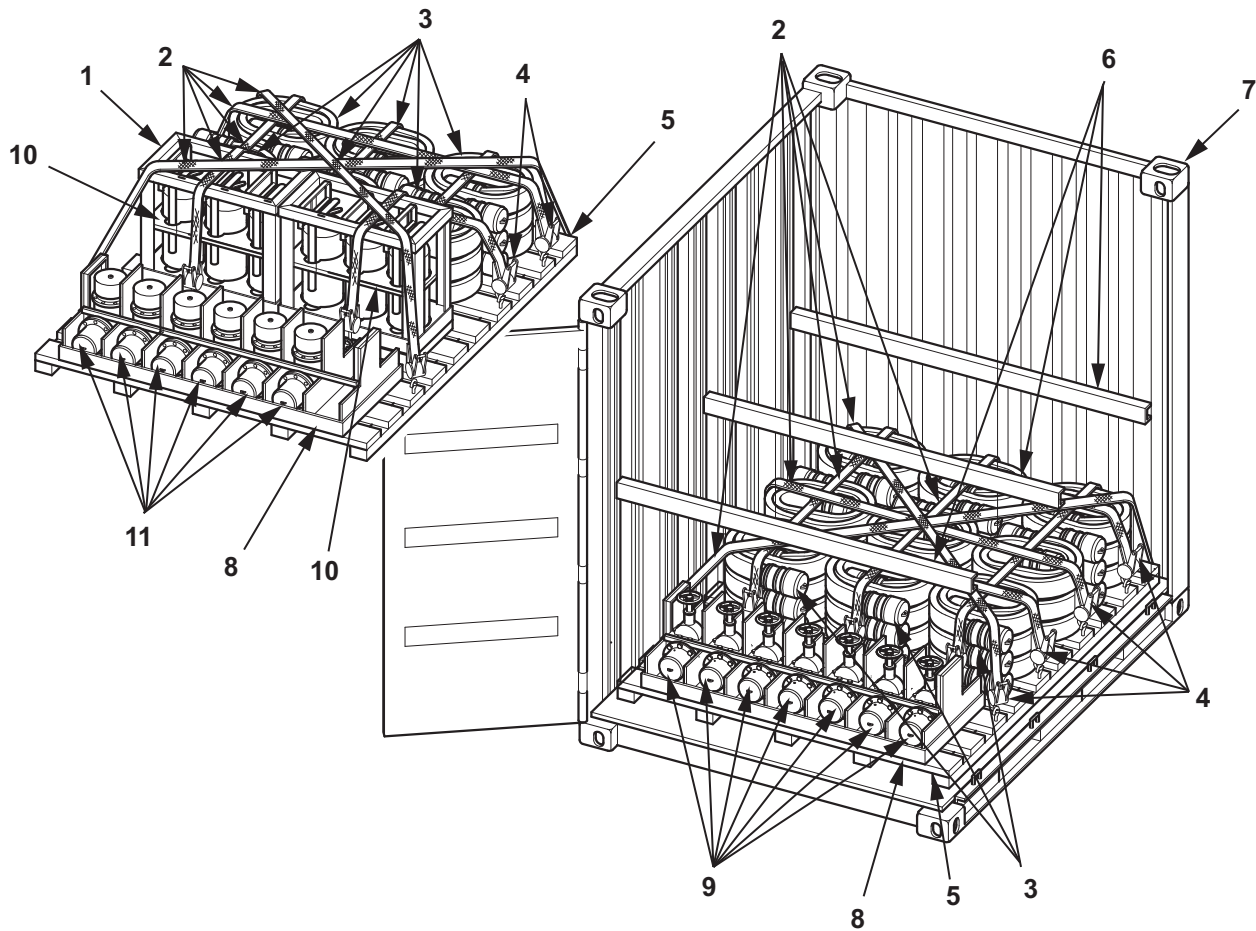
Quantity	DESCRIPTION
2	Screw, Machine, Flat Head, Zinc Plated, Steel, 1/4-20 UNC X 1.00 Inch Long (CAGE/PN: 2V507/90272A542, or equivalent)
2	Washer, Flat, 1/4 Inch, Zinc Plated, Steel (CAGE/PN: 2V507/91090A105, or equivalent)
2	Nut, Lock, Nylon Insert, 1/4 Inch, Zinc Plated (CAGE/PN: 2V507/95615A120, or equivalent)
2	Washer, Lock, 1/4 Inch, Zinc Plated, ASME B18.21.1 (CAGE/PN: 2V507/91104A029, or equivalent)

HOSES, VALVES, AND TEES CONTAINERIZATION (TRICON 9)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the Hoses, Valves, and Tees containerization.



HOSES, VALVES, AND TEES CONTAINERIZATION (TRICON 9) - CONTINUED

Table 38. Hoses, Valves, and Tees — Container 9.

ITEM NUMBER	DESCRIPTION
1	Extinguisher, Fire, Dry Chemical, 20 LB
2	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch (Total: 17)
3	Hose Assembly, Discharge, 4-inch x 10-feet
4	Plastic Pallet
5	Eyescrew, 3/8-inch x 1-1/2-inch x 2-3/4-inch, Workload Limit 1200 LBS (Total: 26)
6	Shoring Beam
7	TRICON Container
8	Valve Rack
9	Valve Assembly, Gate, Female 4-inch x Male 4-inch
10	Fire Extinguisher Holder
11	Tee Assembly, Female 4-inch x Male 4-inch x Male 4-inch

Attach each valve rack (Item 8) to plastic pallet (Item 4) using the following:

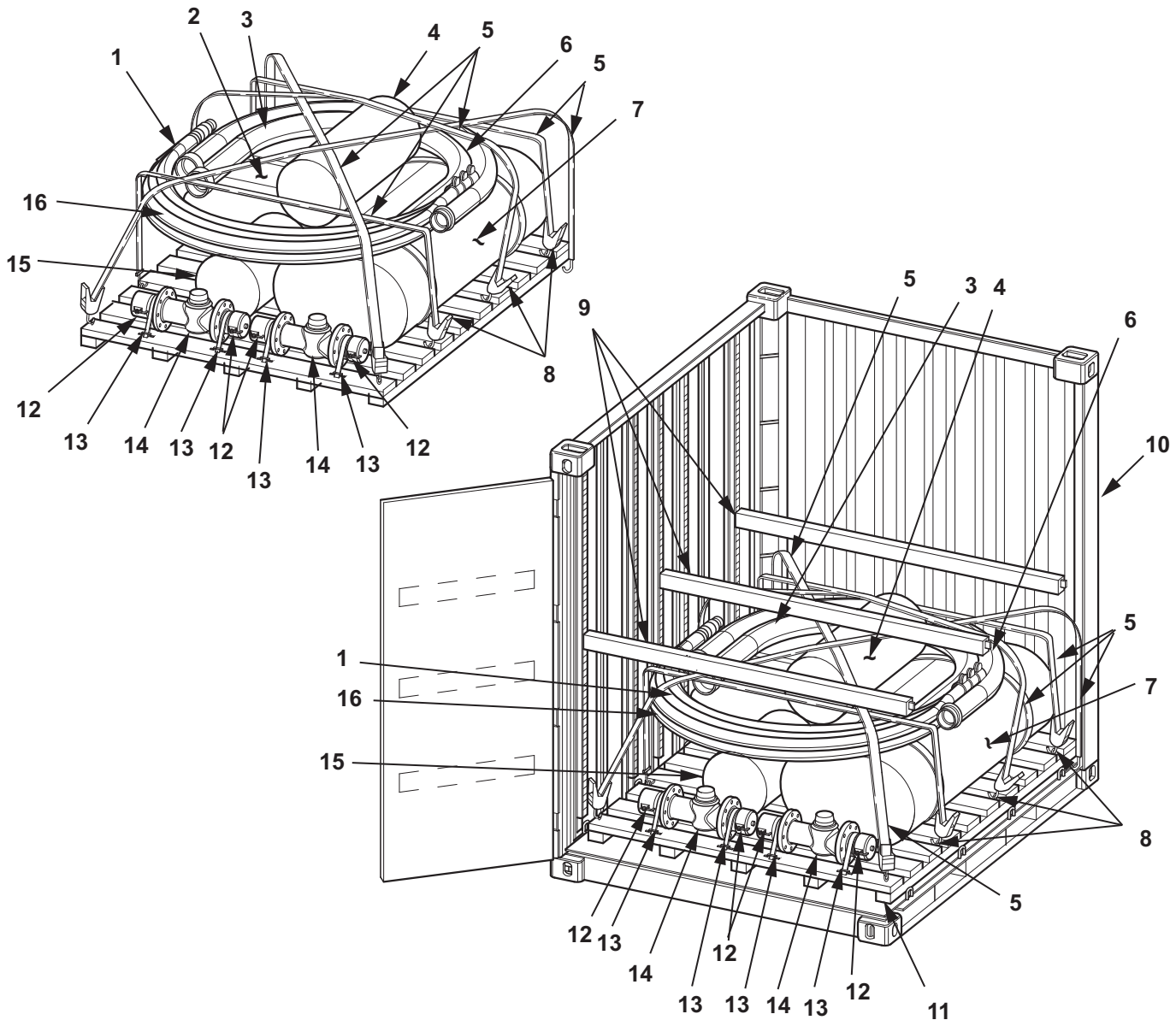
Quantity	DESCRIPTION
6	Screw, Lag, Hex Head, Zinc Chromate Steel, 3/8-inch x 2-1/2-inch long (CAGE/PN: 2V507/91478A634, or equivalent)
6	Washer, Flat, 3/8-inch (CAGE/PN: 2V507/94744A265, or equivalent)

20,000 GALLON TANK ASSEMBLY CONTAINERIZATION, 120,000 GALLON SYSTEM (TRICONS 10-12)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the 20,000 Gallon Tank Assembly containerization.



20,000 GALLON TANK ASSEMBLY CONTAINERIZATION, 120,000 GALLON SYSTEM (TRICONS 10-12) - CONTINUED

Table 39. 20,000 Gallon Tank Assembly — Containers 10-12.

ITEM NUMBER	DESCRIPTION
1	Drain Hose, Tank, 2-inch x 8-feet
2	Berm Liner, 20,000 Gallon Fuel Tank
3	Hose Assembly, Suction 4-inch x 10-feet long
4	Duffle Bag, Fuel Tank Accessories
5	Web, Tiedown, Nylon, 10,000 pounds, 2-inch Wide, with Ratchet and Winch (Total: 10)
6	Hose, Fill, 4-inch x 10-feet long
7	Tank, Collapsible, Fuel, 20,000 Gallon
8	Eyescrew, 3/8-inch x 1-1/2-inch, x 2-3/4-inch, Workload Limit 1200 LBS (Total: 12)
9	Shoring Beam
10	TRICON Container
11	Plastic Pallet
12	Web, Tiedown, Nylon, 1-inch Wide, with spring buckle (Total: 8)
13	Loop, Footman (Total: 16)
14	Tank Volume Meter, 4-inch
15	Duffle Bag, Berm Liner Accessories
16	Drain Hose, Berm Liner, 2-inch x 10-feet

Attach each footman loop (Item 13) to plastic pallet (Item 11) using the following:

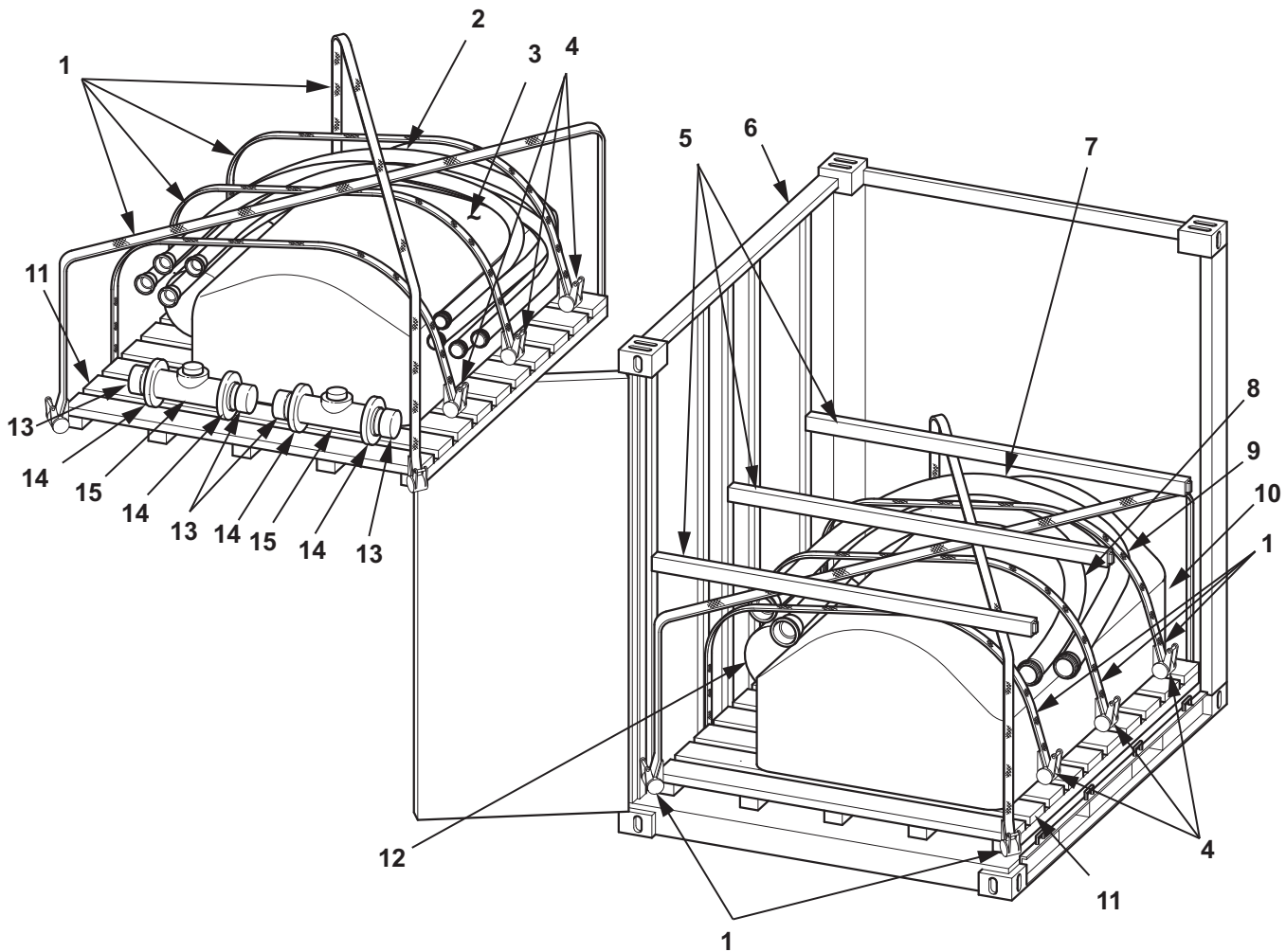
Quantity	DESCRIPTION
2	Screw, Wood, Zinc Chromate Steel, #14 x 1/2-inch long (CAGE/PN: 2V507/90031A319, or equivalent)

50,000 GALLON TANK ASSEMBLY CONTAINERIZATION, 300,000 GALLON SYSTEM (TRICONS 10-15)

WARNING

Pallet load may be unbalanced. Use care when removing and inserting loaded pallet into the TRICON. Failure to exercise care may result in damage to the equipment and/or injury to personnel.

Packaging of FSSP components requires special tiedowns or fabrication and construction of holding devices and fixtures to secure FSSP components in containers. The following figures show the requirements for the 50,000 Gallon Tank Assembly containerization.



50,000 GALLON TANK ASSEMBLY CONTAINERIZATION, 300,000 GALLON SYSTEM (TRICONS 10-15) - CONTINUED

Table 40. 50,000 Tank Assembly — Containers 10-15.

ITEM NUMBER	DESCRIPTION
1	Web, Tiedown, Nylon, 10,000 pounds, 2-inch wide, with Ratchet and Winch
2	Drain Hose, Berm Liner, 2-inch x 10-feet
3	Berm Liner, 50,000 Gallon Fuel Tank
4	Eyescrew, 3/8-inch x 1-1/2-inch x 2-3/4-inch, Workload Limit 1200 LBS
5	Shoring Beam
6	TRICON Container
7	Hose Assembly, Suction 4-inch x 10-feet long
8	Drain Hose, Tank, 2-inch x 8-feet
9	Hose, fill, 4-inch x 10-feet long
10	Tank, Collapsible, Fuel, 50,000 Gallon
11	Plastic Pallet
12	Duffle Bag, Fuel Tank Accessories
13	Web, Tiedown, Nylon, 1-inch wide, with spring buckle
14	Loop, Footman
15	Tank Volume Meter, 4-inch
16	Duffle Bag, Berm Liner Accessories

Attach each footman loop (Item 14) to plastic pallet (Item 11) using the following:

Quantity	DESCRIPTION
2	Screw, Wood, Zinc Chromate Steel, #14 x 1/2-inch long (CAGE/PN: 2V507/90031A319, or equivalent)

120,000 GALLON PACKAGING PLAN/QUANTITIES

Table 41. 120K FSSP Packaging Plan.

TRICON	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
COMPONENT													
Spill Containment Berm, 6-feet x 8-feet x 1-foot	1						1						2
Hose Assembly, Suction, 4-inch x 10-feet		24						32		2	2	2	62
Spill Containment Berm, 4-feet x 4-feet x 1-foot		1	1	1		2							5
Filter-Separator, liquid fuel, frame mounted, 350 GPM Capacity						2							2
Pumping Assembly, 350 GPM	1						1						2
Tee Assembly, female 4-inch x male 4-inch x female 4-inch		1	1					7					9
Valve Assembly, Butterfly, 4 x 4-inch		3		6									9
Fuel Spill Control Kit			1		1								2
Valve Assembly, Gate, female 4-inch x male 4-inch		2	4	10		4		7	7				34
Extinguisher, fire, dry-chemical (Hand Portable)		3	5	8		3			6				25
Tee Assembly, female 4-inch x male 4-inch x male 4-inch			1	7					6				14
Nozzle assembly, closed-circuit refueling, standard				2									2
Tee Assembly, male 4-inch x male 4-inch x female 4-inch						1							1
Hose Assembly, Discharge, 4-inch x 25-feet			2		21	20							43
Tee Assembly, female 4-inch x female 4-inch x male 4-inch		1				1							2
Nozzle Assembly, Fuel and Oil Servicing, 1-inch				2									2
Reducer, female 4-inch x male 3-inch				6									6
Hose Assembly, discharge, 4-inch x 10-feet		4	4	4					45				57

120,000 GALLON PACKAGING PLAN/QUANTITIES – CONTINUED

Table 41. 120K FSSP Packaging Plan.

TRICON	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
COMPONENT													
Reducer, male 4-inch x female 3-inch				3									3
Tank, Collapsible, Fuel, 20,000 Gallon										2	2	2	6
Berm Liner										2	2	2	6
Reducer, Female 4-inch x male 2-inch				1									1
Tee Assembly, 2-inch, valved break dry				2									2
Adapter, female 2-inch quick disconnect x 2-inch valved break dry				1									1
Adapter, male 2-inch quick disconnect x 2-inch valved break dry				2									2
Hose Assembly, discharge, 2-inch x 50-feet, valved dry break					6								6
Nozzle Assembly, Fuel and Oil Servicing, 1.5-inch				2									2
Ball valve assembly, 2-inch quick disconnect				2									2
Reducer, female 2-inch x male 1.5-inch				2									2
Stand Assembly, nozzle and valve		3		8									11
Aircraft Pressure Refueling Nozzle, D-1, with 45 psi Pressure Regulator, 2-inch non-valved dry break				2									2
Strainer Assembly, 4-inch coupling		3											3
Aircraft Pressure Refueling Nozzle, D-1, with 4-inch female camlock				3									3
Adapter, double, male x male, 3-inch nominal					3								3
Adapter, double, female x female, 3-inch nominal			6										6
Adapter, double, male x male, 4-inch nominal					3								3

120,000 GALLON PACKAGING PLAN/QUANTITIES – CONTINUED

Table 41. 120K FSSP Packaging Plan – Continued.

TRICON	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
COMPONENT													
Adapter, double, female x female, 4-inch nominal			6										6
Coupling half, cap, dust, 4-inch					4								4
Coupling half, cap, dust, 3-inch					9								9
Coupling half, cap, dust, 1.5-inch					1								1
Coupling half, plug, dust, 4-inch					7								7
Coupling half, plug, dust, 3-inch					9								9
Ground rod assembly, self-driving		4	1		9								14
Coupling, rail tanker, NATO			2										2
Coupling set, tank truck, NATO			1		1								2
NATO standard adapter or tank unit (male half)					2								2
NATO standard connector or hose unit (female half)					2								2
Aircraft Pressure Refueling Nozzle, D-1 with 4-inch male camlock		3											3
Hose Repair Kit			1										1
Fuel Additive Injection Assembly			1										1
Flow Meter Assembly, inline		1		1									2
Wet Wing Defueling Assembly					1								1
Displacement and Evacuation Kit, 4-inch Hoseline			1										1
Tank Volume Meter										4	4	4	12

300,000 GALLON PACKAGING PLAN/QUANTITIES

Table 42. 300K FSSP Packaging Plan.

TRICON	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
COMPONENT																
Spill Containment Berm, 6-feet x 8-feet x 1-foot	1						1									2
Hose Assembly, Suction, 4-inch x 10-feet		24						32		1	1	1	1	1	1	62
Spill Containment Berm, 4-feet x 4-feet x 1-foot		1	1	1		2										5
Filter-Separator, liquid fuel, frame mounted, 350 GPM Capacity						2										2
Pumping Assembly, 350 GPM	1						1									2
Tee Assembly, female 4-inch x male 4-inch x female 4-inch		1	1					7								9
Valve Assembly, Butterfly, 4 x 4-inch		3		6												9
Fuel Spill Control Kit			1		1											2
Valve Assembly, Gate, female 4-inch x male 4-inch		2	4	10		4		7	7							34
Extinguisher, fire, dry-chemical (Hand Portable)		3	5	8		3			6							25
Tee Assembly, female 4-inch x male 4-inch x male 4-inch			1	7					6							14
Nozzle assembly, closed-circuit refueling, standard				2												2
Tee Assembly, male 4-inch x male 4-inch x female 4-inch						1										1
Hose Assembly, Discharge, 4-inch x 25-feet			2		21	20										436
Tee Assembly, female 4-inch x female 4-inch x male 4-inch		1				1										2
Nozzle Assembly, Fuel and Oil Servicing, 1-inch				2												2
Reducer, female 4-inch x male 3-inch				6												6

300,000 GALLON PACKAGING PLAN/QUANTITIES – CONTINUED

Table 42. 300K FSSP Packaging Plan – Continued.

TRICON	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
COMPONENT																
Hose Assembly, discharge, 4-inch x 10-feet		4	4	4					45							57
Reducer, male 4-inch x female 3-inch				3												3
Tank, Collapsible, Fuel, 20,000 Gallon										1	1	1	1	1	1	6
Berm Liner										1	1	1	1	1	1	6
Reducer, Female 4-inch x male 2-inch				1												1
Tee Assembly, 2-inch, valved break dry				2												2
Adapter, female 2-inch quick disconnect x 2-inch valved break dry				1												1
Adapter, male 2-inch quick disconnect x 2-inch valved break dry				2												2
Hose Assembly, discharge, 2-inch x 50-feet, valved dry break					6											6
Nozzle Assembly, Fuel and Oil Servicing, 1.5-inch				2												2
Ball valve assembly, 2-inch quick disconnect				2												2
Reducer, female 2-inch x male 1.5-inch				2												2
Stand Assembly, nozzle and valve		3		8												11
Aircraft Pressure Refueling Nozzle, D-1, with 45 psi Pressure Regulator, 2-inch non-valved dry break				2												2
Strainer Assembly, 4-inch coupling				3												3
Aircraft Pressure Refueling Nozzle, D-1, with 4-inch female camlock		3														3
Adapter, double, male x male, 3-inch nominal					3											3

300,000 GALLON PACKAGING PLAN/QUANTITIES – CONTINUED

Table 42. 300K FSSP Packaging Plan – Continued.

TRICON	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
COMPONENT																
Adapter, double, female x female, 3-inch nominal			6													6
Adapter, double, male x male, 4-inch nominal					3											3
Adapter, double, female x female, 4-inch nominal			6													6
Coupling half, cap, dust, 4-inch					4											4
Coupling half, cap, dust, 3-inch					9											9
Coupling half, cap, dust, 1.5-inch					1											1
Coupling half, plug, dust, 4-inch					7											7
Coupling half, plug, dust, 3-inch					9											9
Ground rod assembly, self-driving		4	1		9											14
Coupling, rail tanker, NATO			2													2
Coupling set, tank truck, NATO			1		1											2
NATO standard adapter or tank unit (male half)					2											2
NATO standard connector or hose unit (female half)					2											2
Aircraft Pressure Refueling Nozzle, D-1 with 4-inch male camlock		3														3
Hose Repair Kit			1													1
Fuel Additive Injection Assembly			1													1
Flow Meter Assembly, inline		1		1												2
Wet Wing Defueling Assembly					1											1
Displacement and Evacuation Kit, 4-inch Hoseline			1													1
Tank Volume Meter										2	2	2	2	2	2	12

COMPONENT CHARACTERISTICS

The following table provides characteristics of components within the FSSP system.

Table 43. Fuel System Supply Point Component Characteristics.

ITEM CHARACTERISTIC	DESCRIPTION
CAPACITIES	
Fuel System	Up to 300,000 gal (1,135,624 liters)
	Fuel Tanks (Six tanks of any combination of the following two different sizes makes up the fuel system.)
20K Tank	20,000 gallons (75,708 liters)
50K Tank	50,000 gallons (189,270 liters)
Pumping Assembly	(2 each) 350 GPM (1325 LPM)
Filter-Separator	(2 each) 350 GPM (1325 LPM)
NOTE The following shipping weights and dimensions do not include pumps, filter-separators, tanks, nozzles stands, and other miscellaneous fittings that are not shipped with the FSSP.	
SHIPPING DIMENSIONS	
	Models M106 and M107
Quantity of containers (TRICON)	12 - 15
Width	77 in. (195.6 cm)
Length	96 in. (243.8 cm)
Height	96 in. (243.8 cm)

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
THEORY OF OPERATION**

INTRODUCTION

The FSSP is comprised of a number of separate major components to store and dispense fuel. The principles of operation of each of these major components and how they work within the system are defined in the following paragraphs. (Refer to Figure 1).

INTRODUCTION - CONTINUED**FUEL SYSTEM**

The FSSP is used to store and dispense fuel to using units in the field. A typical layout of the FSSP is shown in Figure 1. Fuel enters the FSSP through the receipt manifold (Figure 1, Item 4). The first of two 350 GPM fuel pumping assembly (Figure 1, Item 3) pumps the fuel through the flowmeter assembly (Figure 1, Item 2), the fuel additive injection assembly (Figure 1, Item 1) and is moved into the collapsible fabric fuel tanks (Figure 1, Item 5). The operator selects the collapsible fabric fuel tank to be filled by opening and losing the appropriate gate valves. A second 350 GPM fuel pumping assembly (Figure 1, Item 10) moves the fuel from the collapsible tanks (Figure 1, Item 5) through two 350 GPM filter-separators (Figure 1, Item 9) and flowmeter assembly (Figure 1, Item 8). Fuel is issued through the quick acting valves and installed nozzles (Figure 1, Item 7) and the retail issue points (Figure 1, Item 6). Issue points to be used are selected by the operator by opening and closing appropriate gate valves.

PUMPS

A 350 GPM fuel pumping assembly (Figure 1, Item 3) is used on the receiving side of the FSSP to move fuel into the collapsible fabric fuel tanks (Figure 1, Item 5). An identical 350 GPM fuel pumping assembly (Figure 1, Item 10) is used on the delivery side of the FSSP to move the fuel from the tanks to the various types of dispensing units.

FILTER-SEPARATOR

Two 350 GPM filter-separators (Figure 1, Item 9) may be connected in parallel on the delivery side of the system to remove entrained water and solid contaminants from fuel before it is dispensed into vehicles or containers.

TANKS

Collapsible fabric fuel tanks (Figure 1, Item 5) (any combination of 20,000 or 50,000 gallon tanks may be used) are used to store fuel received from fuel transporters or pipelines to be supplied to the dispensing units.

TANKS - CONTINUED

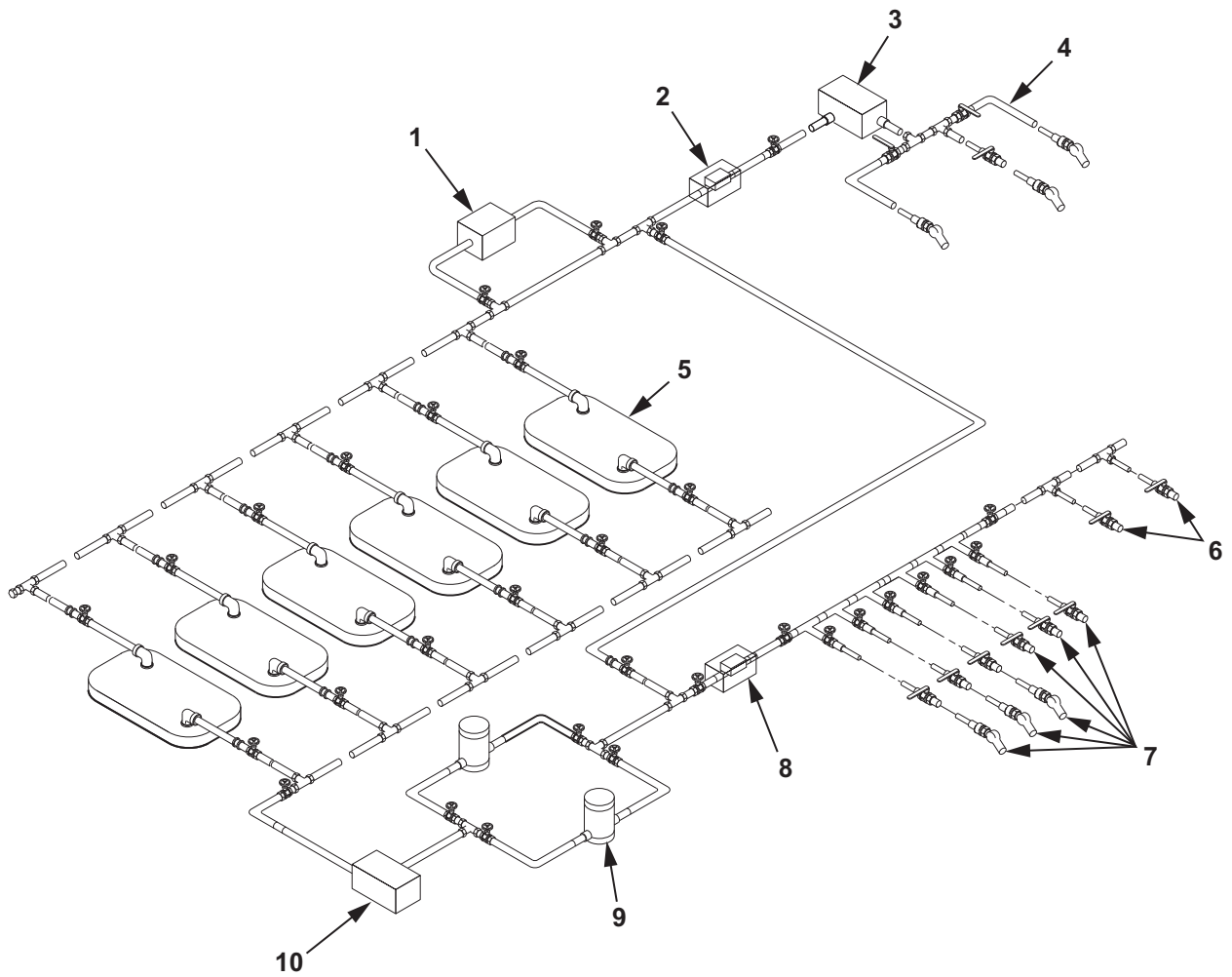


Figure 1. Typical Layout of Fuel System Supply Point (FSSP).

TANKS - CONTINUED

FITTINGS

There are several different types of fitting assemblies in the FSSP to connect hoses, valves and components together.

HOSE ASSEMBLIES

There are two types of hose assemblies used in the system. The suction hose assemblies have reinforcing wires spiralled throughout their length to keep the hose from collapsing and to act as a bonding wire. The discharge hose assemblies are of a non-wire reinforced type, but have bonding wires imbedded in the entire length of the assembly.

DISPENSING NOZZLES

Nozzles provide a means of refueling vehicles, refueling aircraft or filling cans and drums. The nozzles are fuel and oil servicing and automatic shutoff for use with 1.5 in. or 1 in. hose. When 1 in. nozzles are required, fittings are supplied to remove the 1.5 in. nozzles and replace them with 1 in. nozzles. D1 nozzles are used for refueling aircraft.

DISPENSING VALVES

Five quick acting valves are also provided for dispensing fuel to systems with various other types of fuel connections. Three sizes of quick acting valves are provided; 1.5 in., 2 in. and 3 in. When 4 in. dispensing valves are required, the 4 in. to 3 in. reducer fitting on the 3 in. valve can be removed. All fuel delivery components (hoses, pump, filter, wyes, tees, elbows, nozzles, etc.) feature unisex dry-break couplings, with the exception of the valved camlock elbow couplings that connect the fuel hoses to the fuel tanks. Valved unisex couplings are dry-break fittings. They can be connected or disconnected only when the valves are closed. This allows components to be separated without spilling fuel. When connected (with valves open) the unisex couplings are locked together, preventing accidental separation.

TANK VOLUME METER

The tank volume meter is installed on the input and output sides of the collapsible fabric fuel tanks (Figure 2, Item 3) and calculates the sum of two flows. The flowrate and total of both flows is calculated and is displayed in a LCD display. The operating temperature range for the meter is -20°F – +178°F (-30°C – +80°C). The meter is battery powered with five 24 VAC/DC internal lithium batteries, which have an average lifetime of 7 years.

FUEL ADDITIVE INJECTION ASSEMBLY

The fuel additive injection assembly (Figure 2, Item 1) is a fluid powered, multi-additive injection system designed to inject Fuel System Icing Inhibitor (FSII), Static Discharge Additive (SDA) and Corrosion Inhibitor (CI) additives into fuels. The system is powered and controlled by the flow of fuel and additives through the fluid motor. The system does not operate on external power or require any operators to control the system while in operation. As the flow of fuel either increases or decreases through the system, the fluid motor will either increase or decrease simultaneously.

FLOWMETER ASSEMBLY

A flowmeter assembly (Figure 2, Item 2) is used to observe the volume and quantity of fuel flowing from the receipt manifold when fuel is resupplied to the FSSP. A flowmeter assembly (Figure 2, Item 4) is used to observe the volume and quantity of fuel flowing when fuel is dispensed. When fuel flows through the flowmeter assembly the rotor is driven by the fuel passing through a vortex chamber. The volume and rate of fuel flow is transferred to a readout device through the use of a magnetic coupling.

FLOWMETER ASSEMBLY - CONTINUED

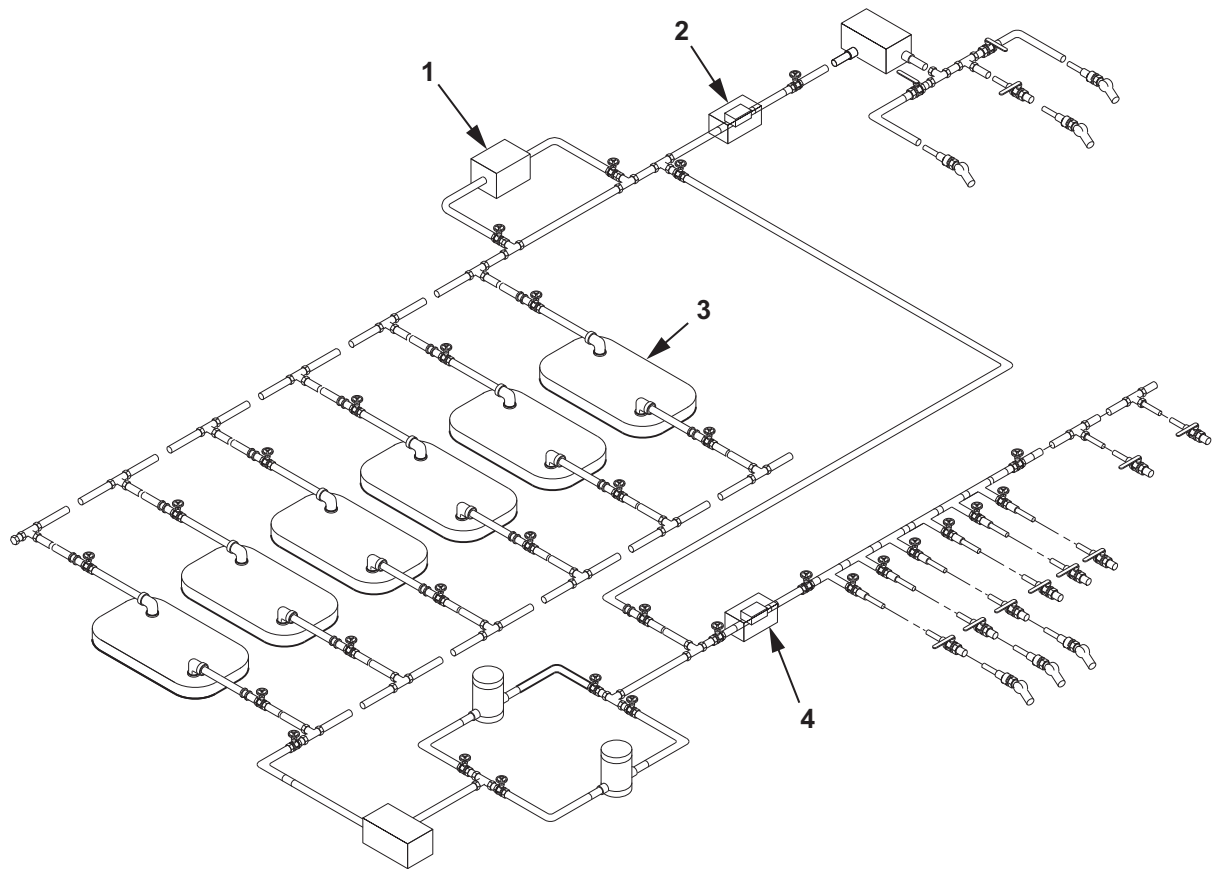


Figure 2. Typical Layout of Fuel System Supply Point (FSSP).

END OF WORK PACKAGE

CHAPTER 2

OPERATOR INSTRUCTIONS FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**OPERATOR MAINTENANCE
DESCRIPTION AND USE OF OPERATOR CONTROLS AND INDICATORS**

FUEL SYSTEM SUPPLY POINT CONTROLS AND INDICATORS (OVERVIEW)**GENERAL**

The FSSP is designed for a variety of installations and for operation under a wide range of climatic conditions. Operators must be aware of any peculiarities or operational limitations for their specific installation. Before setting up and operating this system, be sure that the type of terrain and climate in which the system will be used is determined and that the system has been assembled and serviced to match the existing needs.

OPERATOR CONTROLS AND INDICATORS

There are only a few components in the FSSP system that have operator controls and indicators for the portion of the system covered in this manual. For controls and indicators applicable to tanks, pumps and/or filter-separators, refer to TM 5-5430-219-13, Operator's, Unit and Intermediate Direct Support Maintenance Manual for Tank, Fabric, Collapsible; TM 10-4320-372-14, Operator's, Unit, Direct Support and General Support Maintenance Manual for Fuel Pumping Assembly, Diesel Engine Driven, Wheel Mounted 350 Gallons Per Minute; TM 10-4330-235-13&P, Operator's, Unit and Direct Support Maintenance Manual, Including Repair Parts and Special Tools List, for Filter-Separator, Liquid Fuel, Frame Mounted 350 GPM Capacity; TM 10-6630-240-12&P, Operator's and Unit Maintenance Manual, Including Repair Parts and Special Tools List, for Test Kit Petroleum, Aviation Fuel Contaminant.

TANK VOLUME METER MONITOR CONTROLS AND INDICATORS

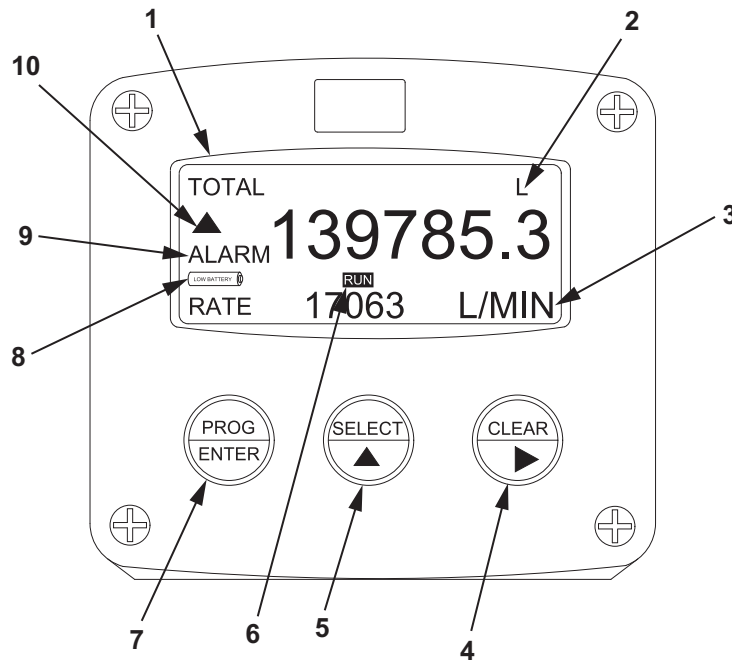


Figure 1. Tank Volume Meter Monitor Controls and Indicators.

Table 1. Tank Volume Meter Monitor Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	Displayed Function	Indicates the current function of the readout.
2	Measurement Total	Indicates the unit of measurement for the total.
3	Time and Measurement Units	Indicates the time and measurement units for flow rate, level, pressure or temperature.
4	CLEAR Key	Used to select values or to clear a value.
5	SELECT Key	Used to select a function or as an up arrow key to increase values.
6	Status Indicator	Indicates the current status of the tank volume meter.
7	PROG/ENTER Key	Used to program and save new values or settings. Also used to gain access to SETUP level.
8	Low Battery Indicator	Indicates when the battery voltage is low and battery should be replaced.
9	ALARM Indicator	Indicates that an alarm condition exists and that an error code is present in the monitor.
10	Trend Indicator	Indicates the trend of the indicating system. The up arrow indicates that rate of flow and total is increasing. The down arrow indicates that rate of flow and total is decreasing.

FUEL ADDITIVE INJECTION ASSEMBLY CONTROLS AND INDICATORS

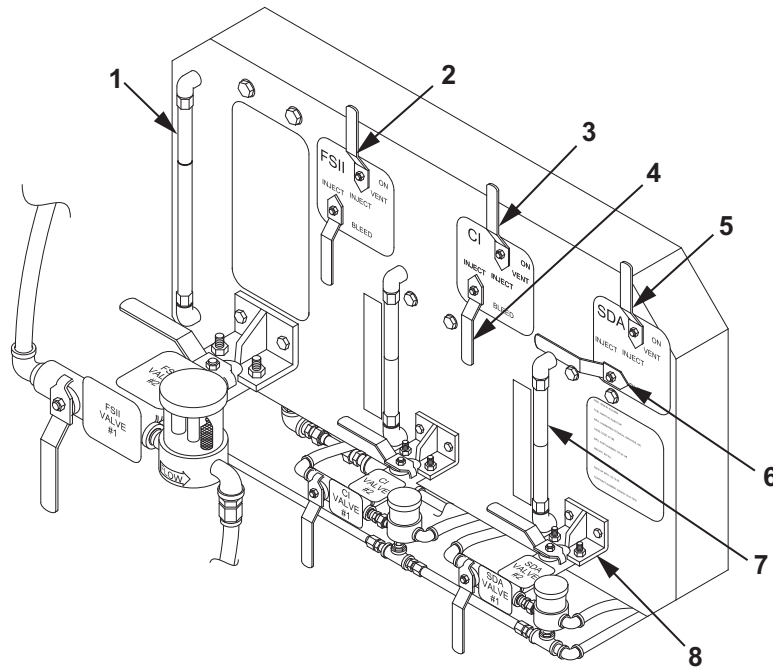


Figure 2. Fuel Additive Injection Assembly Controls and Indicators.

Table 2. Fuel Additive Injection Assembly Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	Fuel System Icing Inhibitor (FSII) Calibration Gauge	Used to calibrate amount of icing inhibitor to add to fuel.
2	FSII Vent Valve	Used to select between ON, VENT or INJECT for the fuel system icing inhibitor additive.
3	Corrosion Inhibitor (CI) Vent Valve	Used to select between ON, VENT or INJECT for the corrosion inhibitor additive.
4	CI Bleed Valve	Used to select between INJECT and BLEED for the corrosion inhibitor additive.
5	Static Discharge Additive (SDA) Vent Valve	Used to select between ON, VENT or INJECT for the static discharge additive.
6	SDA Bleed Valve	Used to select between INJECT and BLEED for the static discharge additive.
7	SDA Calibration Gauge	Used to calibrate amount of static discharge additive to add to fuel.
8	SDA VALVE #2	Used to fill the static discharge additive calibration gauge during field calibration of the injectors.

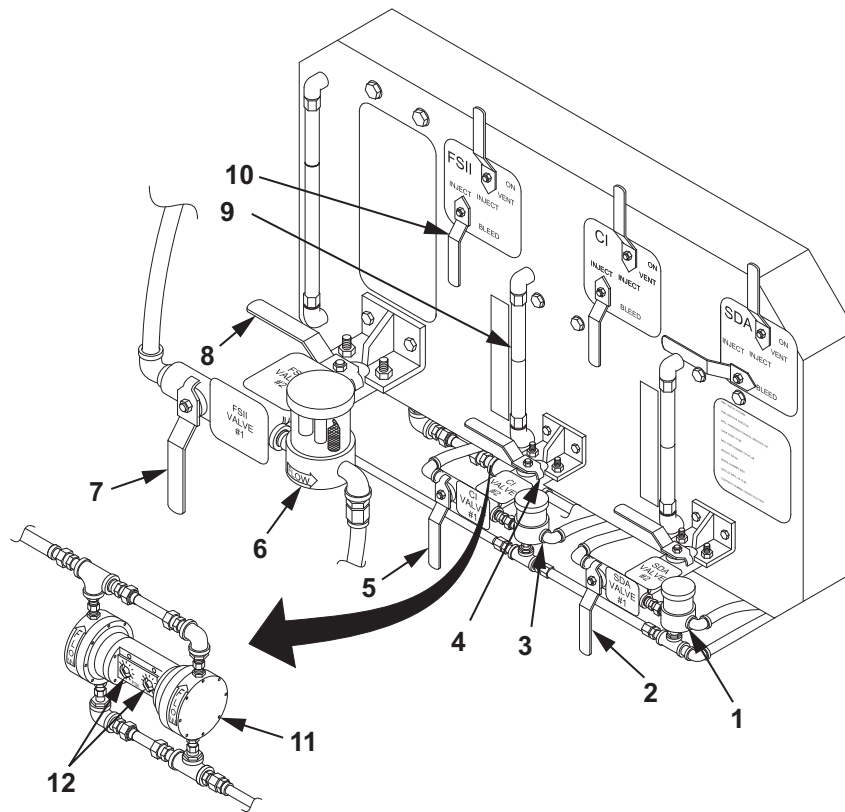


Figure 3. Fuel Additive Injection Assembly Controls and Indicators.

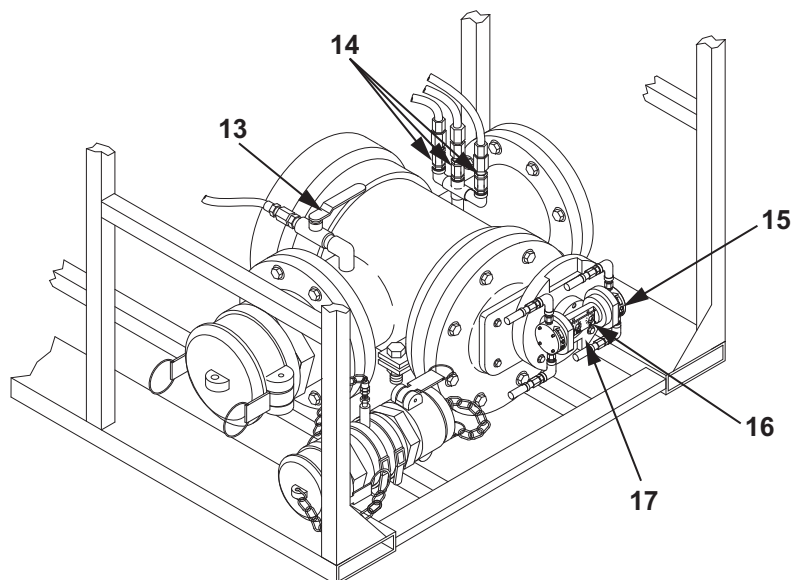


Figure 4. Fuel Additive Injection Assembly Controls and Indicators.

FUEL ADDITIVE INJECTION ASSEMBLY CONTROLS AND INDICATORS - CONTINUED

Table 3. Fuel Additive Injection Assembly Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	SDA Sight Flow Indicator	Allows operator to monitor presence of additive in the system. Allows operator to observe the exact amount of additive being injected into the system. Used to observe the condition of the filter during operation.
2	SDA VALVE #1	Used to interrupt the supply of additive between the additive tank and the injector.
3	CI Sight Flow Indicator	Allows operator to monitor presence of additive in the system. Allows operator to observe the exact amount of additive being injected into the system. Used to observe the condition of the filter during operation.
4	CI VALVE #2	Used to fill the corrosion inhibitor additive calibration gauge during field calibration of the injectors.
5	CI VALVE #1	Used to interrupt the supply of additive between the additive tank and the injector.
6	FSII Hi Volume Sight Flow Indicator	Allows operator to monitor presence of additive in the system. Allows operator to observe the exact amount of additive being injected into the system. Used to observe the condition of the filter during operation.
7	FSII VALVE #1	Used to interrupt the supply of additive between the additive tank and the injector.
8	FSII VALVE #2	Used to fill the fuel system icing inhibitor additive calibration gauge during field calibration of the injectors.
9	CI Calibration Gauge	Used to calibrate amount of corrosion inhibitor to add to fuel.
10	FSII Bleed Valve	Used to select between INJECT and BLEED for the icing inhibitor additive.
11	FSII Injection Pump	Pump system used to inject the icing inhibitor additive.
12	FSII Stroke Adjustment Knobs	Used to adjust the length of stroke for the FSII injection pump.
13	Priming Valve	Used to initially prime system and to purge system prior to storage.
14	Injection Point Check Valves	Used to prevent fuel from migrating back into injectors.
15	CI and SDA Injection Pump	Pump system used to inject the corrosion inhibitor and the static discharge additives.
16	SDA Stroke Adjustment Knob	Used to adjust the length of stroke for the SDA pump.
17	CI Stroke Adjustment Knob	Used to adjust the length of stroke for the CI pump.

FUEL ADDITIVE INJECTION ASSEMBLY CONTROLS AND INDICATORS - CONTINUED

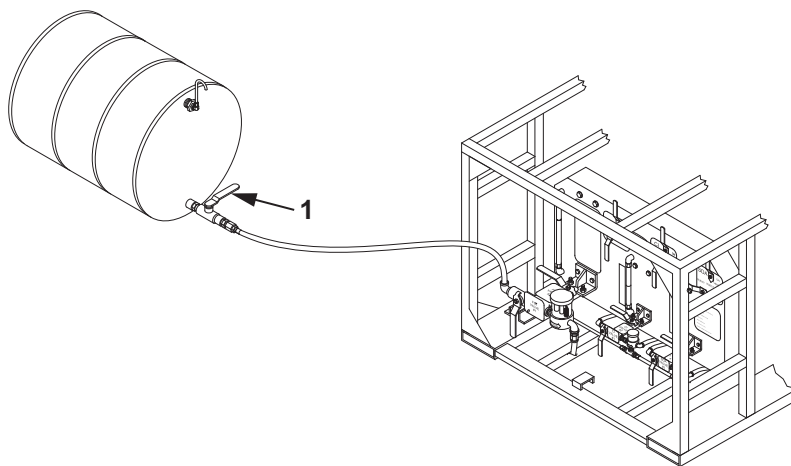


Figure 5. Fuel Additive Injection Assembly Controls and Indicators.

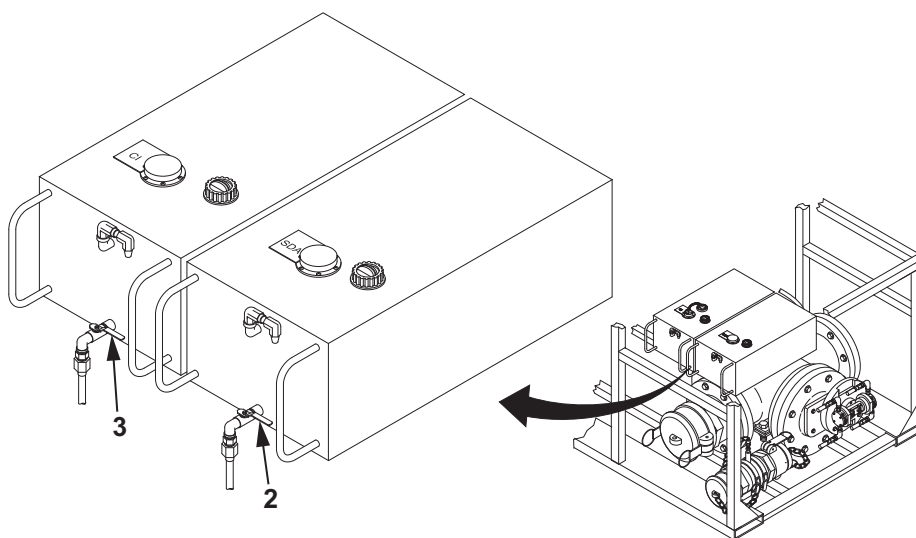


Figure 6. Fuel Additive Injection Assembly Controls and Indicators.

Table 4. Fuel Additive Injection Assembly Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	FSII Additive Shutoff Valve	Used to start or stop flow of FSII additive. When valve handle is positioned in line with the valve, additive will flow to the injection pump. When valve handle is positioned perpendicular with the valve, additive will not flow to the injection pump.
2	SDA Additive Shutoff Valve	Used to start or stop flow of SDA additive. When valve handle is positioned in line with the valve, additive will flow to the injection pump. When valve handle is positioned perpendicular with the valve, additive will not flow to the injection pump.
3	CI Additive Shutoff Valve	Used to start or stop flow of CI additive. When valve handle is positioned in line with the valve, additive will flow to the injection pump. When valve handle is positioned perpendicular with the valve, additive will not flow to the injection pump.

FLOWMETER ASSEMBLY REGISTER READOUT CONTROLS AND INDICATORS

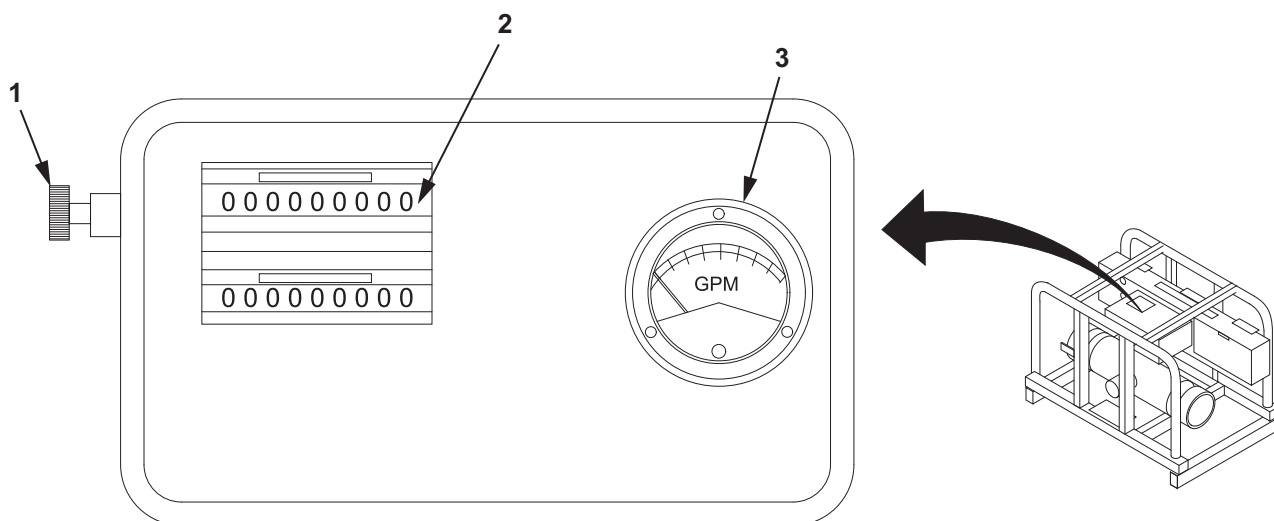


Figure 7. Flowmeter Assembly register readout Controls and Indicators.

Table 5. Flowmeter Assembly Register Readout Controls and Indicators.

KEY	CONTROL/INDICATOR	FUNCTION
1	Reset Knob	Used to reset top counter.
2	Dual 9-digit Counter	Used to observe quantity of fuel pumped. Top counter is resettable. Bottom counter is cumulative counter.
3	Rate of Flow Indicator	Used to observe rate of flow.

END OF WORK PACKAGE

OPERATOR MAINTENANCE PREPARATION FOR USE

INITIAL SETUP:

Tools and Special Tools

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

FM 10-67-1
TM 5-5430-219-13
TM 10-4320-372-14
TM 10-4330-235-13&P

Materials/Parts

Apron, utility (Item 2, WP 0214)
Tape, teflon (Item 14, WP 0214)

Personnel Required

Petroleum Supply Specialist 92F (8)

WARNING



HEAVY OBJECT



FIRE



HEAVY PARTS

A suitable lifting device must be used when lifting objects heavier than 50lbs (23 kg). Failure to comply may result in injury to personnel.

Pallets and components may be extremely flammable. Do not store system pallets and components in direct sunlight. Failure to comply may result in death or injury to personnel.

To prevent components from falling during movement, ensure material handling equipment has tines longer than 72 in (1.8 m). Failure to comply may result in death or injury to personnel.

SITE PREPARATION

1. Prepare site per FM 10-67-1.
2. Identify and mark location of major end items, fuel tanks, pumps, flowmeters, receiving line, issuing lines, fuel additive injection assembly and filter-separators using foldout FO-1, located in the rear of this manual.

END OF TASK

PREPARATION FOR USE — ASSEMBLE FSSP

CAUTION

Ensure all dust caps and plugs remain in place on components, hoses and fittings until they are connected to the system. After connecting components, hoses and fittings, couple adjoining end caps and plugs. Failure to comply can cause contamination of the FSSP resulting in damage to equipment.

NOTE

Retaining straps are used to tie hoses together during shipment. When loosening retaining straps to unroll hoses, ensure retaining straps are secured to the hoses for later use in shipment.

END OF TASK

FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION

FUEL TANKS 1 THROUGH 6 INSTALLATION

NOTE

If berms are constructed prior to set up, remove tank water drain hoses from TRICON containers 10, 11 and 12. Place tank waterdrain hoses diagonally across from receiving and issuing points of FSSP.

1. Remove pallets holding fuel tanks and their components from TRICON containers 10, 11 and 12 and position just outside of area designated for each fuel tank placement. Refer to WP 0002 for contents of containers.

NOTE

Berms may or may not be constructed at the time berm liners are placed.

2. Position tank liners inside berms and position fuel tanks inside fuel tank liner. Refer to TM 5-5430-219-13.

WARNING



EXPLOSION

Ensure berm liner drain ball valves are closed and locked. In the event of fuel tank rupture, fuel will escape through open ball valves resulting in a major fuel spill. Undetected fuel leakage can result in an explosion causing injury or death to personnel.

3. Install the water drain hoses on the tank liners. Refer to TM 5-5430-219-13.
4. Starting at fuel tank number 1, install 2 in X 8 foot drain hoses with threaded end to fuel tank drain assemblies. Refer to TM 5-5430-219-13.

NOTE

The dust cap is attached to the flanged adapter to prevent it from being lost. The filler/discharge elbow on the discharge end requires a female/male elbow. The filler/discharge elbow used on the intake end requires a female/female elbow. Refer to TM 5-5430-219-13 for additional information.

5. Install the tank filler/discharge elbows. Refer to TM 5-5430-219-13.
6. Connect vent pipe to 2 in vent assembly center of fuel tank. Refer to TM 5-5430-219-13.
7. Connect two 4 in. X 10 ft suction hoses (Figure 1, Item 2 and 3) to the tank discharge elbow (Figure 1, Item 4).

CAUTION

Before touching tank output volume meters touch a well grounded object to discharge static electricity. Failure to discharge static electricity will damage the electronics of the volume meter monitor.

8. Connect a tank output volume meter (out) (Figure 1, Item 1) to the end of the second 4 in. X 10 ft suction hose (Figure 1, Item 3).

NOTE

The arrow on the tank volume meter must be installed in the direction of fuel flow.

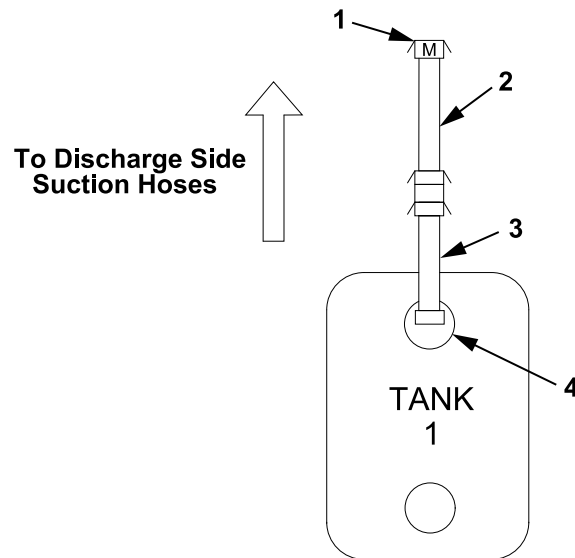
**FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION -
CONTINUED**

Figure 1. Fuel Tank Filler/Discharge Hoses.

9. Remove upper and lower pallets from TRICON 9 holding receiving components. Refer to WP 0002 for contents of containers. Position pallets on the receiving line across from the second fuel tank.

**FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION -
CONTINUED**

10. Connect two 4 in. X 10 ft discharge hoses (Figure 2, Item 3 and 4) to the tank filler elbow (Figure 2, Item 2) on the receipt side of the fuel tank (Figure 2, Item 1).

CAUTION

Before touching tank output volume meters touch a well grounded object to discharge static electricity. Failure to discharge static electricity will damage the electronics of the volume meter monitor.

NOTE

The arrow on the tank volume meter must be installed in the direction of fuel flow.

11. Connect the tank input volume meter (in) (Figure 2, Item 7) to the end of the 4 in. X 10 ft discharge hose (Figure 2, Item 3) on the receipt side of the fuel tank (Figure 2, Item 1).
12. Remove one gate valve (4 in. X 4 in.) from pallet and connect gate valve (Figure 2, Item 6) to discharge hose (Figure 2, Item 4).

NOTE

After installation of female X male X male tee assembly, female port of tee assembly will be facing towards receiving point and male end will be facing toward fuel tank number 2.

13. Remove a female X male X male tee assembly from pallet and connect female X male X male tee assembly (Figure 2, Item 5) to gate valve (Figure 2, Item 6) on the receipt/filler side of the fuel tank.

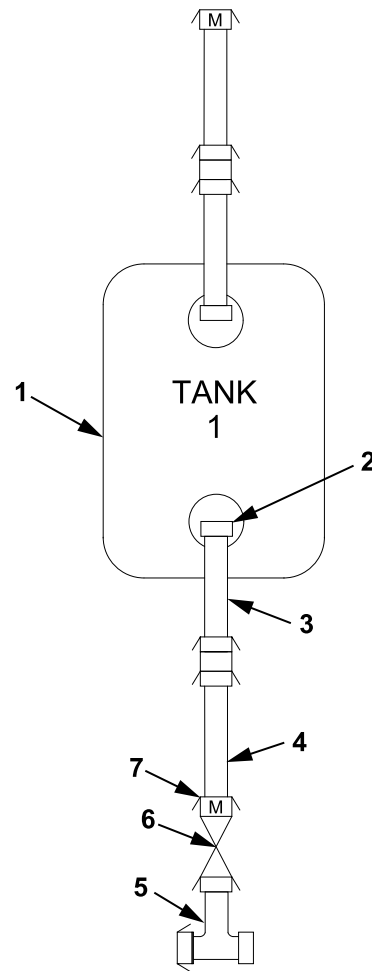
**FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION -
CONTINUED**

Figure 2. Fuel Tank Receipt Side Components.

FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION - CONTINUED

14. Remove six sections of 4 in. X 10 ft discharge hose from pallet.
15. Connect six sections of the 4 in. X 10 ft discharge hose (Figure 3, Item 5) to the female X male X male tee assembly (Figure 3, Item 1) on the male end towards the second fuel tank.
16. Remove a female X male X male tee assembly from pallet. Connect female X male X male tee assembly (Figure 3, Item 4) to discharge hose (Figure 3, Item 5) from fuel tank number 1.
17. Remove a 4 in. X 4 in. gate valve from pallet. Connect gate valve (Figure 3, Item 3) on the male port of tee assembly (Figure 3, Item 4) towards second fuel tank.
18. Connect gate valve (Figure 3, Item 3) to tank volume meter (Figure 3, Item 2).
19. Repeat steps 7 through 12 for tank 2.

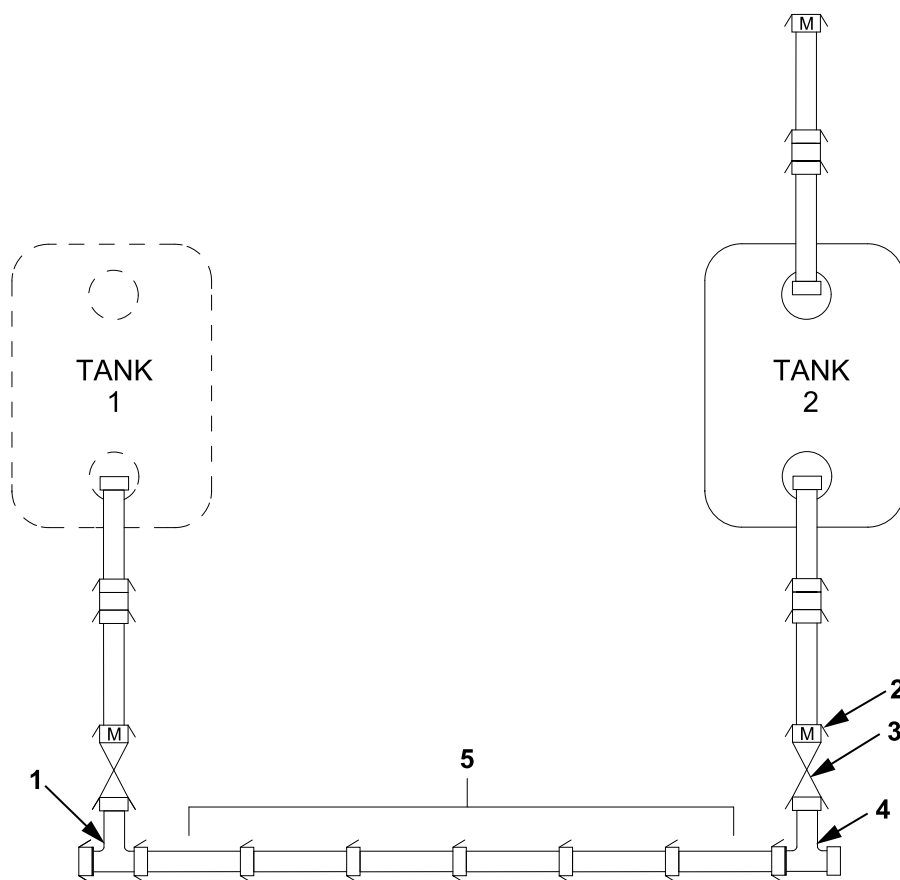


Figure 3. Fuel Tank Receipt Components Between Tanks.

20. Remove upper and lower pallets from TRICON 4 and TRICON 5 holding issuing components. Refer to WP 0002 for contents of containers.

FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION - CONTINUED

21. Position pallets on the issuing line across from the third fuel tank.
22. Remove a 4 in. X 4 in. gate valve from the pallet. Connect the 4 in. X 4 in. gate valve (Figure 4, Item 6) to suction hose (Figure 4, Item 5).
23. Remove a female X male X female tee assembly from the pallet. Connect the female X male X female tee assembly (Figure 4, Item 7) to the 4 in X 4 in gate valve (Figure 4, Item 6). Male in of tee assembly will be facing towards the second fuel tank.
24. Install a 4 in. male camlock X 2 in. valved dry-break adapter (Figure 4, Item 8) to the female X male X female tee assembly (Figure 4, Item 7).
25. Remove six sections of 4 in. X 10 ft suction hose from pallet.
26. Connect six sections of the 4 in. X 10 ft suction hose (Figure 4, Item 8) to the female X male X female tee assembly (Figure 4, Item 7) on the male end towards the second fuel tank.
27. Remove a female X male X female tee assembly from the pallet. Connect the female X male X female tee assembly (Figure 4, Item 2) to suction hose (Figure 4, Item 8) from fuel tank number 1.
28. Remove a 4 in. X 4 in. gate valve from the pallet. Connect a 4 in. X 4 in. gate valve (Figure 4, Item 3) to tee assembly (Figure 4, Item 2) on the female port of tee towards second fuel tank.
29. Connect the 4 in. X 4 in. gate valve (Figure 4, Item 3) to tank volume meter (Figure 4, Item 4).

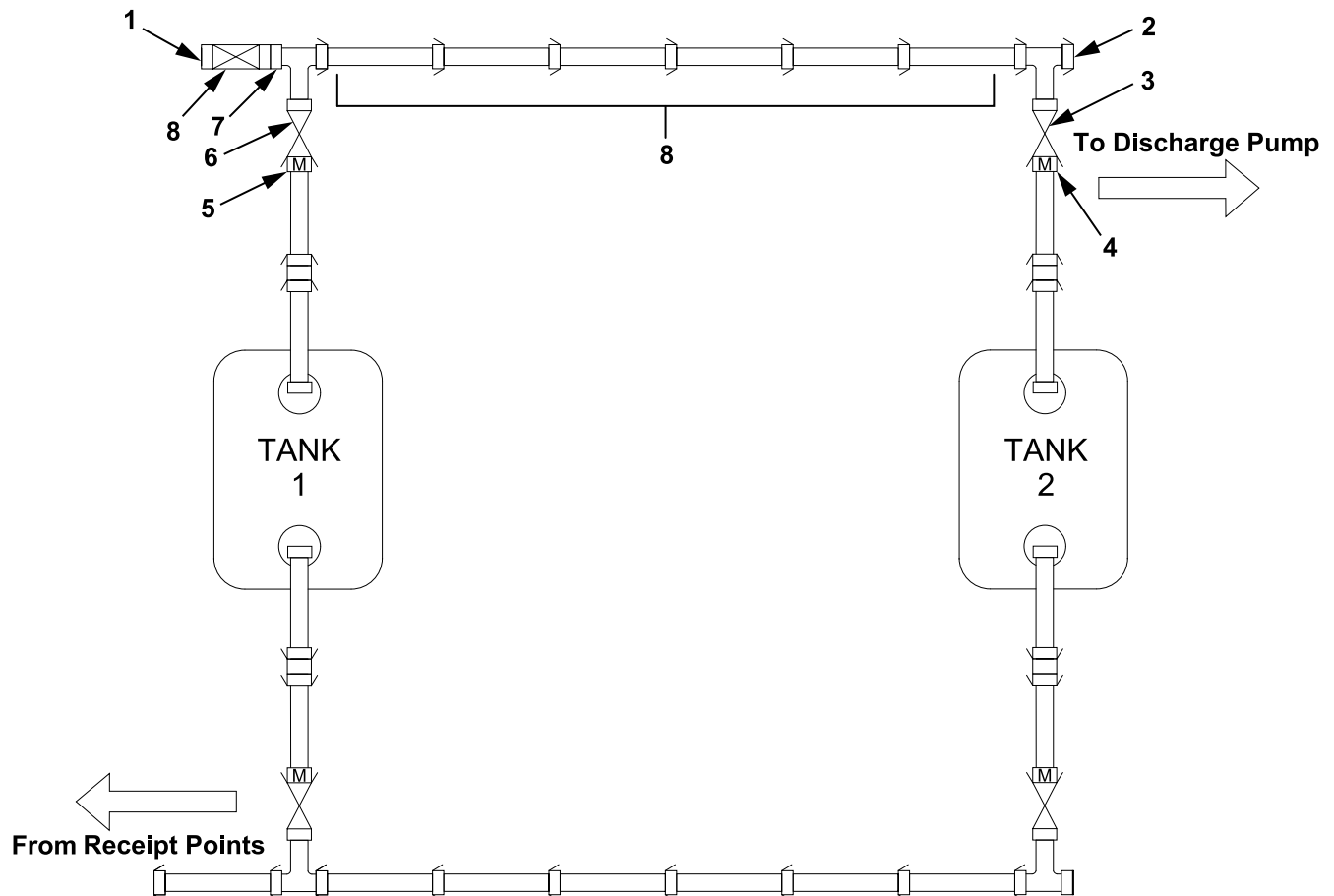


Figure 4. Installation of Tank Issuing Suction Hoses.

FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION - CONTINUED

30. Connect cable assembly (Figure 5, Item 5) to tank input volume meter assembly (Figure 5, Item 6).

CAUTION

Do not allow the cable to move while installing the weatherproof housing to the magnetic pickup. Failure to comply will result in damage to the cable.

- a. Connect the amphenol connector (Figure 5, Item 8) to the magnetic pickup (Figure 5, Item 7).
 - b. Install weatherproof housing (Figure 5, Item 9) to the tank input volume meter (Figure 5, Item 6) by turning the weatherproof housing (Figure 5, Item 9) clockwise. Hand tighten weatherproof housing (Figure 5, Item 9).
 - c. Connect dome connector (Figure 5, Item 10) to weatherproof housing (Figure 5, Item 9) by turning the nut (Figure 5, Item 1) clockwise. Tighten dome connector (Figure 5, Item 8).
 - d. While holding connector (Figure 5, Item 8), connect tank volume meter monitor (Figure 5, Item 9) by turning clockwise. Tighten tank volume meter monitor (Figure 5, Item 9).
31. Repeat steps 1 through 31 for tanks number 3 through 6.

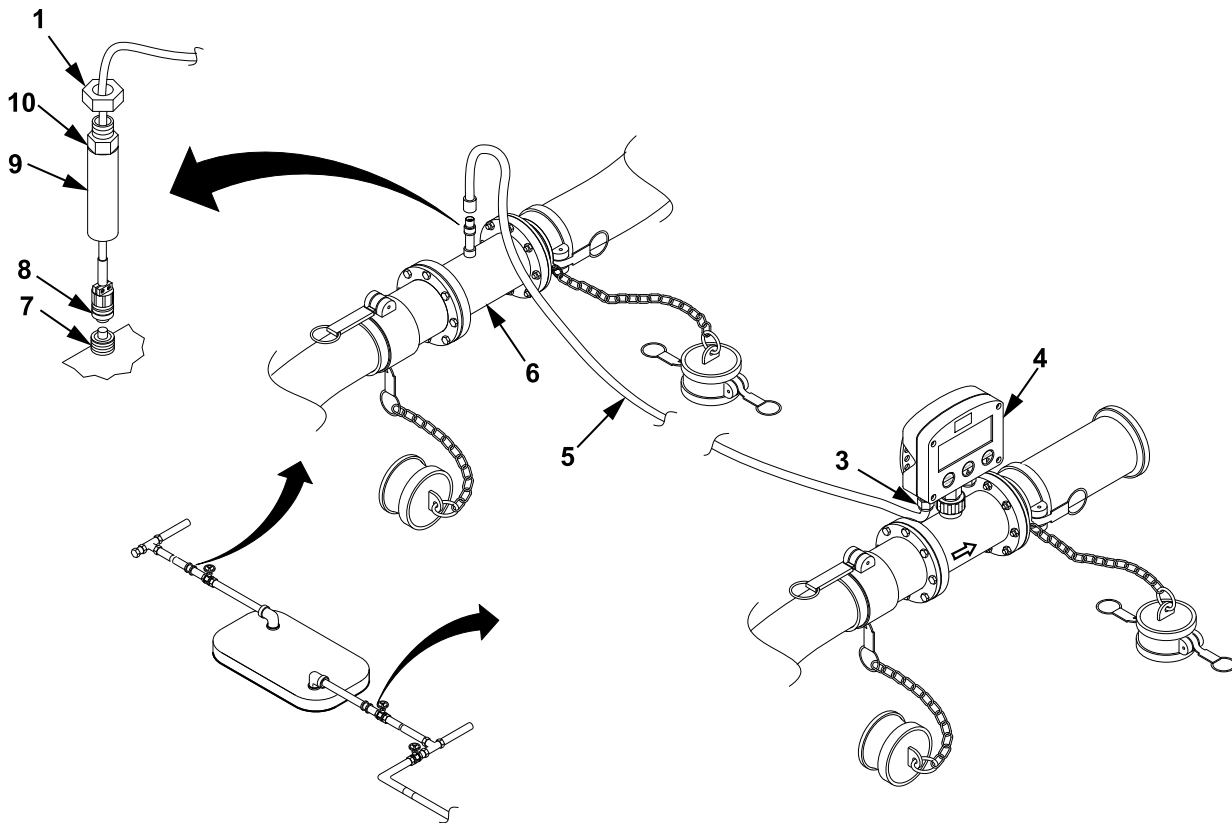


Figure 5. Installation of Tank Volume Meter Electrical Cable Assembly

FUEL TANKS, VOLUME METERS AND HOSES INSTALLATION FUEL TANKS 1 THROUGH 6 INSTALLATION - CONTINUED

32. Connect a 4 in. X 4 in. gate valve (Figure 6, Item 1) to the female X male X male tee assembly (Figure 6, Item 3).
33. Connect a 4 in. male camlock X 2 in. valved dry-break adapter (Figure 6, Item 2) to 4 in. X 4 in. gate valve (Figure 6, Item 1).

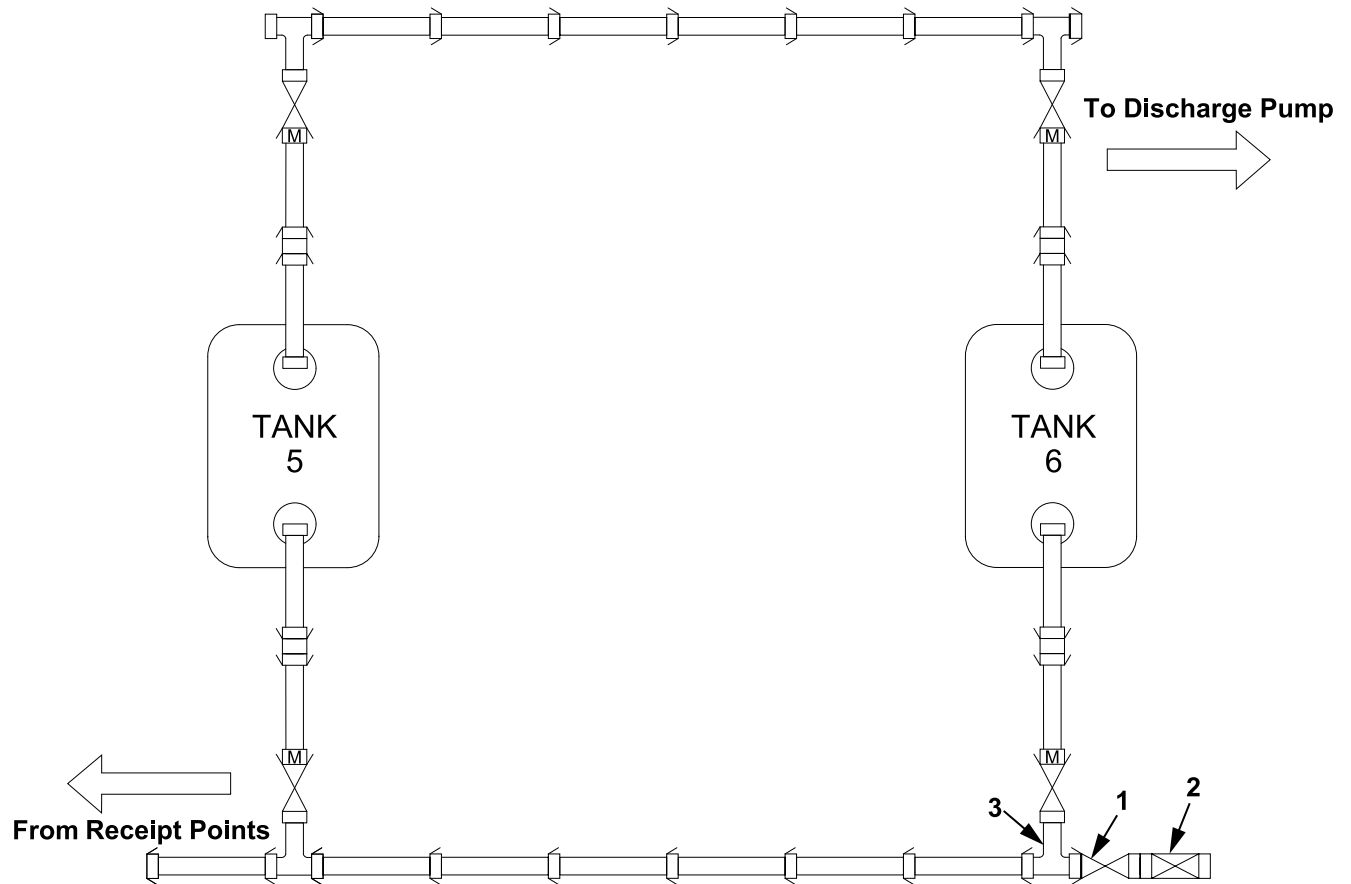


Figure 6. Installation of 2 In. Valved Dry-Break Adapter.

END OF TASK

DISCHARGE 350 GPM FUEL PUMPING ASSEMBLY INSTALLATION**NOTE**

Installation of the discharge 350 GPM pumping assembly uses components from the upper and lower pallets of TRICON 6.

1. Remove the spill containment berm from TRICON 7.
2. Remove the 350 GPM fuel pumping assembly from TRICON 7.
3. Position upper and lower pallets from TRICON 6 adjacent to the fuel/water separator location.
4. Connect a 4 in. X 4 in. gate valve (Figure 7, Item 1) to tee assembly (Figure 7, Item 4).
5. Connect the two sections of 4 in. X 10 ft suction hose (Figure 7, Item 3) to 4 in. X 4 in. gate valve (Figure 7, Item 1) towards the suction port of the 350 GPM fuel pumping assembly (Figure 7, Item 4).
6. Position the spill containment berm adjacent to the end of the two sections of 4 in. X 10 ft suction hose (Figure 7, Item 3).
7. Position the 350 GPM fuel pumping assembly (Figure 7, Item 2) in the spill containment berm.
8. Install the ground rod to ground the 350 GPM fuel pumping assembly per FM 10-67-1.
9. Connect the two sections of 4 in. X 10 ft suction hose (Figure 7, Item 3) to the suction port of the 350 GPM fuel pumping assembly (Figure 7, Item 2).

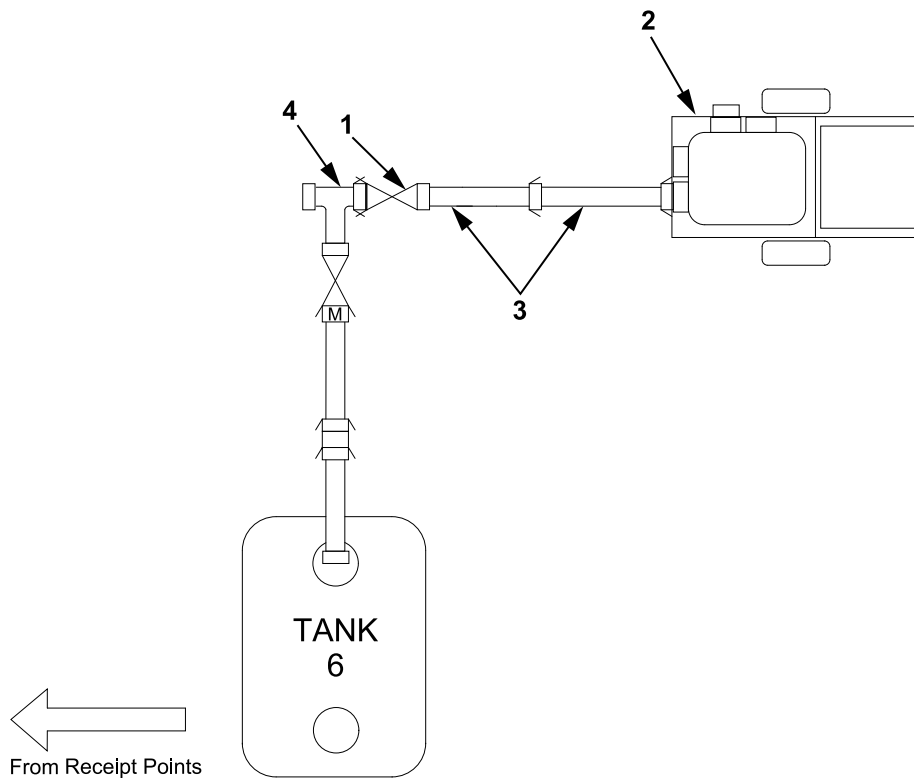


Figure 7. Connection of Discharge 350 GPM Pumping Assembly.

DISCHARGE 350 GPM FUEL PUMPING ASSEMBLY INSTALLATION - CONTINUED

10. Remove two sections of 4 in. X 25 ft discharge hose from pallet.
11. Connect the two sections of 4 in. X 25 ft discharge hose (Figure 8, Item 1) to the discharge side of the 350 GPM fuel pumping assembly (Figure 8, Item 2).
12. Remove a male X male X female tee assembly from pallet.
13. Connect the male X male X female tee assembly (Figure 8, Item 3) to the end of the 4 in. X 25 ft discharge hose (Figure 8, Item 1).

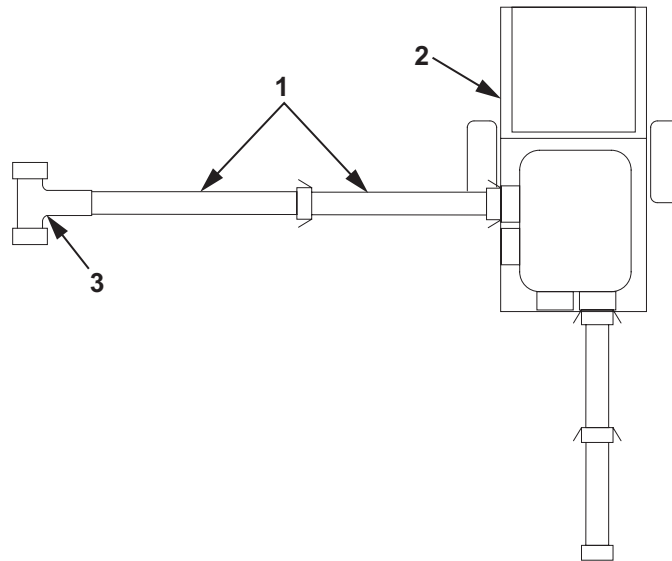


Figure 8. Installation of Discharge 350 GPM Fuel Pumping Assembly.

END OF TASK

FILTER-SEPARATOR INSTALLATION**NOTE**

Installation of the filter-separators uses components from the upper and lower pallets of TRICON 6.

1. Remove one gate valve from pallets previously removed from TRICON 6.
2. Remove one section of 4 in. X 25 ft discharge hose from pallet.
3. Connect 4 in. X 25 ft hose (Figure 9, Item 8) to tee assembly (Figure 9, Item 9).
4. Connect the 4 in. X 25 ft discharge hose (Figure 9, Item 8) to gate valve (Figure 9, Item 7).
5. Obtain four 4 in. ball valves from fuel tank accessory kits.
6. Connect a 4 in. ball valve (Figure 9, Item 6) to gate valve (Figure 9, Item 7).
7. Remove a filter-separator from TRICON 6.
8. Position filter-separator (Figure 9, Item 4) inside provided spill containment berm.
9. Install the ground rod per FM 10-67-1.
10. Drive ground at least three feet into ground and connect to filter-separator.
11. Connect filter-separator (Figure 9, Item 5) to ball valve (Figure 9, Item 6).
12. Remove the sampling probe adapter from the filter-separator.
13. Connect the sampling probe adapter (Figure 9, Item 5) to filter-separator (Figure 9, Item 4). Refer to TM 10-4330-235-13&P.
14. Connect a 4 in. ball valve (Figure 9, Item 3) to the sampling probe adapter (Figure 9, Item 5).
15. Remove one gate valve from pallet.
16. Connect gate valve (Figure 9, Item 2) to 4 in. ball valve (Figure 9, Item 3).
17. Remove one section of 4 in. X 25 ft discharge hose from pallet.
18. Connect the 4 in. X 25 ft discharge hose (Figure 9, Item 1) to gate valve (Figure 9, Item 2).
19. Remove one female X female X male tee assembly from pallet.
20. Connect female X female X male tee assembly (Figure 9, Item 18) to the 4 in. X 25 ft discharge hose (Figure 9, Item 1).
21. Remove two sections of 4 in. X 10 ft discharge hose from pallet.
22. Connect the sections of 4 in. X 10 ft discharge hose (Figure 9, Item 20) to tee assembly (Figure 9, Item 18).
23. Remove one female X male X male tee assembly from pallet.
24. Connect female X male X male tee assembly (Figure 9, Item 19) to the 4 in. X 10 ft discharge hose (Figure 9, Item 20).
25. Remove one section of 4 in. X 25 ft discharge hose from pallet.
26. Connect the 4 in. X 25 ft discharge hose (Figure 9, Item 17) to tee assembly (Figure 9, Item 18).
27. Remove a filter-separator from TRICON 6.
28. Position filter-separator (Figure 9, Item 14) inside provided spill containment berm.
29. Install the ground rod per FM 10-67-1.
30. Remove the sampling probe adapter (Figure 9, Item 13) from the filter-separator for testing product after filter-separator.
31. Remove one gate valve from pallet.
32. Connect gate valve (Figure 9, Item 16) to 4 in. X 25 ft discharge hoses (Figure 9, Item 17).
33. Connect 4 in. ball valve (Figure 9, Item 15) to gate valve (Figure 9, Item 16).
34. Connect sampling probe adapter (Figure 9, Item 13) to 4 in. ball valve (Figure 9, Item 15) for testing product after filter-separator.
35. Connect sampling probe adapter (Figure 9, Item 13) to filter-separator (Figure 9, Item 14) for testing product after filter-separator. Refer to TM 10-4330-235-13&P.
36. Connect a 4 in. ball valve (Figure 9, Item 12) to filter-separator (Figure 9, Item 14).
37. Remove one gate valve from pallet.
38. Connect gate valve (Figure 9, Item 11) to 4 in. ball valve (Figure 9, Item 12).
39. Remove one section of 4 in. X 25 ft discharge hose from pallet.
40. Connect the 4 in. X 25 ft discharge hose (Figure 9, Item 10) to gate valve (Figure 9, Item 11).

FILTER-SEPARATOR INSTALLATION - CONTINUED

41. Connect the 4 in. X 25 ft discharge hose (Figure 9, Item 10) to tee assembly (Figure 9, Item 9).

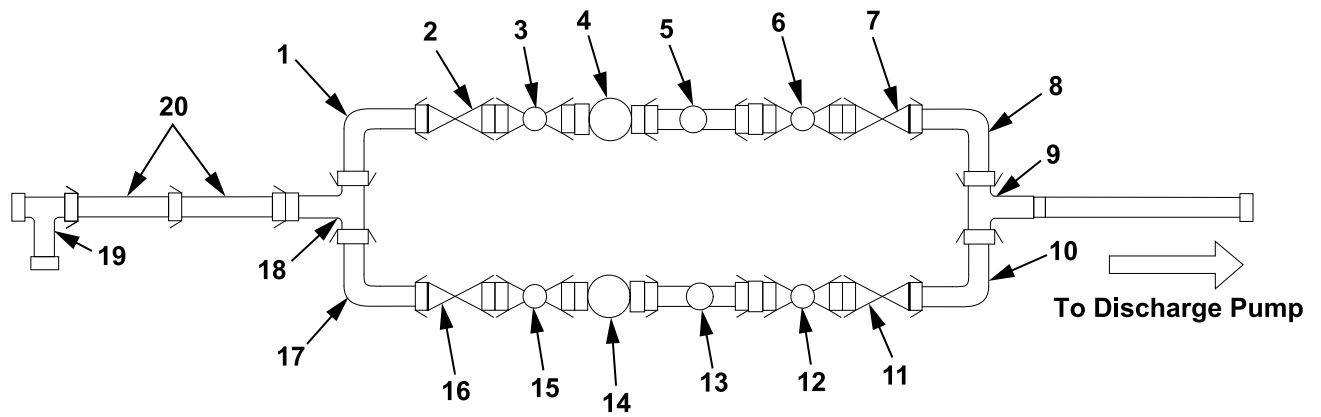


Figure 9. Installation of Filter-Separators.

END OF TASK

RECIRCULATION LINE INSTALLATION

NOTE

The recirculation line connects into a tee assembly after the flowmeter on the receipt line and before the flowmeter on the issue (discharge) line.

The installation of the recirculation line uses the upper and lower pallets from TRICON 6.

1. Remove one gate valve from pallet.
2. Connect the gate valve (Figure 10, Item 2) to tee assembly (Figure 10, Item 3).
3. Remove fifteen sections of 4 in. X 25 ft discharge hose from pallet.
4. Connect the sections of 4 in. X 25 ft discharge hose (Figure 10, Item 1) to gate valve (Figure 10, Item 2).

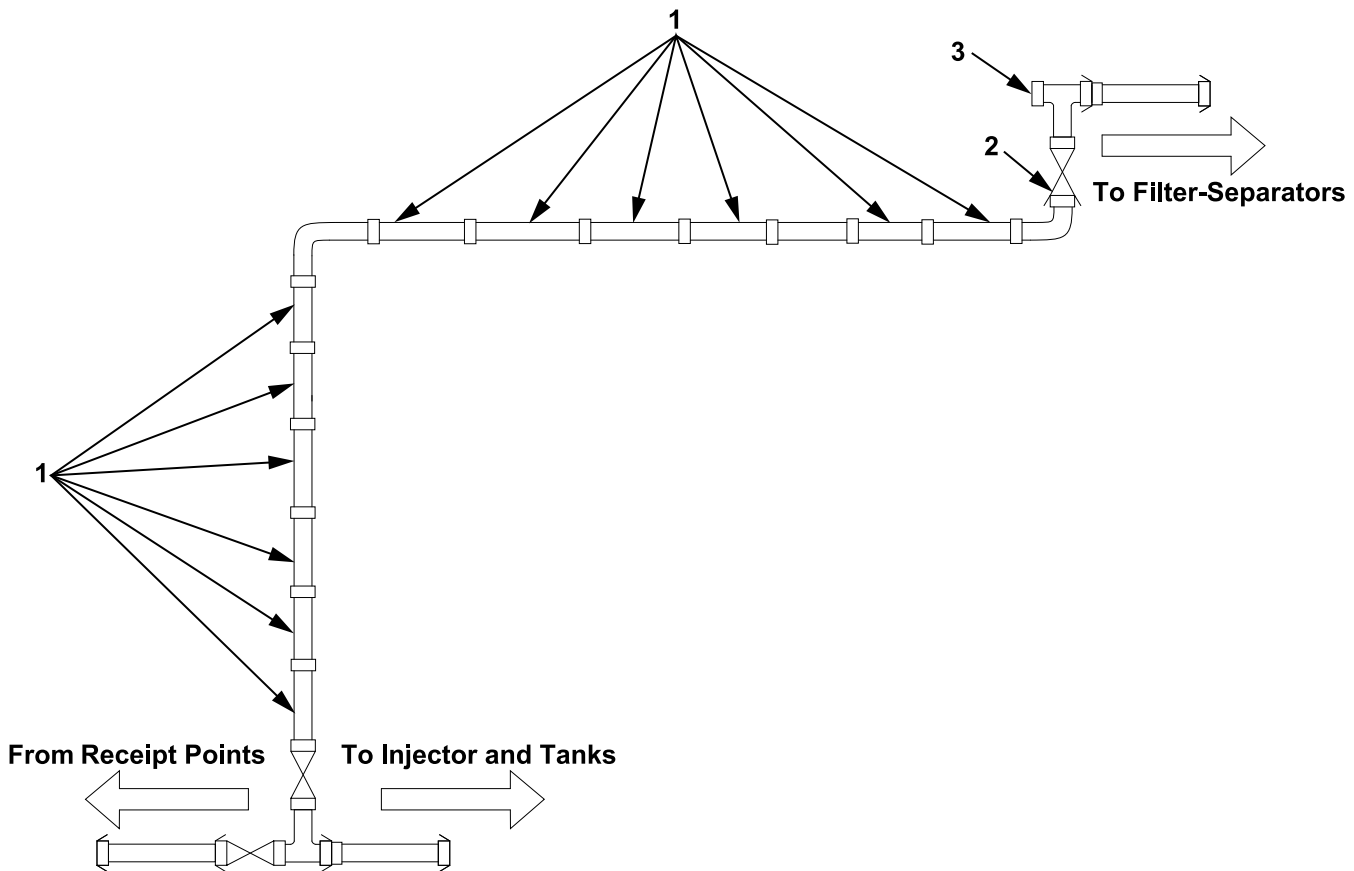


Figure 10. Installation of Recirculation Line.

END OF TASK

FLOWMETER INSTALLATION

NOTE

Installation of flowmeter uses components from the upper and lower pallets of TRICONS 4 and 5.

1. Position the upper and lower pallets from TRICONS 4 and 5 outside the proposed issue points.
2. Remove one gate valve from pallet.
3. Connect the gate valve (Figure 11, Item 5) to tee assembly (Figure 11, Item 6).
4. Remove one section of 4 in. X 10 ft discharge hose from pallet.
5. Connect the section of 4 in. X 10 ft discharge hose (Figure 11, Item 4) to gate valve (Figure 11, Item 5).
6. Remove the spill containment berm from pallet.
7. Remove the flowmeter from pallet.
8. Position the spill containment berm adjacent to the end of the section of 4 in. X 10 ft discharge hose (Figure 11, Item 4).
9. Position the flowmeter (Figure 11, Item 3) in the spill containment berm.
10. Ground the flowmeter (Figure 11, Item 3).
 - a. Remove the ground rod assembly from the ground rod box on the flowmeter (Figure 11, Item 4).
 - b. Install the ground rod per FM 10-67-1.
 - c. Attach ground cable clamps to the flowmeter (Figure 11, Item 3).
11. Connect one section of 4 in. X 10 ft discharge hose (Figure 11, Item 4) to the flowmeter (Figure 11, Item 3).
12. Remove one gate valve from pallet.
13. Remove one section of 4 in. X 10 ft discharge hose from pallet.
14. Connect the section of 4 in. X 10 ft discharge hose (Figure 11, Item 2) to gate valve (Figure 11, Item 1) and the flowmeter (Figure 11, Item 3).

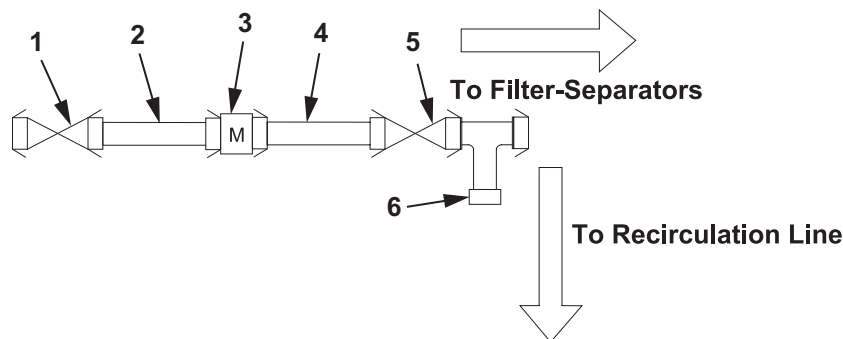
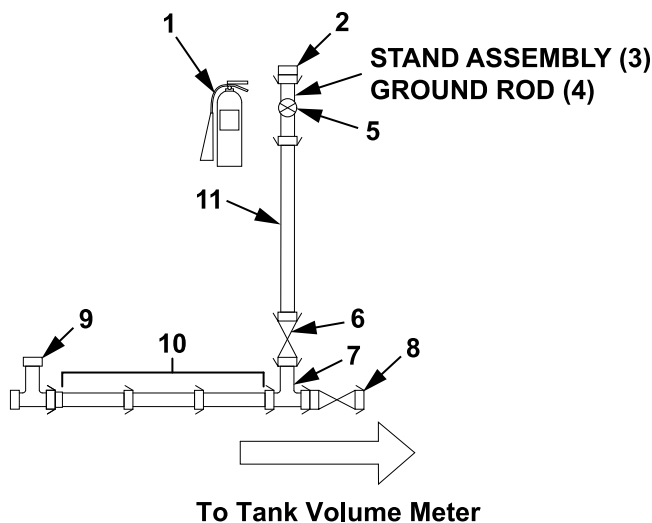


Figure 11. Installation of Distribution Points Flowmeter.

END OF TASK

NOTE

1. Remove one female X male X male tee assembly from pallet.
2. Connect the female X male X male tee assembly (Figure 12, Item 7) to the gate valve (Figure 12, Item 8).
3. Remove one gate valve from pallet.
4. Connect gate valve (Figure 12, Item 6) to the female X male X male tee assembly (Figure 12, Item 7) pointing towards the issue point.
5. Remove one section of 4 in. X 25 ft discharge hose from pallet.
6. Connect the section of 4 in. X 25 ft discharge hose (Figure 12, Item 11) to gate valve (Figure 12, Item 6).
7. Remove one butterfly valve from pallet.
8. Connect the butterfly valve (Figure 12, Item 5) to the section of 4 in. X 25 ft discharge hose (Figure 12, Item 11).
9. Connect a D1 nozzle (Figure 12, Item 2) to the butterfly valve (Figure 12, Item 5).
10. Remove one stand assembly from pallet.
11. Remove one fire extinguisher from pallet.
12. Remove one ground rod from pallet.
13. Position the stand assembly (Figure 12, Item 3) and fire extinguisher (Figure 12, Item 1) adjacent to the butterfly valve (Figure 12, Item 5).
14. Install the ground rod (Figure 12, Item 4) adjacent to the stand assembly (Figure 12, Item 3) per FM 10-67-1.
15. Remove three sections of 4 in. X 25 ft discharge hose from pallet.
16. Connect the sections of 4 in. X 25 ft discharge hose (Figure 12, Item 10) to female X male X male tee assembly (Figure 12, Item 7).
17. Remove one female X male X male tee assembly from pallet.
18. Connect the female X male X male tee assembly (Figure 12, Item 9) to the end of 4 in. X 25 ft discharge hose (Figure 12, Item 10).
19. Repeat steps 3 through 18 for the remaining two bulk issue points with D1 nozzles.



END OF TASK

BULK ISSUE POINTS WITHOUT D1 NOZZLES INSTALLATION**NOTE**

Installation of bulk issue points uses components from the upper and lower pallets of TRICONS 4 and 5.

1. Remove one gate valve from pallet.
2. Connect gate valve (Figure 13, Item 6) to the female X male X male tee assembly (Figure 13, Item 7) pointing towards the issue point.
3. Remove one section of 4 in. X 25 ft discharge hose from pallet.
4. Connect the section of 4 in. X 25 ft discharge hose (Figure 13, Item 5) to gate valve (Figure 13, Item 6).
5. Remove one butterfly valve from pallet.
6. Connect the butterfly valve (Figure 13, Item 2) to the section of 4 in. X 25 ft discharge hose (Figure 13, Item 5).
7. Remove one stand assembly from pallet.
8. Remove one fire extinguisher from pallet.
9. Remove one ground rod from pallet.
10. Position the stand assembly (Figure 13, Item 3) and fire extinguisher (Figure 13, Item 1) adjacent to the butterfly valve (Figure 13, Item 2).
11. Install the ground rod (Figure 13, Item 4) adjacent to the stand assembly (Figure 13, Item 3) per FM 10-67-1.
12. Remove three sections of 4 in. X 25 ft discharge hose from pallet.
13. Connect the sections of 4 in. X 25 ft discharge hose (Figure 13, Item 8) to female X male X male tee assembly (Figure 13, Item 7).
14. Remove one female X male X male tee assembly from pallet.
15. Connect the female X male X male tee assembly (Figure 13, Item 9) to the end of 4 in. X 25 ft discharge hose (Figure 13, Item 8).

NOTE

Use proper handling equipment when placing fuel spill control kit.

16. Remove one fuel spill control kit (two black drums) and one transport case from pallet.
17. Place one fuel spill control kit (Figure 13, Item 10) near 4 in. X 25 ft discharge hoses (Figure 13, Item 8).
18. Repeat steps 1 through 15 for the next bulk issue point. On the last bulk issue point, omit steps 12 through 15.

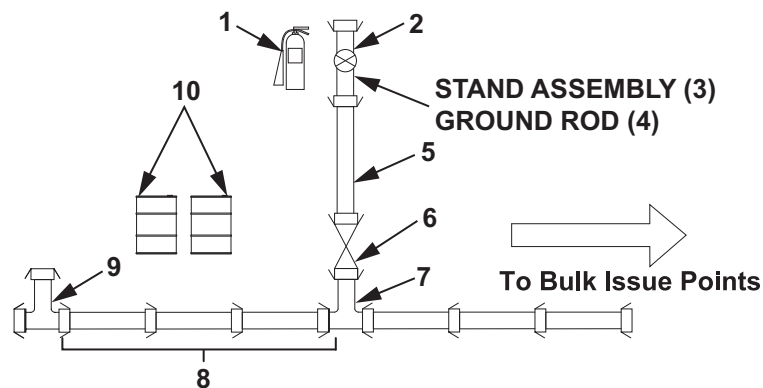


Figure 13. Installation of Issue Points Without D1 Nozzles.

END OF TASK

RETAIL ISSUE POINTS INSTALLATION

NOTE

Installation of retail issue points uses components from the upper and lower pallets of TRICONS 4 and 5.

1. Remove one gate valve from pallet.
2. Remove one female 4 in. X male 2 in. reducer from pallet.
3. Connect gate valve (Figure 14, Item 7) to the female X male X male tee assembly (Figure 14, Item 8) pointing towards the issue point.
4. Connect female 4 in. X male 2 in. reducer (Figure 14, Item 6) to gate valve (Figure 14, Item 7).
5. Remove one female 2 in. camlock X 2 in. valved dry-break adapter from pallet.
6. Connect female 2 in. camlock X 2 in. valved dry-break adapter (Figure 14, Item 5) to female 4 in. X male 2 in. reducer (Figure 14, Item 6).
7. Remove two sections of 2 in. X 50 ft discharge hose from pallet.
8. Connect the sections of 2 in. X 50 ft discharge hose (Figure 14, Item 5) to the dry-break end of valved dry-break adapter (Figure 14, Item 5).
9. Remove one 2 in. dry-break tee assembly and two D1 nozzles from pallet.
10. Connect the 2 in. dry-break tee assembly (Figure 14, Item 3) to the end of 2 in. X 50 ft discharge hose (Figure 14, Item 5).
11. Remove one section of 2 in. X 50 ft discharge hose from pallet.
12. Connect the section of 2 in. X 50 ft discharge hose (Figure 14, Item 9) to the 2 in. dry-break tee assembly (Figure 14, Item 3).
13. Connect a D1 nozzle (Figure 14, Item 1) to the section of 2 in. X 50 ft discharge hose (Figure 14, Item 9).
14. Remove one fire extinguisher, ground rod and nozzle stand from pallet.
15. Position the fire extinguisher (Figure 14, Item 2) adjacent to the end of the 2 in. X 50 ft discharge hose (Figure 14, Item 9).
16. Position nozzle stand and ground rod assembly at end of discharge hose (Figure 14, Item 9).

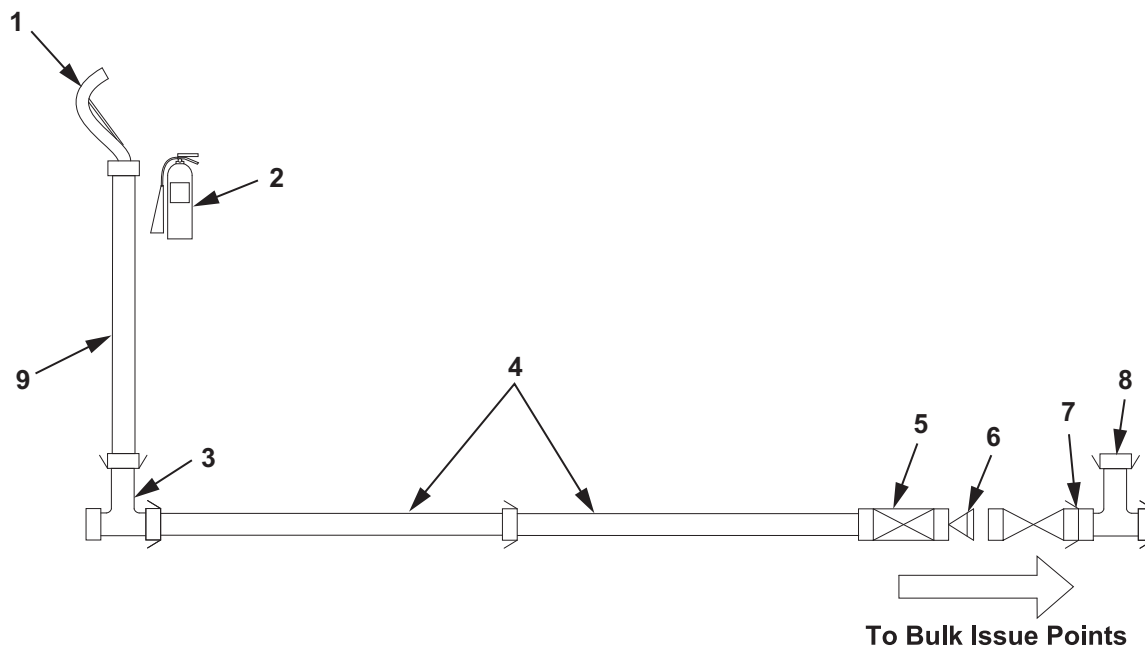


Figure 14. Installation of First Retail Issue Point.

RETAIL ISSUE POINTS INSTALLATION - CONTINUED

17. Install the ground rod per FM 10-67-1.
18. Remove two sections of 2 in. X 50 ft discharge hose from pallet.
19. Connect the sections of 2 in. X 50 ft discharge hose (Figure 15, Item 4) to the 2 in. dry-break tee assembly (Figure 15, Item 5).
20. Remove one 2 in. dry-break tee assembly from pallet.
21. Connect the 2 in. dry-break tee assembly (Figure 15, Item 3) to the end of 2 in. X 50 ft discharge hose (Figure 15, Item 4).
22. Remove one section of 2 in. X 50 ft discharge hose from pallet.
23. Connect the section of 2 in. X 50 ft discharge hose (Figure 15, Item 6) to the 2 in. dry-break tee assembly (Figure 15, Item 3).
24. Connect a D1 nozzle (Figure 15, Item 1) to the section of 2 in. X 50 ft discharge hose (Figure 15, Item 6).
25. Remove one fire extinguisher, nozzle stand and ground rod from pallet.
26. Ground the D1 nozzle assembly (Figure 15, Item 1).
27. Position nozzle stand and ground rod assembly at end of discharge hose (Figure 15, Item 6).
28. Install the ground rod per FM 10-67-1.
29. Position the fire extinguisher (Figure 15, Item 2) adjacent to the end of the 2 in. X 50 ft discharge hose (Figure 15, Item 6).

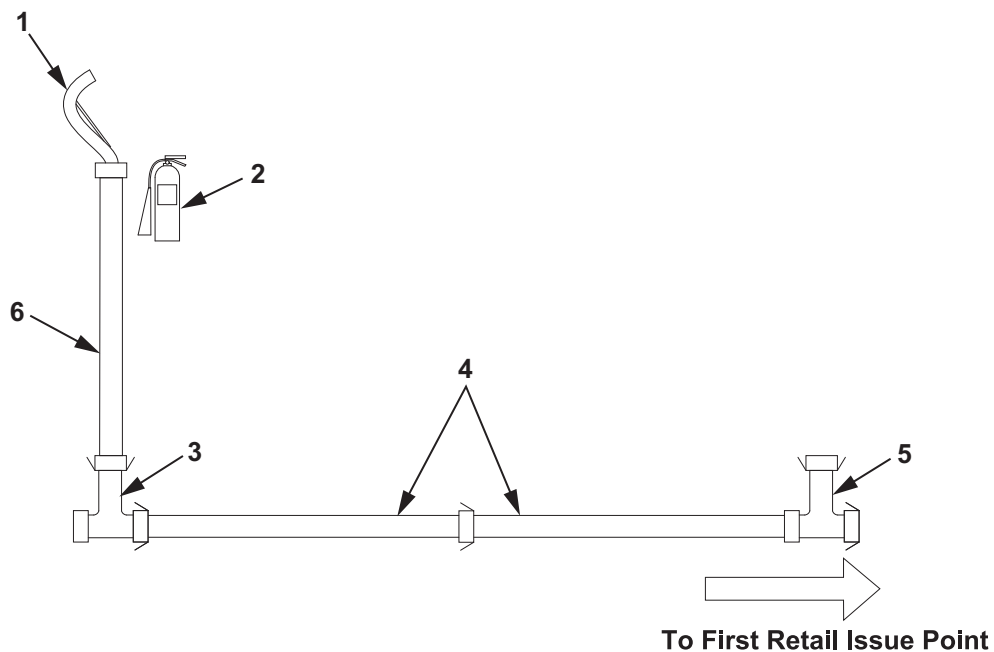


Figure 15. Installation of Second Retail Issue Point.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY INSTALLATION**NOTE**

Installation of fuel additive injection assembly uses components from the upper and lower pallets of TRICONS 3 and 9.

1. Position the upper and lower pallets from TRICONS 3 and 9 adjacent to the proposed location for the fuel additive injection assembly.
2. Remove two sections of 4 in. X 10 ft discharge hose from pallet.
3. Connect two sections of 4 in. X 10 ft discharge hose (Figure 16, Item 6) to the female X male X male tee assembly closest to the last fuel tank constructed.
4. Remove a female X male X male tee assembly from pallet.
5. Connect the female X male X female tee assembly (Figure 16, Item 5) to the end of the 4 in. X 10 ft discharge hose (Figure 16, Item 6).
6. Remove one gate valve from pallet.
7. Connect the gate valve (Figure 16, Item 4) to ends of the female X male X female tee assembly (Figure 16, Item 5) in the direction of the direct tank fill line.
8. Remove four sections of 4 in. X 10 ft discharge hose from pallet.
9. Connect four sections of 4 in. X 10 ft discharge hose (Figure 16, Item 3) to gate valve (Figure 16, Item 4).
10. Connect gate valve (Figure 16, Item 2) to four sections of 4 in. X 10 ft discharge hose (Figure 16, Item 3).
11. Remove a female X male X male tee assembly from pallet.
12. Connect the female X male X male tee assembly (Figure 16, Item 1) to gate valve (Figure 16, Item 2).
13. Remove one section of 4 in. X 10 ft discharge hose from pallet.
14. Connect one section of 4 in. X 10 ft discharge hose (Figure 16, Item 14) to the female X male X male tee assembly (Figure 16, Item 1).
15. Remove one section of 4 in. X 25 ft discharge hose from pallet.
16. Connect one section of 4 in. X 25 ft discharge hose (Figure 16, Item 13) to tee assembly (Figure 16, Item 1).
17. Remove two gate valves from pallet.
18. Obtain two 4 in. ball valves.
19. Connect gate valve (Figure 16, Item 12) to 4 in. X 25 ft discharge hose (Figure 16, Item 13).
20. Connect a 4 in. ball valve (Figure 16, Item 11) to gate valve (Figure 16, Item 9).
21. Remove the fuel additive injection assembly and spill containment berm from pallet.
22. Place the spill containment berm on the ground where the fuel additive injection assembly (Figure 16, Item 10) is to be placed.
23. Using a forklift, place the fuel additive injection assembly (Figure 16, Item 10) in the spill containment berm.
24. Connect fuel additive injection assembly (Figure 16, Item 10) to 4 in. ball valve (Figure 16, Item 11).
25. Connect a 4 in. ball valve (Figure 16, Item 9) to fuel additive injection assembly (Figure 16, Item 10).
26. Connect gate valve (Figure 16, Item 8) to 4 in. ball valve (Figure 16, Item 9).
27. Remove one section of 4 in. X 25 ft discharge hose from pallet.
28. Connect the 4 in. X 25 ft discharge hose (Figure 16, Item 7) to gate valve (Figure 16, Item 8).
29. Connect the 4 in. X 25 ft discharge hose (Figure 16, Item 7) to tee assembly (Figure 16, Item 5).
30. Remove one fuel spill control kit (two black drums) from pallet.

NOTE

Use proper handling equipment when placing fuel spill control kit.

31. Place one fuel spill control kit (Figure 16, Item 15) near fuel additive injection assembly (Figure 16, Item 10).
32. Ground the fuel additive injection assembly (Figure 16, Item 10).

FUEL ADDITIVE INJECTION ASSEMBLY INSTALLATION - CONTINUED

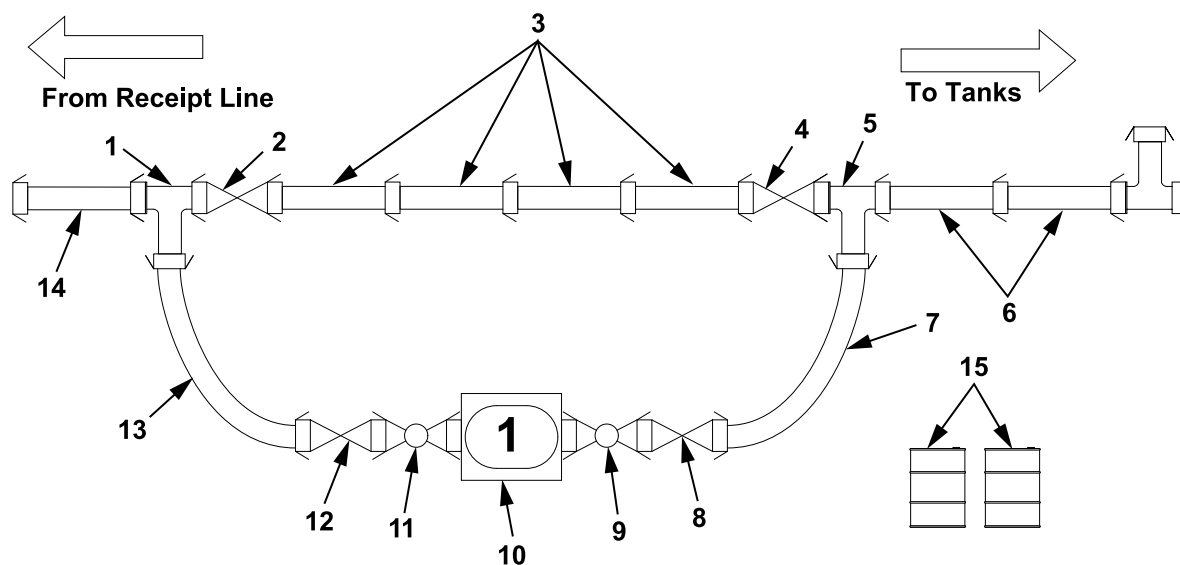


Figure 16. Installation of Fuel Additive Injection Assembly.

- a. Remove ground cable clamp (Figure 17, Item 2) with copper ground cable (Figure 17, Item 1) from bail pin (Figure 17, Item 6).
- b. Remove bail pin (Figure 17, Item 6).
- c. Remove bail pin (Figure 17, Item 8).
- d. Remove ground rod (Figure 17, Item 3) from fuel additive injection assembly frame (Figure 17, Item 7).
- e. Drive ground rod (Figure 17, Item 3) into the ground per FM 10-67-1.
- f. Loosen screw (Figure 17, Item 5) on ground rod (Figure 17, Item 3).
- g. Insert copper ground cable (Figure 17, Item 1) under screw (Figure 17, Item 5) and tighten screw (Figure 17, Item 5).
- h. Attach ground cable clamp (Figure 17, Item 2) to copper grounding plate (Figure 17, Item 4) on fuel additive injection assembly frame (Figure 17, Item 7).

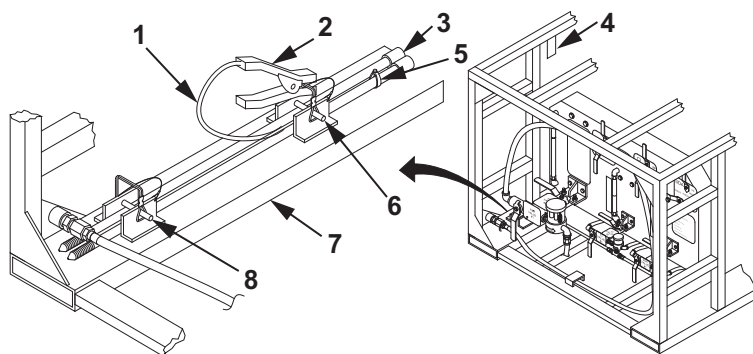


Figure 17. Fuel Additive Injection System Grounding Rod Assembly.

END OF TASK

FLOWMETER INSTALLATION

NOTE

Installation of flowmeter uses components from the upper and lower pallets of TRICON 2.

1. Position the upper and lower pallets from TRICON 2 adjacent to the proposed location for the flowmeter.
2. Remove a female X male X female tee assembly from pallet.
3. Connect the female X male X female tee assembly (Figure 18, Item 4) to the end of the 4 in. X 10 ft discharge hose (Figure 18, Item 6).
4. Remove two gate valves from pallet.
5. Connect gate valve (Figure 18, Item 7) and gate valve (Figure 18, Item 5) to the female X male X female tee assembly (Figure 18, Item 4).
6. Remove one section of 4 in. X 10 ft discharge hose from pallet.
7. Connect one section of 4 in. X 10 ft discharge hose (Figure 18, Item 3) to gate valve (Figure 18, Item 7).
8. Remove the spill containment berm and flowmeter from pallet.
9. Position the spill containment berm on the ground adjacent to the end of the 4 in. X 10 ft discharge hose (Figure 18, Item 3).
10. Place the flowmeter (Figure 18, Item 8) in the spill containment berm.
11. Connect 4 in. X 10 ft discharge hose (Figure 18, Item 3) to flowmeter (Figure 18, Item 8).
12. Remove one section of 4 in. X 10 ft discharge hose from pallet.
13. Connect one section of 4 in. X 10 ft discharge hose (Figure 18, Item 2) to flowmeter (Figure 18, Item 3).
14. Remove one gate valve from pallet.
15. Connect the gate valve (Figure 18, Item 1) to the 4 in. X 10 ft discharge hose (Figure 18, Item 2).
16. Ground the flowmeter (Figure 18, Item 8).
 - a. Remove the ground rod assembly from the ground rod box on the flowmeter assembly (Figure 18, Item 8).
 - b. Install the ground rod per FM 10-67-1.
 - c. Attach ground cable clamps to the flowmeter (Figure 18, Item 8).

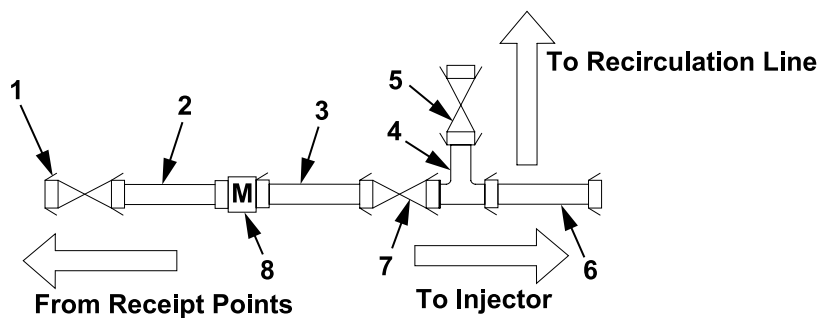


Figure 18. Installation of Flowmeter Connections.

END OF TASK

RECEIPT LINES AND RECEIVING 350 GPM PUMPING ASSEMBLY INSTALLATION

NOTE

Installation of receipt lines uses components from the upper and lower pallets of TRICON 2.

The receiving 350 GPM pumping assembly is located in TRICON 1.

1. Position TRICON 1 adjacent to the proposed location of the receiving 350 GPM fuel pumping assembly.
2. Remove two sections of 4 in. X 10 ft discharge hose from pallet.
3. Connect two sections of 4 in. X 10 ft discharge hose (Figure 19, Item 1) to gate valve (Figure 19, Item 2).
4. Remove the spill containment berm from TRICON 1.
5. Remove the 350 GPM pumping assembly from TRICON 1.
6. Position the spill containment berm adjacent to the end of the two sections of 4 in. X 10 ft discharge hose (Figure 19, Item 1).
7. Position the 350 GPM fuel pumping assembly (Figure 19, Item 6) in the spill containment berm.
8. Install the ground rod to ground the 350 GPM fuel pumping assembly per FM 10-67-1.
9. Connect the sections of 4 in. X 10 ft discharge hose (Figure 19, Item 1) to the 350 GPM fuel pumping assembly (Figure 19, Item 6).
10. Remove two sections of 4 in. X 10 ft suction hose from pallet.
11. Connect the two sections of 4 in. X 10 ft suction hose (Figure 19, Item 5) to the suction port of the 350 GPM fuel pumping assembly (Figure 19, Item 6).
12. Remove a female X female X male and a female X male X female tee assembly from pallet.
13. Connect the female X female X male and female X male X female tee assemblies (Figure 19, Item 4) to gate valve (Figure 19, Item 3).

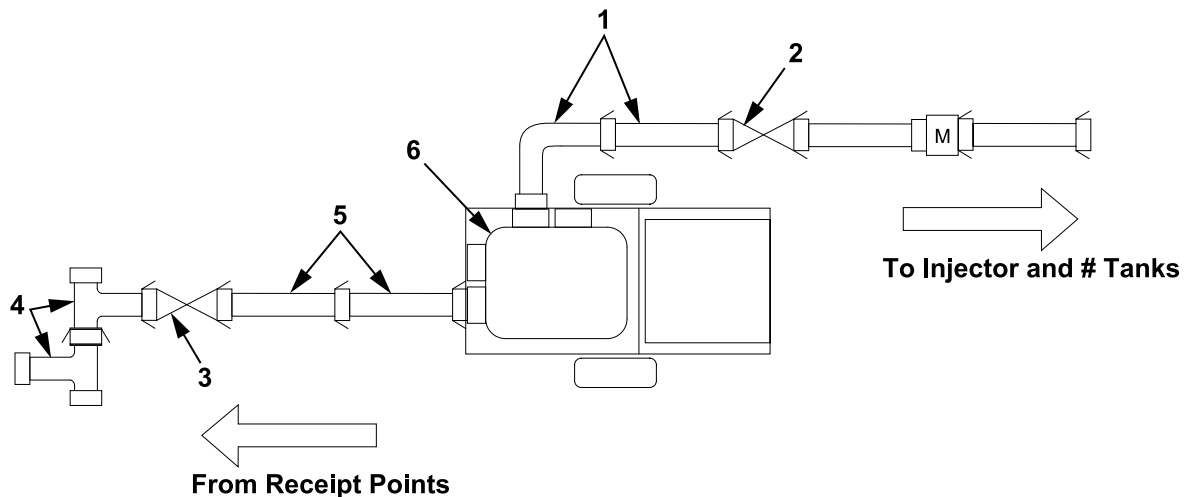


Figure 19. Installation of 350 GPM Fuel Pumping Assembly.

END OF TASK

COMPONENTS IN THE RECEIPT AREA INSTALLATION

1. Remove 10 sections of 4 in. X 10 ft suction hose from pallet.
2. Connect the 10 sections of 4 in. X 10 ft suction hose (Figure 20, Item 1) towards one of the side receiving points on the female X female X male double tee (Figure 20, Item 2).
3. Remove a ground rod, fire extinguisher, butterfly valve and stand assembly from pallet.
4. Install the butterfly valve (Figure 20, Item 16) on the end of the 10 sections of 4 in. X 10 ft suction hose (Figure 20, Item 1).
5. Position the stand assembly (Figure 20, Item 14) and fire extinguisher (Figure 20, Item 15) adjacent to the butterfly valve (Figure 20, Item 16).
6. Install the ground rod (Figure 20, Item 13) adjacent to the stand assembly (Figure 20, Item 14) per FM 10-67-1.
7. Remove two sections of 4 in. X 10 ft suction hose from pallet.
8. Connect the two sections of 4 in. X 10 ft suction hose (Figure 20, Item 10) to the center of the female X female X male double tee (Figure 20, Item 2).
9. Remove a ground rod, fire extinguisher, butterfly valve and stand assembly from pallet.
10. Install the butterfly valve (Figure 20, Item 9) on the end of the two sections of 4 in. X 10 ft suction hose (Figure 20, Item 10).
11. Position the stand assembly (Figure 20, Item 12) and fire extinguisher (Figure 20, Item 8) adjacent to the butterfly valve (Figure 20, Item 9).
12. Install the ground rod (Figure 20, Item 11) adjacent to the stand assembly (Figure 20, Item 12) per FM 10-67-1.
13. Remove 10 sections of 4 in. X 10 ft suction hose from pallet.
14. Connect the 10 sections of 4 in. X 10 ft suction hose (Figure 20, Item 3) towards the receiving point on the remaining side of the female X female X male double tee (Figure 20, Item 2).
15. Remove a ground rod, fire extinguisher, butterfly valve and stand assembly from pallet.
16. Install the butterfly valve (Figure 20, Item 4) on the end of the 10 sections of 4 in. X 10 ft suction hose (Figure 20, Item 3).
17. Position the stand assembly (Figure 20, Item 7) and fire extinguisher (Figure 20, Item 5) adjacent to the butterfly valve (Figure 20, Item 4).
18. Install the ground rod (Figure 20, Item 6) adjacent to the stand assembly (Figure 20, Item 7) per FM 10-67-1.

COMPONENTS IN THE RECEIPT AREA INSTALLATION - CONTINUED

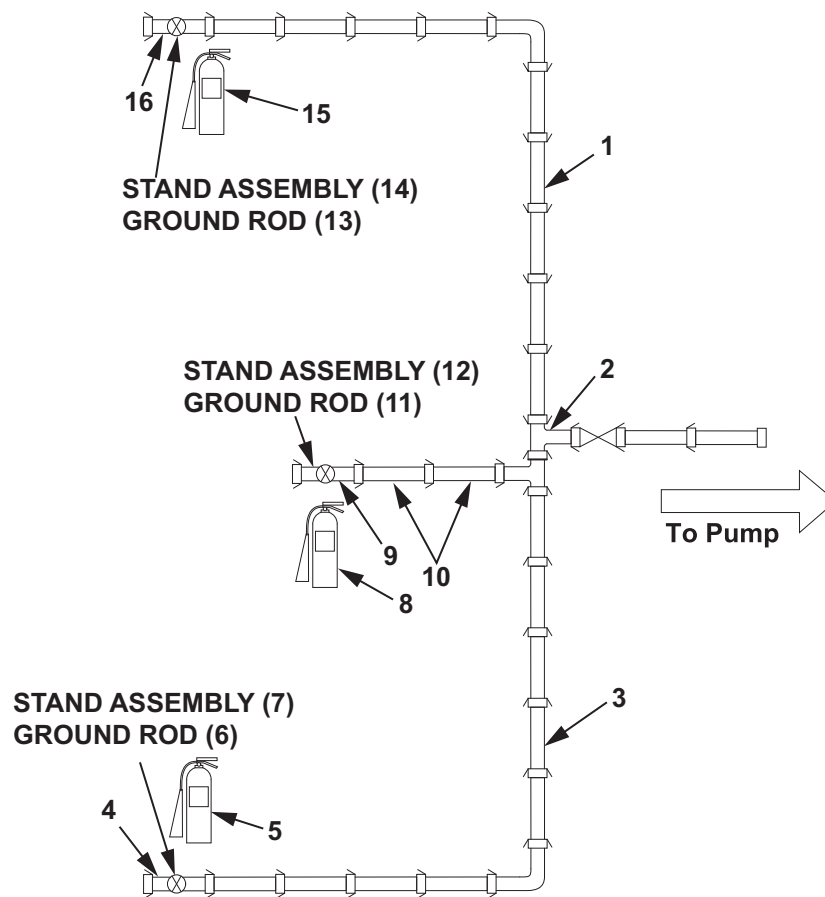


Figure 20. Installation of FSSP Components in Receipt Area.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY TANKS FILLING AND SERVICING

WARNING

CHEMICAL



EYE PROTECTION



VAPOR



POISON

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

NOTE

If setup of the fuel additive injection assembly is not required, skip fuel additive injection assembly procedures.

The 1 inch fuel and oil servicing nozzle assembly, part number 64210 is for filling fuel cans. Ensure correct size of nozzle is used during all procedures.

1. Remove cap (Figure 21, Item 1) from CI tank (Figure 21, Item 6).
2. Fill CI tank (Figure 21, Item 6) with additive.
3. Install cap (Figure 21, Item 1) on CI tank (Figure 21, Item 6).
4. Remove cap (Figure 21, Item 2) from SDA tank (Figure 21, Item 3).
5. Fill SDA tank (Figure 21, Item 3) with additive.
6. Install cap (Figure 21, Item 2) on SDA tank (Figure 21, Item 3).
7. Position the CI additive tank valve (Figure 21, Item 5) to the open position (handle in line with valve).
8. Position the SDA additive tank valve (Figure 21, Item 4) to the open position (handle in line with valve).

FUEL ADDITIVE INJECTION ASSEMBLY TANKS FILLING AND SERVICING - CONTINUED

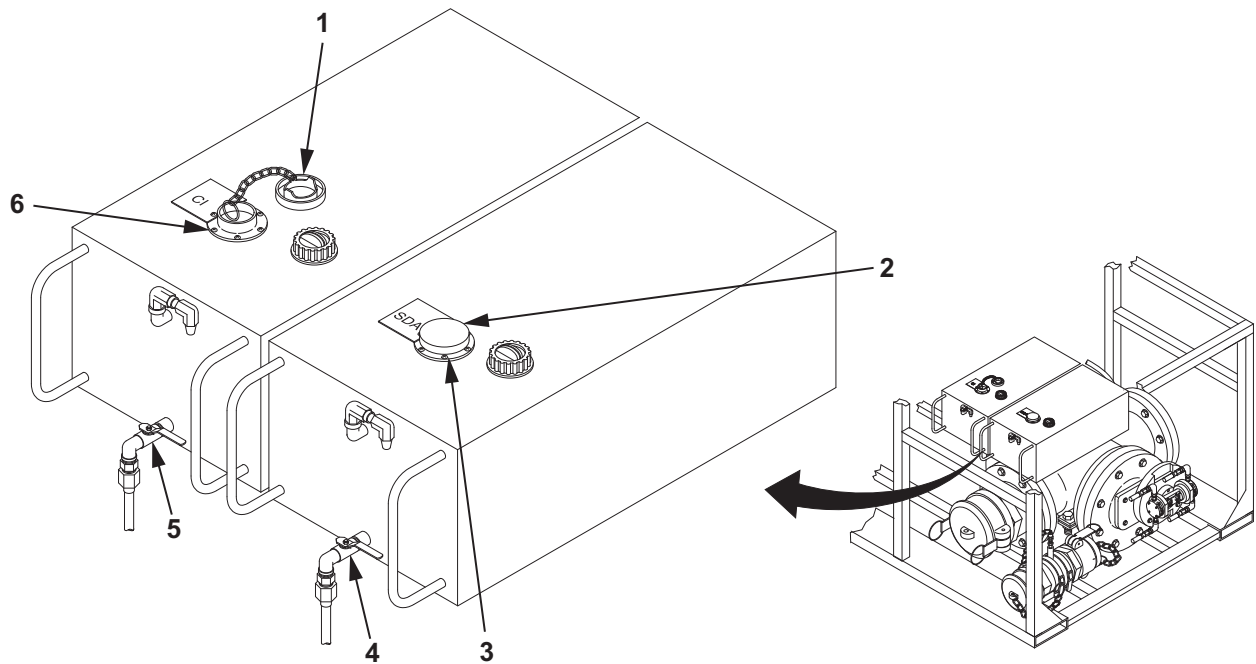


Figure 21. Fuel Additive Injection Assembly CI and SDA Tanks.

END OF TASK

FSII ADDITIVE DRUM CONNECTION

WARNING

CHEMICAL



EYE PROTECTION



VAPOR



POISON

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

NOTE

The bottom of the additive supply must be at least as high as the inlet of the injector. If additive drums are placed in a horizontal position, the 2 in. dryer/vent assembly must be in top most position and the additive shutoff valve must be at lowest position.

1. Place the additive drums higher than the fuel additive injector.
2. Disconnect end of the FSII 3/4 in. flex line (Figure 22, Item 3) from the storage connector (Figure 22, Item 2) on the fuel additive injection system frame (Figure 22, Item 1).
3. Remove the FSII 3/4 in. flex line (Figure 22, Item 3) from the frame clips (Figure 22, Item 4).

FSII ADDITIVE DRUM CONNECTION - CONTINUED

4. Connect the fuel additive hose for injecting FSII additive from containers.

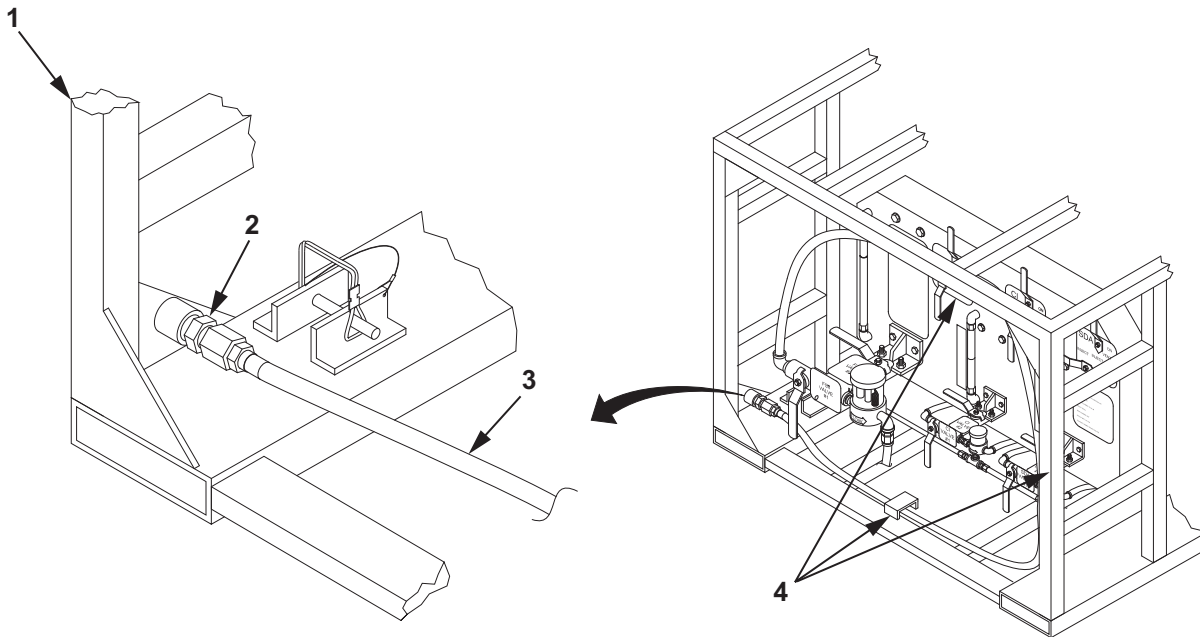


Figure 22. FSII Additive Hose Assembly.

- a. Install 2 in. vent/dryer (Figure 23, Item 1) in drum bung hole (Figure 23, Item 2).

NOTE

Threads of additive shutoff valve will be prewrapped with teflon tape for initial use.

- b. Wrap the threads of the FSII fuel additive shutoff valve (Figure 23, Item 3) with teflon tape.
 - c. Install the FSII fuel additive shutoff valve (Figure 23, Item 3) in the FSII additive drum (Figure 23, Item 4).
 - d. Connect the end of FSII 3/4 in. flex line (Figure 22, Item 1) to the FSII fuel additive shutoff valve (Figure 23, Item 3).
5. Turn the FSII fuel additive shutoff valve (Figure 23, Item 3) on the FSII additive drum (Figure 23, Item 4) to the on position.

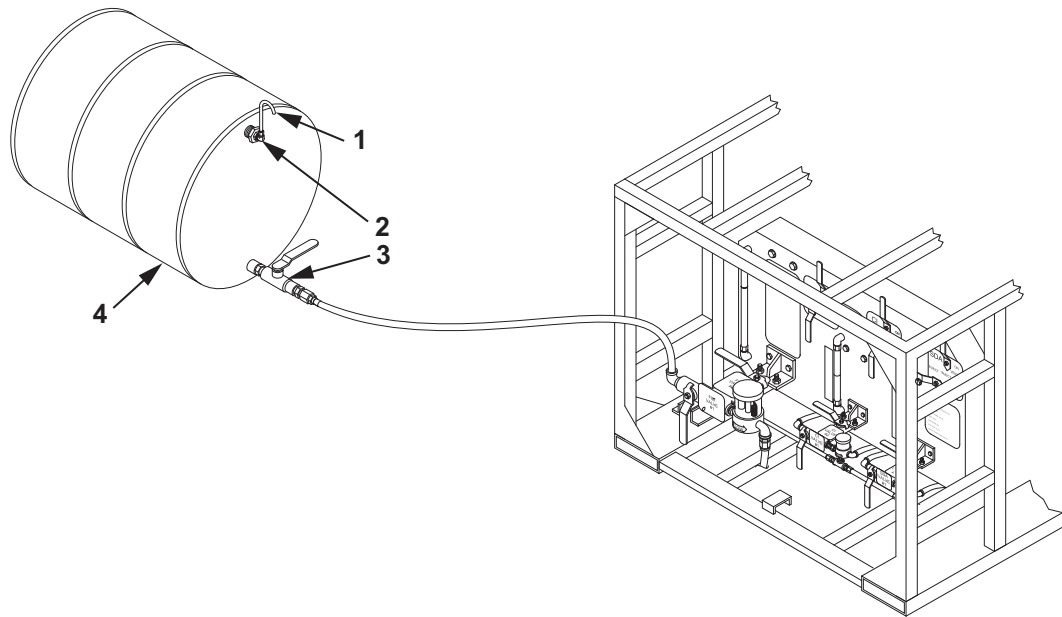
FSII ADDITIVE DRUM CONNECTION - CONTINUED

Figure 23. Injecting Additives Using Drums.

END OF TASK**INITIAL ADJUSTMENTS BEFORE USE**

1. Inspect all tanks, hoses, pumping assemblies, filter-separators and all tee, valve and adapter assemblies for completeness, damage and for proper operation.
2. Perform preventive maintenance checks and services (WP 0064).

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY PRIMING**NOTE**

The fuel additive injection assembly must be primed prior to injecting fuel additive.

1. Start the pumping assemblies and pressurize the FSSP.
2. Close gate valves (Figure 16, Item 4, 2).
3. Position the priming valve (Figure 24, Item 1) on the injector housing (Figure 24, Item 2) to the off position.

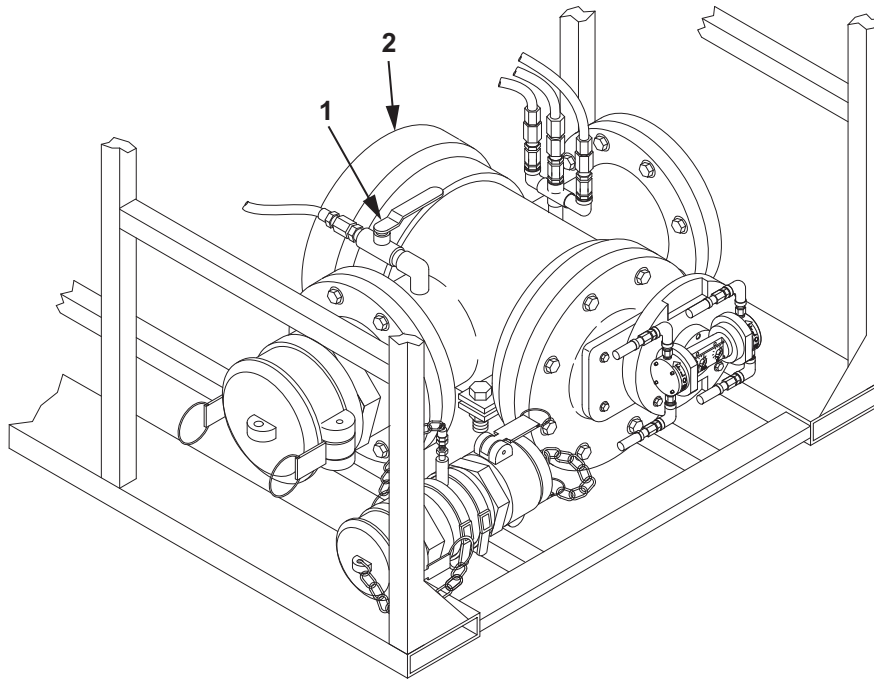


Figure 24. Fuel Priming Valve, Additive Injector Housing.

4. Close the SDA VALVE #1 (Figure 25, Item 6).
5. Close the CI VALVE #1 (Figure 25, Item 10).
6. Close the FSII VALVE #1 (Figure 25, Item 12).
7. Position the FSII bleed valve (Figure 25, Item 1) to the INJECT position.
8. Position the FSII vent valve (Figure 25, Item 2) to the INJECT position.
9. Position the CI bleed valve (Figure 25, Item 4) to the INJECT position.
10. Position the CI vent valve (Figure 25, Item 3) to the INJECT position.
11. Position the SDA bleed valve (Figure 25, Item 6) to the INJECT position.
12. Position the SDA vent valve (Figure 25, Item 5) to the INJECT position.
13. Position the priming valve (Figure 24, Item 1) on the injector housing (Figure 24, Item 2) to the on position for at least 30 seconds. Leave the valve on until a clear, air-free stream of fuel is observed in the sight flow indicators (Figure 25, Item 7, 9, 11).
14. Position the priming valve (Figure 25, Item 1) to the off position.
15. Open SDA VALVE #1 (Figure 25, Item 8).
16. Open CI VALVE #1 (Figure 25, Item 10).
17. Open FSII VALVE #1 (Figure 25, Item 12).

FUEL ADDITIVE INJECTION ASSEMBLY PRIMING - CONTINUED

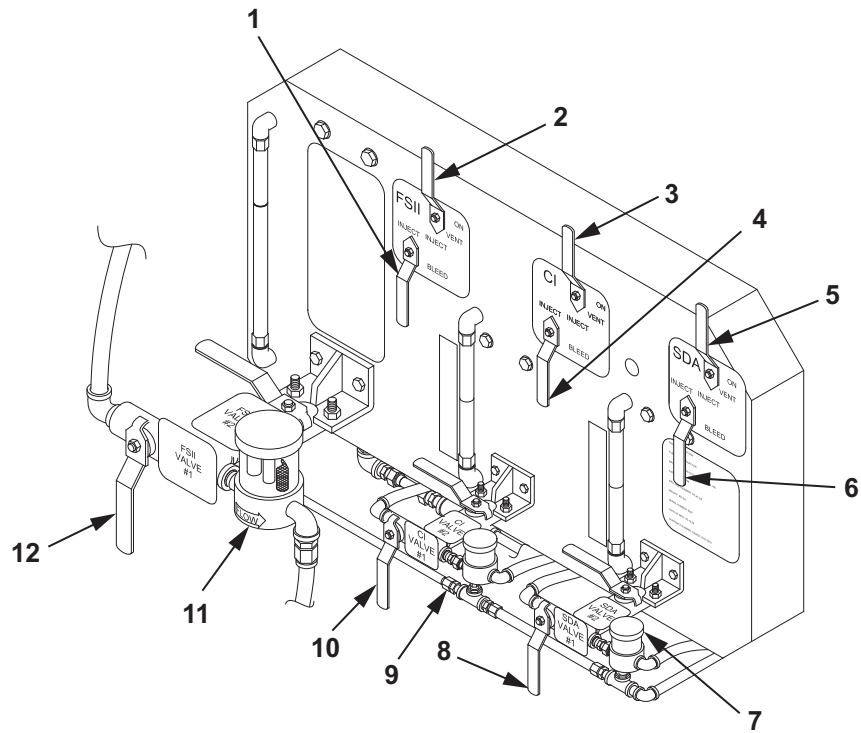


Figure 25. Priming the Fuel Additive Injection Assembly with the On-Board Priming System.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY CALIBRATION

NOTE

Do not overfill the calibration gauges.

1. Verify injectors are primed. If not, prime injectors.

FUEL ADDITIVE INJECTION ASSEMBLY CALIBRATION - CONTINUED

2. Calibrate FSII fuel additive injection assembly.
 - a. Open the FSII VALVE #2 (Figure 26, Item 21).
 - b. Position the FSII vent valve (Figure 26, Item 2) to the ON position to fill the FSII calibration gauge (Figure 26, Item 1).
 - c. Position the FSII vent valve (Figure 26, Item 2) to the INJECT position when the FSII calibration gauge (Figure 26, Item 1) is filled to the 90 oz mark.
 - d. Move calibration gauge o-ring (Figure 26, Item 23) to the additive level in the FSII calibration gauge (Figure 26, Item 1).
 - e. Make note of amount of fuel to be used for calibration.
 - f. Position FSII VALVE #1 (Figure 26, Item 20) to the off position.
 - g. Position FSII vent valve (Figure 26, Item 2) to the ON position.
 - h. Start the flow of fuel product to determine amount of FSII additive injected.
 - i. After a small amount of fuel product is pumped, approximately 100–200 gallons, record the amount of FSII additive drawn from the FSII calibration gauge (Figure 26, Item 1).
 - j. Record the amount of fuel product that was pumped.
 - k. Position FSII vent valve (Figure 26, Item 2) to the INJECT position.
 - l. Close FSII VALVE #2 (Figure 26, Item 21).
 - m. Position the FSII VALVE #1 (Figure 26, Item 20) to the on position.
 - n. Divide the amount of additive used by the volume of fuel that was pumped, using the formula below:
 - 1) EXAMPLE: (US)
 - 2) ADDITIVE INJECTED = 6.5 oz
 - 3) FUEL DELIVERED = 350 GALLONS
 - 4) $6.5 = .0185$
 - 5) 350
 - 6) $.0185 = .000144$ (144 MILLIONTHS)
 - 7) 128 oz/gal OR 144 PPM (PARTS PER MILLION)

NOTE

Stroke adjustment knobs set the level of additive injected by turning knobs to increase or decrease amount of additive to be injected.

- o. Increase or decrease delivered additive to fuel ratio by loosening the set screws (Figure 26, Item 6) and adjusting the stroke adjustment knobs (Figure 26, Item 10) on the FSII additive injector (Figure 26, Item 9). Repeat calibration steps until desired additive to fuel ratio is reached.
 - p. Lock the adjustments securely with the set screws (Figure 26, Item 17) located below each of the stroke adjustment knobs (Figure 26, Item 18).
3. Calibrate CI fuel additive injection assembly.
 - a. Open the CI VALVE #2 (Figure 26, Item 16).
 - b. Position the CI vent valve (Figure 26, Item 4) to the ON position to fill the CI calibration gauge (Figure 26, Item 22).
 - c. Position the CI vent valve (Figure 26, Item 4) to the INJECT position when the CI calibration gauge (Figure 26, Item 22) is filled to the 7 oz mark.
 - d. Move calibration gauge o-ring (Figure 26, Item 3) to the additive level in the CI calibration gauge (Figure 26, Item 22).

FUEL ADDITIVE INJECTION ASSEMBLY CALIBRATION - CONTINUED

- e. Make note of amount of fuel to be used for calibration.
- f. Position CI VALVE #1 (Figure 26, Item 15) to the off position.
- g. Position CI vent valve (Figure 26, Item 14) to the ON position.
- h. Start the flow of fuel product to determine amount of CI additive injected.
- i. After a small amount of fuel product is pumped, approximately 100–200 gallons, record the amount of CI additive drawn from the CI additive calibration gauge (Figure 26, Item 22).
- j. Record the amount of fuel product that was pumped.
- k. Position CI vent valve (Figure 26, Item 4) to the INJECT position.
- l. Close CI VALVE #2 (Figure 26, Item 16).
- m. Position CI VALVE #1 (Figure 26, Item 15) to the on position.
- n. Divide the amount of additive used by the volume of fuel that was pumped, using the formula below:
 - 1) EXAMPLE: (US)
 - 2) ADDITIVE INJECTED = 11.5 oz
 - 3) FUEL DELIVERED = 350 GALLONS
 - 4) $6.5 = .0185$
 - 5) 350
 - 6) $.0185 = .000144$ (144 MILLIONTHS)
 - 7) 128 oz/gal OR 144 PPM (PARTS PER MILLION)

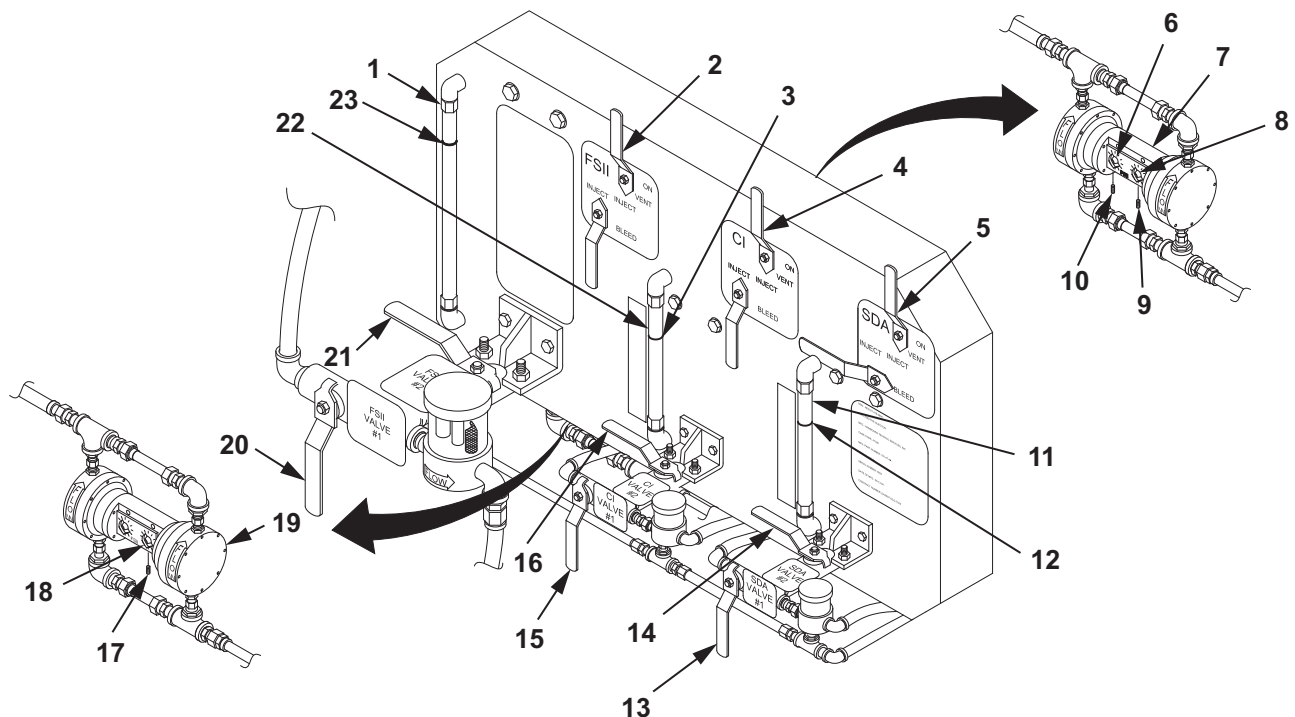


Figure 26. Calibrating the FSII Fuel Additive Injector.

FUEL ADDITIVE INJECTION ASSEMBLY CALIBRATION - CONTINUED

NOTE

Stroke adjustment knobs set the level of additive injected by turning knobs to increase or decrease amount of additive to be injected.

- o. Increase or decrease delivered additive to fuel ratio by loosening the set screw (Figure 27, Item 9) and adjusting the stroke adjustment knob (Figure 27, Item 8) on the CI, SDA additive injector (Figure 27, Item 7). Repeat calibration steps until desired additive to fuel ratio is reached.
- p. Lock the adjustments securely with the set screw (Figure 27, Item 9) located below the stroke adjustment knob (Figure 27, Item 8).

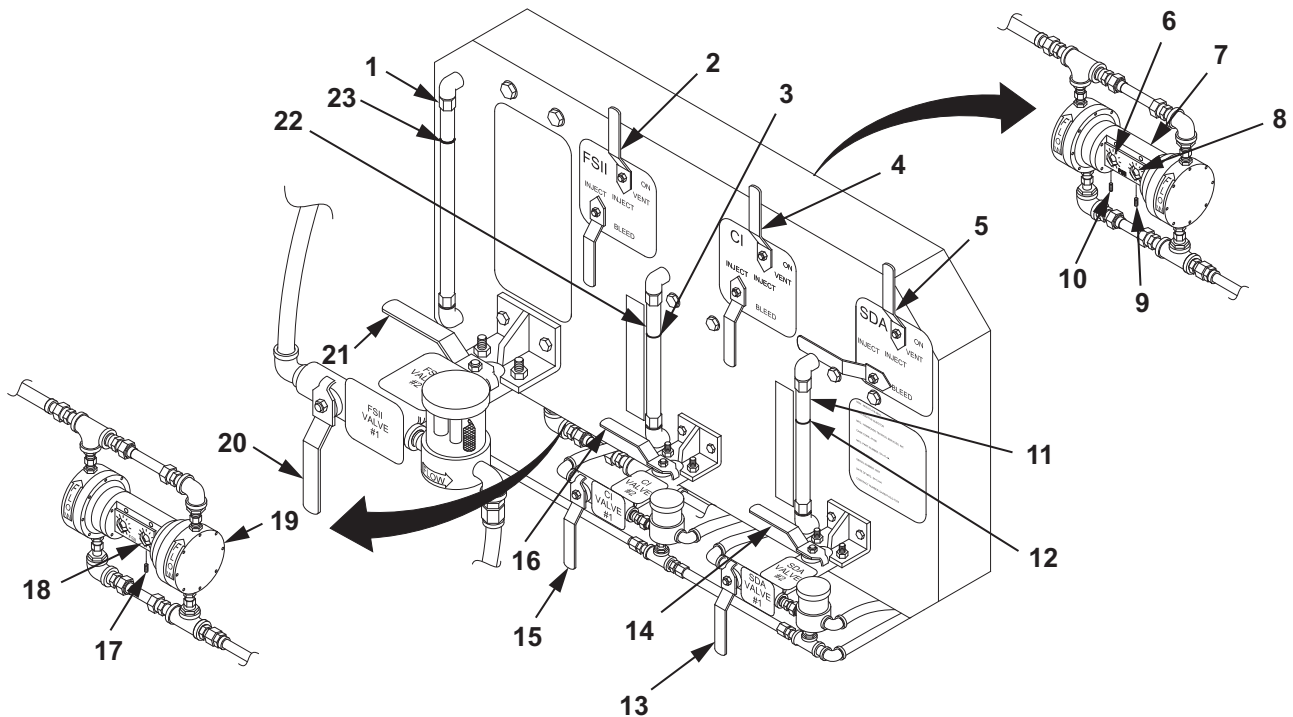


Figure 27. Calibrating the FSII Fuel Additive Injector.

END OF TASK**OPERATING PROCEDURES - TANK VOLUME METER MONITOR OPERATION****NOTE**

Two totals appear on the monitor display; calculated total and accumulated total. The calculated total is used by the operator to determine amount of fuel passing through the tank volume meter for a specified period of time. The accumulated total is the total amount of fuel passing through the tank volume meter during the lifetime of the tank volume meter.

The accumulated total cannot be cleared.

1. Clear the calculated total.
 - a. Press the CLEAR key (Figure 28, Item 2) once. The monitor display (Figure 28, Item 1) will flash the message: "PUSH CLEAR".
 - b. Press the CLEAR key (Figure 28, Item 2) to avoid clearing the calculated total.
2. Press the SELECT key (Figure 28, Item 3) to display the accumulated total.

OPERATING PROCEDURES - TANK VOLUME METER MONITOR OPERATION - CONTINUED

3. Acknowledge an alarm indication.
 - a. Press the SELECT key (Figure 28, Item 3) several times when ALARM (Figure 28, Item 4) starts to blink in the monitor display (Figure 28, Item 1). A four-digit error code will appear.
 - b. Determine what the error code means. Refer to table 1.

Table 1. Tank Volume Meter Error Codes.

ERROR CODE	ERROR CODE EXPLANATION
0001	Irrecoverable display-data error; data on the display may be corrupted.
0002	Irrecoverable data-storage error; the programming cycle might have gone wrong, check programmed values.
0003	Error 1 and error 2 occurred simultaneously.

NOTE

The alarm condition is usually handled internally by the monitor. If all values on the monitor display appear to be correct, no action is required by the operator. If the alarm occurs more often or stays active for a longer time, contact Unit Maintenance.

- c. Contact Unit Maintenance if error codes remain active in the monitor display (Figure 28, Item 1).

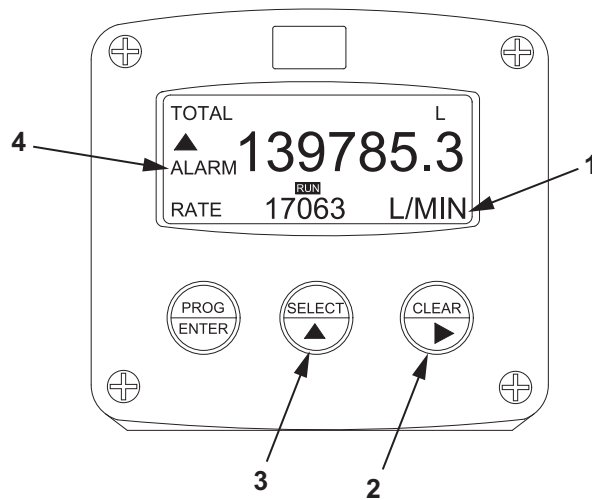


Figure 28. Tank Volume Meter Monitor Display.

END OF TASK

OPERATING PROCEDURES - FSSP OPERATION**FUEL STORAGE**

1. Attach butterfly valves to the output of the transporter or fuel supply pipeline. Use adapters, as necessary, to mate transporter or pipeline butterfly valves to FSSP receipt points.

CAUTION

Fuel tanks can be badly damaged by overfilling them. Fuel is normally pumped into one tank at a time while remaining gate valve assemblies leading to the other tanks in the FSSP are closed to reduce possible damage to fuel tanks.

NOTE

Refer to foldout FO-2, Figure FO-2, in the rear of this manual for callouts.

The gate valves to be closed will vary depending on the tank to be filled. Isolate the tank to be filled by opening and closing the required gate valves.

2. Close gate valve (Figure FO-2, Item 1) for the tank to be filled.
3. Close gate valve (Figure FO-2, Item 2).
4. Close gate valve (Figure FO-2, Item 3).
5. Open gate valve (Figure FO-2, Item 4) to the desired fuel tank to permit flow of fuel to that tank.
6. Open gate valve (Figure FO-2, Item 5).
7. Open gate valve (Figure FO-2, Item 6).
8. Open gate valve (Figure FO-2, Item 7).
9. Open gate valve (Figure FO-2, Item 8).
10. Open gate valve (Figure FO-2, Item 9).
11. Open butterfly valves (Figure FO-2, Item 10) to allow fuel to flow from the output of the transporter or fuel supply pipeline.
12. Operate the 350 GPM fuel pumping assembly (Figure FO-2, Item 11) per TM 10-4320-372-14.
13. Shut down the 350 GPM fuel pumping assembly (Figure FO-2, Item 11) per TM 10-4320-372-14 when transferring of fuel is completed.
14. Close butterfly valves (Figure FO-2, Item 10).
15. Close gate valve (Figure FO-2, Item 9).
16. Close gate valve (Figure FO-2, Item 8).
17. Close gate valve (Figure FO-2, Item 7).
18. Close gate valve (Figure FO-2, Item 6).
19. Close gate valve (Figure FO-2, Item 5).
20. Close gate valve (Figure FO-2, Item 4).
21. Open gate valve (Figure FO-2, Item 3).
22. Open gate valve (Figure FO-2, Item 2).
23. Open gate valve (Figure FO-2, Item 1).
24. Remove butterfly valves from the output of the transporter or fuel supply pipeline.

FUEL DISPENSING**NOTE**

Refer to foldout FO-3, Figure FO-3, in the rear of this manual for callouts.

The gate valves to be opened will vary depending on the tank to be used.

1. Open gate valve assembly (Figure FO-3, Item 1) on the fuel tank (Figure FO-3, Item 2) from which fuel will be drawn.
2. Open gate valve assembly (Figure FO-3, Item 3).
3. Close six butterfly valve assemblies (Figure FO-3, Item 4).
4. Close gate valve (Figure FO-3, Item 5).
5. Select desired 350 GPM filter-separator (Figure FO-3, Item 6) to use in dispensing operation and open one gate valve assembly (Figure FO-3, Item 7) and one gate valve assembly (Figure FO-3, Item 8) for the selected 350 GPM filter-separator (Figure FO-3, Item 6).
6. Operate the 350 GPM fuel pumping assembly (Figure FO-3, Item 9) per TM 10-4320-372-14 to move fuel from the desired fuel tank (Figure FO-3, Item 2) into the fuel discharge lines.
7. Open gate valve (Figure FO-3, Item 10).
8. Open gate valve (Figure FO-3, Item 11).
9. Open gate valve (Figure FO-3, Item 5).
10. Open gate valve (Figure FO-3, Item 12) or butterfly valve assemblies (Figure FO-3, Item 4) for the fuel discharge point selected to discharge fuel.
11. To dispense through a nozzle assembly (Figure FO-3, Item 13), connect one nozzle assembly grounding clamp (Figure FO-3, Item 14) to container or vehicle.
12. Connect remaining nozzle assembly grounding clamp (Figure FO-3, Item 15) to an FSSP ground rod (Figure FO-3, Item 16).
13. Place nozzle spout (Figure FO-3, Item 17) into fuel container or vehicle fuel tank.
14. Operate lever on nozzle assembly (Figure FO-3, Item 13) to dispense fuel.
15. When dispensing operation is completed, release lever on nozzle assembly (Figure FO-3, Item 13).
16. Remove nozzle spout (Figure FO-3, Item 17) from fuel container or vehicle tank.
17. Disconnect nozzle assembly ground clamp (Figure FO-3, Item 14) from fuel container or vehicle.
18. Disconnect remaining nozzle assembly grounding clamp (Figure FO-3, Item 15) from the FSSP ground rod (Figure FO-3, Item 16).
19. Close all valves opened in this procedure or continue operations, as desired.
20. Shut down the 350 GPM fuel pumping assembly (Figure FO-3, Item 9) per TM 10-4320-372-14.

END OF TASK**END OF WORK PACKAGE**

OPERATOR MAINTENANCE
TANK VOLUME METER MONITOR, EAS-0400-OUT, OPERATING PROCEDURES
SET UP, PROGRAM, ACTIVATE SHELF MODE

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

OPERATING PROCEDURES - CONFIGURE TANK VOLUME METER MONITOR**SET UP****NOTE**

The tank volume meter monitor is pre-programmed with factory default settings. The following procedures explain how to view and change back to default settings as needed.

A pass code may be required to enter SETUP level. If prompted for a pass code, enter 1234, the factory default setting. If the pass code has been changed from the factory default setting and the pass code is not known, the tank volume meter monitor must be replaced.

The tank volume meter monitor has two modes, operate and shelf. If the tank volume meter monitor screen is blank, it is in shelf mode. Perform step 1 to switch from shelf to operator mode.

1. If the display screen (Figure 1, Item 2) on the tank volume meter monitor (Figure 1, Item 6) is blank, return tank volume meter monitor to operate mode as follows:
 - a. Press the PROG/ENTER key (Figure 1, Item 4) on the tank volume meter monitor (Figure 1, Item 6).
 - b. Verify that OPERATE (Figure 1, Item 1) appears on the display screen (Figure 1, Item 2).
 - c. Press the SELECT key (Figure 1, Item 5) to select YES (Figure 1, Item 3).

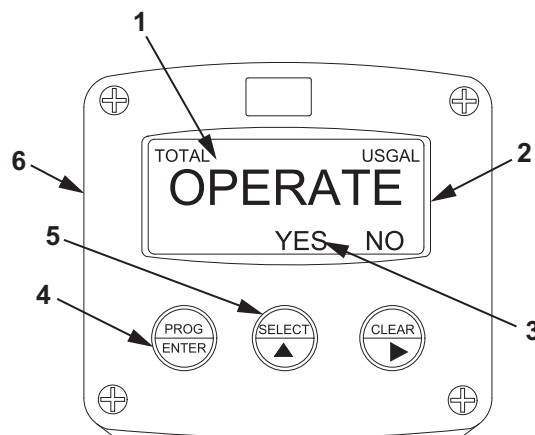


Figure 1. OPERATE Display.

SET UP - CONTINUED

- d. Verify that RUN (Figure 2, Item 4) appears on the display screen (Figure 2, Item 2).
2. Press and hold the PROG/ENTER key (Figure 2, Item 3) for 7–10 seconds to enter the SETUP level. The display screen (Figure 2, Item 2) will show two arrows (Figure 2, Item 1).

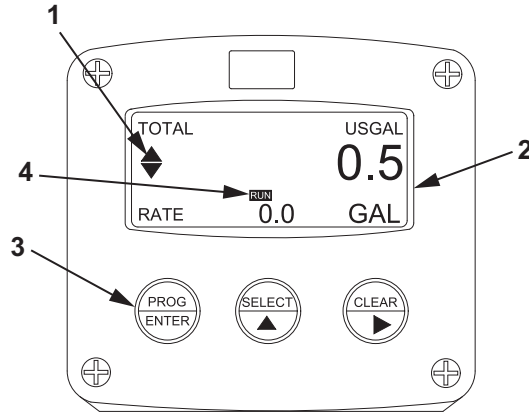


Figure 2. RUN Display.

3. Verify that TOTAL A (Figure 3, Item 4) appears in the display screen (Figure 3, Item 2).
4. Verify default settings for function group TOTAL A (Figure 3, Item 4) as follows:
 - a. Press the SELECT key (Figure 3, Item 3) on the tank volume meter monitor (Figure 3, Item 1).

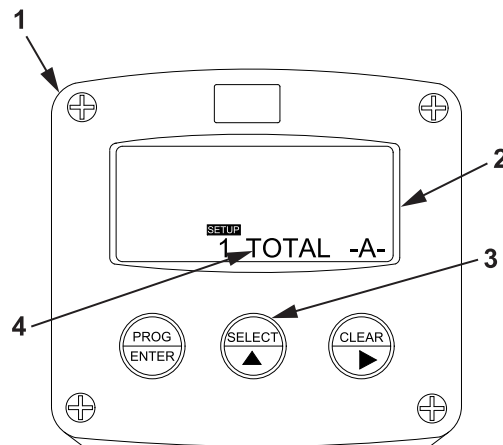
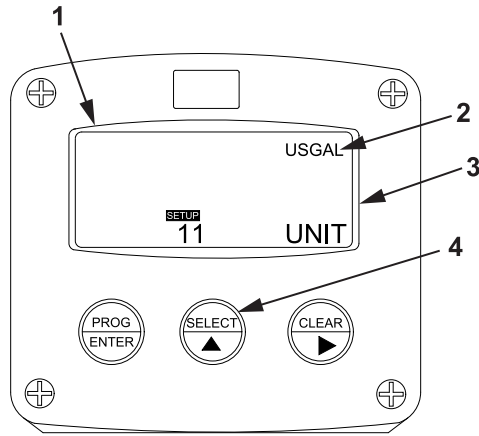


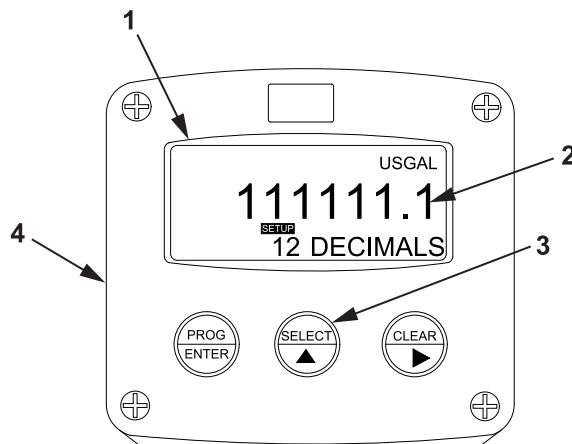
Figure 3. TOTAL A Display.

SET UP - CONTINUED

- b. Verify that USGAL (Figure 4, Item 2) appears on the display screen (Figure 4, Item 3). If USGAL (Figure 4, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select USGAL (Figure 4, Item 2).
- c. Press the SELECT key (Figure 4, Item 4) on the tank volume meter monitor (Figure 4, Item 1).

*Figure 4. USGAL Display.*

- d. Verify that 111111.1 (Figure 5, Item 2) appears on the display screen (Figure 5, Item 1). If 111111.1 (Figure 5, Item 1) does not appear, perform the procedure to program tank volume meter monitor settings and select 111111.1 (Figure 5, Item 2).
- e. Press the SELECT key (Figure 5, Item 3) on the tank volume meter monitor (Figure 5, Item 4).

*Figure 5. 111111.1 Display.*

SET UP - CONTINUED

NOTE

The K-factor will be written on the tank volume meter, enter the K-factor as a whole number.

- f. Verify that K-FACT (Figure 6, Item 4) appears on the display screen (Figure 6, Item 3) and that the K-factor (Figure 6, Item 2) displayed matches the K-factor written on the tank volume meter. If the K-factor (Figure 6, Item 2) displayed does not match, perform the procedure to program tank volume meter monitor settings and enter the K-factor as shown on the tank volume meter.
- g. Press the SELECT key (Figure 6, Item 5) on the tank volume meter monitor (Figure 6, Item 1).

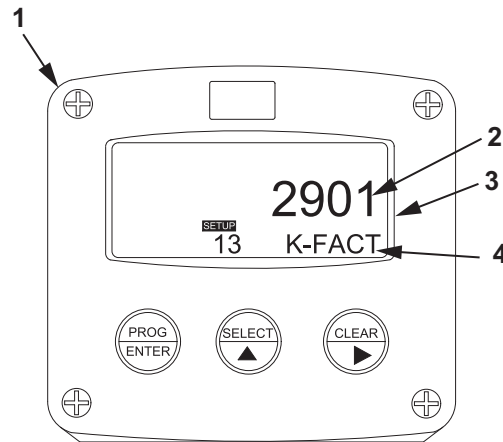


Figure 6. K-FACT Display.

- h. Verify that DECS 2 (Figure 7, Item 2) appears on the display screen (Figure 7, Item 3). If DECS 2 (Figure 7, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select DECS 2 (Figure 7, Item 2).
- i. Press the SELECT key (Figure 7, Item 4) on the tank volume meter monitor (Figure 7, Item 1).

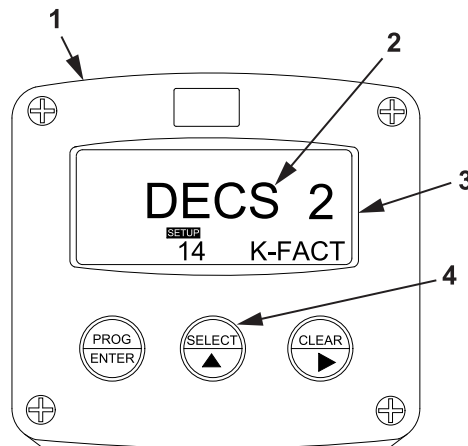


Figure 7. DECS 2 Display.

SET UP - CONTINUED

- j. Verify that TOTAL A (Figure 8, Item 2) appears on the display screen (Figure 8, Item 1).
- k. Press the CLEAR key (Figure 8, Item 3) on the tank volume meter monitor (Figure 8, Item 4).

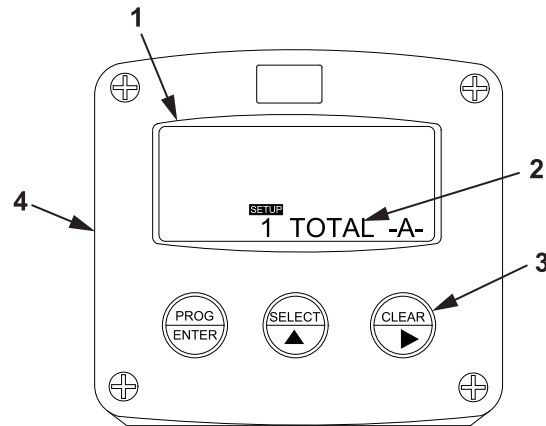


Figure 8. TOTAL A Display.

- 5. Verify that FLOWR A (Figure 9, Item 2) appears on the display screen (Figure 9, Item 1).
- 6. Verify default settings for function group FLOWR A (Figure 9, Item 2).
 - a. Press the SELECT key (Figure 9, Item 3) on the tank volume meter monitor (Figure 9, Item 4).

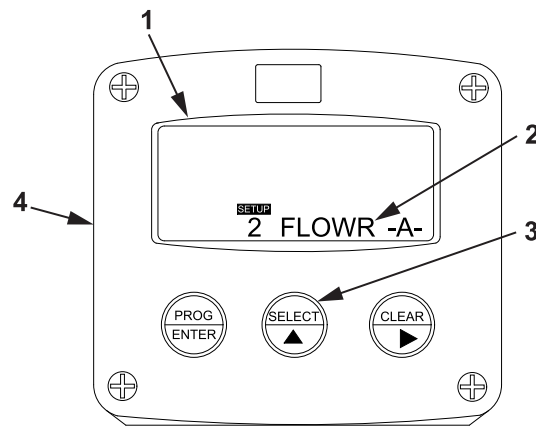


Figure 9. FLOWR A Display.

SET UP - CONTINUED

- b. Verify that GAL (Figure 10, Item 2) appears on the display screen (Figure 10, Item 1). If GAL (Figure 10, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select GAL (Figure 10, Item 2).
- c. Press the SELECT key (Figure 10, Item 3) on the tank volume meter monitor (Figure 10, Item 4).

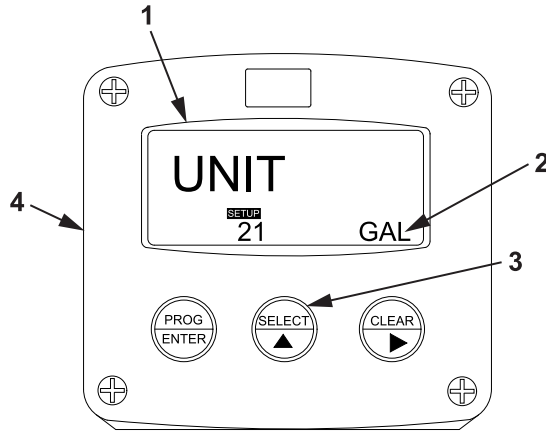


Figure 10. GAL Display.

- d. Verify that TIME/MIN (Figure 11, Item 2) appears on the display screen (Figure 11, Item 1). If TIME/MIN (Figure 11, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select TIME/MIN (Figure 11, Item 2).
- e. Press the SELECT key (Figure 11, Item 3) on the tank volume meter monitor (Figure 11, Item 4).

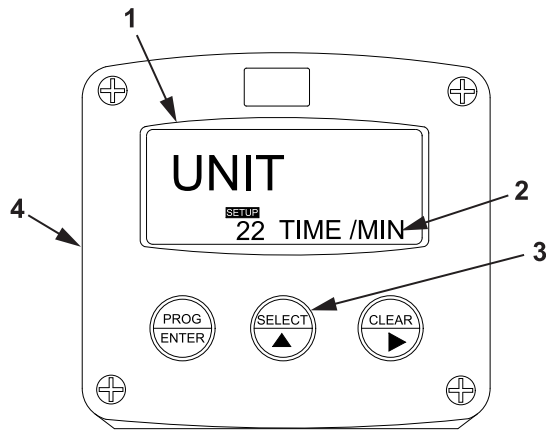


Figure 11. TIME/MIN Display.

SET UP - CONTINUED

- f. Verify that 111111.1 (Figure 12, Item 2) appears on the display screen (Figure 12, Item 1). If 111111.1 (Figure 12, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select 111111.1 (Figure 12, Item 2).

NOTE

The K-factor will be written on the tank volume meter, enter the K-factor as a whole number.

- g. Press the SELECT key (Figure 12, Item 3) on the tank volume meter monitor (Figure 12, Item 4).

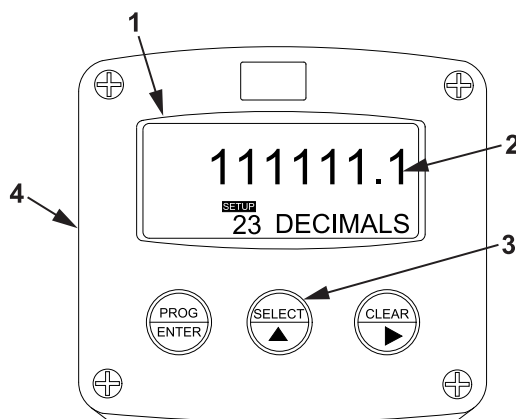


Figure 12. 111111.1 Display.

- h. Verify that K-FACT (Figure 13, Item 3) appears on the display screen (Figure 13, Item 1) and that the K-factor (Figure 13, Item 2) displayed matches the K-factor written on the tank volume meter. If the K-factor (Figure 13, Item 2) displayed does not match, perform the procedure to program tank volume meter monitor settings and enter the K-factor as shown on the tank volume meter.
- i. Press the SELECT key (Figure 13, Item 4) on the tank volume meter monitor (Figure 13, Item 5).

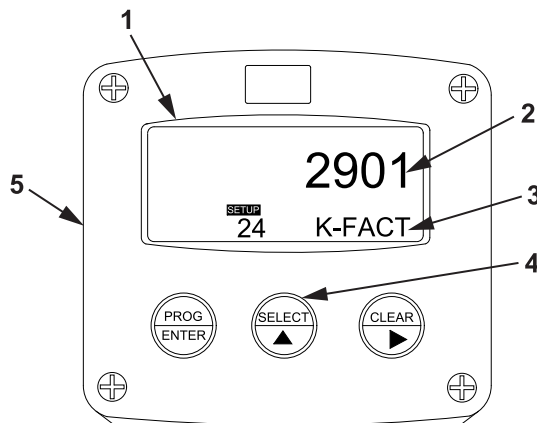


Figure 13. K-FACT Display.

SET UP - CONTINUED

- j. Verify that DECS 2 (Figure 14, Item 2) appears on the display screen (Figure 14, Item 1). If DECS 2 (Figure 14, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select DECS 2 (Figure 14, Item 2).
- k. Press the SELECT key (Figure 14, Item 3) on the tank volume meter monitor (Figure 14, Item 4).

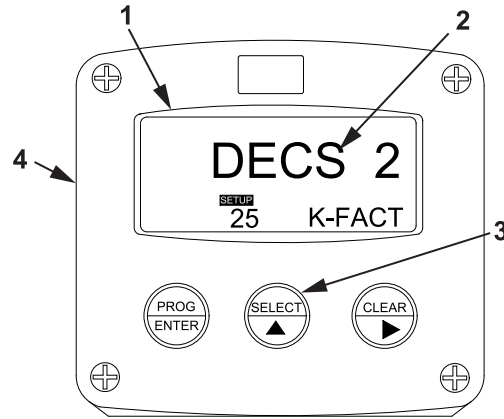


Figure 14. DECS 2 Display.

- l. Verify that 1 (Figure 15, Item 1) appears on the display screen (Figure 15, Item 2). If 1 (Figure 15, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select 1 (Figure 15, Item 2).
- m. Press the SELECT key (Figure 15, Item 3) on the tank volume meter monitor (Figure 15, Item 4).

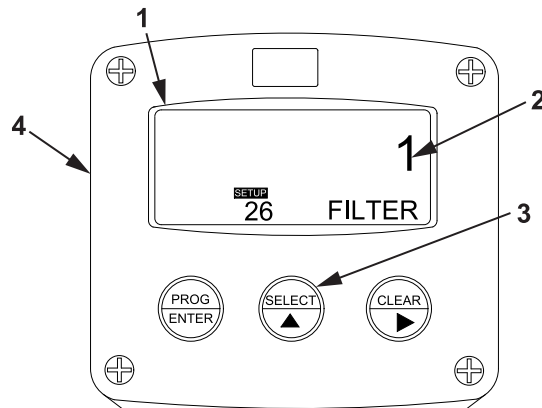


Figure 15. 1 Display.

SET UP - CONTINUED

- n. Verify that 60.0 (Figure 16, Item 2) appears on the display screen (Figure 16, Item 1). If 60.0 (Figure 16, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select 60.0 (Figure 16, Item 2).
- o. Press the SELECT key (Figure 16, Item 3) on the tank volume meter monitor (Figure 16, Item 4).

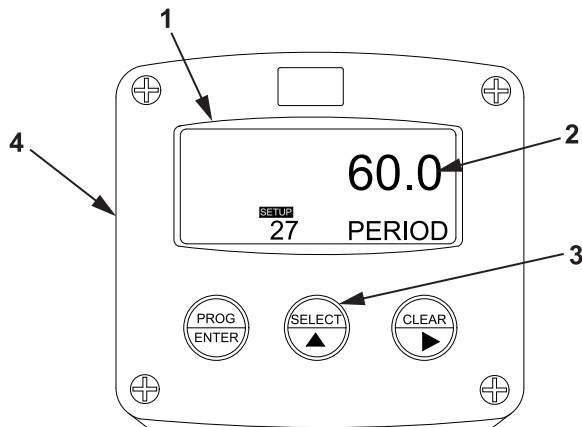


Figure 16. 60.0 Display.

- p. Verify that FLOWR A (Figure 17, Item 2) appears on the display screen (Figure 17, Item 1).
- q. Press the CLEAR key (Figure 17, Item 3) on the tank volume meter monitor (Figure 17, Item 4).

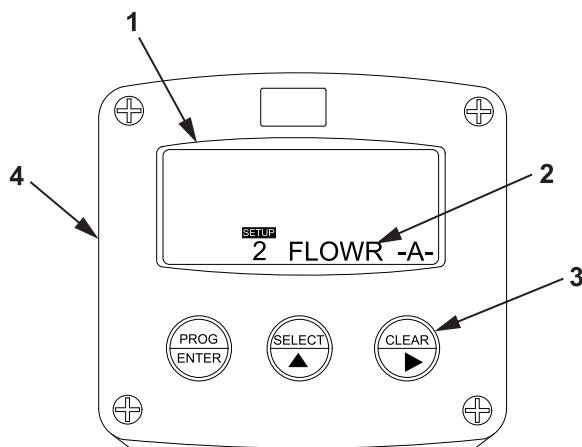


Figure 17. FLOWR A Display.

SET UP - CONTINUED

7. Verify that TOTAL B (Figure 18, Item 2) appears on the display screen (Figure 18, Item 1).
8. Verify default settings for function group TOTAL B (Figure 18, Item 3).
 - a. Press the SELECT key (Figure 18, Item 2) on the tank volume meter monitor (Figure 18, Item 4).

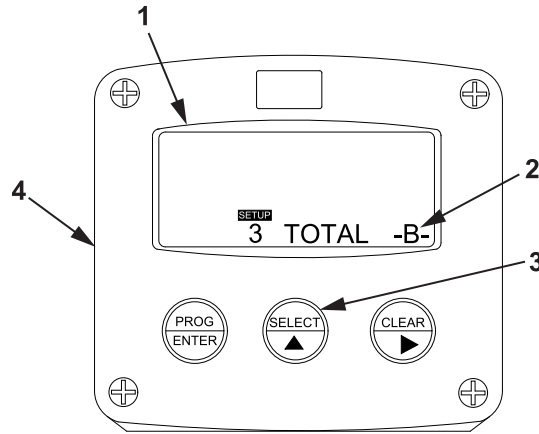


Figure 18. TOTAL B Display.

NOTE

The K-factor will be written on the tank volume meter, enter the K-factor as a whole number.

- b. Verify that K-FACT (Figure 19, Item 3) appears on the display screen (Figure 19, Item 1) and that the K-factor (Figure 19, Item 2) displayed matches the K-factor written on the tank volume meter. If the K-factor (Figure 19, Item 2) displayed does not match, perform the procedure to program tank volume meter monitor settings and enter the K-factor as shown on the tank volume meter.
- c. Press the SELECT key (Figure 19, Item 4) on the tank volume meter monitor (Figure 19, Item 5).

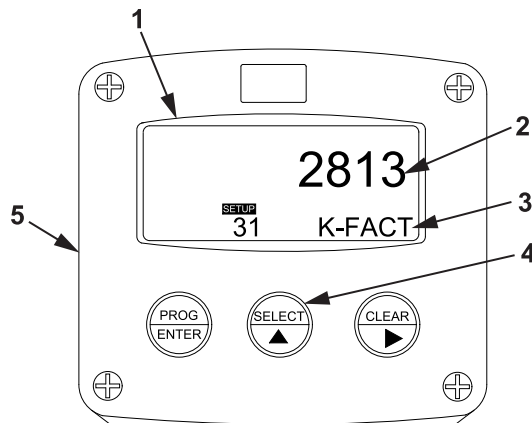


Figure 19. K-FACT Display.

SET UP - CONTINUED

- d. Verify that DECS 2 (Figure 20, Item 2) appears on the display screen (Figure 20, Item 1). If DECS 2 (Figure 20, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select DECS 2 (Figure 20, Item 2).
- e. Press the SELECT key (Figure 20, Item 3) on the tank volume meter monitor (Figure 20, Item 4).

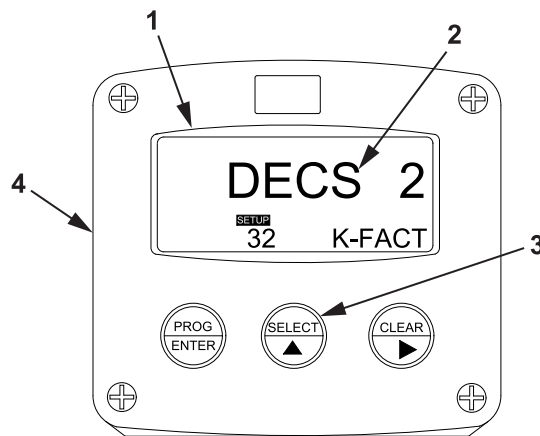


Figure 20. DECS 2 Display.

- f. Verify that TOTAL B (Figure 21, Item 2) appears on the display screen (Figure 21, Item 1).
- g. Press the CLEAR key (Figure 21, Item 3) on the tank volume meter monitor (Figure 21, Item 4).

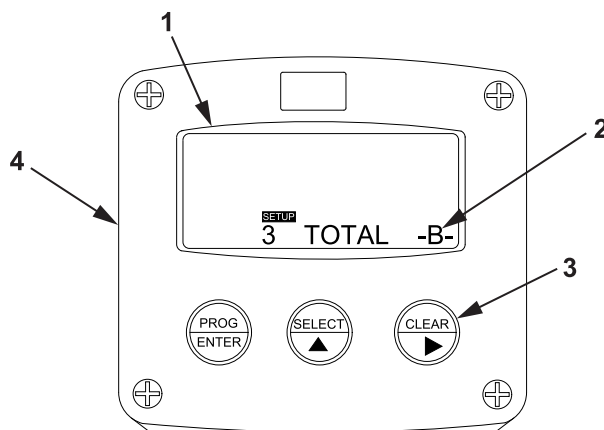


Figure 21. TOTAL B Display.

SET UP - CONTINUED

9. Verify that FLOWR B (Figure 22, Item 2) appears on the display screen (Figure 22, Item 1).
10. Verify default settings for function group FLOWR B (Figure 22, Item 2) as follows:
 - a. Press the SELECT key (Figure 22, Item 3) on the tank volume meter monitor (Figure 22, Item 4).

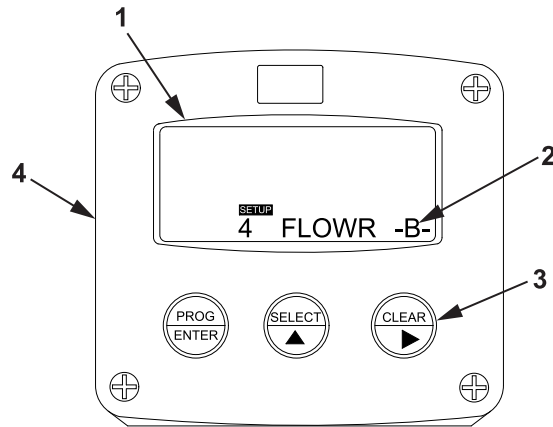


Figure 22. FLOWR B Display.

NOTE

The K-factor will be written on the tank volume meter, enter the K-factor as a whole number.

- b. Verify that K-FACT (Figure 23, Item 3) appears on the display screen (Figure 23, Item 1) and that the K-factor (Figure 23, Item 2) displayed matches the K-factor written on the tank volume meter. If the K-factor (Figure 23, Item 2) displayed does not match, perform the procedure to program tank volume meter monitor settings and enter the K-factor as shown on the tank volume meter.
- c. Press the SELECT key (Figure 23, Item 4) on the tank volume meter monitor (Figure 23, Item 5).

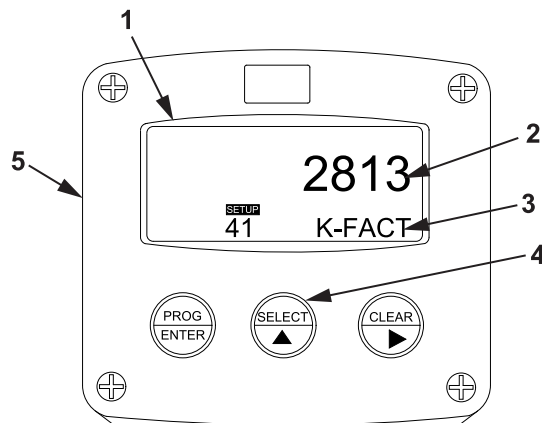
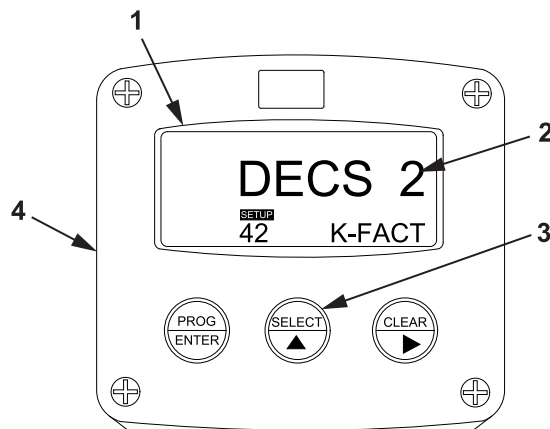


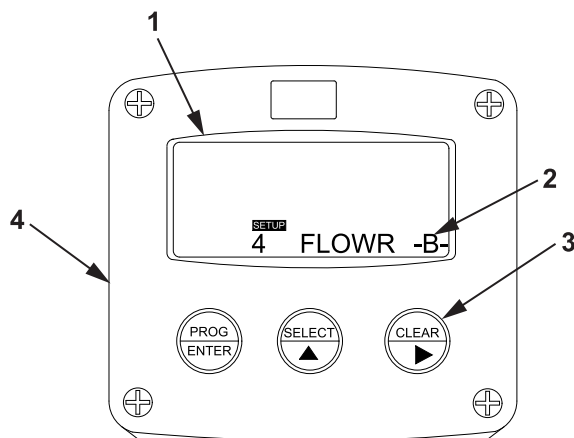
Figure 23. K-FACT Display.

SET UP - CONTINUED

- d. Verify that DECS 2 (Figure 24, Item 2) appears on the display screen (Figure 24, Item 1). If DECS 2 (Figure 24, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select DECS 2 (Figure 24, Item 2).
- e. Press the SELECT key (Figure 24, Item 3) on the tank volume meter monitor (Figure 24, Item 4).

*Figure 24. DECS 2 Display.*

- f. Verify that FLOWR B (Figure 25, Item 2) appears on the display screen (Figure 25, Item 1).
- g. Press the CLEAR key (Figure 25, Item 3) on the tank volume meter monitor (Figure 25, Item 4).

*Figure 25. FLOWR B Display.*

SET UP - CONTINUED

11. Verify that DISPLAY (Figure 26, Item 2) appears on the display screen (Figure 26, Item 1).
12. Verify default settings for function group DISPLAY (Figure 26, Item 1) as follows:
 - a. Press the SELECT key (Figure 26, Item 3) on the tank volume meter monitor (Figure 26, Item 4).

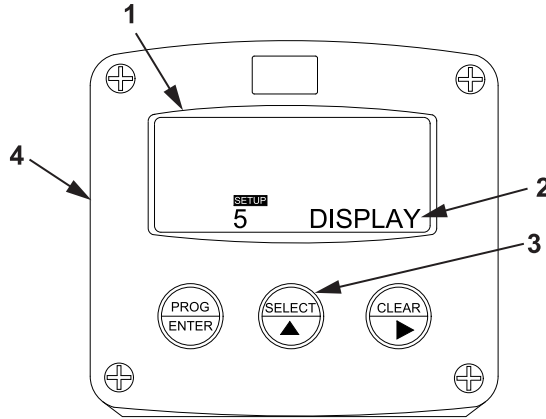


Figure 26. DISPLAY Display.

- b. Verify that TOTAL (Figure 27, Item 2) appears on the display screen (Figure 27, Item 1). If TOTAL (Figure 27, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select TOTAL (Figure 27, Item 2).
 - c. Press the SELECT key (Figure 27, Item 3) on the tank volume meter monitor (Figure 27, Item 4) three times.

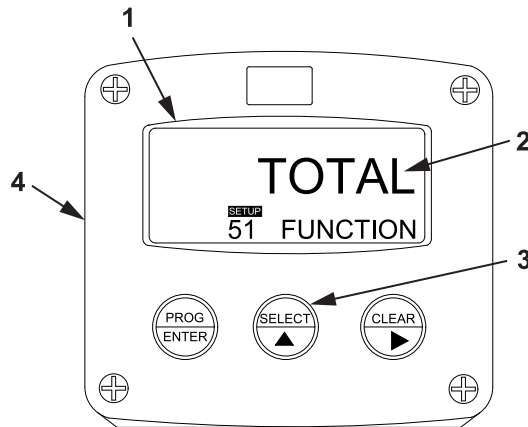


Figure 27. TOTAL Display.

SET UP - CONTINUED

- d. Verify that DISPLAY (Figure 28, Item 2) appears on the display screen (Figure 28, Item 1).
- e. Press the CLEAR key (Figure 28, Item 3) on the tank volume meter monitor (Figure 28, Item 4).

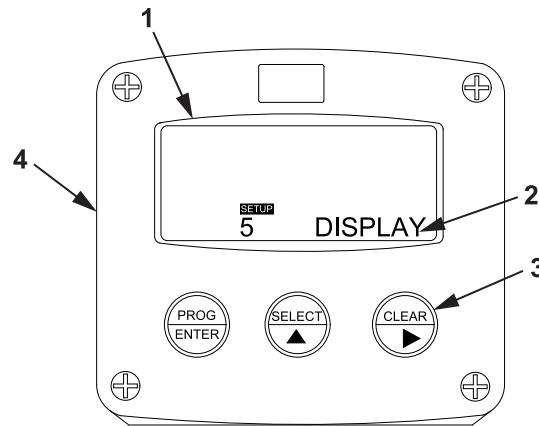


Figure 28. DISPLAY Display.

13. Verify that POWERMAN (Figure 29, Item 2) appears on the display screen (Figure 29, Item 1).
14. Verify default settings for function group POWERMAN (Figure 29, Item 2) as follows:
 - a. Press the SELECT key (Figure 29, Item 3) on the tank volume meter monitor (Figure 29, Item 4).

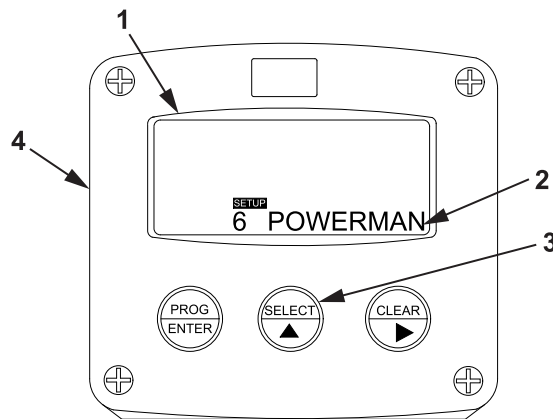


Figure 29. POWERMAN Display.

SET UP - CONTINUED

- b. Verify that 30 SEC (Figure 30, Item 2) appears on the display screen (Figure 30, Item 1). If 30 SEC (Figure 30, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select 30 SEC (Figure 30, Item 2).
- c. Press the SELECT key (Figure 30, Item 3) on the tank volume meter monitor (Figure 30, Item 4).

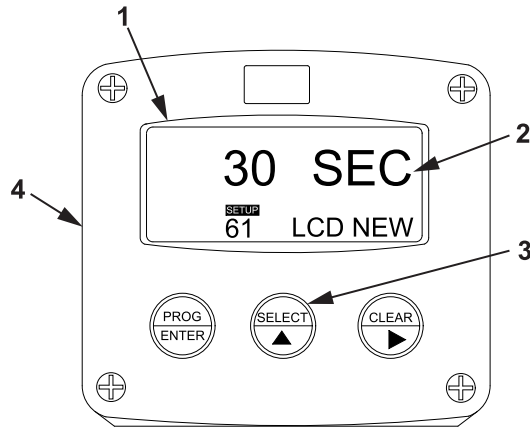


Figure 30. 30 SEC Display.

NOTE

The tank volume meter monitor has two modes, operate or shelf. If shelf is selected, the unit can be stored for several years. It will not count pulses. The display will switch off, but all settings and totals are stored. In this mode, power consumption is extremely low.

- d. Verify that OPERATE (Figure 31, Item 2) appears on the display screen (Figure 31, Item 1). If shelf mode is desired, perform the procedure to program tank volume meter monitor and select SHELF.
- e. Press the SELECT key (Figure 31, Item 3) on the tank volume meter monitor (Figure 31, Item 4).

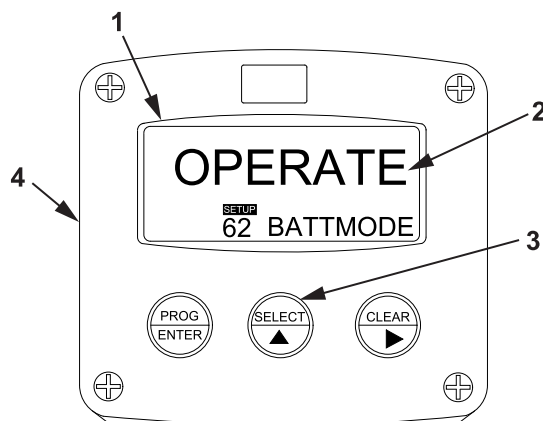


Figure 31. OPERATE Display.

SET UP - CONTINUED

- f. Verify that POWERMAN (Figure 32, Item 2) appears on the display screen (Figure 32, Item 1).
- g. Press the CLEAR key (Figure 32, Item 3) on the tank volume meter monitor (Figure 32, Item 4).

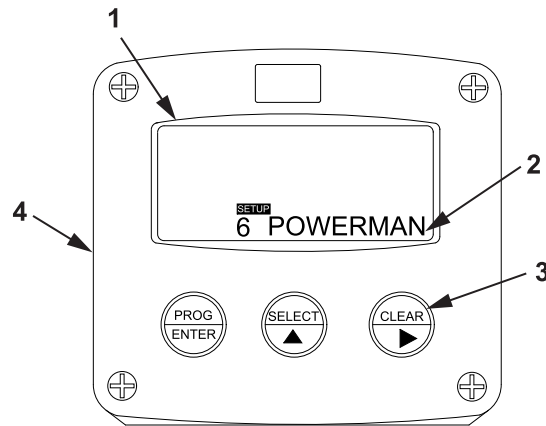


Figure 32. POWERMAN Display.

- 15. Verify that FLOWMETER (Figure 33, Item 2) appears on the display screen (Figure 33, Item 1).
- 16. Verify default settings for function group FLOWMETER (Figure 33, Item 2) as follows:
 - a. Press the SELECT key (Figure 33, Item 3) on the tank volume meter monitor (Figure 33, Item 4).

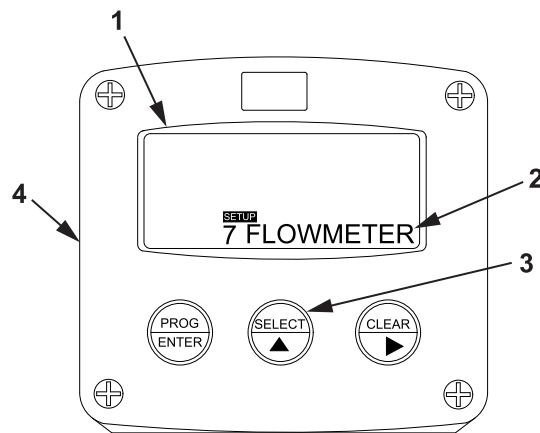


Figure 33. FLOWMETER Display.

SET UP - CONTINUED

- b. Verify that COIL LO (Figure 34, Item 2) appears on the display screen (Figure 34, Item 1). If COIL LO (Figure 34, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select COIL LO (Figure 34, Item 2).
- c. Press the SELECT key (Figure 34, Item 3) on the tank volume meter monitor (Figure 34, Item 4).

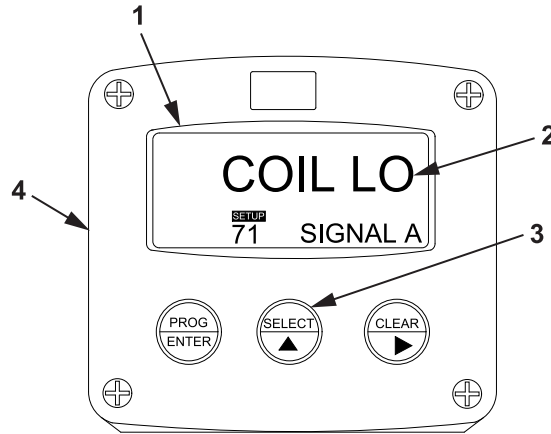


Figure 34. COIL LO Display.

- d. Verify that COIL LO (Figure 35, Item 1) appears on the display screen (Figure 35, Item 2). If COIL LO (Figure 35, Item 1) does not appear, perform the procedure to program tank volume meter monitor settings and select COIL LO (Figure 35, Item 1).
- e. Press the SELECT key (Figure 35, Item 3) on the tank volume meter monitor (Figure 35, Item 4).

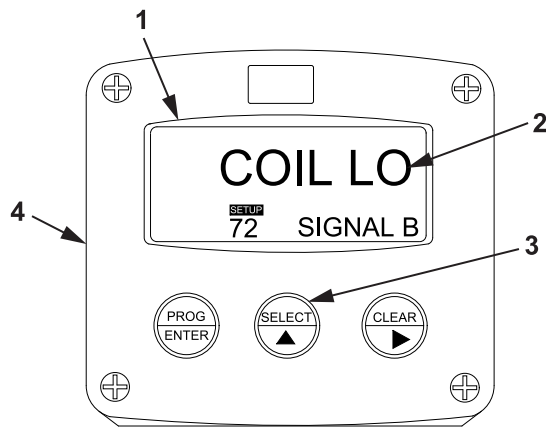


Figure 35. COIL LO Display.

SET UP - CONTINUED

- f. Verify that FLOWMETER (Figure 36, Item 2) appears on the display screen (Figure 36, Item 1).
- g. Press the CLEAR key (Figure 36, Item 3) on the tank volume meter monitor (Figure 36, Item 4).

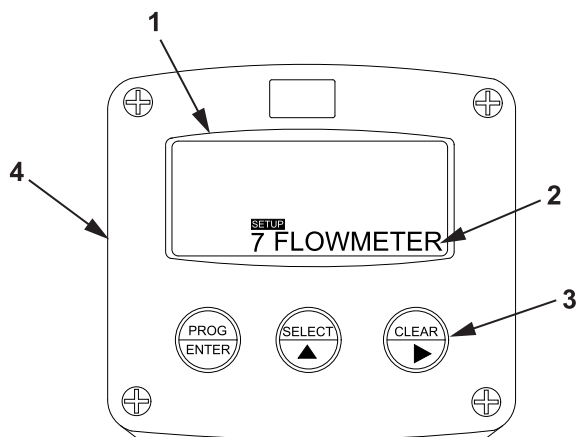


Figure 36. FLOWMETER Display.

17. Verify that ANALOG (Figure 37, Item 2) appears on the display screen (Figure 37, Item 1).
18. Verify default settings for function group ANALOG (Figure 37, Item 2) as follows:
 - a. Press the SELECT key (Figure 37, Item 3) on the tank volume meter monitor (Figure 37, Item 4).

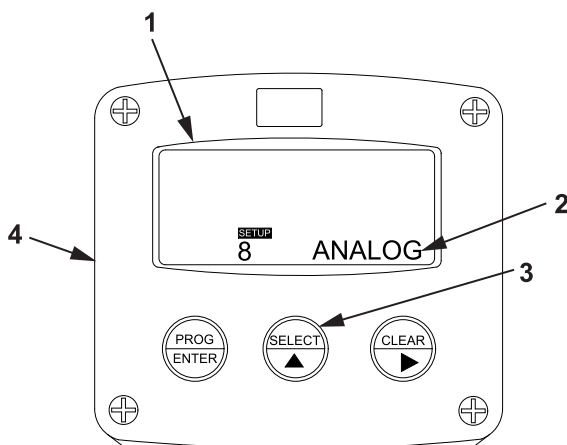


Figure 37. ANALOG Display.

SET UP - CONTINUED

- b. Verify that DISABLE (Figure 38, Item 2) appears on the display screen (Figure 38, Item 1). If DISABLE (Figure 38, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select DISABLE (Figure 38, Item 2).
- c. Press the SELECT key (Figure 38, Item 3) on the tank volume meter monitor (Figure 38, Item 4) seven times.

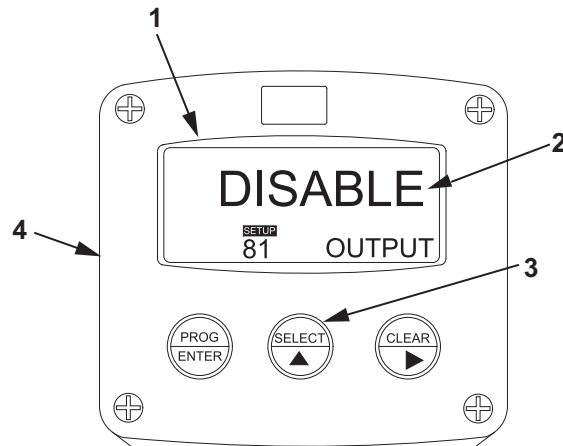


Figure 38. DISABLE Display.

- d. Verify that ANALOG (Figure 39, Item 2) appears on the display screen (Figure 39, Item 1).
- e. Press the CLEAR key (Figure 39, Item 3) on the tank volume meter monitor (Figure 39, Item 4).

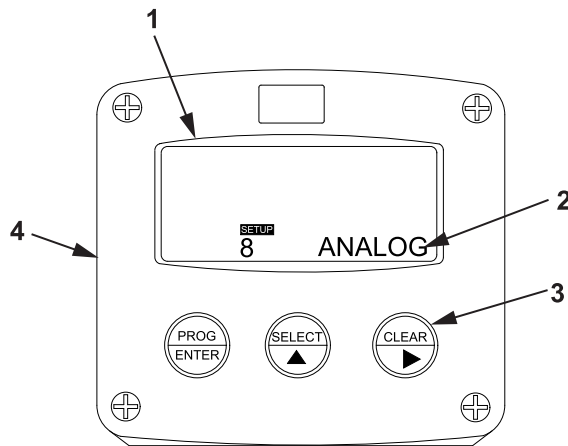


Figure 39. ANALOG Display.

SET UP - CONTINUED

19. Verify that PULSE (Figure 40, Item 2) appears on the display screen (Figure 40, Item 1) as follows:
20. Verify default settings for function group PULSE (Figure 40, Item 2) as follows:
 - a. Press the SELECT key (Figure 40, Item 3) on the tank volume meter monitor (Figure 40, Item 4).

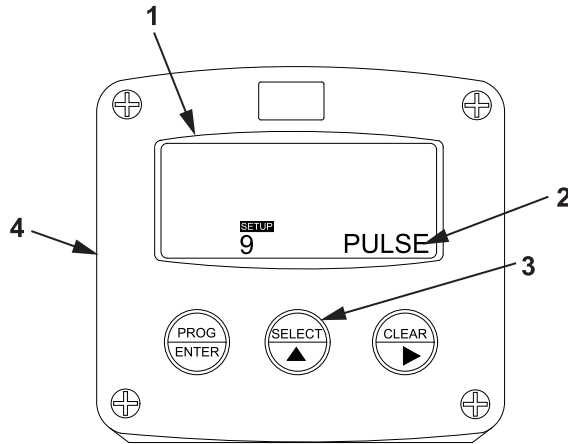


Figure 40. PULSE Display.

- b. Verify that 100 (Figure 41, Item 2) appears on the display screen (Figure 41, Item 1). If 100 (Figure 41, Item 2) does not appear, perform the procedure to program tank volume meter monitor settings and select 100 (Figure 41, Item 2).
- c. Press the SELECT key (Figure 41, Item 3) on the tank volume meter monitor (Figure 41, Item 4).

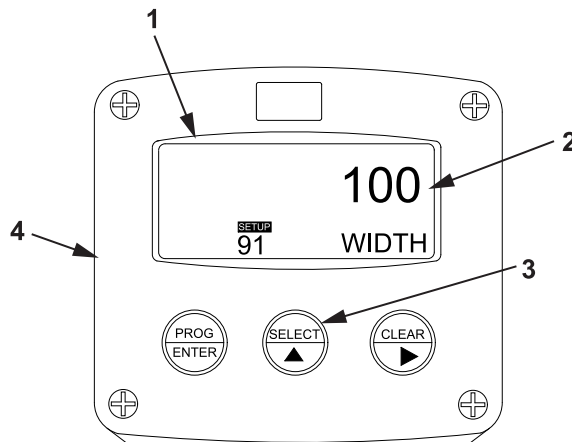


Figure 41. 100 Display.

SET UP - CONTINUED

- d. Verify that 100.0 (Figure 42, Item 2) appears on the display screen (Figure 42, Item 1). If 100.0 (Figure 42, Item 1) does not appear, perform the procedure to program tank volume meter monitor settings and select 100.0 (Figure 42, Item 2).
- e. Press the SELECT key (Figure 42, Item 3) on the tank volume meter monitor (Figure 42, Item 4).

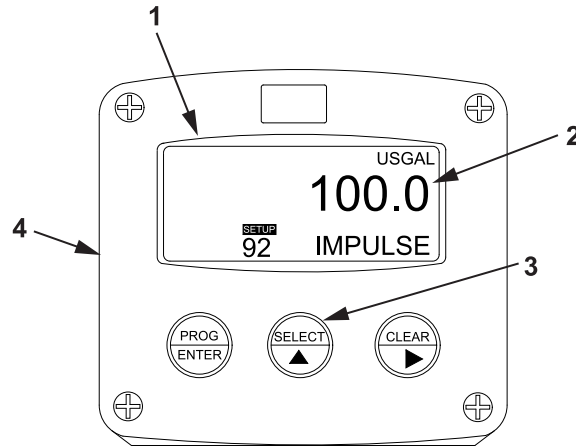


Figure 42. 100.0 Display.

- f. Verify that PULSE (Figure 43, Item 2) appears on the display screen (Figure 43, Item 1).
- g. Press the CLEAR key (Figure 43, Item 3) on the tank volume meter monitor (Figure 43, Item 4) three times.

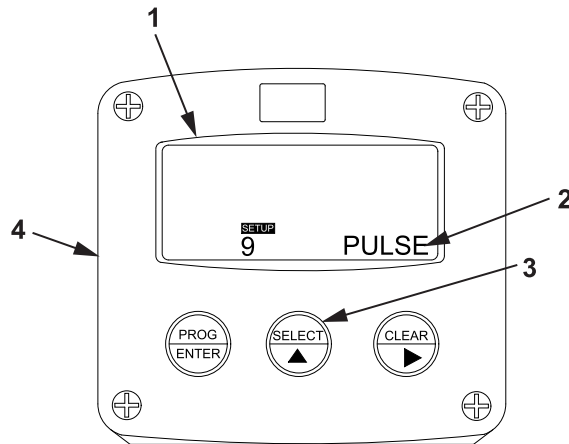


Figure 43. PULSE Display.

SET UP - CONTINUED

21. Verify that TOTAL A (Figure 44, Item 2) appears in the display screen (Figure 44, Item 1).
22. Press and hold the PROG/ENTER key (Figure 44, Item 3) on the tank volume meter monitor (Figure 44, Item 4) for 3 seconds to return to the operational screen.
23. Upon completion of programing, check display screen (Figure 44, Item 1) for proper operation.

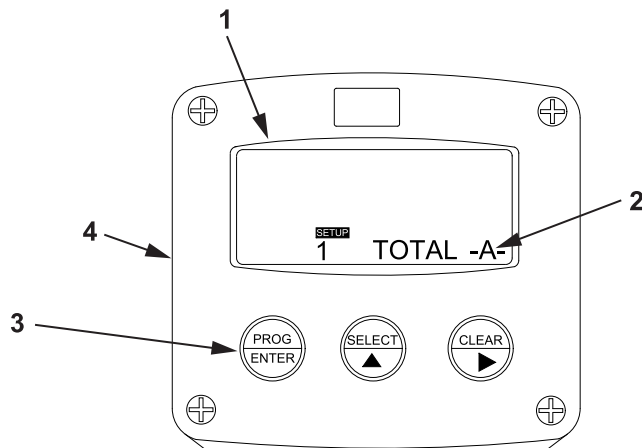


Figure 44. TOTAL A Display.

PROGRAM

NOTE

When data is altered but the PROG/ENTER key is not pressed, then the alteration can still be canceled by waiting for 20 seconds or by pressing and holding the PROG/ENTER key for 3 seconds. The configuration procedure will be left automatically and the former value will be reinstated.

1. Press the PROG/ENTER key (Figure 45, Item 6) on the tank volume meter monitor (Figure 45, Item 7).
2. Verify that PROGRAM (Figure 45, Item 3) flashes on the display screen (Figure 45, Item 1).
3. Use either the SELECT key (Figure 45, Item 4) or the CLEAR key (Figure 45, Item 5) to toggle to the desired setting (Figure 45, Item 2).
4. Press the PROG/ENTER key (Figure 45, Item 6) to select and save desired setting (Figure 45, Item 2).

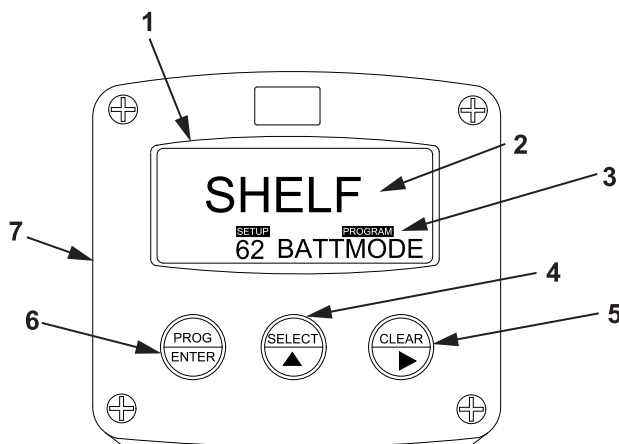


Figure 45. PROGRAM Display.

ACTIVATE SHELF MODE

NOTE

The tank volume meter monitor has two modes, operate or shelf. If shelf is selected, the unit can be stored for several years. It will not count pulses. The display will switch off, but all settings and totals are stored. In this mode, power consumption is extremely low.

1. Press and hold the PROG/ENTER key (Figure 46, Item 2) for 7–10 to enter the SETUP level. The display screen (Figure 46, Item 1) will show two arrows (Figure 46, Item 3).

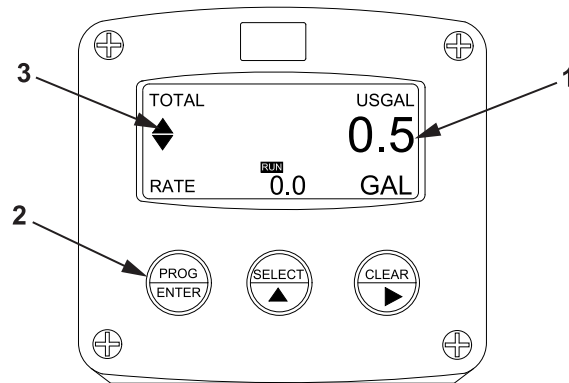


Figure 46. SETUP Display.

2. Verify that TOTAL A (Figure 47, Item 3) appears in the display screen (Figure 47, Item 1).
3. Press the CLEAR key (Figure 47, Item 2) five times.

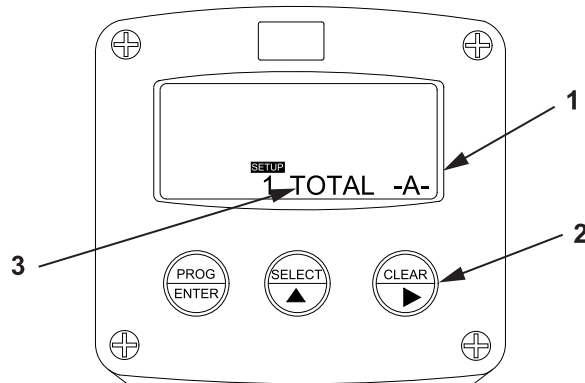


Figure 47. TOTAL A Display.

ACTIVATE SHELF MODE - CONTINUED

4. Verify that POWERMAN (Figure 48, Item 2) appears on the display screen (Figure 48, Item 1).
5. Press the SELECT key (Figure 48, Item 3) two times.

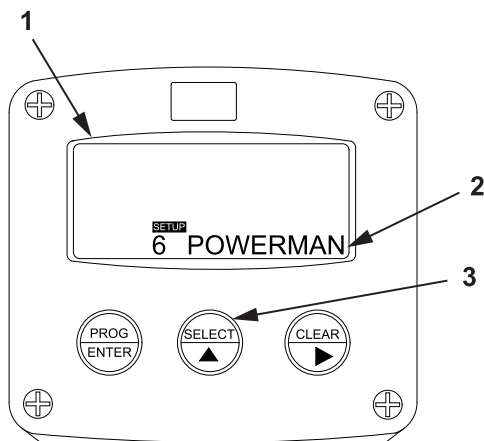


Figure 48. POWERMAN Display.

6. Verify that OPERATE (Figure 49, Item 2) appears on the display screen (Figure 49, Item 1).
7. Press the PROG/ENTER key (Figure 49, Item 6) on the tank volume meter monitor (Figure 49, Item 7).
8. Verify that PROGRAM (Figure 49, Item 3) flashes on the display screen (Figure 49, Item 1).
9. Use either the SELECT key (Figure 49, Item 4) or the CLEAR key (Figure 49, Item 5) to toggle to SHELF (Figure 50, Item 2).

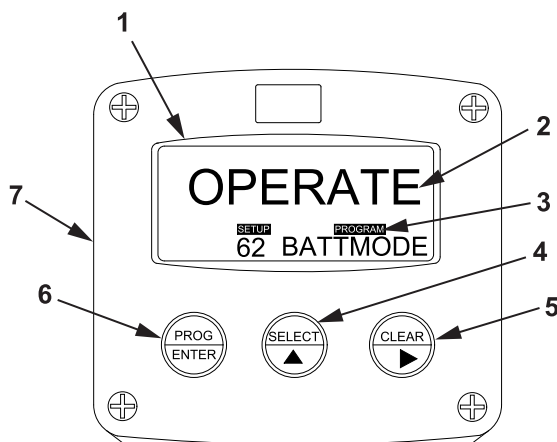


Figure 49. OPERATE Display.

ACTIVATE SHELF MODE - CONTINUED

10. Press the PROG/ENTER key (Figure 50, Item 2) to select and activate SHELF (Figure 50, Item 1).

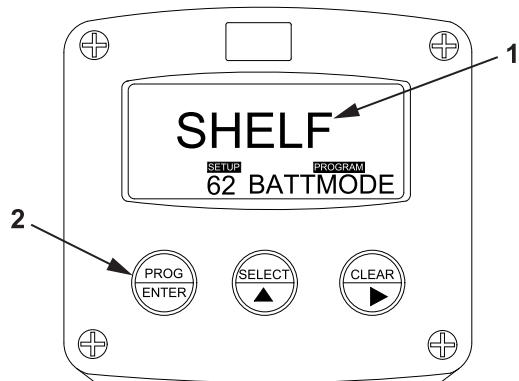


Figure 50. SHELF Display.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, TPI-4T-4A-1
SET UP FSII SAMPLE TEST KIT, PERFORM FSII ADDITIVE VOLUME PERCENT (%V) TEST

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
 Goggles, industrial (Item 24, WP 0212)
 Fuel spill control kit (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

Equipment Condition

Fuel additive injection assembly set up and operational (WP 0005).

Materials/Parts

Apron, utility (Item 2, WP 0214)
 Cloth, cleaning (Item 5, WP 0214)

OPERATING PROCEDURES - OPERATE FSII SAMPLE TEST KIT**SET UP FSII SAMPLE TEST KIT**

1. Remove test kit stand (Figure 1, Item 8) with rod (Figure 1, Item 9), ring (Figure 1, Item 10), funnel bottle (Figure 1, Item 7), two foil dishes (Figure 1, Item 6), graduated beaker (Figure 1, Item 3) and piston type pipet (Figure 1, Item 5) from test kit case (Figure 1, Item 4).
2. Remove refractometer (Figure 1, Item 2) from box in test kit case (Figure 1, Item 4).
3. Install ring (Figure 1, Item 10) on rod (Figure 1, Item 9) and secure with T-handle (Figure 1, Item 11).
4. Place assembled test kit stand (Figure 1, Item 8) on flat, level surface.
5. Remove funnel bottle cap (Figure 1, Item 1) from test kit case (Figure 1, Item 4).
6. Fill one foil dish (Figure 1, Item 6) halfway with tap or other clean water source.

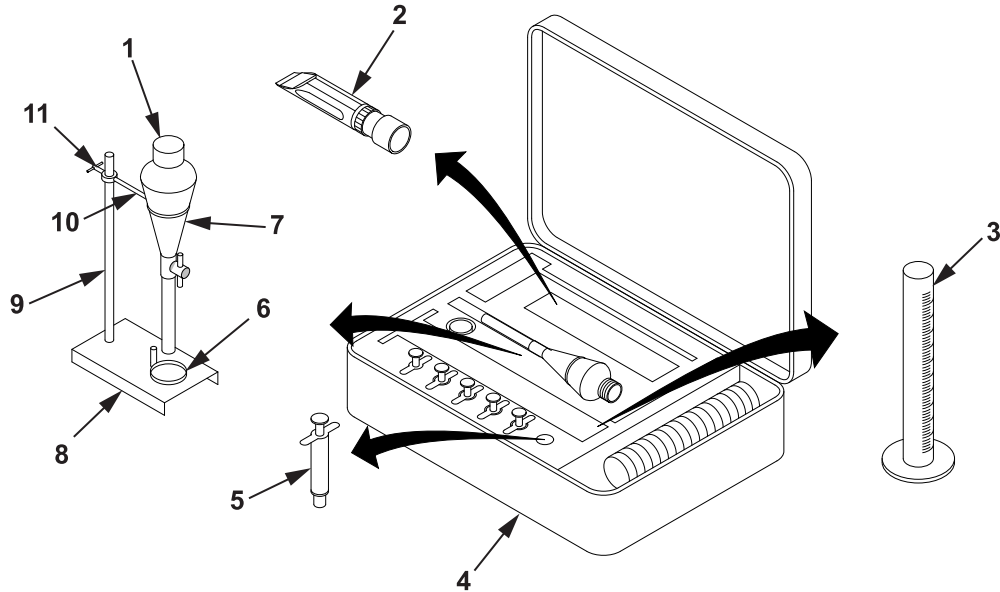


Figure 1. FSII Sample Test Kit.

SET UP FSII SAMPLE TEST KIT - CONTINUED

7. Set zero on refractometer (Figure 2, Item 2).
 - a. Open sampling cover (Figure 2, Item 1) on refractometer (Figure 2, Item 2).
 - b. Using a pencil (or other like object that will not deteriorate in fuel), dip tip into foil dish (Figure 1, Item 3) and place several drops of water on refractometer sampling window (Figure 2, Item 5).
 - c. While looking into eye piece (Figure 2, Item 4), turn rim (Figure 2, Item 3) until test scale (Figure 3, Item 2) is clear.
 - d. Locate shadow line (Figure 3, Item 5) in refractometer on test scale (Figure 3, Item 4). Proceed to step f if shadow line (Figure 3, Item 5) and zero mark (Figure 3, Item 6) are lined up or proceed to next step if not lined up.

CAUTION

Do not use excessive force in zeroing refractometer scale. Failure to comply could result in damage to equipment.

- e. Using screwdriver, adjust test scale (Figure 3, Item 4) to zero.
 - 1) Locate adjusting screw in middle of identification tag on refractometer (Figure 2, Item 2).
 - 2) Using screwdriver, gently turn adjusting screw until shadow line (Figure 3, Item 5) and zero mark (Figure 3, Item 6) of test scale (Figure 3, Item 4) are aligned.
- f. Using cleaning cloth, dry refractometer (Figure 2, Item 2).

NOTE

The drain valve is closed when the valve handle is parallel to the test kit stand base.

8. Install funnel bottle (Figure 3, Item 2) in test kit stand (Figure 3, Item 7) and verify drain valve (Figure 3, Item 3) at base of funnel bottle (Figure 3, Item 2) is closed.

PERFORM FSII ADDITIVE VOLUME PERCENT (%V) TEST**WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Use graduated beaker (Figure 3, Item 1) to obtain 200 mL (6.8 fl oz) of fuel to be tested.
2. Pour 160 mL (5.44 fl oz) of test fuel into funnel bottle (Figure 3, Item 2).

PERFORM FSII ADDITIVE VOLUME PERCENT (%V) TEST - CONTINUED

3. Using piston type pipet (Figure 3, Item 9), draw water from foil dish (Figure 3, Item 7).
4. Release exactly 2 mL (0.068 fl oz) of water into funnel bottle (Figure 3, Item 2).
5. Install funnel bottle cap (Figure 3, Item 1) on funnel bottle (Figure 3, Item 2).
6. Remove funnel bottle (Figure 3, Item 2) from test kit stand (Figure 3, Item 8) and shake for 5 minutes to combine fuel and water.
7. Place funnel bottle (Figure 3, Item 2) back in test kit stand (Figure 3, Item 8) and a clean foil dish (Figure 3, Item 7) under drain valve (Figure 3, Item 3).
8. Allow water to separate from fuel.
9. Slowly open drain valve (Figure 3, Item 3) and allow small amount of water to drain into foil dish (Figure 3, Item 7). If nothing drains into foil dish (Figure 3, Item 7), close drain valve (Figure 3, Item 3), loosen funnel bottle cap (Figure 3, Item 1) and slowly open drain valve (Figure 3, Item 3) again.
10. Close drain valve (Figure 3, Item 3) when several drops of water have drained into foil dish (Figure 3, Item 7).

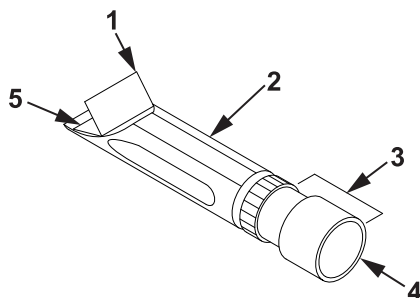


Figure 2. Refractometer Used In %v Test.

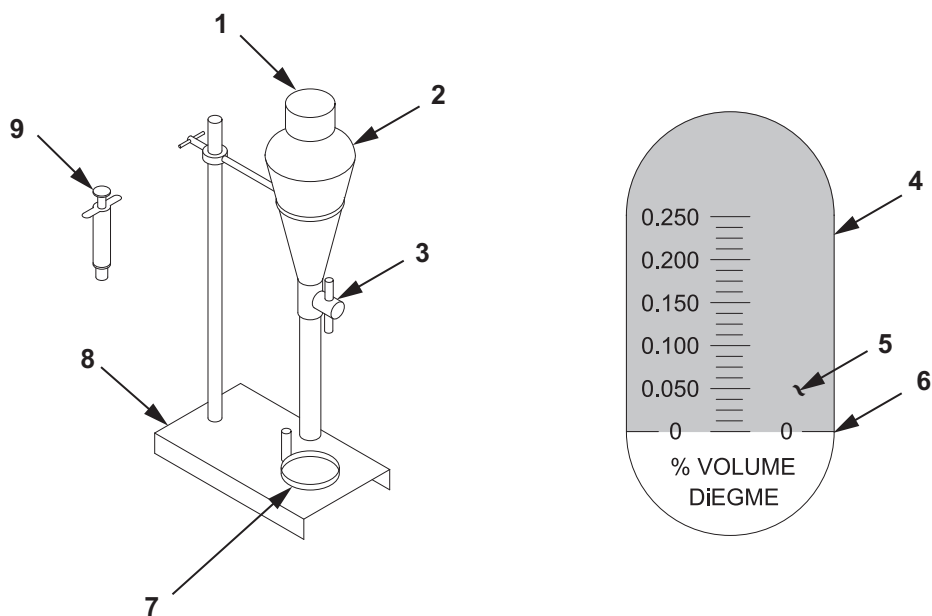


Figure 3. Test Equipment In Stand and Scale As Viewed Through Refractometer.

PERFORM FSII ADDITIVE VOLUME PERCENT (%V) TEST - CONTINUED

11. Open sampling cover (Figure 4, Item 1) on refractometer (Figure 4, Item 2).
12. Using a pencil or other like object, dip tip into foil dish (Figure 3, Item 7) and place several drops of water on refractometer sampling window (Figure 4, Item 5).
13. Close sampling cover (Figure 4, Item 1) on refractometer (Figure 4, Item 2).

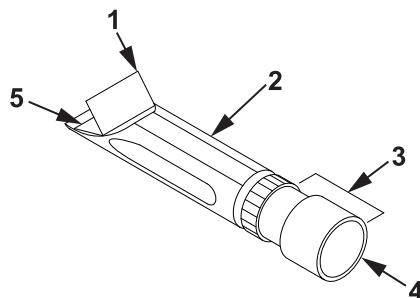


Figure 4. Refractometer Used In %v Test.

NOTE

Volume percent values on scale are actual. No calculations are required.

14. View test scale (Figure 5, Item 4) and make note of %v of additive.
15. Remove funnel bottle cap (Figure 5, Item 1) from funnel bottle (Figure 5, Item 2) and empty contents.

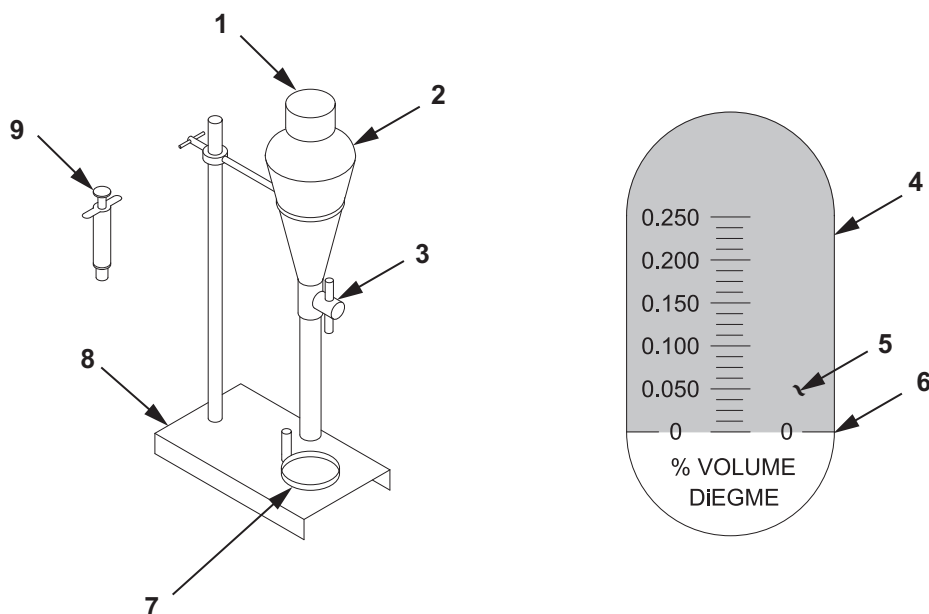


Figure 5. Test Equipment In Stand and Scale As Viewed Through Refractometer.

16. Dispose of water/fuel mixture in accordance with local procedures.
17. Using a cleaning cloth, clean and thoroughly dry test equipment.
18. Using fuel spill control kit, clean up any spilled fluid and dispose of fuel spill control kit waste per local procedures.

PERFORM FSII ADDITIVE VOLUME PERCENT (%V) TEST - CONTINUED**FSII SAMPLE TEST KIT DISASSEMBLY**

1. Loosen T-handle (Figure 6, Item 11) on ring (Figure 6, Item 10).
2. Remove ring (Figure 6, Item 10) from rod (Figure 6, Item 9).
3. Return test kit stand (Figure 6, Item 8), rod (Figure 6, Item 9), ring (Figure 6, Item 10), funnel bottle (Figure 6, Item 7), two foil dishes (Figure 6, Item 6), graduated beaker (Figure 6, Item 3), piston type pipet (Figure 6, Item 5) and funnel bottle cap (Figure 6, Item 1) to test kit case (Figure 6, Item 4).
4. Place refractometer (Figure 6, Item 2) in box and return to test kit case (Figure 6, Item 4).

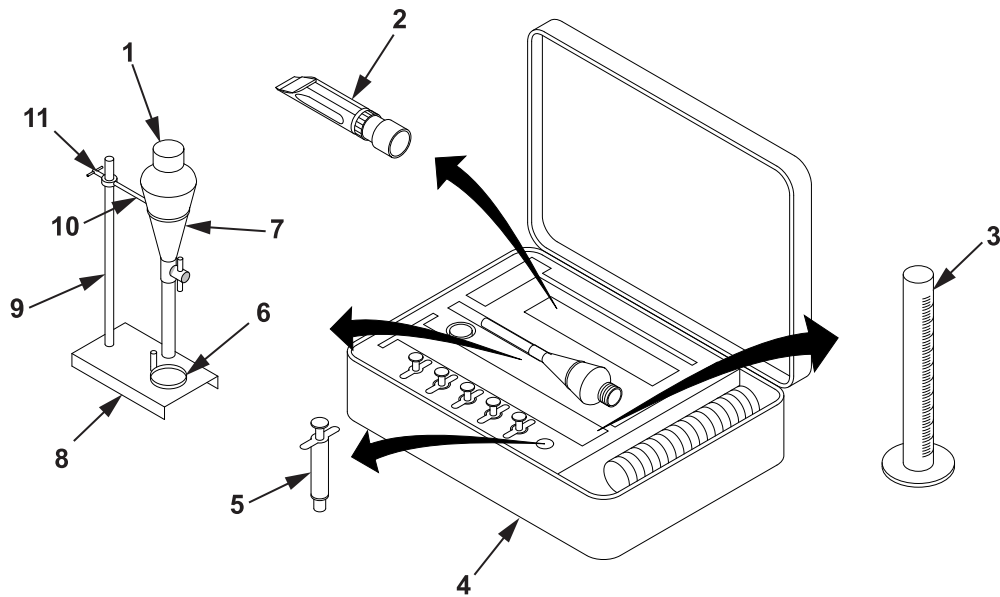


Figure 6. FSII Sample Test Kit.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
OPERATION UNDER USUAL CONDITIONS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)

Goggles, industrial (Item 24, WP 0212)

Materials/Parts

Apron, utility (Item 2, WP 0214)

Personnel Required

Petroleum Supply Specialist 92F

ReferencesTM 10-4320-372-14

PREPARATION FOR MOVEMENT — FSSP DISASSEMBLY PURGING**WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

All fuel additives must be purged from the fuel additive injection pump assemblies prior to movement or storage. Any additive left in the system for prolonged periods of storage will solidify and cause the unit to fail. Failure to comply could result in damage to the fuel additive injection assembly.

1. Prepare fuel additive injection assembly for movement.

PREPARATION FOR MOVEMENT — FSSP DISASSEMBLY PURGING - CONTINUED

NOTE

Ensure that all of the #1 valves remain closed.

2. Close the FSII, CI and SDA VALVE #1 (Figure 1, Item 1, 2, 3).

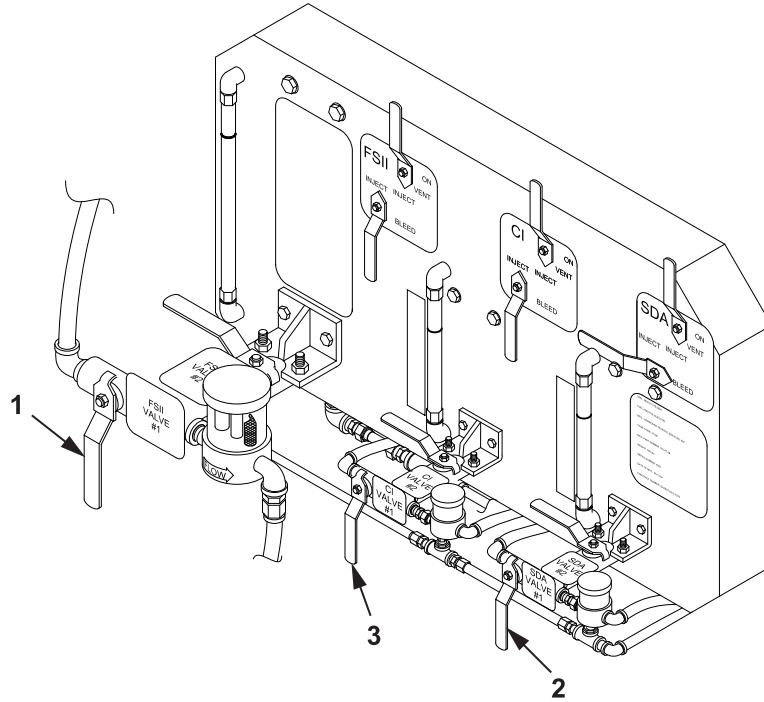


Figure 1. Fuel Additive Injection Assembly Supply Valves.

PREPARATION FOR MOVEMENT — FSSP DISASSEMBLY PURGING - CONTINUED

CAUTION

If the unit is going to be inoperative for more than one week in temperatures above freezing or more than 72 hours in temperatures below freezing, the fuel additive injection assembly must be purged. Failure to comply could result in damage to the fuel additive injection assembly.

3. Operate the FSSP to pressurize the system.
4. Place priming valve (Figure 2, Item 1) in the on position for 30 seconds.
5. Shut down the 350 GPM fuel pumping assembly per TM 10-4320-372-14.
6. Position priming valve (Figure 2, Item 1) to the off position.

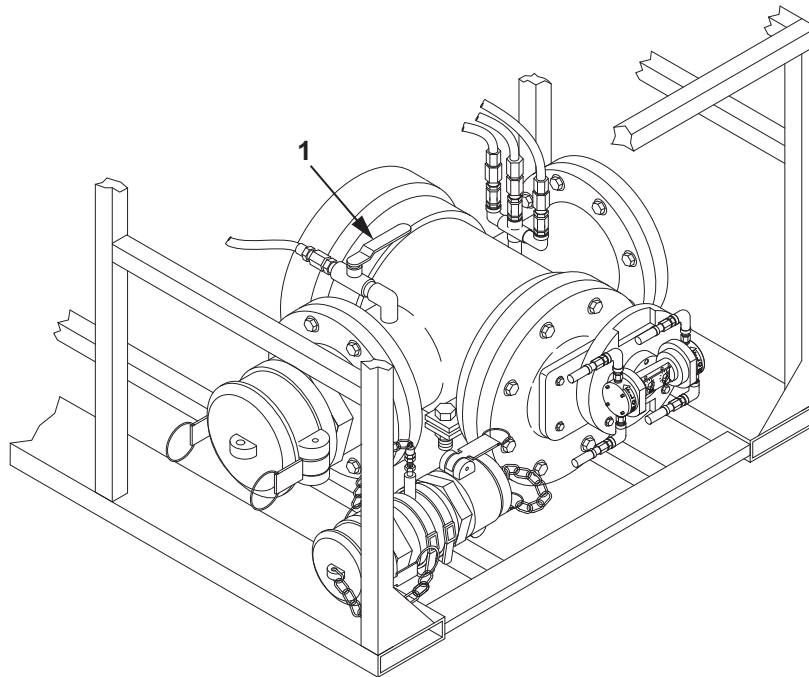


Figure 2. Fuel Additive Injection Assembly Priming Valve.

PREPARATION FOR MOVEMENT — FSSP DISASSEMBLY PURGING - CONTINUED

7. Place FSII additive shutoff valve (Figure 3, Item 3) on the FSII supply drum (Figure 3, Item 9) in the off position.

NOTE

Make certain to keep the end of the hose out of the dirt and thread the swivel fitting back into its connector on the inside of the frame.

8. Disconnect the end of 3/4 in. flex line (Figure 3, Item 8) from the FSII additive shutoff valve (Figure 3, Item 3).
9. Install the FSII 3/4 in. flex line (Figure 3, Item 7) in the frame clips (Figure 3, Item 5) on the fuel additive injection assembly frame (Figure 3, Item 4).
10. Connect end of the FSII 3/4 in. flex line (Figure 3, Item 8) to the storage connector (Figure 3, Item 6) on the fuel additive injection assembly frame (Figure 3, Item 4).
11. Upright the FSII drum and remove 2 in. vent/dryer (Figure 3, Item 1) from drum bung hole (Figure 3, Item 2). Store in additive injection assembly frame tool box.

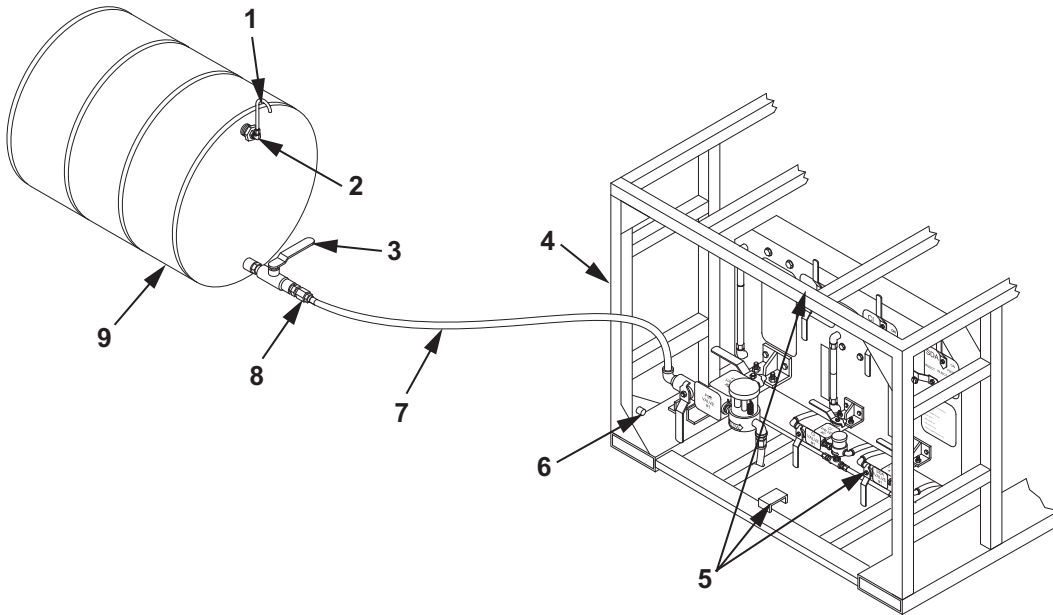


Figure 3. Injecting Additives Using Drums.

PREPARATION FOR MOVEMENT — FSSP DISASSEMBLY PURGING - CONTINUED

12. Position the bleed and vent valves (Figure 4, Item 1) to the INJECT position and position FSII VALVE #1 and #2 (Figure 4, Item 2) to the closed position for all three additives.

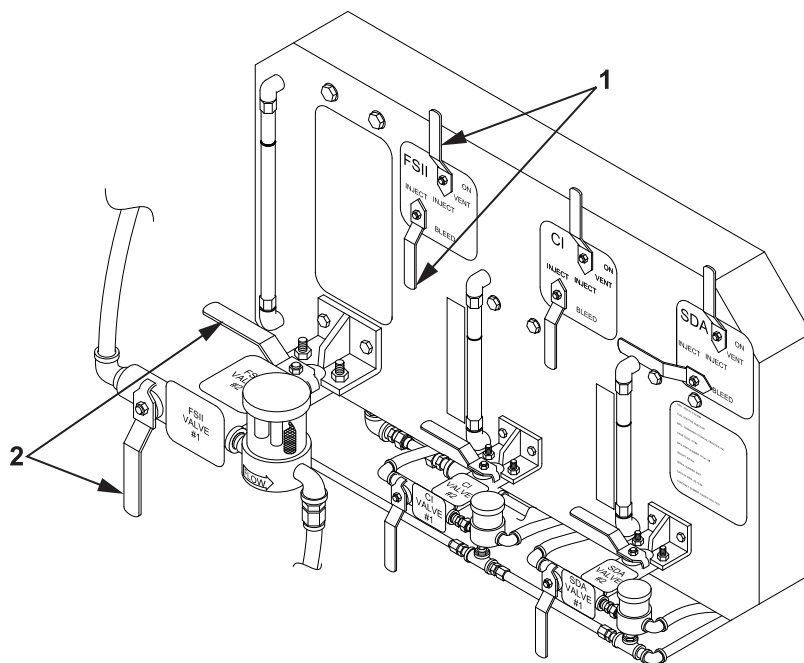


Figure 4. Fuel Additive Injection Assembly Supply Valves.

END OF TASK**DISPENSING LINE EVACUATION****WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

NOTE

Illustration callouts in the FSSP evacuation procedure reference foldout FO-4, figure FO-4, located in the rear of this manual.

1. Close gate valve (Figure FO-4, Item 1) on the dispensing side of fuel tank number 1.
2. Close gate valve (Figure FO-4, Item 2) on the dispensing side of fuel tank number 2.
3. Close gate valve (Figure FO-4, Item 3) on the dispensing side of fuel tank number 3.
4. Close gate valve (Figure FO-4, Item 4) on the dispensing side of fuel tank number 4.
5. Close gate valve (Figure FO-4, Item 5) on the dispensing side of fuel tank number 5.
6. Close gate valve (Figure FO-4, Item 6) on the dispensing side of fuel tank number 6.
7. Close the gate valve (Figure FO-4, Item 7) to the recirculation hose at the dispensing line.

DISPENSING LINE EVACUATION - CONTINUED

8. Close ball valve (Figure FO-4, Item 8) and gate valve (Figure FO-4, Item 9) at inlet to filter-separator (Figure FO-4, Item 10).
9. Close ball valve (Figure FO-4, Item 11) and gate valve (Figure FO-4, Item 12) at outlet from first filter-separator (Figure FO-4, Item 10).
10. Close gate valve (Figure FO-4, Item 13) and ball valve (Figure FO-4, Item 14) at inlet to filter-separator (Figure FO-4, Item 15).
11. Close ball valve (Figure FO-4, Item 16) and gate valve (Figure FO-4, Item 17) at outlet from filter-separator (Figure FO-4, Item 15).
12. Disconnect gate valve (Figure FO-4, Item 9) from ball valve (Figure FO-4, Item 8). Install dust plug in ball valve (Figure FO-4, Item 8).
13. Disconnect gate valve (Figure FO-4, Item 12) from ball valve (Figure FO-4, Item 11). Install dust plug in ball valve (Figure FO-4, Item 11).
14. Disconnect gate valve (Figure FO-4, Item 13) from ball valve (Figure FO-4, Item 14). Install dust plug in ball valve (Figure FO-4, Item 14).
15. Disconnect gate valve (Figure FO-4, Item 17) from ball valve (Figure FO-4, Item 16). Install dust plug in ball valve (Figure FO-4, Item 16).
16. Connect gate valve (Figure FO-4, Item 9) to gate valve (Figure FO-4, Item 12).
17. Connect gate valve (Figure FO-4, Item 13) to gate valve (Figure FO-4, Item 17).
18. Open gate valves (Figure FO-4, Item 9, 12, 13, 17).
19. Close the discharge gate valve on discharge 350 GPM fuel pumping assembly (Figure FO-4, Item 18).
20. Close the valve on the valved dry-break coupling (Figure FO-4, Item 19) at the last dispensing point where the 1 in. nozzle (Figure FO-4, Item 20) is located.

NOTE

Some trapped fuel will escape from nozzle.

21. Place a drain pan under the 1 in. nozzle (Figure FO-4, Item 20) connection to catch fuel when 1 in. nozzle (Figure FO-4, Item 20) is removed. Hold the dispensing end of the 1 in. nozzle (Figure FO-4, Item 20) down over the drain pan, close the valve on the 1 in. nozzle (Figure FO-4, Item 20) valved dry-break and separate the 1 in. nozzle (Figure FO-4, Item 20) slowly from the valved dry-break coupling (Figure FO-4, Item 19). Install cap on 1 in. nozzle (Figure FO-4, Item 20).
22. Connect the dry-break coupling (Figure FO-4, Item 19), where the 1 in. nozzle (Figure FO-4, Item 20) was located, to the tanker which will receive the fuel.
23. Open the valve on the valved dry-break coupling (Figure FO-4, Item 19).
24. Open gate valves (Figure FO-4, Item 21, 22, 23, 24, 25, 26) to dispensing points.
25. Use the procedures from the technical manual for the tanker to defuel the dispensing line.

NOTE

After the tanker has started defueling the dispensing line, the hose will start to collapse.

26. Start at a dispensing point and disconnect butterfly valve (Figure FO-4, Item 27).
27. Install the dust cap and dust plug on the butterfly valve (Figure FO-4, Item 27).
28. Install dust cap on the end of the hose (Figure FO-4, Item 28) where the butterfly valve (Figure FO-4, Item 27) was located.
29. Roll the hose (Figure FO-4, Item 28) toward the female end of the hose (Figure FO-4, Item 28).
30. Close gate valve (Figure FO-4, Item 26) at the female end of the hose (Figure FO-4, Item 28).
31. Disconnect the female end of the hose (Figure FO-4, Item 28) from gate valve (Figure FO-4, Item 26).
32. Install the dust plug in the female end of the hose (Figure FO-4, Item 28).
33. Install dust cap on gate valve (Figure FO-4, Item 26).
34. Disconnect butterfly valve (Figure FO-4, Item 29) at the second dispensing point.
35. Install the dust cap and dust plug on the butterfly valve (Figure FO-4, Item 29).

DISPENSING LINE EVACUATION - CONTINUED

36. Install dust cap on the end of the hose (Figure FO-4, Item 30) where the butterfly valve (Figure FO-4, Item 29) was located.
37. Roll the hose (Figure FO-4, Item 30) toward the female end of the hose (Figure FO-4, Item 30).
38. Close gate valve (Figure FO-4, Item 25) at the female end of the hose (Figure FO-4, Item 30).
39. Disconnect the female end of the hose (Figure FO-4, Item 30) from gate valve (Figure FO-4, Item 25).
40. Install the dust plug in the female end of the hose (Figure FO-4, Item 30).
41. Install dust cap on gate valve (Figure FO-4, Item 25).
42. Disconnect butterfly valve (Figure FO-4, Item 31) at the third dispensing point.
43. Install the dust cap and dust plug on the butterfly valve (Figure FO-4, Item 31).
44. Install dust cap on the end of the hose (Figure FO-4, Item 32) where the butterfly valve (Figure FO-4, Item 31) was located.
45. Roll the hose (Figure FO-4, Item 32) toward the female end of the hose (Figure FO-4, Item 32).
46. Close gate valve (Figure FO-4, Item 24) at the female end of the hose (Figure FO-4, Item 32).
47. Disconnect the female end of the hose (Figure FO-4, Item 32) from gate valve (Figure FO-4, Item 24).
48. Install the dust plug in the female end of the hose (Figure FO-4, Item 32).
49. Install dust cap on gate valve (Figure FO-4, Item 24).
50. Disconnect butterfly valve (Figure FO-4, Item 33) at the fourth dispensing point.
51. Install the dust cap and dust plug on the butterfly valve (Figure FO-4, Item 33).
52. Install dust cap on the end of the hose (Figure FO-4, Item 34) where the butterfly valve (Figure FO-4, Item 33) was located.
53. Roll the hose (Figure FO-4, Item 34) toward the female end of the hose (Figure FO-4, Item 34).
54. Close gate valve (Figure FO-4, Item 23) at the female end of the hose (Figure FO-4, Item 34).
55. Disconnect the female end of the hose (Figure FO-4, Item 34) from gate valve (Figure FO-4, Item 23).
56. Install the dust plug in the female end of the hose (Figure FO-4, Item 34).
57. Install dust cap on gate valve (Figure FO-4, Item 23).
58. Disconnect butterfly valve (Figure FO-4, Item 35) at the fifth dispensing point.
59. Install the dust cap and dust plug on the butterfly valve (Figure FO-4, Item 35).
60. Install dust cap on the end of the hose (Figure FO-4, Item 36) where the butterfly valve (Figure FO-4, Item 35) was located.
61. Roll the hose (Figure FO-4, Item 36) toward the female end of the hose (Figure FO-4, Item 36).
62. Close gate valve (Figure FO-4, Item 22) at the female end of the hose (Figure FO-4, Item 36).
63. Disconnect the female end of the hose (Figure FO-4, Item 36) from gate valve (Figure FO-4, Item 22).
64. Install the dust plug in the female end of the hose (Figure FO-4, Item 36).
65. Install dust cap on gate valve (Figure FO-4, Item 22).
66. Disconnect butterfly valve (Figure FO-4, Item 37) at the sixth dispensing point.
67. Install the dust cap and dust plug on the butterfly valve (Figure FO-4, Item 37).
68. Install dust cap on the end of the hose (Figure FO-4, Item 38) where the butterfly valve (Figure FO-4, Item 37) was located.
69. Roll the hose (Figure FO-4, Item 38) toward the female end of the hose (Figure FO-4, Item 38).
70. Close gate valve (Figure FO-4, Item 21) at the female end of the hose (Figure FO-4, Item 38).
71. Disconnect the female end of the hose (Figure FO-4, Item 38) from gate valve (Figure FO-4, Item 21).
72. Install the dust plug in the female end of the hose (Figure FO-4, Item 38).
73. Disconnect the discharge hose (Figure FO-4, Item 39) from the discharge valve of the discharge 350 GPM fuel pumping assembly (Figure FO-4, Item 18).
74. Install dust plug in female end of hose (Figure FO-4, Item 39).
75. Install dust cap on gate valve (Figure FO-4, Item 21).
76. Install dust cap on discharge port of the discharge 350 GPM fuel pumping assembly (Figure FO-4, Item 18).
77. Roll hose (Figure FO-4, Item 39) from the female end toward the male end.

DISPENSING LINE EVACUATION - CONTINUED

78. At the male end of the hose (Figure FO-4, Item 39), lift the hose coupling and disconnect hose (Figure FO-4, Item 39) from next hose (Figure FO-4, Item 40).
79. Install the dust cap on the male end of the hose (Figure FO-4, Item 39) and install the dust plug in the female end of the next hose (Figure FO-4, Item 40).
80. Roll hose (Figure FO-4, Item 40) from female end toward male end, lift at the tee (Figure FO-4, Item 41) and disconnect hose (Figure FO-4, Item 40) from tee assembly (Figure FO-4, Item 41).
81. Install the dust cap on the male end of the hose (Figure FO-4, Item 40).
82. Install dust plug in tee assembly (Figure FO-4, Item 41).
83. Disconnect hose (Figure FO-4, Item 42) from one side of the tee assembly (Figure FO-4, Item 41) and install dust plug in the female end of the hose (Figure FO-4, Item 42).
84. Install dust cap on tee assembly (Figure FO-4, Item 41) where hose (Figure FO-4, Item 42) was disconnected.
85. Roll hose (Figure FO-4, Item 42) to the gate valve (Figure FO-4, Item 13).
86. Close gate valves (Figure FO-4, Item 13, 17).
87. Disconnect hose (Figure FO-4, Item 42) from gate valve (Figure FO-4, Item 13) and install the dust cap on the male end of the hose (Figure FO-4, Item 42).
88. Remove gate valve (Figure FO-4, Item 13) and install dust plug and dust cap in gate valve (Figure FO-4, Item 13).
89. Disconnect hose (Figure FO-4, Item 43) from one side of the tee assembly (Figure FO-4, Item 41) and install dust plug in the female end of the hose (Figure FO-4, Item 43).
90. Install dust cap on tee assembly (Figure FO-4, Item 41) where hose (Figure FO-4, Item 43) was disconnected.
91. Roll hose (Figure FO-4, Item 43) to gate valve (Figure FO-4, Item 9).
92. Close gate valves (Figure FO-4, Item 9, 12).
93. Disconnect hose (Figure FO-4, Item 43) from gate valve (Figure FO-4, Item 9) and install the dust cap on the male end of the hose (Figure FO-4, Item 43).
94. Remove gate valve (Figure FO-4, Item 9) and install dust plug and dust cap in gate valve (Figure FO-4, Item 9).
95. Lift gate valve (Figure FO-4, Item 12) and disconnect gate valve (Figure FO-4, Item 12) from hose (Figure FO-4, Item 44).
96. Install dust plug in female end of hose (Figure FO-4, Item 44).
97. Remove gate valve (Figure FO-4, Item 12) and install dust plug and dust cap in gate valve (Figure FO-4, Item 12).
98. Roll hose (Figure FO-4, Item 44) to tee assembly (Figure FO-4, Item 45).
99. Disconnect hose (Figure FO-4, Item 44) from tee assembly (Figure FO-4, Item 45).
100. Install dust cap on male end of hose (Figure FO-4, Item 44) and dust plug in tee assembly (Figure FO-4, Item 45).
101. Lift gate valve (Figure FO-4, Item 17) disconnect gate valve (Figure FO-4, Item 17) from hose (Figure FO-4, Item 46).
102. Install dust plug in female end of hose (Figure FO-4, Item 46).
103. Remove gate valve (Figure FO-4, Item 17) and install dust plug and dust cap in gate valve (Figure FO-4, Item 17).
104. Roll hose (Figure FO-4, Item 46) to tee assembly (Figure FO-4, Item 45).
105. Disconnect hose (Figure FO-4, Item 46) from tee assembly (Figure FO-4, Item 45).
106. Install dust cap on male end of hose (Figure FO-4, Item 46) and dust plug in tee assembly (Figure FO-4, Item 45).
107. Lift tee assembly (Figure FO-4, Item 45) and disconnect hose (Figure FO-4, Item 47) from tee assembly (Figure FO-4, Item 45).
108. Install dust plug in female end of hose (Figure FO-4, Item 47) and dust cap on tee (Figure FO-4, Item 45).
109. Roll hose (Figure FO-4, Item 47) from female end to male end.

DISPENSING LINE EVACUATION - CONTINUED

110. Lifting at hose coupling, disconnect hose (Figure FO-4, Item 47) from next hose (Figure FO-4, Item 48).
111. Install dust plug and dust cap on hoses (Figure FO-4, Item 47, 48).
112. Roll hose (Figure FO-4, Item 48) from female end to male end.
113. Lifting tee assembly (Figure FO-4, Item 49) and gate valve (Figure FO-4, Item 50), disconnect hose (Figure FO-4, Item 48) from tee assembly (Figure FO-4, Item 49).
114. Install dust plug in hose (Figure FO-4, Item 48).
115. Lifting tee assembly (Figure FO-4, Item 49) and gate valve (Figure FO-4, Item 50), disconnect hose (Figure FO-4, Item 51) from gate valve (Figure FO-4, Item 50).
116. Install dust plug in hose (Figure FO-4, Item 51) and dust cap on gate valve (Figure FO-4, Item 50).
117. Remove tee assembly (Figure FO-4, Item 49) from gate valve (Figure FO-4, Item 7).
118. Remove tee assembly (Figure FO-4, Item 49) from gate valve (Figure FO-4, Item 50).
119. Install dust caps and dust plugs in tee assembly (Figure FO-4, Item 49) and gate valves (Figure FO-4, Item 7, 50).
120. Roll hose (Figure FO-4, Item 51) to flowmeter (Figure FO-4, Item 52) and disconnect hose (Figure FO-4, Item 51) at flowmeter (Figure FO-4, Item 52) inlet.
121. Install dust cap and dust plug in flowmeter (Figure FO-4, Item 52) inlet and hose (Figure FO-4, Item 51).
122. Disconnect hose (Figure FO-4, Item 53) at flowmeter (Figure FO-4, Item 52) outlet. Roll hose (Figure FO-4, Item 53) to gate valve (Figure FO-4, Item 54).
123. Install dust cap and dust plug in flowmeter (Figure FO-4, Item 52) outlet and hose (Figure FO-4, Item 53).
124. Close gate valve (Figure FO-4, Item 54) and disconnect hose (Figure FO-4, Item 53) from gate valve (Figure FO-4, Item 54).
125. Install dust cap and dust plug in hose (Figure FO-4, Item 53) and gate valve (Figure FO-4, Item 54).
126. Disconnect gate valve (Figure FO-4, Item 54) from tee assembly (Figure FO-4, Item 55) and install dust plug and dust cap.
127. Lift tee assembly (Figure FO-4, Item 55) and disconnect hose (Figure FO-4, Item 56).
128. Install dust plug and dust cap in hose (Figure FO-4, Item 56) and tee assembly (Figure FO-4, Item 55).
129. Roll hose (Figure FO-4, Item 56) toward male end.
130. Roll each hose (Figure FO-4, Item 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70) female end to male end throughout the dispensing line to the 4 in. camlock X 2 in. dry-break adapter (Figure FO-4, Item 71) removing tee assemblies (Figure FO-4, Item 72, 73, 74, 75, 76) and installing dust caps and dust plugs as each component is disconnected.
131. Disconnect gate valve (Figure FO-4, Item 77) from reducer (Figure FO-4, Item 78) and tee assembly (Figure FO-4, Item 76).
132. Install dust plug and dust cap on gate valve (Figure FO-4, Item 77, 76).
133. Disconnect reducer (Figure FO-4, Item 78) from 4 in. camlock X 2 in. dry-break adapter (Figure FO-4, Item 71).
134. Install dust cap and dust plug on reducer (Figure FO-4, Item 78).
135. Install dust plug in female end of 4 in. camlock X 2 in. dry-break adapter (Figure FO-4, Item 71).
136. Close valve on the 4 in. camlock X 2 in. dry-break adapter (Figure FO-4, Item 71) and hose (Figure FO-4, Item 79).
137. Disconnect hose (Figure FO-4, Item 79) from 4 in. camlock X 2 in. dry-break adapter (Figure FO-4, Item 71) and roll hose (Figure FO-4, Item 79) toward hose (Figure FO-4, Item 80).
138. Disconnect hose (Figure FO-4, Item 79) from next section of hose (Figure FO-4, Item 80) and install dust caps on hoses (Figure FO-4, Item 79, 80).
139. Roll hose (Figure FO-4, Item 80) toward valved dry-break tee assembly (Figure FO-4, Item 81).

DISPENSING LINE EVACUATION - CONTINUED

140. Close the valve on the valved dry-break tee assembly (Figure FO-4, Item 81) where the hose (Figure FO-4, Item 80) connects and disconnect hose (Figure FO-4, Item 80) from valved dry-break tee assembly (Figure FO-4, Item 81). Install dust caps on hose (Figure FO-4, Item 80) and tee assembly (Figure FO-4, Item 81).

NOTE

Some trapped fuel will escape from nozzle.

141. Place a drain pan under the 1.5 in. nozzle (Figure FO-4, Item 82) connection to catch fuel when 1.5 in. nozzle (Figure FO-4, Item 82) is removed. Hold the dispensing end of the 1.5 in. nozzle (Figure FO-4, Item 82) down over the drain pan, close the valve on the valved dry-break coupling (Figure FO-4, Item 83) and separate the 1.5 in. nozzle (Figure FO-4, Item 82) slowly from the valved dry-break coupling (Figure FO-4, Item 83).
142. Roll hose (Figure FO-4, Item 84) toward the valved dry-break tee assembly (Figure FO-4, Item 81), close the valve on the valved dry-break tee assembly (Figure FO-4, Item 81) and the hose (Figure FO-4, Item 84) where the hose (Figure FO-4, Item 84) connects and disconnect hose (Figure FO-4, Item 84) from valved dry-break tee assembly (Figure FO-4, Item 81).
143. Close the valve on the valved dry-break tee assembly (Figure FO-4, Item 81) and hose (Figure FO-4, Item 85) where the hose (Figure FO-4, Item 85) connects and disconnect hose (Figure FO-4, Item 85) from valved dry-break tee assembly (Figure FO-4, Item 81).
144. Roll hose (Figure FO-4, Item 85) toward valved dry-break tee assembly (Figure FO-4, Item 86).
145. At hose coupling of hoses (Figure FO-4, Item 85, 87), close both valves on the hoses (Figure FO-4, Item 85, 87). Disconnect hoses (Figure FO-4, Item 85, 87).
146. Roll hose (Figure FO-4, Item 87) toward valved dry-break tee assembly (Figure FO-4, Item 86).
147. At last valved dry-break tee assembly (Figure FO-4, Item 86) on the dispensing line, close valve on valved dry-break tee assembly (Figure FO-4, Item 86) and hose (Figure FO-4, Item 87) valved dry-break. Disconnect hose (Figure FO-4, Item 87) from valved dry-break tee assembly (Figure FO-4, Item 86).
148. Close valve on valved dry-break tee assembly (Figure FO-4, Item 86) and hose (Figure FO-4, Item 88). Roll hose (Figure FO-4, Item 88) from valved dry-break tee assembly (Figure FO-4, Item 86) toward end of hose connected to tanker.
149. Disconnect hose (Figure FO-4, Item 88) from tanker.

END OF TASK**SUCTION LINE EVACUATION****WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Connect a 2 in. valved dry-break hose to the valved dry-break adapter (Figure FO-4, Item 89) at the end of the suction line.
2. Connect the hose to a tanker. Use the technical manual defueling instructions for the tanker to start evacuation of the suction line.
3. Close suction manifold gate valve on discharge 350 GPM fuel pumping assembly (Figure FO-4, Item 18).

SUCTION LINE EVACUATION - CONTINUED

4. Disconnect male end of suction hose (Figure FO-4, Item 90) from suction manifold of the discharge 350 GPM fuel pumping assembly (Figure FO-4, Item 18). Install dust cap on hose (Figure FO-4, Item 90).
5. Lift hose (Figure FO-4, Item 90), draining remaining fuel toward female end of hose (Figure FO-4, Item 90).
6. Lift at hose coupling and disconnect hose (Figure FO-4, Item 90) at coupling of hose (Figure FO-4, Item 91). Install dust plug on hose (Figure FO-4, Item 90).
7. Install dust cap on hose (Figure FO-4, Item 91).
8. Lift hose (Figure FO-4, Item 91), draining remaining fuel toward female end of hose (Figure FO-4, Item 91).
9. Lift at hose coupling and disconnect hose (Figure FO-4, Item 91) from gate valve (Figure FO-4, Item 92). Install dust plug on hose (Figure FO-4, Item 91).
10. Close gate valve (Figure FO-4, Item 92) at tee assembly (Figure FO-4, Item 93) on pumping side of fuel tank number 6.
11. Lift tee assembly (Figure FO-4, Item 93) and disconnect hose (Figure FO-4, Item 94) from tee assembly (Figure FO-4, Item 93). Install dust cap on male end of hose (Figure FO-4, Item 94).
12. Disconnect tee assembly (Figure FO-4, Item 93) from gate valve (Figure FO-4, Item 6) and gate valve (Figure FO-4, Item 92). Install dust caps and dust plugs on tee assembly (Figure FO-4, Item 93) and gate valve (Figure FO-4, Item 92).
13. Lift male end of hose (Figure FO-4, Item 94) draining fuel remaining in hose toward the female end of the hoses (Figure FO-4, Item 95, 96, 97, 98) disconnecting hoses (Figure FO-4, Item 95, 96, 97, 98) to the next tee assembly (Figure FO-4, Item 99). Install dust plugs and dust caps as each hose (Figure FO-4, Item 95, 96, 97, 98) is disconnected.
14. Lift tee assembly (Figure FO-4, Item 99) at fuel tank number 5 and disconnect gate valve (Figure FO-4, Item 5) from tee assembly (Figure FO-4, Item 99).
15. Disconnect hose (Figure FO-4, Item 100) from tee assembly (Figure FO-4, Item 99). Install dust cap on male end of hose (Figure FO-4, Item 100) and dust plugs and dust caps on tee assembly (Figure FO-4, Item 99).
16. Lift male end of each hose (Figure FO-4, Item 100, 101, 102, 103, 104, 105), draining fuel remaining in hoses (Figure FO-4, Item 100, 101, 102, 103, 104, 105) toward the female end of the hoses (Figure FO-4, Item 100, 101, 102, 103, 104, 105), disconnecting hoses (Figure FO-4, Item 100, 101, 102, 103, 104, 105) to the next tee assembly (Figure FO-4, Item 106). Install dust plugs and dust caps as each hose (Figure FO-4, Item 100, 101, 102, 103, 104, 105) is disconnected.
17. Lift tee assembly (Figure FO-4, Item 106) and disconnect gate valve (Figure FO-4, Item 4) at fuel tank number 4 from tee assembly (Figure FO-4, Item 106). Install dust cap and plug on gate valve (Figure FO-4, Item 4).
18. Lift tee assembly (Figure FO-4, Item 106) and disconnect hose (Figure FO-4, Item 107) from tee assembly (Figure FO-4, Item 106). Install dust cap on male end of hose (Figure FO-4, Item 107) and install dust caps and dust plugs on tee assembly (Figure FO-4, Item 106).
19. Lift male end of each hose (Figure FO-4, Item 107, 108, 109, 110, 111, 112), draining fuel remaining in line toward the female end of the hoses (Figure FO-4, Item 107, 108, 109, 110, 111, 112) and disconnecting hoses (Figure FO-4, Item 107, 108, 109, 110, 111, 112) to the next tee assembly (Figure FO-4, Item 113). Install dust plugs and dust caps as each hose (Figure FO-4, Item 107, 108, 109, 110, 111, 112) is disconnected.
20. Lift tee assembly (Figure FO-4, Item 113) and disconnect gate valve (Figure FO-4, Item 3) at fuel tank number 3 from tee assembly (Figure FO-4, Item 113).
21. Disconnect hose (Figure FO-4, Item 114) from tee assembly (Figure FO-4, Item 113). Install dust cap on male end of hose (Figure FO-4, Item 114) and dust plugs and dust caps on tee assembly (Figure FO-4, Item 113).
22. Lift male end of hose (Figure FO-4, Item 114, 115, 116, 117, 118, 119), draining fuel remaining in line toward the female end of the hoses (Figure FO-4, Item 114, 115, 116, 117, 118, 119) and disconnecting hoses (Figure FO-4, Item 114, 115, 116, 117, 118, 119) to the next tee assembly (Figure FO-4, Item 120). Install dust plugs and dust caps as each hose (Figure FO-4, Item 114, 115, 116, 117, 118, 119) is disconnected.

SUCTION LINE EVACUATION - CONTINUED

23. Lift tee assembly (Figure FO-4, Item 120) and disconnect gate valve (Figure FO-4, Item 2) at fuel tank number 2 from tee assembly (Figure FO-4, Item 120).
24. Disconnect hose (Figure FO-4, Item 121) from tee assembly (Figure FO-4, Item 120). Install dust cap on male end of hose (Figure FO-4, Item 121) and dust plugs and dust caps on tee assembly (Figure FO-4, Item 120).
25. Lift male end of hoses (Figure FO-4, Item 121, 122, 123, 124, 125, 126), draining fuel remaining in line toward the female end of the hoses (Figure FO-4, Item 121, 122, 123, 124, 125, 126) and disconnecting hoses (Figure FO-4, Item 121, 122, 123, 124, 125, 126) to the next tee assembly (Figure FO-4, Item 127). Install dust plugs and dust caps as each hose (Figure FO-4, Item 121, 122, 123, 124, 125, 126) is disconnected.
26. Lift tee assembly (Figure FO-4, Item 127) and disconnect gate valve (Figure FO-4, Item 1) at fuel tank number 1 from tee assembly (Figure FO-4, Item 127).
27. Close valves on valved dry-break adapter (Figure FO-4, Item 89) and 2 in. valved dry-break hose. Disconnect hose.
28. Stop defueling procedure per tanker technical manual instructions and disconnect hose from tanker.
29. Disconnect tee assembly (Figure FO-4, Item 127) from valved dry-break adapter (Figure FO-4, Item 89). Install dust caps and dust plug on tee assembly (Figure FO-4, Item 127) and valved dry-break adapter (Figure FO-4, Item 89).

NOTE

Start disconnecting fuel hoses and tank volume meters at tank number 1.

30. At gate valve (Figure FO-4, Item 1) for fuel tank, lift gate valve (Figure FO-4, Item 1), draining fuel toward fuel tank.
31. Disconnect gate valve (Figure FO-4, Item 1) from hose (Figure FO-4, Item 128). Install dust plug in hose (Figure FO-4, Item 128) and dust cap and dust plug in gate valve (Figure FO-4, Item 1).
32. Lift hose (Figure FO-4, Item 128) toward tank volume meter (Figure FO-4, Item 129), draining fuel from hose (Figure FO-4, Item 128).
33. Disconnect hose (Figure FO-4, Item 128) from tank volume meter (Figure FO-4, Item 129). Install dust cap on hose (Figure FO-4, Item 128).
34. Lift tank volume meter (Figure FO-4, Item 129) and disconnect hose (Figure FO-4, Item 130) from tank volume meter (Figure FO-4, Item 129). Install dust plug in hose (Figure FO-4, Item 130) and dust plug and dust cap on tank volume meter (Figure FO-4, Item 129).
35. Lift hose (Figure FO-4, Item 130) and drain fuel in hose (Figure FO-4, Item 130) into fuel tank. Disconnect hose (Figure FO-4, Item 130) from tank elbow (Figure FO-4, Item 131). Install dust plug in tank elbow (Figure FO-4, Item 131) and dust cap on hose (Figure FO-4, Item 130).
36. Repeat steps 30 through 35 for fuel tanks 2 through 6.

RECEIVING LINE EVACUATION**WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

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1. Connect a 2 in. X 50 ft valved dry-break coupling hose to the 4 in. X 2 in. valved dry-break adapter (Figure FO-4, Item 132) at the end of the receiving line.
2. Close gate valve (Figure FO-4, Item 133) on the receipt side of fuel tank 1.

RECEIVING LINE EVACUATION - CONTINUED

3. Close gate valve (Figure FO-4, Item 134) on the receipt side of fuel tank 2.
4. Close gate valve (Figure FO-4, Item 135) on the receipt side of fuel tank 3.
5. Close gate valve (Figure FO-4, Item 136) on the receipt side of fuel tank 4.
6. Close gate valve (Figure FO-4, Item 137) on the receipt side of fuel tank 5.
7. Close gate valve (Figure FO-4, Item 138) on the receipt side of fuel tank 6.
8. Open gate valve (Figure FO-4, Item 139).
9. Open gate valve (Figure FO-4, Item 140).
10. Open gate valve (Figure FO-4, Item 141).
11. Open gate valve (Figure FO-4, Item 142).
12. Open gate valve (Figure FO-4, Item 143).
13. Open gate valve (Figure FO-4, Item 144).
14. Close 4 in. ball valve (Figure FO-4, Item 145) and gate valve (Figure FO-4, Item 146) on the input side of the fuel additive injection assembly (Figure FO-4, Item 147).
15. Close 4 in. ball valve (Figure FO-4, Item 148) and gate valve (Figure FO-4, Item 149) on the output side of the fuel additive injection assembly (Figure FO-4, Item 147).
16. Disconnect the 4 in. ball valve (Figure FO-4, Item 145) from the gate valve (Figure FO-4, Item 146) on the input side of the fuel additive injection assembly (Figure FO-4, Item 147).
17. Disconnect the 4 in. ball valve (Figure FO-4, Item 148) from the gate valve (Figure FO-4, Item 149) on the output side of the fuel additive injection assembly (Figure FO-4, Item 147).
18. Install dust caps and dust plugs on fuel additive injection assembly (Figure FO-4, Item 147), gate valves (Figure FO-4, Item 146,149) and ball valves (Figure FO-4, Item 145, 148).
19. Using technical manual procedures for tanker, start evacuating the receiving line.
20. At the receiving manifold, lift hose (Figure FO-4, Item 150) and disconnect butterfly valve (Figure FO-4, Item 151). Install dust caps and plugs for butterfly valve (Figure FO-4, Item 151).
21. Lift hose (Figure FO-4, Item 150), draining fuel from the hose (Figure FO-4, Item 150) to the next hose (Figure FO4, Item 152). Disconnect hose (Figure FO-4, Item 150) and install dust plugs and dust caps in hose (Figure FO4, Item 150).
22. Continue lifting, draining and disconnecting hoses (Figure FO-4, Item 152, 153, 154, 155, 156, 157, 158, 159, 160) until all hoses (Figure FO-4, Item 152, 153, 154, 155, 156, 157, 158, 159, 160) are disconnected, dust caps and dust plugs.
23. Install dust cap on end of tee assembly (Figure FO-4, Item 161).
24. Lift hose (Figure FO-4, Item 162) and disconnect butterfly valve (Figure FO-4, Item 163). Install dust caps and plugs on butterfly valve (Figure FO-4, Item 163).
25. Lift hose (Figure FO-4, Item 162), draining fuel from the hose (Figure FO-4, Item 162) to the next hose (Figure FO4, Item 164). Disconnect hose (Figure FO-4, Item 162) and install dust plugs and dust caps in hose (Figure FO4, Item 162).
26. Continue lifting, draining and disconnecting hoses (Figure FO-4, Item 164, 165, 166, 167, 168, 169, 170, 171, 172) until all hoses (Figure FO-4, Item 164, 165, 166, 167, 168, 169, 170, 171, 172) are disconnected, dust caps, and dust plugs are installed.
27. Install dust cap on end of tee assembly (Figure FO-4, Item 173).
28. At the receiving manifold, lift hose (Figure FO-4, Item 174) and disconnect butterfly valve (Figure FO-4, Item 175). Install dust caps and plugs on butterfly valve (Figure FO-4, Item 175).
29. Lift hose (Figure FO-4, Item 174), draining fuel from the hose (Figure FO-4, Item 174) to the next hose (Figure FO4, Item 176). Disconnect hose (Figure FO-4, Item 174) and install dust plugs and dust caps in hose (Figure FO-4, Item 174).
30. Lift hose (Figure FO-4, Item 176), draining fuel from the hose (Figure FO-4, Item 176) to the tee assembly (Figure FO-4, Item 161). Disconnect hose (Figure FO-4, Item 176) and install dust plugs and dust caps in hose (Figure FO-4, Item 176).
31. Install dust plug on end of tee assembly (Figure FO-4, Item 161).
32. Lift tee assembly (Figure FO-4, Item 161) to drain fuel. Close gate valve (Figure FO-4, Item 139).
33. Disconnect tee assembly (Figure FO-4, Item 173) from gate valve (Figure FO-4, Item 139).

RECEIVING LINE EVACUATION - CONTINUED

34. Separate tee assemblies (Figure FO-4, Item 161, 173). Install dust plugs and dust caps on tee assemblies (Figure FO-4, Item 161, 173).
35. Lift gate valve (Figure FO-4, Item 139), draining fuel into suction side of receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177). Close suction valve on receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177).
36. Disconnect hose (Figure FO-4, Item 178) from suction port of receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177). Install dust plug and dust cap on hose (Figure FO-4, Item 178) and receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177).
37. Disconnect hose (Figure FO-4, Item 178) from hose (Figure FO-4, Item 179). Install dust plug and dust cap on hoses (Figure FO-4, Item 178,179).
38. Disconnect hose (Figure FO-4, Item 179) from gate valve (Figure FO-4, Item 139). Install dust plug and dust cap in hose (Figure FO-4, Item 179) and dust plug and dust cap in gate valve (Figure FO-4, Item 139).
39. Close discharge valve on receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177).
40. Disconnect hose (Figure FO-4, Item 180) from discharge manifold of receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177). Install dust plug and dust cap on hose (Figure FO-4, Item 180) and receiving 350 GPM fuel pumping assembly (Figure FO-4, Item 177).
41. Roll hose (Figure FO-4, Item 180) from female end to male end of the hose (Figure FO-4, Item 181), pushing fuel remaining in hose (Figure FO-4, Item 181) toward the tanker. At hose connection, disconnect hose (Figure FO-4, Item 180) from hose (Figure FO-4, Item 181) and install dust plug and dust cap hoses (Figure FO-4, Item 180, 181).
42. Roll next section of hose (Figure FO-4, Item 181) to the gate valve (Figure FO-4, Item 140). Close gate valve (Figure FO-4, Item 140), disconnect and install dust cap on hose (Figure FO-4, Item 181) and install dust plug in gate valve (Figure FO-4, Item 140).
43. Disconnect recirculation hose (Figure FO-4, Item 182) from gate valve (Figure FO-4, Item 7) at the dispensing line and install dust plug in recirculation hose (Figure FO-4, Item 182) and dust cap on gate valve (Figure FO-4, Item 7).
44. Roll first recirculation hose (Figure FO-4, Item 182) from female end toward male end of hose (Figure FO-4, Item 182) lifting and disconnecting at the hose coupling to the next hose (Figure FO-4, Item 183). Install dust plugs and dust caps as hose (Figure FO-4, Item 182) is disconnected.
45. Continue disconnecting recirculation hoses (Figure FO-4, Item 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196) lifting and disconnecting at each hose coupling. Install dust plugs and dust cap as hoses (Figure FO-4, Item 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196) are disconnected until gate valve (Figure FO-4, Item 197) is reached. Install dust plug in gate valve (Figure FO-4, Item 197).
46. Disconnect and roll hose (Figure FO-4, Item 198) to flowmeter (Figure FO-4, Item 199) and disconnect hose (Figure FO-4, Item 198) at flowmeter (Figure FO-4, Item 199) inlet.
47. Install dust cap and dust plug in flowmeter (Figure FO-4, Item 199) inlet, hose (Figure FO-4, Item 198) and gate valve (Figure FO-4, Item 140).
48. Disconnect hose (Figure FO-4, Item 200) at flowmeter (Figure FO-4, Item 199) outlet. Roll hose (Figure FO-4, Item 200) to gate valve (Figure FO-4, Item 141).
49. Install dust cap and dust plug in flowmeter (Figure FO-4, Item 199) outlet and hose (Figure FO-4, Item 200).
50. Close gate valve (Figure FO-4, Item 141) and disconnect hose (Figure FO-4, Item 200) from gate valve (Figure FO-4, Item 141).
51. Install dust cap and dust plug in hose (Figure FO-4, Item 200) and gate valve (Figure FO-4, Item 141).
52. Lift gate valve (Figure FO-4, Item 141), tee assembly (Figure FO-4, Item 201) and gate valve (Figure FO-4, Item 197).
53. Disconnect gate valve (Figure FO-4, Item 141) from tee assembly (Figure FO-4, Item 201). Install dust plug in gate valve (Figure FO-4, Item 141) and dust cap on tee assembly (Figure FO-4, Item 201).
54. Lift gate valve (Figure FO-4, Item 197) and tee assembly (Figure FO-4, Item 201) and disconnect hose (Figure FO-4, Item 202). Install dust plug in hose (Figure FO-4, Item 202).

RECEIVING LINE EVACUATION - CONTINUED

55. Disconnect gate valve (Figure FO-4, Item 197) from tee assembly (Figure FO-4, Item 201). Install dust plugs and dust caps on tee assembly (Figure FO-4, Item 201).
56. Roll hose (Figure FO-4, Item 202) from female end to male end. Lift and disconnect hose (Figure FO-4, Item 202) from tee assembly (Figure FO-4, Item 203). Install dust cap on hose (Figure FO-4, Item 202) and dust plug in tee assembly (Figure FO-4, Item 203).
57. Disconnect gate valve (Figure FO-4, Item 142) from tee assembly (Figure FO-4, Item 203). Install dust plugs and dust caps in gate valve (Figure FO-4, Item 142) and tee assembly (Figure FO-4, Item 203).
58. At the gate valve (Figure FO-4, Item 146) on the inlet side of the fuel additive injection assembly (Figure FO-4, Item 147), lift gate valve (Figure FO-4, Item 146) and disconnect gate valve (Figure FO-4, Item 146) from hose (Figure FO-4, Item 204). Install dust cap on gate valve (Figure FO-4, Item 146).
59. Install dust cap on male end of hose (Figure FO-4, Item 204) and roll hose (Figure FO-4, Item 204) from male end toward female end.
60. Lift hose (Figure FO-4, Item 204) and tee assembly (Figure FO-4, Item 203). Close gate valve (Figure FO-4, Item 142) on the receiving line.
61. Disconnect hose (Figure FO-4, Item 204) from tee assembly (Figure FO-4, Item 203) and install dust plug in hose (Figure FO-4, Item 204).
62. Disconnect gate valve (Figure FO-4, Item 142) from tee assembly (Figure FO-4, Item 203).
63. Install dust plugs and dust caps on tee assembly (Figure FO-4, Item 203).
64. Lift gate valve (Figure FO-4, Item 142) on the receiving line and disconnect gate valve (Figure FO-4, Item 142) from hose (Figure FO-4, Item 205).
65. Install dust cap and dust plug in gate valve (Figure FO-4, Item 142).
66. Install dust plug in female end of hose (Figure FO-4, Item 205) and roll hose (Figure FO-4, Item 205) from female end toward male end.
67. Lift hoses (Figure FO-4, Item 205, 206, 207, 208) at each hose coupling, rolling the hoses (Figure FO-4, Item 205, 206, 207, 208), disconnecting and installing dust cap on the male end of the hoses (Figure FO-4, Item 205, 206, 207, 208) and installing dust plug in female end of each hose (Figure FO-4, Item 205, 206, 207, 208).
68. Close gate valve (Figure FO-4, Item 143).
69. At gate valve (Figure FO-4, Item 149) on the outlet side of the fuel additive injection assembly (Figure FO-4, Item 147), lift gate valve (Figure FO-4, Item 149) and disconnect gate valve (Figure FO-4, Item 149) from hose (Figure FO-4, Item 209). Install dust cap on gate valve (Figure FO-4, Item 149).
70. Install dust plug in female end of hose (Figure FO-4, Item 209) and roll hose (Figure FO-4, Item 209) from female end toward male end.
71. Disconnect hose (Figure FO-4, Item 209) from tee assembly (Figure FO-4, Item 210) and install dust cap on male end of hose (Figure FO-4, Item 209).
72. Install dust plug in tee assembly (Figure FO-4, Item 210).
73. Lift gate valve (Figure FO-4, Item 143) and tee assembly (Figure FO-4, Item 210). Disconnect hose (Figure FO-4, Item 211) from tee assembly (Figure FO-4, Item 210).
74. Disconnect gate valve (Figure FO-4, Item 143) from tee assembly (Figure FO-4, Item 210).
75. Install dust caps and dust plugs in tee assembly (Figure FO-4, Item 210) and gate valve (Figure FO-4, Item 143).
76. Install dust plug in female end of hose (Figure FO-4, Item 211) and roll hose (Figure FO-4, Item 211) from female end toward male end.
77. Lift hose (Figure FO-4, Item 212) at hose coupling and roll hose (Figure FO-4, Item 212) from female end toward male end. Disconnect and install dust cap on the male end of the hose (Figure FO-4, Item 211) and install dust plug in hose (Figure FO-4, Item 212).
78. Lift tee assembly (Figure FO-4, Item 213) and hose (Figure FO-4, Item 212). Disconnect hose (Figure FO-4, Item 212) from tee assembly (Figure FO-4, Item 213). Install dust cap on male end of hose (Figure FO-4, Item 212) and dust plug in tee assembly (Figure FO-4, Item 213).

RECEIVING LINE EVACUATION - CONTINUED

79. Disconnect male end of tee assembly (Figure FO-4, Item 213) from gate valve (Figure FO-4, Item 133) at the inlet to tank number 1. Install dust cap on tee assembly (Figure FO-4, Item 213) and dust plug in gate valve (Figure FO4, Item 133).
80. Lift tee assembly (Figure FO-4, Item 213) and disconnect tee assembly (Figure FO-4, Item 213) from hose (Figure FO-4, Item 214). Install dust plug in hose (Figure FO-4, Item 214) and dust cap on tee assembly (Figure FO4, Item 213).
81. Disconnect and roll hoses (Figure FO-4, Item 214, 215, 216, 217, 218, 219) from female end toward male end, lifting at each coupling, disconnecting the hoses (Figure FO-4, Item 214, 215, 216, 217, 218, 219) and installing dust plugs and dust caps on hoses (Figure FO-4, Item 214, 215, 216, 217, 218, 219).
82. Lift at the tee assembly (Figure FO-4, Item 220) and disconnect hose (Figure FO-4, Item 219) from tee assembly (Figure FO-4, Item 220). Install dust cap on the male end of the hose (Figure FO-4, Item 219) and install dust plug in tee assembly (Figure FO-4, Item 220).
83. Disconnect tee assembly (Figure FO-4, Item 220) from gate valve (Figure FO-4, Item 134). Install dust cap on tee assembly (Figure FO-4, Item 220). Install dust plug in gate valve (Figure FO-4, Item 134) at the inlet line of tank number 2.
84. Lift tee assembly (Figure FO-4, Item 220) and disconnect tee assembly (Figure FO-4, Item 220) from hose (Figure FO-4, Item 221). Install dust plug in hose (Figure FO-4, Item 221) and dust cap on tee assembly (Figure FO4, Item 220).
85. Disconnect and roll hoses (Figure FO-4, Item 221, 222, 223, 224, 225, 226) from female end toward male end, lifting at each coupling, disconnecting the hoses (Figure FO-4, Item 221, 222, 223, 224, 225, 226) and installing dust plugs and dust caps on hoses (Figure FO-4, Item 221, 222, 223, 224, 225, 226).
86. Lift at the tee assembly (Figure FO-4, Item 227) and disconnect hose (Figure FO-4, Item 226) from tee assembly (Figure FO-4, Item 227). Install dust cap hose (Figure FO-4, Item 226) and install dust plug in tee assembly (Figure FO-4, Item 227).
87. Disconnect tee assembly (Figure FO-4, Item 227) from gate valve (Figure FO-4, Item 135). Install dust cap on tee assembly (Figure FO-4, Item 227). Install dust plug in gate valve (Figure FO-4, Item 135) at the inlet line of tank number 3.
88. Lift tee assembly (Figure FO-4, Item 227) and disconnect tee assembly (Figure FO-4, Item 227) from hose (Figure FO-4, Item 228). Install dust plug in hose (Figure FO-4, Item 228) and dust cap on tee assembly (Figure FO4, Item 227).
89. Disconnect and roll hoses (Figure FO-4, Item 228, 229, 230, 231, 232, 233) from female end toward male end, lifting at each coupling, disconnecting the hoses (Figure FO-4, 228, 229, 230, 231, 232, 233) and installing dust plugs and dust caps on hoses (Figure FO-4, Item 228, 229, 230, 231, 232, 233).
90. Lift at the tee assembly (Figure FO-4, Item 234) and disconnect hose (Figure FO-4, Item 233) from tee assembly (Figure FO-4, Item 234). Install dust cap on hose (Figure FO-4, Item 233) and install dust plug in tee assembly (Figure FO-4, Item 234).
91. Disconnect tee assembly (Figure FO-4, Item 234) from gate valve (Figure FO-4, Item 136). Install dust cap on tee assembly (Figure FO-4, Item 234) and dust plug in gate valve (Figure FO-4, Item 136) at the inlet line of tank number 4.
92. Lift tee assembly (Figure FO-4, Item 234) and disconnect tee assembly (Figure FO-4, Item 234) from hose (Figure FO-4, Item 235). Install dust plug in hose (Figure FO-4, Item 235) and dust cap on tee assembly (Figure FO4, Item 234).
93. Disconnect and roll hoses (Figure FO-4, Item 235, 236, 237, 238, 239, 240) from female end toward male end, lifting at each coupling, disconnecting the hoses (Figure FO-4, Item 235, 236, 237, 238, 239, 240) installing dust plugs and dust caps on hoses (Figure FO-4, Item 235, 236, 237, 238, 239, 240).
94. Lift the tee assembly (Figure FO-4, Item 241) and disconnect hose (Figure FO-4, Item 240) from tee assembly (Figure FO-4, Item 241). Install dust cap on the hose (Figure FO-4, Item 240) and install dust plug in tee assembly (Figure FO-4, Item 241).
95. Disconnect tee assembly (Figure FO-4, Item 241) from gate valve (Figure FO-4, Item 137). Install dust cap on tee assembly (Figure FO-4, Item 241) and dust plug in gate valve (Figure FO-4, Item 137) at the inlet line of tank number 5.
96. Lift tee assembly (Figure FO-4, Item 241) and disconnect tee assembly (Figure FO-4, Item 241) from hose (Figure FO-4, Item 242). Install dust plug in hose (Figure FO-4, Item 242) and dust cap on tee assembly (Figure FO4, Item 241).

RECEIVING LINE EVACUATION - CONTINUED

97. Disconnect and roll hoses (Figure FO-4, Item 242, 243, 244, 245, 246) from female end toward male end, lifting at each coupling, disconnecting the hoses (Figure FO-4, Item 242, 243, 244, 245, 246) and installing dust plugs and dust caps on hoses (Figure FO-4, Item 242, 243, 244, 245, 246).
98. Lift tee assembly (Figure FO-4, Item 247) and disconnect hose (Figure FO-4, Item 246) from tee assembly (Figure FO-4, Item 247). Install dust cap on the hose (Figure FO-4, Item 246) and dust plug in tee assembly (Figure FO-4, Item 247).
99. Disconnect tee assembly (Figure FO-4, Item 247) from gate valve (Figure FO-4, Item 138). Install dust cap on tee assembly (Figure FO-4, Item 247) and dust plug in gate valve (Figure FO-4, Item 138) at the inlet line of tank number 6.
100. Lift tee assembly (Figure FO-4, Item 247), close gate valve (Figure FO-4, Item 144) and valved dry-break adapter (Figure FO-4, Item 132).
101. Close valve on the valved dry-break of the 2 in. X 50 ft hose. Disconnect hose from valved dry-break adapter (Figure FO-4, Item 132).
102. Stop defueling procedures per tanker technical manual.
103. Remove valved dry-break adapter (Figure FO-4, Item 132) from gate valve (Figure FO-4, Item 144). Install dust plugs and dust caps on gate valve (Figure FO-4, Item 144) and valved dry-break adapter (Figure FO-4, Item 132).
104. Remove gate valve (Figure FO-4, Item 144) from tee assembly (Figure FO-4, Item 247). Install dust cap and plug on tee assembly (Figure FO-4, Item 247) and gate valve (Figure FO-4, Item 144).
105. At the gate valve (Figure FO-4, Item 133) for the receiving side of tank number 1, lift gate valve (Figure FO-4, Item 133) and drain fuel toward fuel tank.
106. Disconnect hose (Figure FO-4, Item 248) from gate valve (Figure FO-4, Item 133). Install dust plug in hose (Figure FO-4, Item 248) and dust cap on gate valve (Figure FO-4, Item 133).
107. Roll hose (Figure FO-4, Item 248) toward tank volume meter (Figure FO-4, Item 249) and disconnect hose (Figure FO-4, Item 248) at tank volume meter (Figure FO-4, Item 249). Install dust cap on hose (Figure FO-4, Item 248) and dust plug in tank volume meter (Figure FO-4, Item 249).
108. Lift tank volume meter (Figure FO-4, Item 249) and disconnect hose (Figure FO-4, Item 250) from tank volume meter (Figure FO-4, Item 249). Install dust plug in hose (Figure FO-4, Item 250) and dust cap on tank volume meter (Figure FO-4, Item 249).
109. Roll hose (Figure FO-4, Item 250) toward fuel tank and disconnect hose (Figure FO-4, Item 250) from tank elbow (Figure FO-4, Item 251). Install dust cap on hose (Figure FO-4, Item 250) and dust plug in tank elbow (Figure FO-4, Item 251).
110. At the gate valve (Figure FO-4, Item 134) for the receiving side of tank number 2, lift gate valve (Figure FO-4, Item 134) and drain fuel toward fuel tank.
111. Disconnect hose (Figure FO-4, Item 252) from gate valve (Figure FO-4, Item 134). Install dust plug in hose (Figure FO-4, Item 252) and dust cap on gate valve (Figure FO-4, Item 134).
112. Roll hose (Figure FO-4, Item 252) toward tank volume meter (Figure FO-4, Item 253) and disconnect hose (Figure FO-4, Item 252) at tank volume meter (Figure FO-4, Item 253). Install dust cap on hose (Figure FO-4, Item 252) and dust plug in tank volume meter (Figure FO-4, Item 253).
113. Lift tank volume meter (Figure FO-4, Item 253) and disconnect hose (Figure FO-4, Item 254) from tank volume meter (Figure FO-4, Item 253). Install dust plug in hose (Figure FO-4, Item 254) and dust cap on tank volume meter (Figure FO-4, Item 253).
114. Roll hose (Figure FO-4, Item 254) toward fuel tank and disconnect hose (Figure FO-4, Item 254) from tank elbow (Figure FO-4, Item 255). Install dust cap on hose (Figure FO-4, Item 254) and dust plug in tank elbow (Figure FO-4, Item 255).
115. At the gate valve (Figure FO-4, Item 135) for the receiving side of tank number 3, lift gate valve (Figure FO-4, Item 135) and drain fuel toward fuel tank.
116. Disconnect hose (Figure FO-4, Item 256) from gate valve (Figure FO-4, Item 135). Install dust plug in hose (Figure FO-4, Item 256) and dust cap on gate valve (Figure FO-4, Item 135).
117. Roll hose (Figure FO-4, Item 256) toward tank volume meter (Figure FO-4, Item 257) and disconnect hose (Figure FO-4, Item 256) at tank volume meter (Figure FO-4, Item 257). Install dust cap on hose (Figure FO-4, Item 256) and dust plug in tank volume meter (Figure FO-4, Item 257).
118. Lift tank volume meter (Figure FO-4, Item 257) and disconnect hose (Figure FO-4, Item 258) from tank volume meter (Figure FO-4, Item 257). Install dust plug in hose (Figure FO-4, Item 258) and dust cap on tank volume meter (Figure FO-4, Item 257).

RECEIVING LINE EVACUATION - CONTINUED

119. Roll hose (Figure FO-4, Item 258) toward fuel tank and disconnect hose from tank elbow (Figure FO-4, Item 259). Install dust cap on hose (Figure FO-4, Item 258) and dust plug in tank elbow (Figure FO-4, Item 259).
120. At the gate valve (Figure FO-4, Item 136) for the receiving side of tank number 4, lift gate valve (Figure FO-4, Item 136) and drain fuel toward fuel tank.
121. Disconnect hose (Figure FO-4, Item 260) from gate valve (Figure FO-4, Item 136). Install dust plug in hose (Figure FO-4, Item 260) and dust cap on gate valve (Figure FO-4, Item 136).
122. Roll hose (Figure FO-4, Item 260) toward tank volume meter (Figure FO-4, Item 261) and disconnect hose (Figure FO-4, Item 260) at tank volume meter (Figure FO-4, Item 261). Install dust cap on hose (Figure FO-4, Item 260) and dust plug in tank volume meter (Figure FO-4, Item 261).
123. Lift tank volume meter (Figure FO-4, Item 261) and disconnect hose (Figure FO-4, Item 262) from tank volume meter (Figure FO-4, Item 261). Install dust plug in hose (Figure FO-4, Item 262) and dust cap on tank volume meter (Figure FO-4, Item 261).
124. Roll hose (Figure FO-4, Item 262) toward fuel tank and disconnect hose (Figure FO-4, Item 262) from tank elbow (Figure FO-4, Item 263). Install dust cap on hose (Figure FO-4, Item 262) and dust plug in tank elbow (Figure FO-4, Item 263).
125. At the gate valve (Figure FO-4, Item 137) for the receiving side of tank number 5, lift gate valve (Figure FO-4, Item 137) and drain fuel toward fuel tank.
126. Disconnect hose (Figure FO-4, Item 264) from gate valve (Figure FO-4, Item 137). Install dust plug in hose (Figure FO-4, Item 264) and dust cap on gate valve (Figure FO-4, Item 137).
127. Roll hose (Figure FO-4, Item 264) toward tank volume meter (Figure FO-4, Item 265) and disconnect hose (Figure FO-4, Item 264) at tank volume meter (Figure FO-4, Item 265). Install dust cap on hose (Figure FO-4, Item 264) and dust plug in tank volume meter (Figure FO-4, Item 265).
128. Lift tank volume meter (Figure FO-4, Item 265) and disconnect hose (Figure FO-4, Item 266) from tank volume meter (Figure FO-4, Item 265). Install dust plug in hose (Figure FO-4, Item 266) and dust cap on tank volume meter (Figure FO-4, Item 265).
129. Roll hose (Figure FO-4, Item 266) toward fuel tank and disconnect hose (Figure FO-4, Item 266) from tank elbow (Figure FO-4, Item 267). Install dust cap on hose (Figure FO-4, Item 266) and dust plug in tank elbow (Figure FO-4, Item 267).
130. At the gate valve (Figure FO-4, Item 138) for the receiving side of tank number 6, lift gate valve (Figure FO-4, Item 138) and drain fuel toward fuel tank.
131. Disconnect hose (Figure FO-4, Item 268) from gate valve (Figure FO-4, Item 138). Install dust plug in hose (Figure FO-4, Item 268) and dust cap on gate valve (Figure FO-4, Item 138).
132. Roll hose (Figure FO-4, Item 268) toward tank volume meter (Figure FO-4, Item 269) and disconnect hose (Figure FO-4, Item 268) at tank volume meter (Figure FO-4, Item 269). Install dust cap on hose (Figure FO-4, Item 268) and dust plug in tank volume meter (Figure FO-4, Item 269).
133. Lift tank volume meter (Figure FO-4, Item 269) and disconnect hose (Figure FO-4, Item 270) from tank volume meter (Figure FO-4, Item 269). Install dust plug in hose (Figure FO-4, Item 270) and dust cap on tank volume meter (Figure FO-4, Item 269).
134. Roll hose (Figure FO-4, Item 270) toward fuel tank and disconnect hose (Figure FO-4, Item 270) from tank elbow (Figure FO-4, Item 271). Install dust cap on hose (Figure FO-4, Item 270) and dust plug in tank elbow (Figure FO4, Item 271).

RECEIVING LINE EVACUATION - CONTINUED**FUEL TANK EVACUATION****WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Connect a female 2 in. camlock X 2 in. valved dry-break adapter to the male connector of the ball valve on the drain of fuel tank number 1.
2. Connect a 2 in. valved dry-break hose to 2 in. valved dry-break adapter at the drain line of fuel tank and to the tanker which will receive the fuel.
3. Open the ball valve.
4. Open the valve on the valved dry-break adapter and the valve on the valved dry-break hose.
5. Use the procedures from the technical manual for the tanker to defuel fuel tank number 1.
6. Repeat steps 1 through 5 for fuel tanks numbers 2 through 6.

END OF TASK**END OF WORK PACKAGE**

OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS — UNUSUAL ENVIRONMENT/WEATHER

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 10-4320-372-14

TM 10-4330-235-13&P

UNUSUAL ENVIRONMENT/WEATHER

The FSSP is designed to operate normally within a wide range of climatic conditions. However, some extreme conditions required special operating and servicing procedures to prevent undue loading and excessive wear on the equipment.

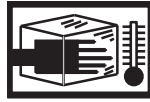
END OF TASK**OPERATION IN EXTREME HEAT CONDITIONS****WARNING****FIRE****EXPLOSION**

Leaking fuel can ignite and cause serious injury to personnel and damage to equipment. Failure to follow procedures could result in serious injury or death to personnel.

When operating the FSSP in temperatures of 125°F (52°C) or higher, extra care should be taken to minimize the possibility of fuel fire and explosion. Failure to comply could result in serious injury or death to personnel.

1. Ensure all fittings and hose connections are tight and do not leak fuel.
2. Clean up all spills and drips as they occur to prevent accumulation of explosive fumes from the evaporating fuel.
3. Special hot weather procedures must be followed for operation of the pump assemblies and the filter-separators, which are part of the FSSP. Refer to TM 10-4320-372-14 for pumping assembly operation and TM 10-4330-235-13&P for filter-separator operation.

END OF TASK

OPERATION IN EXTREME COLD CONDITIONS**WARNING****CRYONGENIC**

Most fuels evaporate very quickly and can quickly lower the temperature of exposed skin until there is a great danger of frost bite. Prevent leakage of fuel onto bare skin of personnel. Failure to follow procedures could result in serious injury or death to personnel.

CAUTION

When operating the FSSP in temperatures down to -50°F (-45°C), extra care should be taken to minimize damage to equipment.

1. Special cold weather procedures must be followed for operation of the pump assemblies and the filter-separators, which are part of the FSSP. Refer to TM 10-4320-372-14 for pumping assembly operation and TM 10-4330-235-13&P for filter-separator operation.
2. Remove any fuel from exposed skin as soon as possible. Operation under conditions of extreme cold may cause equipment problems due to loss of flexibility. Nozzle seals and coupling face seals are especially subject to damage.

END OF TASK**OPERATION IN SANDY OR DUSTY CONDITIONS****CAUTION**

Accumulation of dust or sand in the filters of the pumping assembly will cause the pumps to overheat and damage the equipment.

1. Clean filters and all other areas of dust and sand accumulation daily.

CAUTION

Fuel which has been contaminated by dust and sand will severely affect the operation of any engine.

2. Check for dust or sand contaminated fuel.
3. Ensure all hose and piping connections are tight.
4. Ensure the insides of all FSSP components are clean before connecting components during setup or assembly.
5. Check the filter-separator on a more frequent basis to ensure that the filter is working properly to remove dust and sand that may have entered the FSSP. Refer to TM 10-4330-235-13&P for detailed procedures when using the filter-separator in a dusty and sandy environment.

END OF TASK

OPERATION IN SALT AIR AND SEA SPRAY CONDITIONS**CAUTION**

Accumulation of salt can cause corrosion and cause damage to equipment.

1. Clean all exposed surfaces frequently.
2. Rinse all exposed surfaces with fresh water to remove salt.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS — INTERIM NUCLEAR, BIOLOGICAL AND CHEMICAL (NBC)
DECONTAMINATION PROCEDURES**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

FM 3-11.4

FM 3-5

INTERIM NUCLEAR, BIOLOGICAL AND CHEMICAL (NBC) DECONTAMINATION PROCEDURES**WARNING****RADIATION****BIOLOGICAL****CHEMICAL**

In the event equipment has been exposed to nuclear, biological or chemical warfare, the equipment shall be handled with extreme caution and decontaminated in accordance with FM 3-5, NBC Decontamination. Unprotected personnel can experience injury or death if residual toxic agents or radioactive material are present. If equipment is exposed to radioactive, biological or chemical agents, personnel must wear protective mask, hood, protective overgarments, chemical gloves and chemical boots in accordance with MOPP level prescribed by the OIC or NCOIC. MOPP analysis and levels are described in detail in FM 3-11.4, Multiservice Tactics, Techniques and Procedures for Nuclear, Biological and Chemical (NBC) Protection. Personnel should contact a unit that has the capabilities for freshwater washdown. The unit can also assist in the evacuation of soldiers who have been exposed and provide space and shelter for exchanging MOPP suits.

1. Decontaminate equipment per FM 3-5.
2. Perform operational check of all equipment after decontamination.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS — EMERGENCY PROCEDURES - FIRE**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

ReferencesTM 10-4320-372-14

EMERGENCY PROCEDURES - FIRE

1. Press the EMERGENCY STOP pushbutton on the pumping assembly. Refer to TM 10-4320-372-14.
2. If possible, close suction and discharge gate valves on the pumping assembly. Refer to TM 10-4320-372-14.
3. Using portable fire extinguishers or available fire fighting equipment, extinguish fire.
4. After the fire is extinguished, check the FSSP for damage caused by fire.
5. Replace any components of the FSSP that are damaged by fire.

END OF TASK**END OF WORK PACKAGE**

OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS — EMERGENCY PROCEDURES - FUEL LEAK DURING OPERATION

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 10-4320-372-14

EMERGENCY PROCEDURES - FUEL LEAK DURING OPERATION**WARNING****HIGH PRESSURE****FIRE****EXPLOSION**

Leaking fuel can ignite and cause serious injury to personnel and damage to equipment. Failure to follow procedures could result in serious injury or death to personnel.

Escaping fuel under pressure has sufficient force to penetrate the skin, causing serious injury to personnel. Do not approach the leak until all pressure is removed from the system.

1. Press the EMERGENCY STOP pushbutton on the pumping assembly. Refer to TM 10-4320-372-14.
2. Close suction and discharge gate valves on the pumping assembly. Refer to TM 10-4320-372-14.
3. When pressure is relieved, close gate valves on both sides of fuel leak.
4. Clean up fuel spill using fuel spill control kit (WP 0013).
5. Repair or replace damaged components, as required, to prevent the leakage of fuel.

END OF TASK**END OF WORK PACKAGE**

OPERATOR MAINTENANCE
OPERATION UNDER UNUSUAL CONDITIONS — EMERGENCY PROCEDURES - FUEL SPILL CONTAINMENT AND CLEANUP

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)
Fuel spill control kit (Item 24, WP 0212)

References

AR 200-1

Personnel Required

Petroleum Supply Specialist 92F

EMERGENCY PROCEDURES - FUEL SPILL CONTAINMENT AND CLEANUP**FUEL SPILL CLEANUPS****WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Army Regulation (AR) 200-1 prescribes Department of the Army (DA) responsibilities, policies and procedures to preserve, protect and restore the quality of the environment. It incorporates all applicable statutory and regulatory requirements in the area of hazardous substances spill contingency planning, control and emergency response; solid and hazardous waste management and environmental restoration for Fuel System Supply Point (FSSP) operations. Management of fuel spills, use of the fuel spill control kit, disposal of contaminated kit material and the restoration of the environment after a spill is the responsibility of the installation, activity and unit commander in consultation with AR 200-1 and environmental authorities.
2. Every spill, no matter how small, should be reported by FSSP operators and investigated in accordance with AR 200-1 so that the cause can be determined and future spills prevented. Every spill should be treated as a potential source of soil contamination and fire. Cleanup procedures are described below.
3. Detailed instructions must be given by the responsible environmental authority. Each spill must be treated as an individual case because of size, type of fuel involved, wind conditions, weather, equipment available, possible involvement of vehicles and other similar variables. In general, the following are basic actions that should be considered and carried out if spills occur with the FSSP.
4. Start immediate cleanup. A quick cleanup slows down the spread of contamination and saves on cleanup costs. Absorb spilled fuel or allow it to evaporate before using the spill area for operation.

FUEL SPILL PROCEDURES AND CONTAINMENT**NOTE**

Fuel spills are classified by the area covered by the spill. The seriousness of a fuel spill is determined by the area of contact between the fuel, soil and air. It is on or above the surface that a flammable, vapor-air mixture can form and fire can take place. The number of sq ft covered by the spill is more important than the amount of fuel spilled.

1. Determine the size of the fuel spill.
 - a. A small priming spill is one that covers less than 18 inches (45.7 cm) in diameter.
 - b. A small spill is one that is less than 10 ft (3.05 m) in diameter or that covers less than 50 sq ft (4.65 sq m). It is not a continuous spill (tank leak).
 - c. A large spill is one that is larger than 10 ft (3.05 m) in diameter, that covers an area larger than 50 sq ft (4.65 sq m) or one that is continuous (a tank leak).
2. Perform the following actions for all fuel spills.
 - a. Stop the flow of fuel, if possible. Examples of stopping a spill include shutting off the valves in a hoseline and closing secondary containment valves around storage tanks.
 - b. Contain the spill. Examples of containing a spill include constructing berms and cut-off trenches and using the fuel spill control kits enclosed oil sorbents. Do not contain gasoline or other volatile chemical spills. Instead, disperse the volatile fuel away from equipment and let it evaporate.
 - c. Evacuate personnel from vehicle involved.
 - d. Shut down operations in the area of large spills or the whole FSSP, if necessary.
 - e. Notify fire fighting and environmental support activities if the spill is serious. Call for help immediately. Once started, fuel fires spread quickly. Reaction speed is the single most important element in fighting a fuel fire successfully.
 - f. Check thoroughly for vapors trapped in equipment used in the FSSP, such as pumps or filter-separators, and in the refueled vehicle's structure if fuel is spilled on or into a vehicle. Be sure vapors have dissipated before the equipment and vehicles are returned to service.
 - g. Start immediate cleanup. A quick cleanup slows down the spread of contamination and saves on cleanup costs. Absorb spilled fuel or allow it to evaporate before using the spill area for operation.
3. Perform the following actions for small priming fuel spills.
 - a. Use the fuel spill control kits bag of granular sorbent to spread over the spill.
 - b. A fireguard should stand by the spill area with a fire extinguisher until the cleanup operation is completed.
4. Perform the following actions for small fuel spills.
 - a. Stop operation at the spill site and post a fireguard with a fire extinguisher by the spill.
 - b. Use the fuel spill control kits 10 ft long (3.05 m) enclosed oil sorbents, which are filled with loose sorbent material, to contain the spill by forming a dike around it.
5. Perform the following actions for large fuel spills.
 - a. At a permanent installation or large temporary refueling point where there is a fire department or fire brigade, call the firefighters immediately and stop operations in the area. As soon as the fire assistance has been called, the actions described below should be performed as necessary.
 - b. If the fuel is MOGAS or JP-4, a large spill should be blanketed with fire extinguisher foam as soon as possible to reduce danger of fire or to put out the fire if one exists.
 - c. It may be necessary to have all personnel leave a vehicle if the spill is at or near it. No one other than authorized personnel should move through the spill area. If anyone gets fuel on his clothes, he should take them off and wash them with soap and water. Any person whose clothes are on fire should roll or be rolled on the ground to put out the fire or be wrapped in a blanket to smother the flames.
 - d. Mobile refueling equipment may be the largest single source of fuel near the spill. If the fuel spill

FUEL SPILL PROCEDURES AND CONTAINMENT - CONTINUED

has not caught fire, starting the engine of a refueler or other vehicle could supply the spark that would ignite the spill or vapors. The decision on what procedure is least hazardous, driving the refueler away or not starting the engine, must be made on the spot by the person in charge. If the vehicle engine is running, normal practice is to drive the vehicle away from the spill unless this would pose an unacceptable risk to the driver.

- e. If an aircraft in the spill area has its engine running at the time of the spill, usually it should lift off out of the spill area. The heat of the engines can cause the spill to ignite. The rotor or prop wash from an aircraft can spread the vapor hazard to an area where ignition sources may be present, thus increasing the danger. It can also cause problems by dissipating fire fighting agents.
6. Clean up small priming fuel spills.
 - a. Post a fireguard by the spill area with a fire extinguisher until the cleanup operation is completed.
 - b. Use the fuel spill control kits bag of granular sorbent to spread over the spill.
 - c. Dig up the sorbent and contaminated soil using the two-piece non-sparking shovel and place the sorbent and soil into plastic disposal bags.
 - d. Use tie strips to seal the bags. Store and transport the bags in the 55 gallon drums marked with the "Hazardous Material" caution plate.
7. Clean up small fuel spills.
 - a. Post a fireguard by the spill area with a fire extinguisher until the cleanup operation is completed.
 - b. Use the fuel spill control kits bag of granular sorbent to spread over the spill.
 - c. Use the fuel spill control kits 16 1/2 in. wide X 20 in. long sorbent pads to absorb the fuel, if necessary.
 - d. If low flash point fuel, such as JP-4, has been spilled, dig up the sorbent and contaminated soil using the two-piece non-sparking shovel and place them either in the kits 5 gallon pails or into plastic disposal bags.
 - e. Use tie strips to seal the bags. Store and transport the bags in the 55 gallon drums marked with the "Hazardous Material" caution plate.
8. Clean up large fuel spills.
 - a. At a permanent installation or large temporary refueling point where there is a fire department or fire brigade, firefighters must be standing by and operations stopped in the area.
 - b. After the immediate emergency is over, go to the unit's appropriate response plan document prepared per AR 200-1 for instructions on whom to call.
 - c. Until cleanup help arrives, it may be best to rope off the area, post a guard, close down nearby refueling operations and allow the spill to evaporate.
 - d. Use the FSSP fuel spill control kit to contain the spill to the largest extent possible.
 - e. The spill area should not be used for operations again until it is free of fuel vapors.

END OF TASK**END OF WORK PACKAGE**

CHAPTER 3

OPERATOR MAINTENANCE TROUBLESHOOTING PROCEDURES FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
OPERATOR MASTER MALFUNCTION/SYMPTOM INDEX**

OPERATIONAL CHECKOUT

Fuel System Supply Point (FSSP) Operational Checkout WP 0015

HOSE ASSEMBLY

4 In. X 10 Ft Suction Hose Assembly, Part Number 78003-100,
Leaks WP 0016

FILTER ASSEMBLY

Liquid Fuel Filter-Separator Assembly, Part Number 78019-100,
Leaks or Does Not Operate Properly WP 0017

PUMPING ASSEMBLY

Pumping Assembly, Part Number 78100-100,
Leaks or Does Not Operate Properly WP 0018

COMPONENTS

4 In. Female X 4 In. Male X 4 In. Female Tee Assembly,
Part Number 78021-100,
Leaks or Will Not Connect With Other Components WP 0019

4 In. Butterfly Valve Assembly, Part Numbers 78042-100 and 78042-101,
Leaks or Does Not Operate Properly WP 0020

4 In. Gate Valve Assembly, Part Number 78011-100,
Leaks or Does Not Operate Properly WP 0021

CCR Nozzle Assembly, Part Number 64017B,
Leaks or Does Not Operate Properly WP 0022

4 In. Male X 4 In. Male X 4 In. Female Tee Assembly,
Part Number 78024-100, Leaks or Will Not Join With Other Components WP 0023

4 In. X 25 Ft Discharge Hose Assembly, Part Number 78007-102,
Leaks WP 0024

4 In. Female X 4 In. Female X 4 In. Male Tee Assembly, Part Number 78025-100,
Leaks or Will Not Join With Other Components WP 0025

1 In. Fuel and Oil Servicing Nozzle Assembly, Part Number 64210,
Leaks or Will Not Connect With Other Components WP 0026

1 In. Fuel and Oil Servicing Nozzle Assembly, Part Number 64210,
Excessive Fuel Discharge Pressure WP 0027

4 In. Female X 3 In. Male Reducer Assembly, Part Number 602640301,
Leaks or Will Not Connect With Other Components WP 0028

4 In. X 10 Ft Discharge Hose Assembly, Part Number 78007-100,
Leaks WP 0029

4 In. Male X 3 In. Female Reducer Assembly, Part Number 602630401,
Leaks or Will Not Connect With Other Components WP 0030

20,000 Gallon Collapsible Fuel Tank, Part Number MPC-F-20K-22276,
Leaks or Will Not Connect With Other Components WP 0031

4 In. Female X 2 In. Male Reducer Assembly, Part Number 602640201,
Leaks or Will Not Connect With Other Components WP 0032

2 In. Tee Assembly, Part Number 64022D,
Leaks or Will Not Connect With Other Components WP 0033

2 In. Female Quick Disconnect X 2 In. Valved Dry-Break Adapter Assembly,
Part Number 64020GQ, Leaks or Will Not Connect With Other Components WP 0034

2 In. Male Quick Disconnect X 2 In. Valved Dry-Break Adapter Assembly,
Part Number 64020FQ, Leaks or Will Not Connect With Other Components WP 0035

2 In. X 50 Ft Discharge Hose Assembly, Part Number 78009-100,

Leaks	WP 0036
1.5 In. Nozzle Assembly, Part Number 64199, Leaks or Will Not Connect With Other Components	WP 0037
2 In. Ball Valve Assembly, Part Number 78048-100, Leaks or Will Not Connect With Other Components	WP 0038
2 In. Female X 1.5 In. Male Reducer Assembly, Part Number 602620151, Leaks or Will Not Connect With Other Components	WP 0039
D1 Nozzle Assembly, Part Number 64201CF4GHX, Leaks or Will Not Connect With Other Components	WP 0040
D1 Nozzle Assembly, Part Number 64201CGH2MQ, Leaks or Will Not Connect With Other Components	WP 0041
3 In. Double Male Adapter Assembly, Part Number 602830301, Leaks	WP 0042
3 In. Double Female Adapter Assembly, Part Number 602730301, Leaks	WP 0043
4 In. Double Male Adapter Assembly, Part Number 602840401, Leaks	WP 0044
4 In. Double Female Adapter Assembly, Part Number 602740401, Leaks	WP 0045
D1 Nozzle Assembly, Part Number 64201CGH2KQ, Leaks or Will Not Connect With Other Components	WP 0046
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Will Not Turn	WP 0047
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Turns, But Will Not Pick Up Additive	WP 0048
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injectors are Primed and System is Running, But Injection is Either Low or Erratic	WP 0049
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injector is Running Slowly Even With High Fuel Flow Rates	WP 0050
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injector Will Not Flow and Appears to be Locked Up	WP 0051
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injection System Does Not Inject the Correct Amount of Additive	WP 0052
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Leaks During Operation	WP 0053
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Amount of Fuel Pumped	WP 0054
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Correct Amount of Fuel Pumped	WP 0055
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Fuel Flow	WP 0056
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Leaks During Operation	WP 0057
Wet Wing Defueling Assembly, Part Number 78029-100, Components Leak or Will Not Connect With Other Components	WP 0058
50,000 Gallon Collapsible Fuel Tank, Part Number MPC-F-50K-22636, Leaks or Will Not Connect With Other Components	WP 0059
Tank Volume Meter, Part Numbers EAS-0400-IN and EAS-0400-OUT, Leaks or Will Not Connect With Other Components	WP 0060
Tank Volume Meter, Part Numbers EAS-0400-IN and EAS-0400-OUT, Does Not Indicate Correct Amount of Fuel Passing Through Meter	WP 0061
Tank Volume Meter Assembly, Part Number EAS-0400-OUT, Monitor Displays Low Battery Symbol	WP 0062

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
OPERATIONAL CHECKOUT**

INITIAL SETUP:**Materials/Parts**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

References

TM 10-4320-372-14

Equipment Condition

FSSP prepared for use (WP 0005).

OPERATIONAL CHECKOUT

When required, this operational checkout shall be used to verify the repair of assemblies, components or parts of the FSSP. Once completed, return to the associated troubleshooting work package.

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

STEP

1. Install repaired component or replacement component where removed from FSSP as applicable.
2. Start 350 GPM fuel pumping assembly (TM 10-4320-372-14).
3. Start fuel flow through FSSP (WP 0005).
4. Inspect assembly, component or part that has been repaired, replaced or troubleshot for serviceability, proper operation and lack of leaks as applicable.

Component, part or system still does not operate correctly or still malfunctions.

CORRECTIVE ACTION

1. Stop fuel flow through FSSP (WP 0005).
2. Shut down 350 GPM pumping assembly (TM 10-4320-372-14).
3. If not repaired, repeat repair steps or continue on with troubleshooting as applicable.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. X 10 FT SUCTION HOSE ASSEMBLY, PART NUMBER 78003-100,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)

Goggles, industrial (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

References

WP 0015

WP 0066

WP 0067

4 IN. X 10 FT SUCTION HOSE ASSEMBLY, PART NUMBER 78003-100, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks at couplings.

MALFUNCTION

Camlock connection leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If hose assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly still leaks at couplings.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
LIQUID FUEL FILTER-SEPARATOR ASSEMBLY, PART NUMBER 78019-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 10-4330-235-13&P

LIQUID FUEL FILTER-SEPARATOR ASSEMBLY, PART NUMBER 78019-100, LEAKS OR DOES NOT OPERATE PROPERLY**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4330-235-13&P for troubleshooting the liquid fuel filter-separator assembly.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
PUMPING ASSEMBLY, PART NUMBER 78100-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 10-4320-372-14

PUMPING ASSEMBLY, PART NUMBER 78100-100, LEAKS OR DOES NOT OPERATE PROPERLY**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4320-372-14 for troubleshooting the pumping assembly.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78021-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78021-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly leaks fuel.

MALFUNCTION

Tee couplings leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If tee assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tee assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78021-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Tee assembly will not join with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101, LEAKS OR DOES NOT OPERATE PROPERLY**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Valve assembly leaks at couplings.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If valve assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Valve assembly is still leaking at couplings.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101, LEAKS OR DOES NOT OPERATE PROPERLY - CONTINUED**SYMPTOM**

Valve assembly will not join with other components.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

Valve assembly handle hard to operate or will not operate.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100, LEAKS OR DOES NOT OPERATE PROPERLY**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Valve assembly leaks at couplings.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If valve assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Valve assembly is still leaking at couplings.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100, LEAKS OR DOES NOT OPERATE PROPERLY - CONTINUED**SYMPTOM**

Valve assembly leaks.

MALFUNCTION

Joint gaskets leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

Valve assembly will not join with other components.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

Valve assembly handwheel hard to operate or will not operate.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
CCR NOZZLE ASSEMBLY, PART NUMBER 64017B,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 10-4930-248-13&P

CCR NOZZLE ASSEMBLY, PART NUMBER 64017B, LEAKS OR DOES NOT OPERATE PROPERLY**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4930-248-13&P for troubleshooting the CCR nozzle assembly.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

**4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100, LEAKS OR WILL NOT
CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly couplings leak fuel.

MALFUNCTION

Tee couplings leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If tee assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tee assembly couplings still leak fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Tee assembly leaks fuel.

MALFUNCTION

Joint gaskets leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

Tee assembly will not join with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-102,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)

Goggles, industrial (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

References

WP 0015

WP 0066

WP 0067

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-102, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks.

MALFUNCTION

Camlock couplings leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If hose assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly still leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78025-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78025-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly leaks fuel.

MALFUNCTION

Tee couplings leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If tee assembly still leaks at couplings proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tee assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78025-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly leaks fuel.

MALFUNCTION

Quick disconnect couplings leaking.

CORRECTIVE ACTION

1. Remove components with non-valved quick disconnect couplings (WP 0066).
2. Inspect non-valved quick disconnect couplings for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect non-valved quick disconnect couplings for defective or missing gasket. If gasket is defective or missing, replace gasket in non-valved quick disconnect couplings (WP 0067).
4. Install components with non-valved quick disconnect couplings (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If nozzle assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Nozzle assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Nozzle assembly will not connect with other components.

MALFUNCTION

Quick disconnect coupling half defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210,
EXCESSIVE FUEL DISCHARGE PRESSURE**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, EXCESSIVE FUEL DISCHARGE PRESSURE**SYMPTOM**

Nozzle assembly has excessive discharge pressure.

MALFUNCTION

Hose end control valve not operating properly.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. FEMALE X 3 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640301,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0068

Personnel Required

Petroleum Supply Specialist 92F

4 IN. FEMALE X 3 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640301, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Reducer assembly leaks fuel.

MALFUNCTION

Camlock connectors are leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If reducer assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Reducer assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0068).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

4 IN. FEMALE X 3 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640301, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Reducer assembly will not connect with other components.

MALFUNCTION

Camlock coupling half defective or damaged.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0068).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. X 10 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-100,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

4 IN. X 10 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-100, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks.

MALFUNCTION

Camlock connectors are leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If hose assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly still leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. MALE X 3 IN. FEMALE REDUCER ASSEMBLY, PART NUMBER 602630401,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0069

Personnel Required

Petroleum Supply Specialist 92F

4 IN. MALE X 3 IN. FEMALE REDUCER ASSEMBLY, PART NUMBER 602630401, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Reducer assembly leaks fuel.

MALFUNCTION

Camlock connection leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If reducer assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Reducer assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0069).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

4 IN. MALE X 3 IN. FEMALE REDUCER ASSEMBLY, PART NUMBER 602630401, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Reducer assembly will not connect with other components.

MALFUNCTION

Camlock connector defective or damaged.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0069).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
20,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-20K-22276**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 5-5430-219-13

TM 10-5430-242-12&P

20,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-20K-22276**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 5-5430-219-13 and TM 10-5430-242-12&P for troubleshooting the 20,000 gallon collapsible fuel tanks.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. FEMALE X 2 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640201,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0070

Personnel Required

Petroleum Supply Specialist 92F

4 IN. FEMALE X 2 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640201, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Reducer assembly leaks fuel.

MALFUNCTION

Camlock connection leaks.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If reducer assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Reducer assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0070).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

4 IN. FEMALE X 2 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640201, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Reducer assembly will not connect with other components.

MALFUNCTION

Camlock connector defective or damaged.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0070).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. TEE ASSEMBLY (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64022D,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

**2 IN. TEE ASSEMBLY (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64022D, LEAKS OR WILL NOT
CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly leaks fuel.

MALFUNCTION

Valved quick disconnect coupling half leaks.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Inspect valved quick disconnect coupling half for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect valved quick disconnect coupling half for defective or missing gasket. If gasket is defective or missing, replace gasket in valved quick disconnect coupling half (WP 0067).
4. Install components with valved quick disconnect coupling half (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If tee assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tee assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

2 IN. TEE ASSEMBLY (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64022D, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES**
**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Adapter valved dry-break coupling or camlock connector leaks.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half and camlock connectors (WP 0066).
2. Inspect camlock connector and valved quick disconnect coupling half for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect valved quick disconnect coupling half and camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in valved quick disconnect coupling half or camlock connector (WP 0067).
4. Install components with valved quick disconnect coupling half and camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If adapter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Adapter assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**

SYMPTOM

Adapter assembly will not connect with other components.

MALFUNCTION

Adapter assembly damaged or defective.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES**
**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)

Goggles, industrial (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

References

WP 0015

WP 0066

WP 0067

**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Adapter valved dry-break couplings or camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half and camlock connectors (WP 0066).
2. Inspect camlock connector and valved quick disconnect coupling half for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect valved quick disconnect coupling half and camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in valved quick disconnect coupling half or camlock connector (WP 0067).
4. Install components with valved quick disconnect coupling half and camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If adapter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Adapter assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**

SYMPTOM

Adapter assembly will not connect with other components.

MALFUNCTION

Adapter assembly damaged or defective.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. X 50 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78009-100,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

2 IN. X 50 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78009-100, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks.

MALFUNCTION

Camlock connectors are leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If hose assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly still leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
1.5 IN. NOZZLE ASSEMBLY, PART NUMBER 64199,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

1.5 IN. NOZZLE ASSEMBLY, PART NUMBER 64199, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly leaks fuel.

MALFUNCTION

Quick disconnect couplings leaking.

CORRECTIVE ACTION

1. Remove components with non-valved quick disconnect couplings (WP 0066).
2. Inspect non-valved quick disconnect couplings for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect non-valved quick disconnect couplings for defective or missing gasket. If gasket is defective or missing, replace gasket in non-valved quick disconnect couplings (WP 0067).
4. Install components with non-valved quick disconnect couplings (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If nozzle assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Nozzle assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

1.5 IN. NOZZLE ASSEMBLY, PART NUMBER 64199, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Nozzle assembly will not connect with other components.

MALFUNCTION

Quick disconnect coupling half defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. BALL VALVE ASSEMBLY, PART NUMBER 78048-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

2 IN. BALL VALVE ASSEMBLY, PART NUMBER 78048-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Ball valve assembly leaks.

MALFUNCTION

Ball valve assembly leaking at camlock connector dust plug.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If valve assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Ball valve assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

2 IN. BALL VALVE ASSEMBLY, PART NUMBER 78048-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Ball valve assembly will not join with other components.

MALFUNCTION

Camlock connector defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. FEMALE X 1.5 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602620151,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0071

Personnel Required

Petroleum Supply Specialist 92F

2 IN. FEMALE X 1.5 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602620151, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Reducer assembly leaks fuel.

MALFUNCTION

Camlock connectors are leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If reducer assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Reducer assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0071).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

2 IN. FEMALE X 1.5 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602620151, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Reducer assembly will not connect with other components.

MALFUNCTION

Camlock connectors defective or damaged.

CORRECTIVE ACTION

1. Repair reducer assembly (WP 0071).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly leaks fuel.

MALFUNCTION

Quick disconnect coupling leaking.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Inspect valved quick disconnect coupling half for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect valved quick disconnect coupling half for defective or missing gasket. If gasket is defective or missing, replace gasket in valved quick disconnect coupling half (WP 0067).
4. Install components with valved quick disconnect coupling half (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If nozzle assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Nozzle assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Nozzle assembly leaks at closed circuit refueling receptacle when refueling.

MALFUNCTION

Nozzle assembly or aircraft/vehicle refueling receptacle defective.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Replace nozzle assembly with a known serviceable nozzle by installing components with valved quick disconnect coupling half (WP 0066) to determine if nozzle or refueling receptacle is defective.
3. If serviceable nozzle assembly also leaks when refueling the same aircraft or vehicle, the closed circuit refueling receptacle on the aircraft or vehicle being refueled is defective. Troubleshooting must be performed for the aircraft or vehicle that has the leaking closed circuit refueling receptacle. Refer to the applicable aircraft or vehicle maintenance manual for troubleshooting procedures.
4. If nozzle assembly does not leak when refueling the same aircraft or vehicle, the original D1 nozzle is defective. Contact Unit Maintenance for repair.
5. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Nozzle assembly will not join with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

Nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

Nozzle assembly defective.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly leaks fuel.

MALFUNCTION

Camlock connector leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If nozzle assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Nozzle assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Nozzle assembly leaks at closed circuit refueling receptacle when refueling.

MALFUNCTION

Nozzle assembly or aircraft/vehicle refueling receptacle defective.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Replace nozzle with a known serviceable nozzle assembly leaks fuel by installing components with camlock connectors (WP 0066) to determine if nozzle assembly or closed circuit refueling receptacle is defective.
3. If serviceable nozzle assembly also leaks when refueling the same aircraft or vehicle, the closed circuit refueling receptacle on the aircraft or vehicle being refueled is defective. Troubleshooting must be performed for the aircraft or vehicle that has the leaking closed circuit refueling receptacle. Refer to the applicable aircraft or vehicle maintenance manual for troubleshooting procedures.
4. If serviceable nozzle assembly does not leak when refueling the same aircraft or vehicle, the original nozzle assembly is defective. Contact Unit Maintenance for repair.
5. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Nozzle assembly will not join with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

Nozzle assembly defective.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
3 IN. DOUBLE MALE ADAPTER ASSEMBLY, PART NUMBER 602830301,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0072

Personnel Required

Petroleum Supply Specialist 92F

3 IN. DOUBLE MALE ADAPTER ASSEMBLY, PART NUMBER 602830301, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If adapter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Adapter assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0072).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
3 IN. DOUBLE FEMALE ADAPTER ASSEMBLY, PART NUMBER 602730301,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0073

Personnel Required

Petroleum Supply Specialist 92F

3 IN. DOUBLE FEMALE ADAPTER ASSEMBLY, PART NUMBER 602730301, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If adapter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Adapter assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0073).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. DOUBLE MALE ADAPTER ASSEMBLY, PART NUMBER 602840401,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0074

Personnel Required

Petroleum Supply Specialist 92F

4 IN. DOUBLE MALE ADAPTER ASSEMBLY, PART NUMBER 602840401, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If adapter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Adapter assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0074).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. DOUBLE FEMALE ADAPTER ASSEMBLY, PART NUMBER 602740401,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067
WP 0075

Personnel Required

Petroleum Supply Specialist 92F

4 IN. DOUBLE FEMALE ADAPTER ASSEMBLY, PART NUMBER 602740401, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If adapter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Adapter assembly still leaks fuel.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0075).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly leaks fuel.

MALFUNCTION

Camlock connector leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If nozzle assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Nozzle assembly still leaks fuel.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Nozzle assembly leaks at closed circuit refueling receptacle when refueling.

MALFUNCTION

Nozzle assembly or aircraft/vehicle refueling receptacle defective.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Replace nozzle assembly with a known serviceable nozzle by installing components with camlock connectors (WP 0066) to determine if nozzle assembly or closed circuit refueling receptacle is defective.
3. If serviceable nozzle assembly also leaks when refueling the same aircraft or vehicle, the closed circuit refueling receptacle on the aircraft or vehicle being refueled is defective. Troubleshooting must be performed for the aircraft or vehicle that has the leaking closed circuit refueling receptacle. Refer to the applicable aircraft or vehicle maintenance manual for troubleshooting procedures.
4. If serviceable nozzle assembly does not leak when refueling the same aircraft or vehicle, the original nozzle assembly is defective. Contact Unit Maintenance for repair.
5. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Nozzle assembly will not join with other components.

MALFUNCTION

Camlock connector is defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**SYMPTOM**

Nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

Nozzle assembly defective.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
WILL NOT TURN**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0005
WP 0015
WP 0066

Personnel Required

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, WILL NOT TURN**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly will not turn.

MALFUNCTION

Fuel hoses connected incorrectly, causing fuel to pass through the system in the wrong direction.

CORRECTIVE ACTION

1. Verify direction of flow arrow is pointing in the direction of fuel flow. If the arrow is pointing in the wrong direction, the fuel hoses must be disconnected and the fuel additive injection assembly turned around to position the arrow in the right direction. Remove and install components with camlock connectors (WP 0066).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel hoses are connected properly and the fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel hose is kinked upstream or downstream of system.

CORRECTIVE ACTION

1. Straighten hose assembly.
2. Perform operational checkout of the FSSP (WP 0015).
3. If the fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, WILL NOT TURN - CONTINUED**MALFUNCTION**

Valve upstream or downstream is partially or fully closed.

CORRECTIVE ACTION

1. Dispense fuel (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If the fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Gate valves in the fuel system are set too low and are not providing enough fuel to power the injector.

CORRECTIVE ACTION

1. Adjust gate valve.
2. Perform operational checkout of the FSSP (WP 0015).
3. If the fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Injector is jammed by foreign object.

CORRECTIVE ACTION

1. Check that fluid motor rotates freely by turning the motor with your hand. If the fuel additive injector does not rotate freely by turning the motor with your hand, contact Unit Maintenance.
2. If the fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly still will not turn.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
TURNS, BUT WILL NOT PICK UP ADDITIVE**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0004
WP 0005
WP 0015

Personnel Required

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly turns, but will not pick up additive.

MALFUNCTION

Additive level in tank is low.

CORRECTIVE ACTION

1. Fill/service fuel additive injection assembly tanks with additives (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

VALVE #1 is in the closed position.

CORRECTIVE ACTION

1. Place VALVE #1 in the open position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE - CONTINUED**MALFUNCTION**

VALVE #2 is fully opened.

CORRECTIVE ACTION

1. Place VALVE #2 in the closed position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Bleed valve is placed to the BLEED position.

CORRECTIVE ACTION

1. Place bleed valve in the INJECT position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Vent valve is either in the ON or VENT position.

CORRECTIVE ACTION

1. Position the vent valve to the INJECT position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Additive shutoff valve is not fully opened.

CORRECTIVE ACTION

1. Position the additive shutoff valve to the fully open position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE - CONTINUED**MALFUNCTION**

Fuel additive supply hose leaking.

CORRECTIVE ACTION

1. Tighten hose connections.
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly turns, but still will not pick up additive.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0004
WP 0005
WP 0015

Personnel Required

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

System is primed and running, but injection is either low or erratic.

MALFUNCTION

Additive level in tank is low.

CORRECTIVE ACTION

1. Fill/service fuel additive injection assembly tanks with additives (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

VALVE #1 is not fully opened.

CORRECTIVE ACTION

1. Place VALVE #1 in the fully open position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC - CONTINUED**MALFUNCTION**

VALVE #2 is fully opened.

CORRECTIVE ACTION

1. Place VALVE #2 in the closed position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Bleed valve is placed to the BLEED position.

CORRECTIVE ACTION

1. Place bleed valve in the INJECT position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Vent valve is either in the ON or VENT position.

CORRECTIVE ACTION

1. Position the vent valve in the INJECT position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Additive shutoff valve is not fully opened.

CORRECTIVE ACTION

1. Position the additive shutoff valve to the fully open position (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC - CONTINUED**MALFUNCTION**

Fuel additive supply hose leaking.

CORRECTIVE ACTION

1. Tighten hose connections.
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Temperature is too low, causing the additive to thicken.

CORRECTIVE ACTION

1. Warm additive.
2. Calibrate the fuel additive injection assembly (WP 0005).
3. Perform operational checkout of the FSSP (WP 0015).
4. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

System is primed and running, but injection is still either low or erratic.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR IS RUNNING SLOWLY EVEN WITH HIGH FUEL FLOW RATES**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTOR IS RUNNING SLOWLY EVEN WITH HIGH FUEL FLOW RATES**SYMPTOM**

Injector is running slowly even with high flow rates.

MALFUNCTION

Injector is running slowly.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR WILL NOT FLOW AND APPEARS TO BE LOCKED UP**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066

Personnel Required

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTOR WILL NOT FLOW AND APPEARS TO BE LOCKED UP**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly injector is locked up.

MALFUNCTION

Fluid motor inlet is clogged with debris or foreign objects.

CORRECTIVE ACTION

1. Remove the fuel inlet hose from the fuel additive injection assembly (WP 0066).
2. Clean the fluid motor inlet.
3. Install the fuel inlet hose on the fuel additive injection assembly (WP 0066).
4. Perform operational checkout of the FSSP (WP 0015).
5. If fuel additive injection assembly injector is still locked up, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly injector is still locked up.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTION SYSTEM DOES NOT INJECT THE CORRECT AMOUNT OF ADDITIVE**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0004
WP 0005
WP 0015

Personnel Required

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTION SYSTEM DOES NOT INJECT THE CORRECT AMOUNT OF ADDITIVE

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Incorrect amount of additive being injected.

MALFUNCTION

Additive level in tank is low.

CORRECTIVE ACTION

1. Fill/service additive injection assembly tanks with additives (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly injection system still does not inject the correct amount of additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank vents are closed.

CORRECTIVE ACTION

1. Open the FSII, CI and SDA vent valves on tanks (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly injection system still does not inject the correct amount of additive, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTION SYSTEM DOES NOT INJECT THE CORRECT AMOUNT OF ADDITIVE - CONTINUED**MALFUNCTION**

Additive shutoff valves are closed.

CORRECTIVE ACTION

1. Open all additive shutoff valves (WP 0004).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly injection system still does not inject the correct amount of additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Additive stroke adjustment set screw(s) vibrated loose.

CORRECTIVE ACTION

1. Reset FSII, CI and SDA additive stroke adjustment knobs (WP 0005) and tighten set screw(s).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly injection system still does not inject the correct amount of additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Additives are too thick due to low temperature.

CORRECTIVE ACTION

1. Warm additive.
2. If additive cannot be warmed for thinning, calibrate fuel additive injection assembly (WP 0005) to compensate.
3. If fuel additive injection assembly injection system still does not inject the correct amount of additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Injection system still does not inject the correct amount of additive.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
LEAKS DURING OPERATION**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015

Personnel Required

Petroleum Supply Specialist 92F

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, LEAKS DURING OPERATION**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly leaking.

MALFUNCTION

Hose leaks between injection pump and tanks.

CORRECTIVE ACTION

1. Tighten hose connections at injection pump and tanks.
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still leaks during operation, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly is still leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE AMOUNT OF FUEL PUMPED**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE AMOUNT OF FUEL PUMPED**SYMPTOM**

Flowmeter assembly does not indicate amount of fuel pumped.

MALFUNCTION

Register readout faulty.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED**SYMPTOM**

Flowmeter assembly does not indicate the correct amount of fuel pumped.

MALFUNCTION

Register readout faulty.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE FUEL FLOW**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE FUEL FLOW**SYMPTOM**

Flowmeter assembly does not indicate fuel flow.

MALFUNCTION

Register readout faulty.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
LEAKS DURING OPERATION**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)

Goggles, industrial (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

References

WP 0015

WP 0066

WP 0067

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, LEAKS DURING OPERATION**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly leaks.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If flowmeter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Flowmeter assembly is still leaking.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100,
COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100, COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Wet wing defueling assembly components leak or will not join with other components.

MALFUNCTION

Wet wing defueling assembly camlock connector or valved quick disconnect coupling half leaks.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half and camlock connectors (WP 0066).
2. Inspect camlock connector and valved quick disconnect coupling half for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect valved quick disconnect coupling half and camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in valved quick disconnect coupling half or camlock connector (WP 0067).
4. Install components with valved quick disconnect coupling half and camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If wet wing defueling assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Wet wing defueling assembly components still leak.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100, COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Wet wing defueling assembly components will not join with other components.

MALFUNCTION

Wet wing defueling assembly components are defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
50,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-50K-22636**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 5-5430-219-13

TM 10-5430-242-12&P

50,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-50K-22636**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 5-5430-219-13 and TM 10-5430-242-12&P for troubleshooting the 50,000 gallon collapsible fuel tank.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER, PART NUMBERS EAS-0400-IN AND EAS-0400-OUT,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

References

WP 0015
WP 0066
WP 0067

Personnel Required

Petroleum Supply Specialist 92F

TANK VOLUME METER, PART NUMBERS EAS-0400-IN AND EAS-0400-OUT, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank volume meter leaks.

MALFUNCTION

Camlock connectors leaking.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Inspect camlock coupling for dirt or debris trapped inside the hose coupling connection. Remove any dirt or debris found.
3. Inspect camlock connector for defective or missing gasket. If gasket is defective or missing, replace gasket in camlock connectors (WP 0067).
4. Install components with camlock connectors (WP 0066).
5. Perform operational checkout of the FSSP (WP 0015).
6. If tank volume meter assembly still leaks at couplings, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter still leaks.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK

TANK VOLUME METER, PART NUMBERS EAS-0400-IN AND EAS-0400-OUT, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Tank volume meter will not join with other components.

MALFUNCTION

Tank volume meter is defective or damaged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER, PART NUMBERS EAS-0400-IN AND EAS-0400-OUT,
DOES NOT INDICATE CORRECT AMOUNT OF FUEL PASSING THROUGH METER**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

TANK VOLUME METER, PART NUMBERS EAS-0400-IN AND EAS-0400-OUT, DOES NOT INDICATE CORRECT AMOUNT OF FUEL PASSING THROUGH METER

SYMPTOM

Fuel is flowing through tank volume meter, but meter does not indicate correct amount of fuel flow.

MALFUNCTION

Tank volume meter does not indicate correct amount of fuel passing through meter.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

**OPERATOR MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
MONITOR DISPLAYS LOW BATTERY SYMBOL**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR DISPLAYS LOW BATTERY SYMBOL**SYMPTOM**

Tank volume meter monitor displays low battery symbol.

MALFUNCTION

Tank volume meter monitor battery discharged.

CORRECTIVE ACTION

Contact Unit Maintenance.

END OF TASK**END OF WORK PACKAGE**

CHAPTER 4

OPERATOR MAINTENANCE INSTRUCTIONS FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**OPERATOR MAINTENANCE
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION**

INTRODUCTION**General**

Preventive Maintenance Checks and Services (PMCS) are performed to keep the fuel system supply point equipment in operating condition. The checks are used to find, correct or report problems. Operators are to do the PMCS as shown in the PMCS table. Preventive maintenance checks and services are performed every day the equipment is operated, using the PMCS table. Pay attention to WARNING and CAUTION statements. A WARNING means someone could be injured or killed. A CAUTION means equipment could get damaged.

Before you begin operating the equipment, do Before PMCS.

During operation, do During PMCS.

After operation, do After PMCS.

Once a week do Weekly PMCS. If equipment has not been operated in a week, also do Before PMCS at the same time.

Do Monthly PMCS once a month. If the equipment has not been operated in a month, also do After PMCS at the same time.

If you are operating the equipment for the first time, do your Weekly and Monthly PMCS the first time you do your Before PMCS.

If you find something wrong when performing PMCS, fix it if you can, using troubleshooting procedures and/or maintenance procedures.

The right-hand column of the PMCS table list conditions that make the equipment not fully mission capable. Write up items not-fixed on DA Form 2404 for Unit Maintenance. For further information on how to use this form, see DA PAM 750-8.

If tools required to perform PMCS are not listed in WP 0212, notify Unit Maintenance.

When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.

Leakage Definition**CAUTION**

Equipment operation is allowed with minor leakages (Class I or II), except for fuel leaks. Of course, consideration must be given to the fluid capacity of the item or system being checked. When in doubt, ask your supervisor.

Class III leaks should be reported immediately to your supervisor.

It is necessary for you to know how fluid leakage affects the status of the FSSP. Following are definitions of the classes of leakage an operator needs to know to be able to determine the condition of the leak. Learn and then be familiar with them, and remember - when in doubt, ask your supervisor.

Leakage Definitions for Operator PMCS.

CLASS I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

CLASS II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being inspected.

CLASS III - Leakage of fluid great enough to form drops that fall from the item being inspected.

Inspection

Look for signs of a problem or trouble. You can feel, smell, hear or see many problems. Be alert when using the equipment.

Inspect to see if items are in good condition. Are they correctly assembled, stowed, secured, excessively worn, leaking, corroded or properly lubricated? Correct any problems found or notify Unit Maintenance.

There are some common items to check all over the equipment. These include the following:

1. Bolts, clamps, nuts and screws: Continuously check for looseness. Look for chipped paint, bare metal, rust or corrosion around bolt and screw heads and nuts. Tighten them when you find them loose. If tools are not available, contact Unit Maintenance.
2. Welds: Many items on the equipment are welded. To check these welds, look for chipped paint, rust, corrosion or gaps. When these conditions exist, notify Unit Maintenance on DA Form 2404.
3. Electrical wires, connectors and harnesses: Tighten loose connectors. Look for cracked or broken insulation, bare wires and broken connectors. If any are found, notify Unit Maintenance.
4. Hoses and fluid lines: Look for wear, damage and leaks, and make sure clamps and fittings are tight. Wet spots mean a leak. A stain by a fitting or connector can also mean a leak. When you find a leak, notify Unit Maintenance.

LUBRICATION SERVICE INTERVALS - NORMAL CONDITIONS

For safer, more trouble-free operations, make sure that your equipment is serviced when it needs it.

LUBRICATION SERVICE INTERVALS - UNUSUAL CONDITIONS

Your equipment will require extra service and care when you operate under unusual conditions. High or low temperatures, long periods of hard use or continued use in sand, water, mud or snow will break down the lubricant, requiring you to add or change lubricant more often.

CLEANING AND LUBRICATION

Proper cleaning and lubrication can aid in avoiding possible problems or trouble, so make it a habit to do the following:

CAUTION

Follow all cleaning and lubrication instructions carefully, failure to do so can result in damage to equipment.

1. Thoroughly wash all equipment exposed to salt spray with clean, fresh water.
2. Clean parts to be lubricated with solvent cleaning compound, MIL-PRF-680 or equivalent. Do not use fluid or semi-fluid lubricant on SFD coated surfaces. Wipe surface dry before lubricating.
3. Clean grease fittings before lubrication.
4. Lubricate all equipment at conclusion of the operation before equipment storage.
5. Always use the PMCS lubrication instructions as a guide.
6. Never use too much lubricant.
7. Never use the wrong type or grade of lubricant.
8. Lubricate more during constant use and less during inactive periods.
9. Use the correct grade of lubricant for seasonal temperature expected.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) 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.

Corrosion is typically associated with rusting of metals or galvanic corrosion, which produces a white powder. Corrosion also includes deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words, such as "corrosion, rust, deterioration" or "cracking", will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 750-8.

OIL FILTERS

There are no oil filters in the FSSP.

ARMY OIL ANALYSIS PROGRAM (AOAP)

There are no components of the FSSP enrolled in the AOAP program.

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION PROCEDURES**

INITIAL SETUP:**Personnel Required**

Petroleum Supply Specialist 92F

References

TM 10-4330-235-13&P

TM 10-4320-372-14

TM 5-5430-219-13

TM 10-4930-248-13&P

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION PROCEDURES

1. Receipt Manifold Butterfly Valves	24. Suction Hoses
2. Hose Assembly	25. Discharge 350 GPM Fuel Pumping Assembly
3. Tee Assemblies	26. Discharge Hoses
4. Gate Valve Assembly	27. Tee Assemblies
5. Suction Hoses	28. Gate Valve Assemblies
6. Receiving 350 GPM Pumping Assembly	29. Discharge Hoses
7. Discharge Hoses	30. Fuel Sampling Probe Adapters
8. Gate Valve Assemblies	31. Filter-Separators
9. 4 In. Inline Flowmeter Assembly	32. Discharge Hoses
10. Tee Assemblies	33. Gate Valve Assemblies
11. Gate Valve Assemblies	34. Tee Assembly
12. Discharge Hoses	35. Discharge Hoses
13. Fuel Additive Injection Assembly	36. Tee Assembly
14. Tee Assemblies	37. Gate Valve Assemblies
15. Discharge Hoses	38. 4 In. Inline Flowmeter Assembly
16. Gate Valve Assemblies	39. Gate Valve Assembly
17. Tank Volume Meters	40. Tee Assemblies
18. Fuel Tanks and Hoses	41. Gate Valve Assemblies
19. Receipt Side Tank Volume Meters	42. Discharge Hoses
20. Gate Valve Assemblies	43. Distribution Point Butterfly Valves
21. Discharge Hoses	44. Nozzles
22. Tee Assemblies	45. Wet Wing Defueling Assembly
23. Gate Valve Assembly	46. TRICON Containers

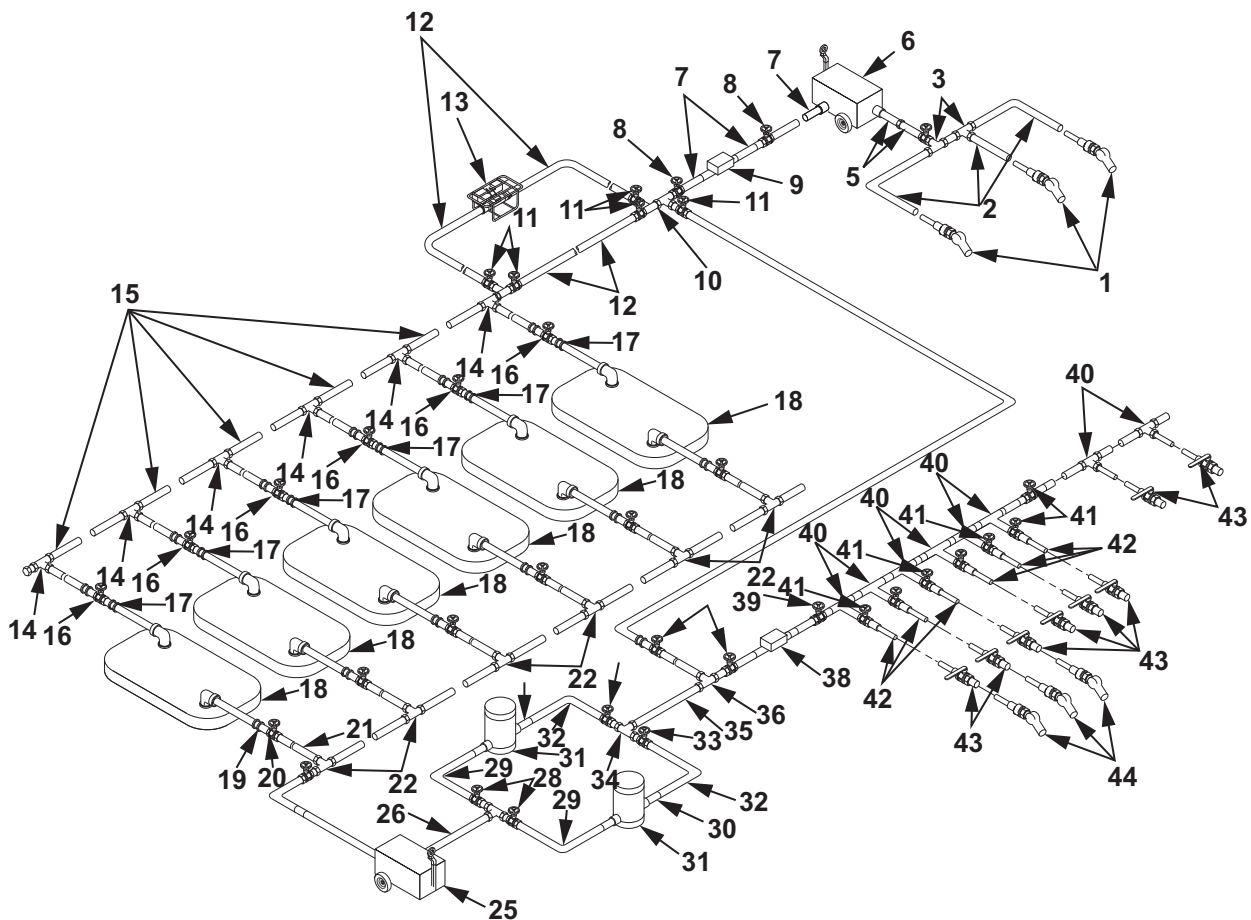


Figure 1. FSSP Components.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION PROCEDURES - CONTINUED

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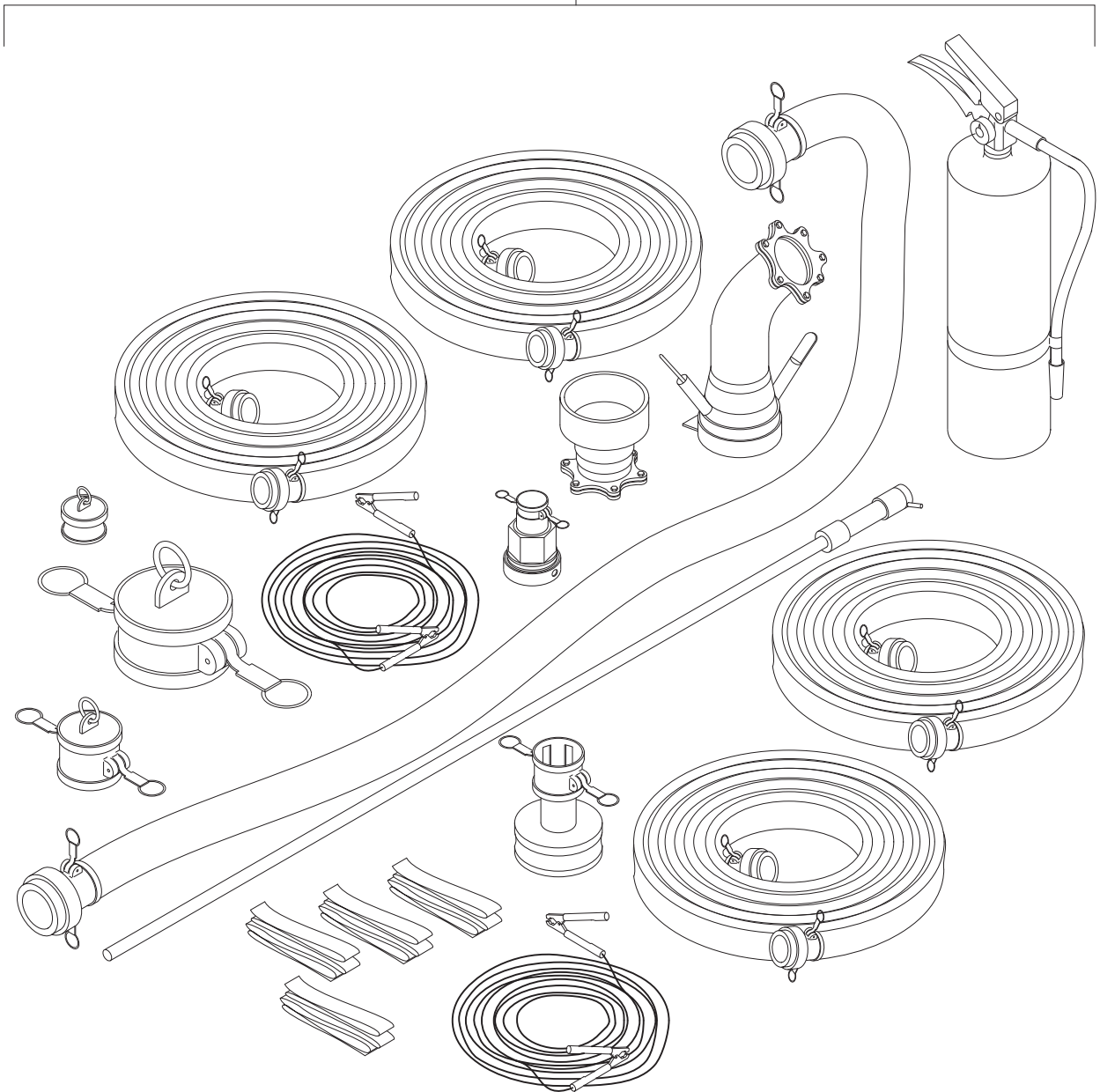


Figure 2. Wet Wing Defueling Assembly.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION PROCEDURES - CONTINUED

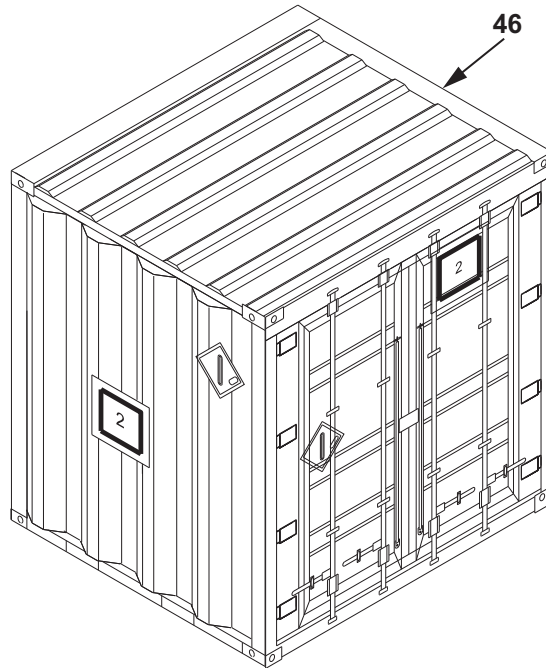


Figure 3. TRICON Container.

Preventive Maintenance Checks and Services (PMCS).

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
1	Before	.2	Receipt Manifold Butterfly Valves	RECEIPT LINES AND RECEIVING PUMP NOTE Fuel must be in system under pressure prior to performing PMCS. Check butterfly valve lever and coupling halves for leakage. If found, replace gaskets (WP 0067). If butterfly valves still leak, replace butterfly valves (WP 0066). Check fire extinguishers for serviceability and gauge for indication of full charge. If fire extinguishers are damaged or not fully charged, replace fire extinguishers. Check ground rods for damage that would prevent proper grounding of equipment. If ground rods are damaged, contact Unit Maintenance. Check fuel spill control kit for missing components. Reference WP 0212 for a listing of components required in the fuel spill control kit.	Class III leakage is found. Fire extinguishers are not fully charged or damaged. Ground rods are damaged and will not ground equipment.
2	Before	.2	Hose Assembly	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
3	Before	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee still leaks, replace tee (WP 0066).	Class III leakage is found.
4	Before	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valves will not operate Gate valves will not operate.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
5	Before	.2	Suction Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
6	Before	.2	Receiving 350 GPM Fuel Pumping Assembly	Perform PMCS per TM 10-4320-372-14.	
7	Before	.2	Discharge Hoses	Check hoses for any damage that may have cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
8	Before	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valves will not operate. Gate valves will not operate.
9	Before	.2	4 In. Inline Flowmeter Assembly	Check flowmeter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066). Check flowmeter body for leakage or damage that would prevent proper operation. If leakage or damage is found, replace flowmeter (WP 0066). Check flowmeter register readout for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Class III leakage is found. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
10	Before	.2	Tee Assemblies	OUTGOING SUCTION TANK HOSES, INJECTORS, METERS AND TANKS Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
11	Before	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
				Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valves will not operate.
11	Before	.2	Gate Valve Assemblies (Continued)	Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
12	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
13	Before	.2	Fuel Additive Injection Assembly	Check fuel additive injection assembly additive tanks and barrel for the proper level of additives. Refill additive tanks or barrel, as necessary (WP 0005).	Class III leakage is found.
				Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance.	Ground rod is damaged and will not ground equipment.
				Check fuel additive injection assembly coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If fuel additive injection assembly still leaks, contact Unit Maintenance.	Class III leakage is found.
				Check fuel additive injection assembly for leakage at additive lines, valves and around pumps. If leakage is found, contact Unit Maintenance.	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
14	Before	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
15	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
16	Before	.2	Gate Valve Assemblies	Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
17	Before	.2	Tank Volume Meters	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
				Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valves will not operate.
				Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
18	Before	.2	Fuel Tanks and Hoses	Check tank volume meter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tank volume meter still leaks, contact Unit Maintenance.	Class III leakage is found.
19	Before	.2	Receipt Side Tank Volume Meters	Check tank volume meter electrical cable for damage and connector security. If electrical cable connector is loose, tighten connector. If electrical cable is damaged, contact Unit Maintenance.	Tank volume meter is inoperative.
				Perform PMCS per TM 5-5430-219-13.	
				Check tank volume meter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tank volume meter still leaks, contact unit maintenance.	Class III leakage is found.
				Check tank volume meter electrical cable for damage and connector security. If electrical cable connector is loose, tighten connector. If electrical cable is damaged, contact unit maintenance.	Tank volume meter is inoperative.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
19	Before	.2	Receipt Side Tank Volume Meters (Continued)	Check tank volume meter monitor for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Ground rod is damaged and will not ground equipment.
20	Before	.2	Gate Valve Assemblies	Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance.	Class III leakage is found.
				Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve assembly still leaks, replace gate valve assembly (WP 0066).	Gate valves will not operate.
				Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valves will not operate.
				Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
21	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
22	Before	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
23	Before	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
				Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valves will not operate.
				Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
24	Before	.2	Suction Hoses	DISCHARGE PUMP, FILTER-SEPARATOR AND RECIRCULATION LINE Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
25	Before	.2	Discharge 350 GPM Fuel Pumping Assembly	Perform PMCS per TM 10-4320-372-14 .	Class III leakage is found.
26	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
27	Before	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
28	Before	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found.
29	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
30	Before	.2	Fuel Sampling Probe Adapters	Check fuel sampling probe adapter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If adapter still leaks, replace adapter (WP 0066).	Class III leakage is found.
31	Before	.2	Filter-Separators	Perform PMCS per TM 10-4330-235-13&P.	
32	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
33	Before	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
				Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valve will not operate.
				Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valve will not operate.
34	Before	.2	Tee Assembly	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
35	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
36	Before	.2	Tee Assembly	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.

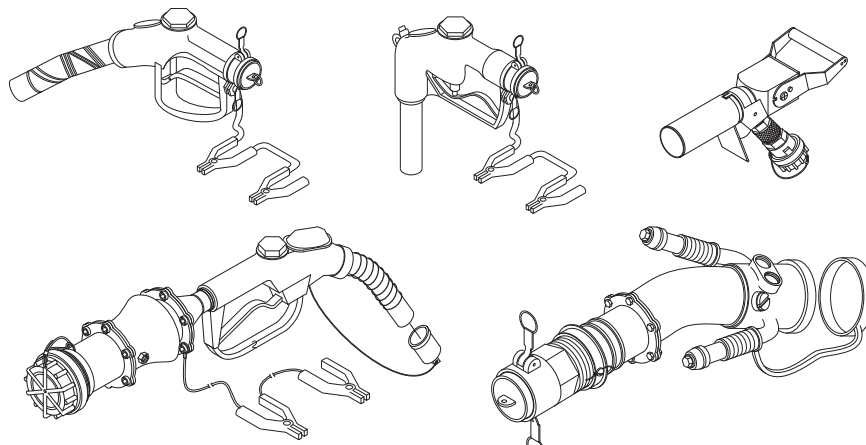
Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
37	Before	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
38	Before	.2	4 In. Inline Flowmeter Assembly	DISTRIBUTION POINTS Check flowmeter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066). Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check flowmeter body for leakage or damage that would prevent proper operation. If leakage or damage is found, replace flowmeter (WP 0066). Check flowmeter register readout for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Class III leakage is found. Ground rod is damaged and will not ground equipment. Class III leakage is found.
39	Before	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
39	Before	.2	Gate Valve Assembly (Continued)	Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valve will not operate. Gate valve will not operate.
40	Before	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
41	Before	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
42	Before	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
43	Before	.2	Distribution Point Butterfly Valves	Check butterfly valve lever and coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If butterfly valves still leak, replace butterfly valves (WP 0066).	Class III leakage is found.
43	Before	.2	Distribution Point Butterfly Valves	Check fire extinguishers for serviceability and gauge for indication of full charge. If fire extinguishers are damaged or not fully charged, replace fire extinguishers. Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance.	Fire extinguishers are not fully charged or damaged. Ground rod is damaged and will not ground equipment.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
 <i>Figure 4. Nozzle Assemblies.</i>					
44	Before	.2	Nozzles	Check all nozzles for cracks, damage or missing parts. If damage is found, replace nozzle assembly (WP 0066). Check control handle for proper operation. If handle does not operate properly, replace nozzle assembly (WP 0066). Check couplings for damage and for missing gaskets. If damage is found, replace gaskets (WP 0067). Perform PMCS on nozzle per WP 0084	Nozzles are cracked, damaged or have missing parts. Class III leakage is found. Control handle does not operate properly. Couplings are damaged or gaskets are missing. Class III leakage is found.
45	Before	.2	Wet Wing Defueling Assembly	Check connectors, hoses, nozzle and couplings for damage or missing gaskets. If coupling gaskets are missing, replace gaskets (WP 0067). If damage is found, replace damaged components (WP 0066).	Connectors, hoses, nozzle and couplings are damaged or gaskets are missing. Class III leakage is found.
46	Before	.2	TRICON Container	Check exterior of container for damage. If damage is found, contact Unit Maintenance. Check access door for proper operation or damaged seal. If door does not operate properly or seal is damaged, contact Unit Maintenance.	

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
1	During	.2	Receipt Manifold Butterfly Valves	RECEIPT LINES AND RECEIVING PUMP Check butterfly valve coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If butterfly valves still leak, replace butterfly valves (WP 0066). Check ground rods for damage that would prevent proper grounding of equipment. If ground rods are damaged, contact Unit Maintenance. Check butterfly valve lever for damage. If damage is found, replace butterfly valve (WP 0066).	Class III leakage is found. Ground rods are damaged and will not ground equipment. Butterfly valve will not operate.
2	During	.2	Hose Assembly	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
3	During	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee still leaks, replace tee (WP 0066).	Class III leakage is found.
4	During	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate.
		.2		Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
5	During	.2	Suction Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
6	During	.2	Receiving 350 GPM Fuel Pumping Assembly	Perform PMCS per TM 10-4320-372-14.	

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
7	During	.2	Discharge Hoses	Check receiving 350 GPM fuel pumping assembly spill containment berm for evidence of fuel leakage. If fuel is found in spill containment berm, clean up spill (WP 0013) and perform troubleshooting procedures to correct fuel leak.	Class III leakage is found.
8	During	.2	Gate Valve Assemblies	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
9	During	.2	4 In. Inline Flowmeter Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valves will not operate.
				Check flowmeter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066). Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check flowmeter body for leakage or damage that would prevent proper operation. If leakage or damage is found, replace flowmeter (WP 0066). Check flowmeter register readout for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Class III leakage is found. Ground rod is damaged and will not ground equipment. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
10	During	.2	Tee Assemblies	Check receiving flowmeter assembly spill containment berm for evidence of fuel leakage. If fuel is found in spill containment berm, clean up spill (WP 0013). If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066). OUTGOING SUCTION TANK HOSES, INJECTORS, METERS AND TANKS Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found. Class III leakage is found.
11	During	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valves will not operate.
12	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
13	During	.2	Fuel Additive Injection Assembly	Check fuel additive injection assembly additive tanks and barrel for the proper level of additives. Refill additive tanks or barrel, as necessary (WP 0005). Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check fuel additive injection assembly coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If coupling halves still leak, contact Unit Maintenance.	Class III leakage is found. Ground rod is damaged and will not ground equipment. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
14	During	.2	Tee Assemblies	Check fuel additive injection assembly for leakage at additive lines, valves and around pumps. If leakage is found, contact Unit Maintenance.	Class III leakage is found.
				Check fuel additive injection assembly spill containment berm for evidence of fuel leakage. If fuel is found in spill containment berm, clean up spill (WP 0013) and perform troubleshooting procedures to correct fuel or additive leakage.	Class III leakage is found.
15	During	.2	Discharge Hoses	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
16	During	.2	Gate Valve Assemblies	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
17	During	.2	Tank Volume Meters	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
				Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valve will not operate.
				Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
				Check tank volume meter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tank volume meter still leaks, contact Unit Maintenance.	Class III leakage is found.
				Check tank volume meter electrical cable for damage and connector security. If electrical cable connector is loose, tighten connector. If electrical cable is damaged, contact Unit Maintenance.	Tank volume meter is inoperative.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
18	During	.2	Fuel Tanks and Hoses	Perform PMCS per TM 5-5430-219-13.	
19	During	.2	Receipt Side Tank Volume Meters	Check tank volume meter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tank volume meter still leaks, contact Unit Maintenance. Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check tank volume meter electrical cable for damage and connector security. If electrical cable connector is loose, tighten connector. If electrical cable is damaged, contact Unit Maintenance. Check tank volume meter monitor for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Class III leakage is found. Ground rod is damaged and will not ground equipment. Tank volume meter is inoperative.
20	During	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valves will not operate.
21	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
22	During	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
23	During	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
24	During	.2	Suction Hoses	DISCHARGE PUMP, FILTER-SEPARATOR AND RECIRCULATION LINE Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
25	During	.2	Discharge 350 GPM Fuel Pumping Assembly	Perform PMCS per TM 10-4320-372-14. Check receiving 350 GPM fuel pumping assembly spill containment berm for evidence of fuel leakage. If fuel is found in spill containment berm, clean up spill (WP 0013) and perform troubleshooting procedures to correct fuel leak.	Class III leakage is found.
26	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
27	During	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
28	During	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
29	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
30	During	.2	Fuel Sampling Probe Adapters	Check fuel sampling probe adapter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If adapter still leaks, replace adapter (WP 0066).	Class III leakage is found.
31	During	.2	Filter-Separators	Perform PMCS per TM 10-4330-235-13&P. Check filter-separators spill containment berm for evidence of fuel leakage. If fuel is found in spill containment berm, clean up spill (WP 0013) and perform troubleshooting procedures to correct fuel leak.	Class III leakage is found.
32	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
33	During	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.

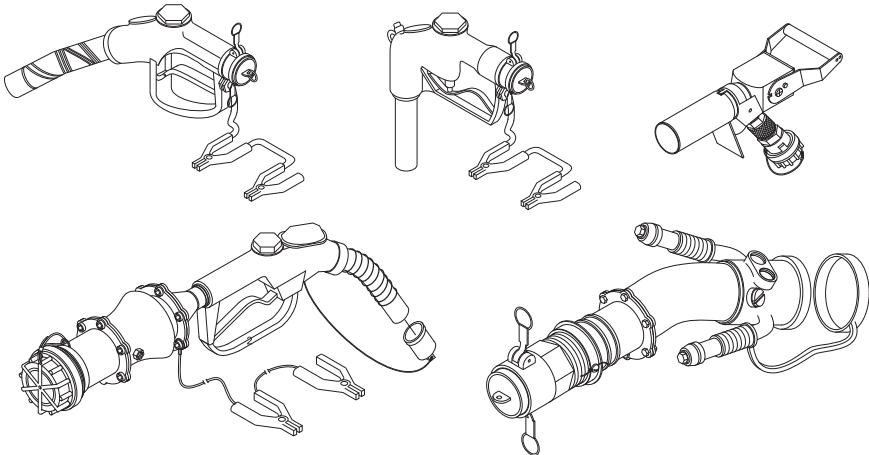
Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
34	During	.2	Tee Assembly	Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066). Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Gate valve will not operate. Gate valve will not operate. Class III leakage is found.
35	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
36	During	.2	Tee Assembly	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
37	During	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
38	During	.2	4 In. Inline Flowmeter Assembly	DISTRIBUTION POINTS Check flowmeter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066). Check flowmeter body for leakage or damage that would prevent proper operation. If leakage or damage is found, replace flowmeter (WP 0066).	Class III leakage is found. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
39	During	.2	4 In. Inline Flowmeter Assembly	Check flowmeter register readout for damage that would prevent proper operation. If damage is found, contact Unit Maintenance. Check flowmeter spill containment berm for evidence of fuel leakage. If fuel is found in spill containment berm, clean up spill (WP 0013). Replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066).	Class III leakage is found.
40	During	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
41	During	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
42	During	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
43	During	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
44	During	.2	Distribution Point Butterfly Valves	Check butterfly valve lever and coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If butterfly valves still leak, replace butterfly valves (WP 0066). Check fire extinguishers for serviceability and gauge for indication of full charge. If fire extinguishers are damaged or not fully charged, replace fire extinguishers. Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance.	Class III leakage is found. Fire extinguishers are not fully charged or damaged. Ground rod is damaged and will not ground equipment.
 <i>Figure 5. Nozzle Assemblies.</i>					
45	During	.2	Nozzles	Check all nozzles for cracks, damage or missing parts. If damage is found, replace nozzle assembly (WP 0066). Check control handle for proper operation. If handle does not operate properly, replace nozzle assembly (WP 0066). Check couplings for damage and for missing gaskets. If damage is found, replace gaskets (WP 0067). Perform PMCS on D1 nozzle per TM 10-4930-248-13&P.	Nozzles are cracked, damaged or have missing parts. Class III leakage is found. Control handle does not operate properly. Couplings are damaged or gaskets are missing. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
46	During	.2	Wet Wing Defueling Assembly	Check connectors, hoses, nozzle and couplings for damage or missing gaskets. If coupling gaskets are missing, replace gaskets (WP 0067). If damage is found, replace damaged components (WP 0066).	Connectors, hoses, nozzle and couplings are damaged or gaskets are missing. Class III leakage is found.
47	During	.2	TRICON Container	Check exterior of container for damage. If damage is found, contact Unit Maintenance. Check access door for proper operation or damaged seal. If door does not operate properly or seal is damaged, contact Unit Maintenance.	
1	After	.2	Receipt Manifold Butterfly Valves	RECEIPT LINES AND RECEIVING PUMP Check butterfly valve coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If butterfly valves still leak, replace butterfly valves (WP 0066). Check butterfly valve lever for damage. If damage is found, replace butterfly valve (WP 0066). Check fire extinguishers for serviceability and gauge for indication of full charge. If fire extinguishers are damaged or not fully charged, replace fire extinguishers. Check ground rods for damage that would prevent proper grounding of equipment. If ground rods are damaged, contact Unit Maintenance. Check fuel spill control kit for missing components. Refer to WP 0212 for a listing of components required in the fuel spill control kit.	Class III leakage is found. Butterfly valve will not operate. Fire extinguishers are not fully charged or damaged. Ground rods are damaged and will not ground equipment.
2	After	.2	Hose Assembly	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
3	After	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
4	After	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
4	After	.2	Gate Valve Assembly (Continued)	Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valve will not operate.
4	After	.2	Gate Valve Assembly (Continued)	Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
5	After	.2	Suction Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
6	After	.2	Receiving 350 GPM Pumping Assembly	Perform PMCS per TM 10-4320-372-14.	
7	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
				Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
8	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
				Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066).	Gate valve will not operate.
				Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valves will not operate.
9	After	.2	4 In. Flowmeter Assembly	Check flowmeter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
10	After	.2	Tee Assemblies	Check ground rods for damage that would prevent proper grounding of equipment. If ground rods are damaged, contact Unit Maintenance. Check flowmeter body for leakage or damage that would prevent proper operation. If leakage or damage is found, replace flowmeter (WP 0066). Check flowmeter register readout for damage that would prevent proper operation. If damage is found, contact Unit Maintenance. OUTGOING SUCTION TANK HOSES, INJECTORS, METERS AND TANKS Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Ground rods are damaged and will not ground equipment. Class III leakage is found. Class III leakage is found.
11	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valves will not operate.
12	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
13	After	.2	Fuel Additive Injection Assembly	Check fuel additive injection assembly additive tanks and barrel for the proper level of additives. Refill additive tanks or barrel, as necessary (WP 0005). Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance.	Ground rod is damaged and will not ground equipment.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
14	After	.2	Tee Assemblies	Check fuel additive injection assembly coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If coupling halves still leak, contact Unit Maintenance. Check fuel additive injection assembly for leakage at additive lines, valves and around pumps. If leakage is found, contact Unit Maintenance. Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found. Class III leakage is found. Class III leakage is found.
15	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
16	After	.2	Gate Valve Assemblies	Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066). Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found. Class III leakage is found.
17	After	.2	Tank Volume Meters	Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066). Check tank volume meter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tank volume meter still leaks, contact Unit Maintenance.	Gate valve will not operate. Gate valves will not operate. Class III leakage is found.
18	After	.2	Fuel Tanks and Hoses	Check tank volume meter electrical cable for damage and connector security. If electrical cable connector is loose, tighten connector. If electrical cable is damaged, contact Unit Maintenance. Perform PMCS per TM 5-5430-219-13.	Tank volume meter is inoperative.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
19	After	.2	Receipt Side Tank Volume Meters	Check tank volume meter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tank volume meter still leaks, contact Unit Maintenance. Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check tank volume meter electrical cable for damage and connector security. If electrical cable connector is loose, tighten connector. If electrical cable is damaged, contact Unit Maintenance. Check tank volume meter monitor for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Class III leakage is found. Ground rod is damaged and will not ground equipment. Tank volume meter is inoperative. Tank volume meter is inoperative.
20	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheels for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valves for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valves will not operate.
21	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Class III leakage is found.
21	After	.2	Discharge Hoses (Continued)	Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
22	After	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
23	After	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
24	After	.2	Suction Hoses	Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066). DISCHARGE PUMP, FILTER-SEPARATOR AND RECIRCULATION LINE Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066).	Gate valve will not operate. Gate valve will not operate.
25	After	.2	Discharge 350 GPM Fuel Pumping Assembly	Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066). Perform PMCS per TM 10-4320-372-14.	Class III leakage is found.
26	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found.
27	After	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
28	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066).	Class III leakage is found.
28	After	.2	Gate Valve Assemblies (Continued)	Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valve will not operate. Gate valve will not operate.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
29	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
30	After	.2	Fuel Sampling Probe Adapters	Check fuel sampling probe adapter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If adapter still leaks, replace adapter (WP 0066).	Class III leakage is found.
31	After	.2	Filter-Separators	Perform PMCS per TM 10-4330-235-13&P.	
32	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
33	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
34	After	.2	Tee Assembly	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
35	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.

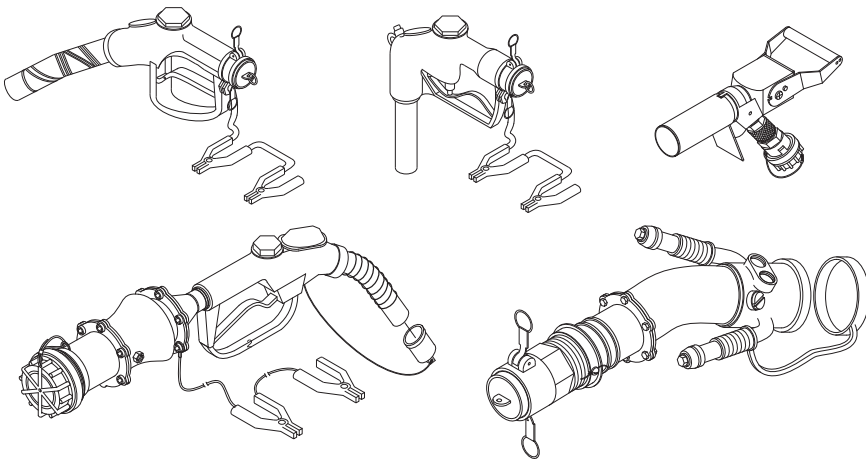
Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
36	After	.2	Tee Assembly	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
37	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.
38	After	.2	4 In. Flowmeter Assembly	DISTRIBUTION POINTS Check flowmeter coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If flowmeter still leaks, replace flowmeter (WP 0066). Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check flowmeter body for leakage or damage that would prevent proper operation. If leakage or damage is found, replace flowmeter (WP 0066). Check flowmeter register readout for damage that would prevent proper operation. If damage is found, contact Unit Maintenance.	Class III leakage is found. Ground rod is damaged and will not ground equipment. Class III leakage is found.
39	Before	.2	Gate Valve Assembly	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066). Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate. Gate valve will not operate.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
40	After	.2	Tee Assemblies	Check tee coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If tee assembly still leaks, replace tee assembly (WP 0066).	Class III leakage is found.
41	After	.2	Gate Valve Assemblies	Check gate valve coupling halves for leakage. If leakage is found, replace coupling gaskets (WP 0067). If gate valve still leaks, replace gate valve assembly (WP 0066). Check gate valve handwheel for damage. If damage is found, replace gate valve assembly (WP 0066).	Class III leakage is found. Gate valve will not operate.
41	After	.2	Gate Valve Assemblies (Continued)	Check gate valve for smooth operation. If gate valve does not operate properly, replace gate valve assembly (WP 0066).	Gate valve will not operate.
42	After	.2	Discharge Hoses	Check hoses for any damage that may cause leakage. If damage is found that will cause leakage, replace hose (WP 0066). Check coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If hose still leaks, replace hose (WP 0066).	Class III leakage is found. Class III leakage is found.
43	After	.2	Distribution Point Butterfly Valves	Check butterfly valve lever and coupling halves for leakage. If found, replace coupling gaskets (WP 0067). If butterfly valves still leak, replace butterfly valves (WP 0066). Check fire extinguishers for serviceability and gauge for indication of full charge. If fire extinguishers are damaged or not fully charged, replace fire extinguishers.	Class III leakage is found. Fire extinguishers are not fully charged or damaged.
44	After	.2	Nozzles	Check ground rod for damage that would prevent proper grounding of equipment. If ground rod is damaged, contact Unit Maintenance. Check nozzles for cracks, damage or missing parts. If damage is found, replace nozzle assembly (WP 0066).	Ground rod is damaged and will not ground equipment. Nozzles are cracked, damaged or have missing parts. Class III leakage is found.

Preventive Maintenance Checks and Services (PMCS). - Continued.

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/AVAILABLE IF:
45	After	.2	Control Handle and Couplings	Check control handle for proper operation. If handle does not operate properly, replace nozzle assembly (WP 0066). Check couplings for damage and for missing gaskets. If damage is found, replace gaskets (WP 0067). Perform PMCS on D1 nozzle per TM 10-4930-248-13&P.	Control handle does not operate properly. Couplings are damaged or gaskets are missing. Class III leakage is found.
					
Figure 6. Nozzle Assemblies.					
46	After	.2	Wet Wing Defueling Assembly	Check connectors, hoses, nozzle and couplings for damage or missing gaskets. If coupling gaskets are missing, replace gaskets (WP 0067). If damage is found, replace damaged components (WP 0066).	Connectors, hoses, nozzle and couplings are damaged or gaskets are missing. Class III leakage is found.
47	After	.2	TRICON Container	Check exterior of container for damage. If damage is found, contact Unit Maintenance. Check access door for proper operation or damaged seal. If door does not operate properly or seal is damaged, contact Unit Maintenance.	

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FUEL SYSTEM HOSE ASSEMBLY REPAIR
4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR, 4 IN. SUCTION HOSE (TITAN BRAND) REPAIR

INITIAL SETUP:**Tools and Special Tools**

Fuel spill control kit (Item 24, WP 0212)
Pan, drip (Item 24, WP 0212)
Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)
Hose repair kit (Item 30, WP 0212)

Equipment Condition

Adapter assembly removed from FSSP
(WP 0066).

Personnel Required

Petroleum Supply Specialist 92F

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

1. Place drip pan under hose assembly (Figure 1, Item 1) to be repaired.
2. Inspect hose assembly (Figure 1, Item 1) to identify the extent of damage.

NOTE

All cuts to remove any damaged areas should be made perpendicular to the hose length.

3. Using a knife, remove the damaged portion by cutting the hose assembly (Figure 1, Item 1) on both sides of the damaged area. Discard damaged hose assembly (Figure 1, Item 1).

NOTE

There are 4 ground wires per hose assembly. They are identified by a red colored dot when looking directly at the cut end of the hose assembly.

4. Locate the position of the ground wires (Figure 1, Item 2) in the hose assembly (Figure 1, Item 1).
5. Using a marking pen, draw a line (Figure 1, Item 4) approximately 1 to 1 1/4 in., down the length of the hose assembly (Figure 1, Item 1) to show the location of each ground wire (Figure 1, Item 2).
6. Using a marking pen, draw a radial line (Figure 1, Item 3) around the hose assembly (Figure 1, Item 1), approximately 1 to 1-1/4 in. back from the cut end of the hose assembly (Figure 1, Item 1).

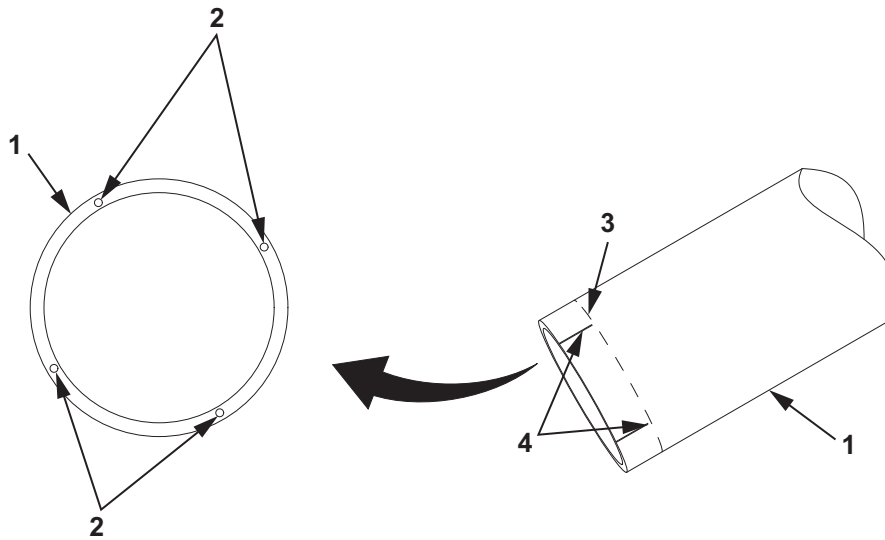


Figure 1. Hose Assembly Repair.

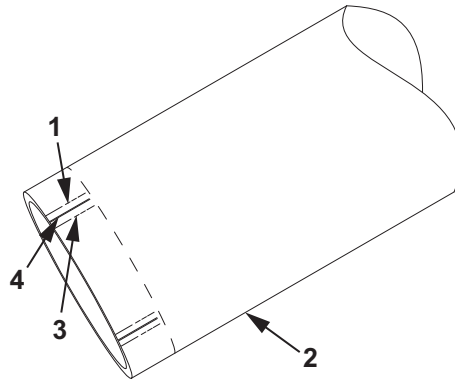
7. Using a set of clamps, secure hose assembly (Figure 2, Item 2) to a flat surface.

NOTE

Be careful not to cut completely through the hose fabric.

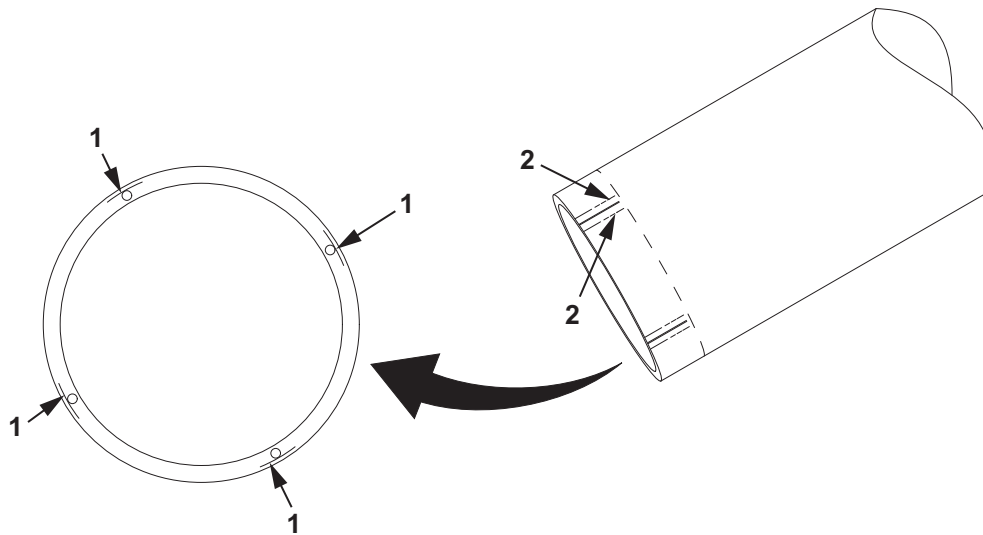
8. Using a knife, expose the ground wire (Figure 2, Item 4) by cutting the hose assembly (Figure 2, Item 2) fabric parallel to the lengthwise line (Figure 1, Item 1) previously marked not to exceed 1/2 of the hose assembly thickness (be sure not to cut completely through the hose assembly fabric). Cut approximately 1/4 in. (Figure 2, Item 3) on both sides of the lengthwise line (Figure 1, Item 3).

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

*Figure 2. Hose Assembly Repair.***NOTE**

Cut must be on the outer side of the reinforcement threads and the ground wire.'

9. Using a knife, cut the hose assembly fabric (Figure 3, Item 1) at the open end of the hose assembly approximately 1/4 in. deep between the two lengthwise (Figure 3, Item 2) cuts previously made.

*Figure 3. Hose Assembly Repair.*

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

10. Using needle nose pliers, pull the outer layer of the hose assembly fabric (Figure 4, Item 1) back by grabbing the outer layer of the hose assembly fabric (Figure 4, Item 1) and rolling the pliers toward the radial line (Figure 4, Item 2) previously marked on the hose assembly.
11. Using a knife, cut the rolled back hose assembly fabric (Figure 4, Item 1) along the radial line (Figure 4, Item 2). Discard excess hose assembly fabric (Figure 4, Item 1).

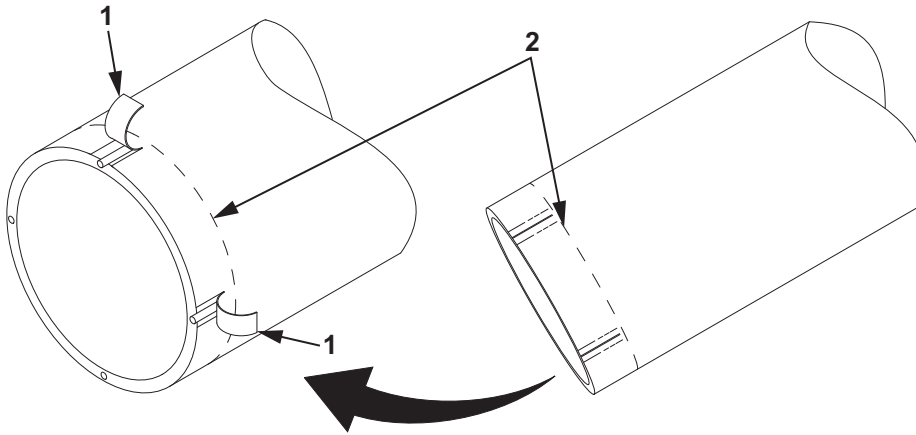


Figure 4. Hose Assembly Repair.

CAUTION

Ground wire is very fragile. Ensure it is not cut or damaged during removal of hose assembly fabric. Failure to comply could effect continuity integrity.

NOTE

After removing the hose assembly fabric, ensure the ground wire is visible with the red thread surrounding the actual ground wire.

12. Using a knife, cut the reinforcement threads (Figure 5, Item 3) of the hose assembly fabric (Figure 5, Item 4) by cutting along each side of the ground wire (Figure 5, Item 1) as close as possible without cutting the ground wire (Figure 5, Item 1) or the red filament (Figure 5, Item 2) surrounding the ground wire (Figure 5, Item 1). Ensure not to cut all the way through the hose assembly fabric (Figure 5, Item 4).
13. Using the needle nose pliers, expose the ground wire (Figure 5, Item 3) back to the radial line (Figure 5, Item 5) by grabbing the ground wire (Figure 5, Item 1) and rolling the pliers so that the ground wire (Figure 5, Item 1) is rolled back over the plier jaws.

NOTE

If the ground wire is hard to pull back, the reinforcement threads will need to be cut again until there is no resistance felt when rolling back the wire.

14. Using the needle nose pliers, hold the ground wire (Figure 5, Item 1) so that it doesn't get damaged and cut the hose assembly fabric (Figure 5, Item 4) at the radial line (Figure 5, Item 5), removing the rest of the hose assembly fabric (Figure 5, Item 4) from around the ground wire (Figure 5, Item 1). Discard excess hose assembly fabric (Figure 5, Item 4).

NOTE

The other three ground wires must be exposed in the same manner as described above.

15. Expose the other three ground wires (Figure 5, Item 1) using the same procedures.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

16. After all four ground wires (Figure 5, Item 1) have been exposed, cut all excess hose assembly (Figure 5, Item 4) fabric out at the radial line (Figure 5, Item 5) previously marked. Discard excess hose assembly (Figure 5, Item 4) fabric.

CAUTION

Use extreme care not to cut the ground wire when removing the red filament from around the wire. Failure to comply will result in damage to equipment and procedures will be required to be performed again.

17. Remove the red filament (Figure 5, Item 2) surrounding each ground wire (Figure 5, Item 1). Discard red filament (Figure 5, Item 2).

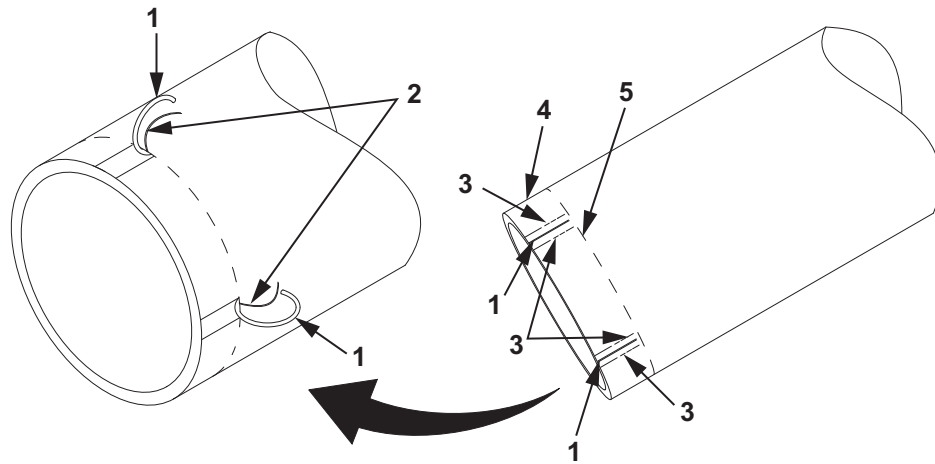


Figure 5. Hose Assembly Repair.

18. Using needle nose pliers, carefully bend the ground wire (Figure 6, Item 2) inside the hose assembly (Figure 6, Item 1).

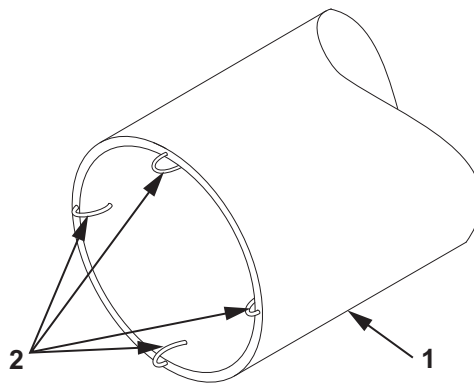


Figure 6. Hose Assembly Repair.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED**NOTE**

The ground wires must be exposed from the other section of hose assembly in the same manner before proceeding to the next step.

19. Using the hose splice (Figure 7, Item 5) as a guide, align the cut end of one section of hose assembly (Figure 7, Item 4) with the machined stop (Figure 7, Item 1) in the center of the hose splice (Figure 7, Item 5).
20. Using a marking pen, mark two lines (Figure 7, Item 3) on the hose assembly (Figure 7, Item 4) where the hose barbs (Figure 7, Item 2) will be located.

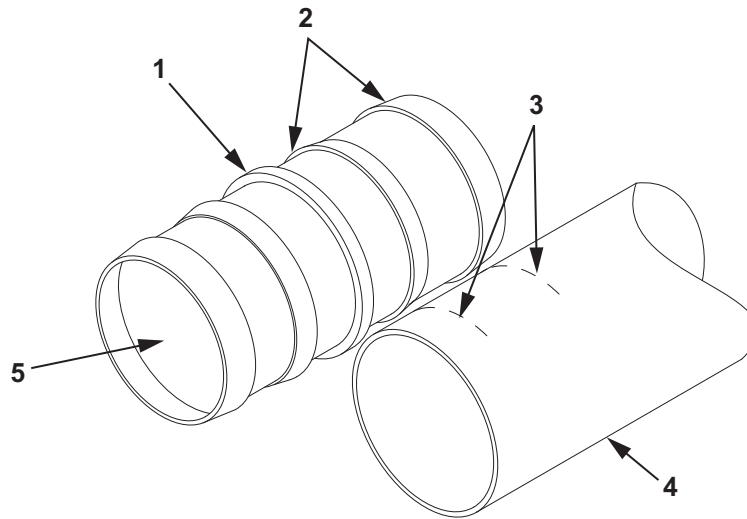


Figure 7. Hose Assembly Repair.

21. Place four clamps (Figure 8, Item 2) loosely on the hose assembly (Figure 8, Item 1) and move them back a few inches for later installation.
22. Install the hose assembly (Figure 8, Item 1) on the hose splice (Figure 8, Item 4) until it is flush with the machined stop (Figure 8, Item 3) in the center of the hose splice (Figure 8, Item 4).
23. Position all four clamps (Figure 8, Item 2) over the hose splice (Figure 8, Item 4) area.

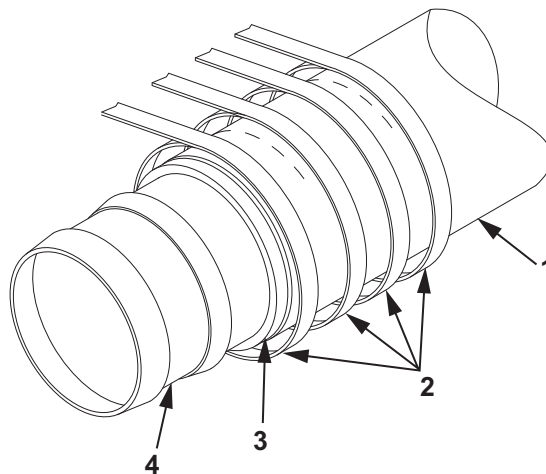


Figure 8. Hose Assembly Repair.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

24. Position the first clamp (Figure 9, Item 1) on the hose assembly (Figure 9, Item 2) until it is aligned with the first mark (Figure 9, Item 3) previously made on the hose assembly.
25. Using clamping tool (Figure 9, Item 4), tighten the clamp (Figure 9, Item 1) until almost flush with the hose assembly (Figure 9, Item 2) surface.

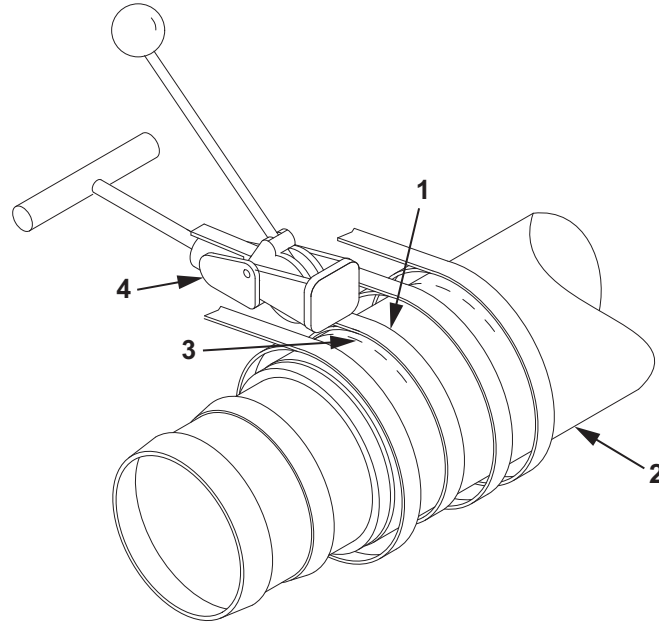


Figure 9. Hose Assembly Repair.

NOTE

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

26. Install the bridge buckle (Figure 10, Item 1) under clamp (Figure 10, Item 2).
27. Tighten clamp (Figure 10, Item 2) until the clamp (Figure 10, Item 2) cannot be tightened by hand any further.

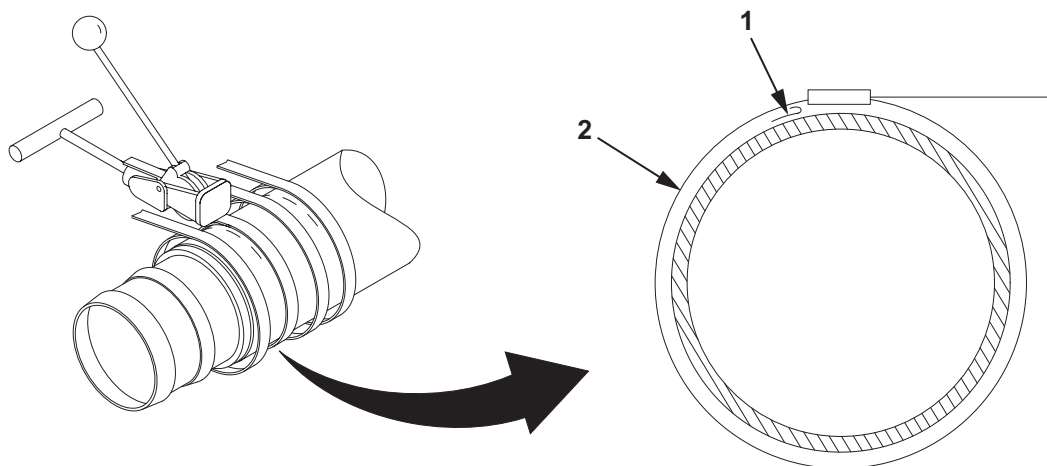


Figure 10. Hose Assembly Repair.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

28. While holding the clamping tool handle (Figure 11, Item 1) in the down position, strike the center punch anvil (Figure 11, Item 2) three to four times with a hammer.
29. While still holding the clamping tool handle (Figure 11, Item 1) in the down position, raise the entire clamping tool (Figure 11, Item 4) up to shear the tail of the band off of the clamp (Figure 11, Item 3).
30. Using hammer, tap the edge of the distorted clamp (Figure 11, Item 3) down to a level configuration.

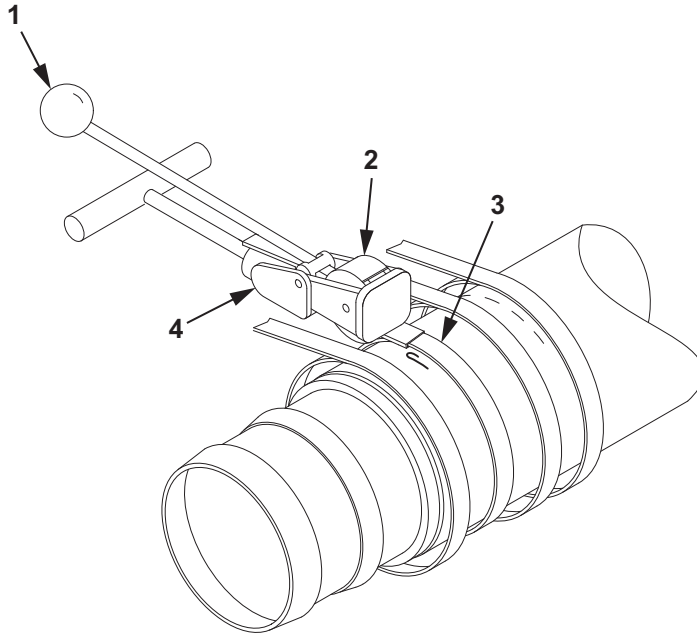


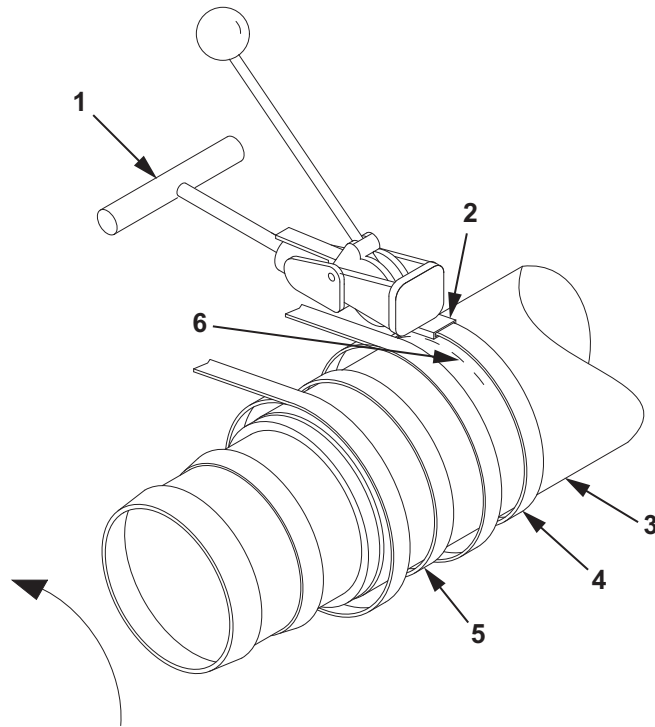
Figure 11. Hose Assembly Repair.

NOTE

All clamps should be installed so that the clamp buckle is oriented a minimum of 30° away from the previously installed clamp buckle.

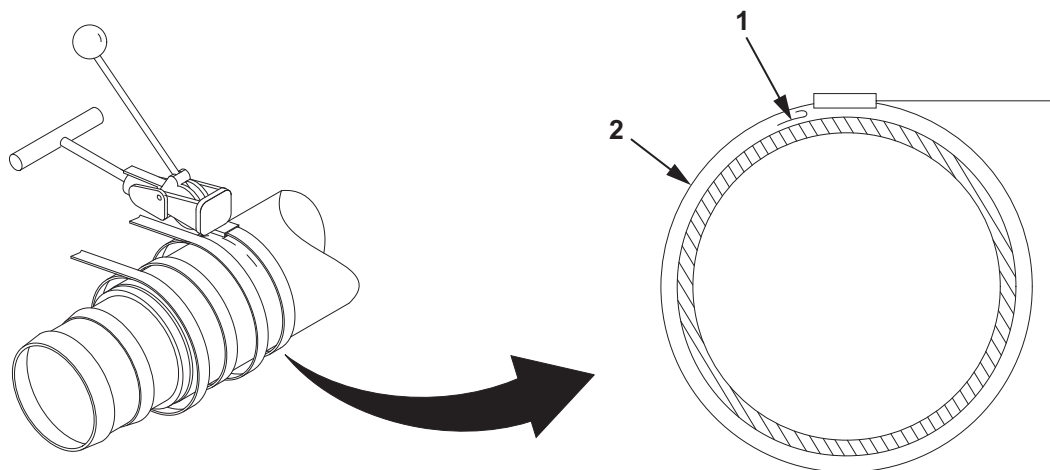
31. Position the second clamp (Figure 12, Item 4) on the hose assembly (Figure 12, Item 3) until it is aligned with the second mark (Figure 12, Item 6) previously made on the hose assembly (Figure 12, Item 3).
32. Rotate the hose assembly (Figure 12, Item 3) until clamp buckle (Figure 12, Item 2) on the second clamp (Figure 12, Item 4) is oriented a minimum of 30° away from the clamp buckle on the first clamp (Figure 12, Item 5).
33. Using clamping tool (Figure 12, Item 1), tighten the clamp (Figure 12, Item 4) until almost flush with the hose assembly (Figure 12, Item 3) surface.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

*Figure 12. Hose Assembly Repair.***NOTE**

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

34. Install the bridge buckle (Figure 13, Item 1) under clamp (Figure 13, Item 2).
35. Tighten clamp (Figure 13, Item 2) until the clamp (Figure 13, Item 2) cannot be tightened by hand any further.

*Figure 13. Hose Assembly Repair.*

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

36. While holding the clamping tool handle (Figure 14, Item 1) in the down position, strike the center punch anvil (Figure 14, Item 2) three to four times with a hammer.
37. While still holding the clamping tool handle (Figure 14, Item 1) in the down position, raise the entire clamping tool (Figure 14, Item 4) up to shear the tail of the band off of the clamp (Figure 14, Item 3).
38. Using hammer, tap the edge of the distorted clamp (Figure 14, Item 3) down to a level configuration.

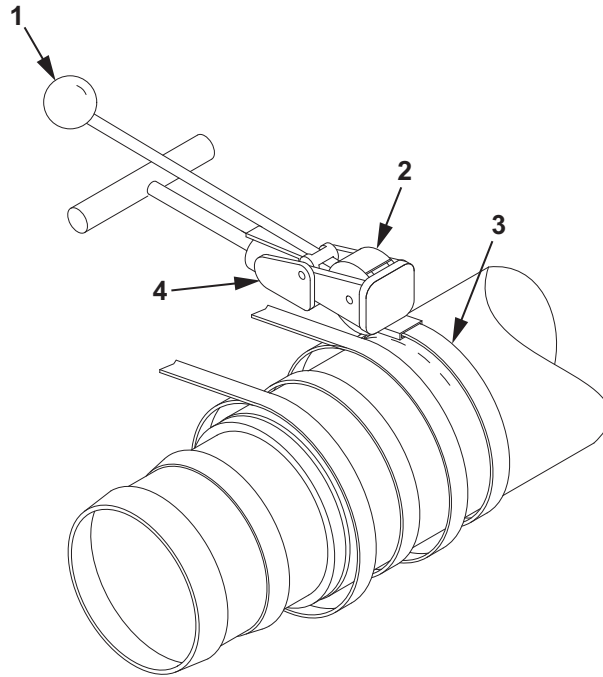


Figure 14. Hose Assembly Repair.

39. Position the third clamp (Figure 15, Item 3) on the hose assembly (Figure 15, Item 3) until it is positioned with a gap of 1/8–1/4 in. from the first clamp (Figure 15, Item 6).
40. Rotate the hose assembly (Figure 15, Item 3) until clamp buckle (Figure 15, Item 2) on the third clamp (Figure 15, Item 5) is oriented a minimum of 30° away from the clamp buckle on the second clamp (Figure 15, Item 4).
41. Using clamping tool (Figure 15, Item 1), tighten the clamp (Figure 15, Item 4) until almost flush with the hose assembly (Figure 15, Item 3) surface.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

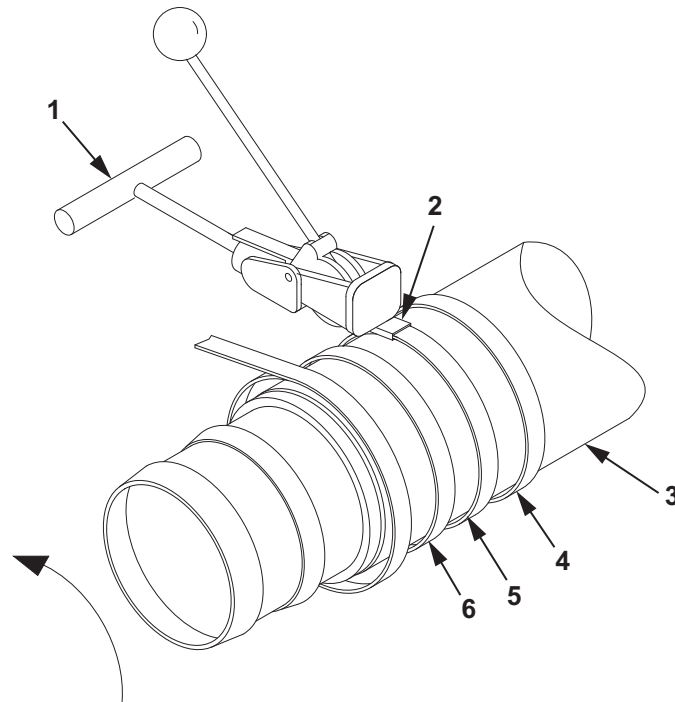


Figure 15. Hose Assembly Repair.

NOTE

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

42. Install the bridge buckle (Figure 16, Item 1) under clamp (Figure 16, Item 2).
43. Tighten clamp (Figure 16, Item 2) until the clamp (Figure 16, Item 2) cannot be tightened by hand any further.

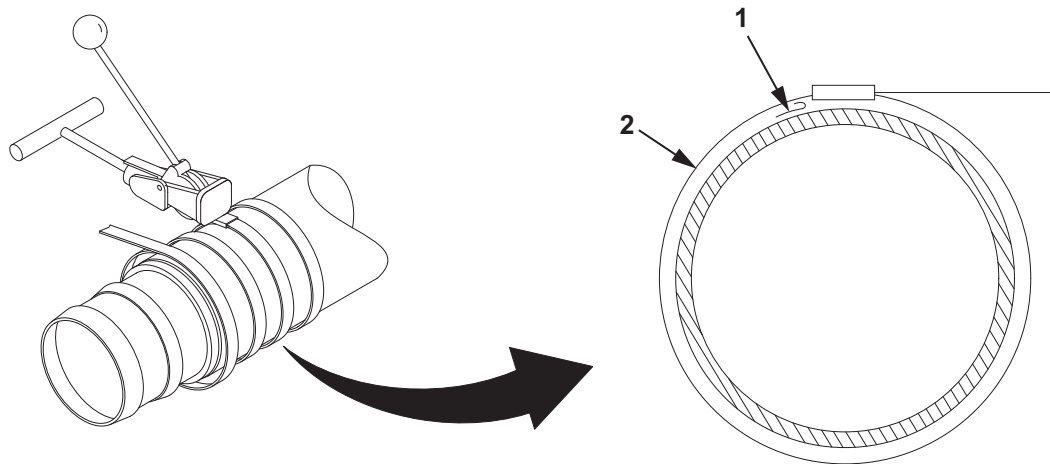


Figure 16. Hose Assembly Repair.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

44. While holding the clamping tool handle (Figure 17, Item 1) in the down position, strike the center punch anvil (Figure 17, Item 2) three to four times with a hammer.
45. While still holding the clamping tool handle (Figure 17, Item 1) in the down position, raise the entire clamping tool (Figure 17, Item 4) up to shear the tail of the band off of the clamp (Figure 17, Item 3).
46. Using hammer, tap the edge of the distorted clamp (Figure 17, Item 3) down to a level configuration.

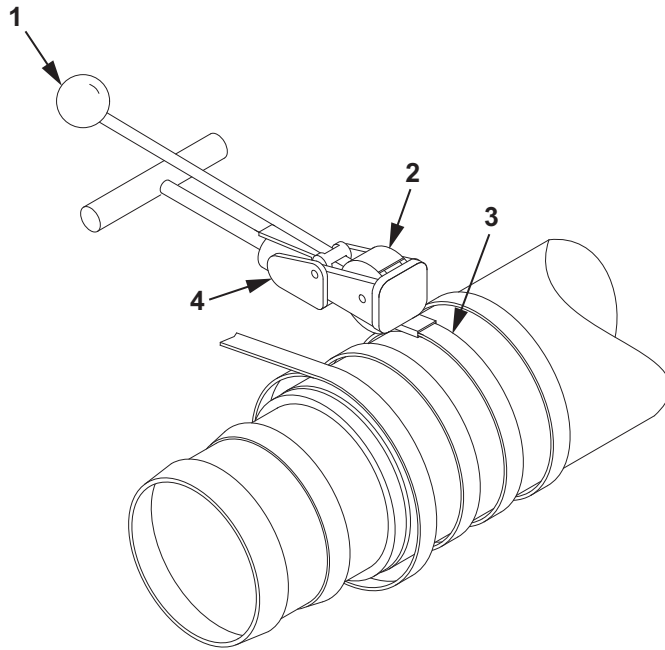
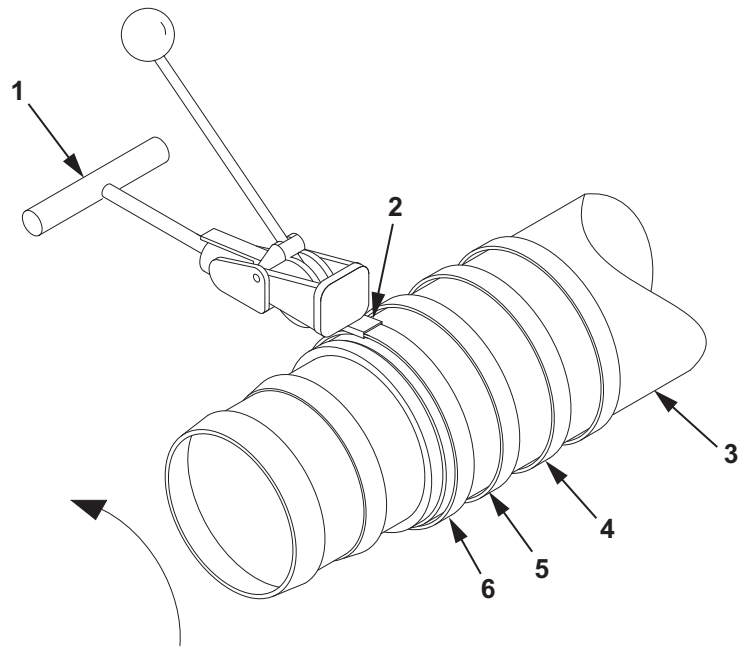


Figure 17. Hose Assembly Repair.

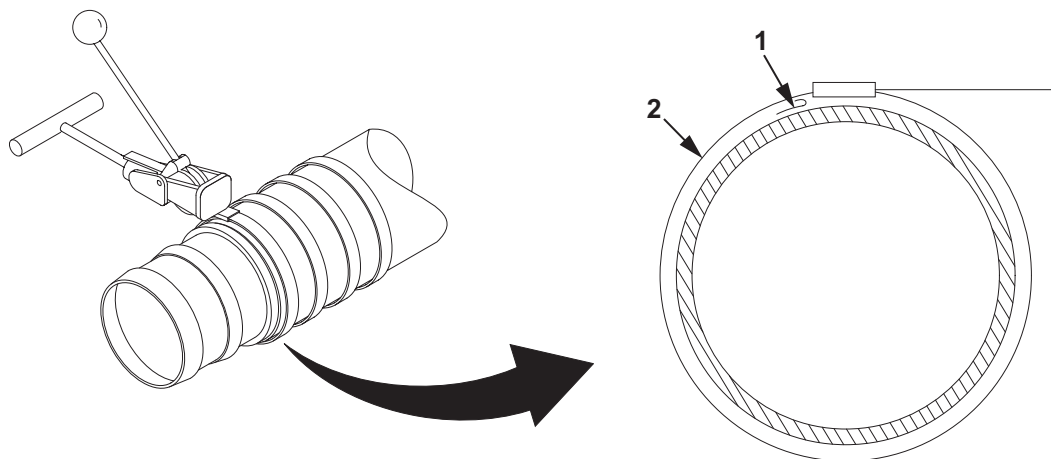
47. Position the fourth clamp (Figure 18, Item 6) on the hose assembly (Figure 18, Item 3) until it is positioned with a gap of 1/8–1/4 in. from the first clamp (Figure 18, Item 3).
48. Rotate the hose assembly (Figure 18, Item 3) until clamp buckle (Figure 18, Item 2) on the fourth clamp (Figure 18, Item 6) is oriented a minimum of 30° away from the clamp buckle on the first clamp (Figure 18, Item 4).
49. Using clamping tool (Figure 18, Item 1), tighten the clamp (Figure 18, Item 6) until almost flush with the hose assembly (Figure 18, Item 3) surface.

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

*Figure 18. Hose Assembly Repair.***NOTE**

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

50. Install the bridge buckle (Figure 19, Item 1) under clamp (Figure 19, Item 2).
51. Tighten clamp (Figure 19, Item 2) until the clamp (Figure 19, Item 2) cannot be tightened by hand any further.

*Figure 19. Hose Assembly Repair.*

4 IN. DISCHARGE HOSE (KIDDE BRAND) REPAIR - CONTINUED

52. While holding the clamping tool handle (Figure 20, Item 1) in the down position, strike the center punch anvil (Figure 20, Item 2) three to four times with a hammer.
53. While still holding the clamping tool handle (Figure 20, Item 1) in the down position, raise the entire clamping tool (Figure 20, Item 5) up to shear the tail of the band off of the clamp (Figure 20, Item 3).
54. Using hammer, tap the edge of the distorted clamp (Figure 20, Item 4) down to a level configuration.
55. Repeat this procedure to splice the other hose assembly section to the hose splice (Figure 20, Item 5).
56. Remove drip pans and dispose of contents per local procedures.
57. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

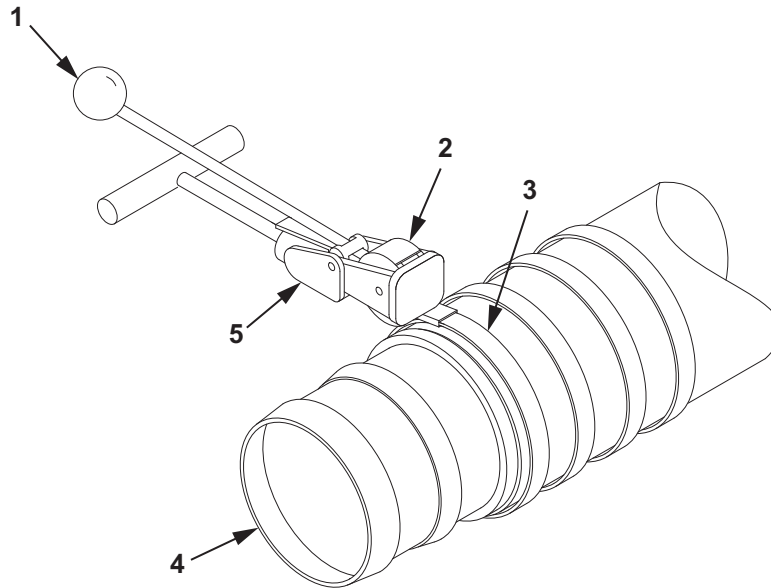


Figure 20. Hose Assembly Repair.

END OF TASK**4 IN. SUCTION HOSE (TITAN BRAND) REPAIR****WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drip pans under hose assembly (Figure 21, Item 1) to be repaired.
2. Inspect hose assembly (Figure 21, Item 1) to identify the extent of damage to the hose assembly (Figure 21, Item 1).

NOTE

All cuts to remove any damaged areas should be made perpendicular to the hose length.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

3. Using a knife and hacksaw, remove the damaged portion of the hose assembly (Figure 21, Item 1) by cutting the hose assembly (Figure 21, Item 1) on both sides of the damaged area. Discard damaged hose (Figure 21, Item 1).
4. Identify the ground wire (Figure 21, Item 2).
5. Using needle nose pliers, pull the ground wire (Figure 21, Item 2) approximately 1/2 in. out of the hose assembly (Figure 21, Item 1) so the ground wire (Figure 21, Item 2) is loose.
6. Using needle nose pliers, cut a piece of copper wire (Figure 21, Item 3) approximately 1-1/2 inches long.
7. Insert the piece of copper wire (Figure 21, Item 3) into the hose assembly (Figure 21, Item 1) approximately 1/2 in. away from the ground wire (Figure 21, Item 2).

NOTE

If two ground wires exist, insert and wrap a piece of copper wire on both.

8. Using needle nose pliers, wrap the copper wire (Figure 21, Item 3) and ground wire (Figure 21, Item 2) together, forming a pigtail.
9. Using needle nose pliers, carefully bend the ground wire (Figure 21, Item 2) inside the hose assembly (Figure 21, Item 1).

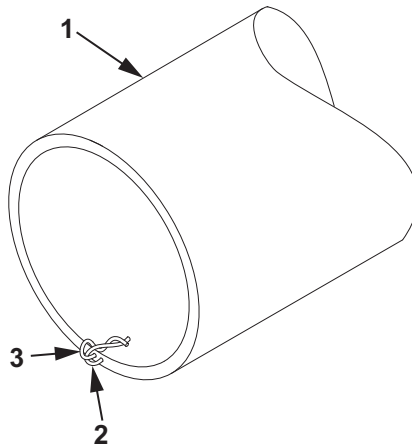


Figure 21. Hose Assembly Repair.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

NOTE

The ground wires must be exposed from the other section of hose assembly in the same manner before proceeding to the next step.

10. Using the hose splice (Figure 22, Item 1) as a guide, align the cut end of one section of hose assembly (Figure 22, Item 2) with the machined stop (Figure 22, Item 3) in the center of the hose splice (Figure 22, Item 1).
11. Using a marking pen, mark two lines (Figure 22, Item 4) on the hose assembly (Figure 22, Item 2) where the hose barbs (Figure 22, Item 5) will be located.

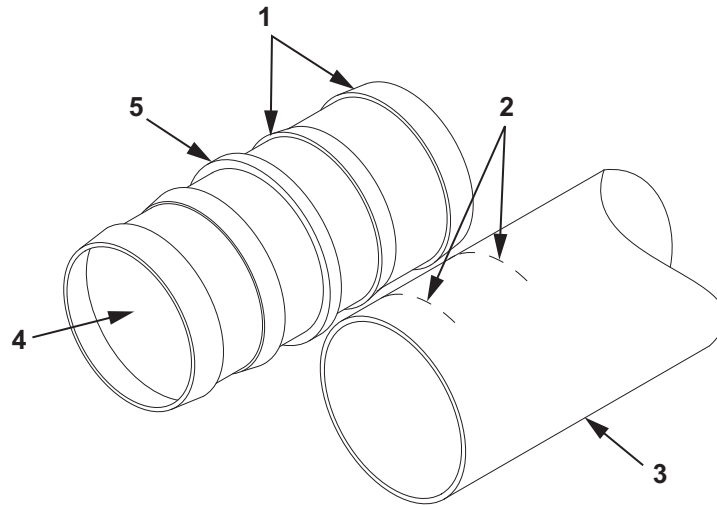


Figure 22. Hose Assembly Repair.

12. Place four clamps (Figure 23, Item 2) loosely on the hose assembly (Figure 23, Item 1) and move them back a few inches for later installation.
13. Install the hose assembly (Figure 23, Item 1) on the hose splice (Figure 23, Item 4) until it is flush with the machined stop (Figure 23, Item 3) in the center of the hose splice (Figure 23, Item 4).
14. Position all four clamps (Figure 23, Item 2) over the hose splice (Figure 23, Item 4) area.

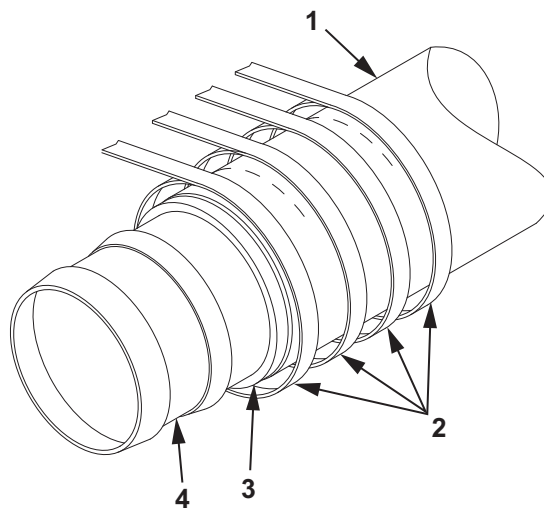


Figure 23. Hose Assembly Repair.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

15. Position the first clamp (Figure 24, Item 1) on the hose assembly (Figure 24, Item 2) until it is aligned with the first mark (Figure 24, Item 3) previously made on the hose assembly (Figure 24, Item 2).
16. Using clamping tool (Figure 24, Item 4), tighten the clamp (Figure 24, Item 1) until almost flush with the hose assembly (Figure 24, Item 2) surface.

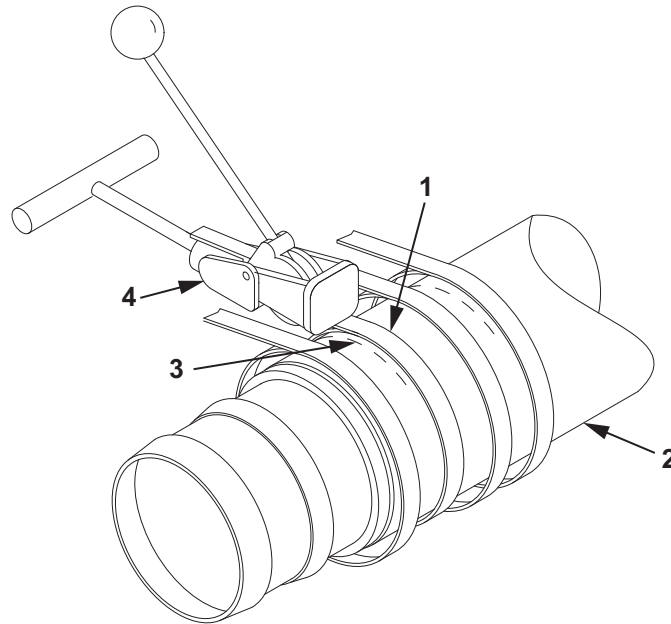


Figure 24. Hose Assembly Repair.

NOTE

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

17. Install the bridge buckle (Figure 25, Item 1) under clamp (Figure 25, Item 2).
18. Tighten clamp (Figure 25, Item 2) until the clamp (Figure 25, Item 2) cannot be tightened by hand any further.

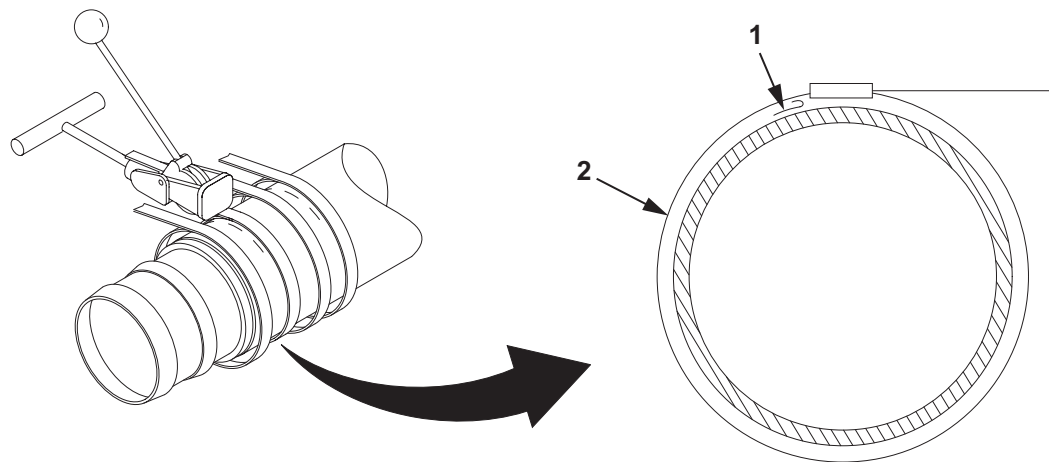


Figure 25. Hose Assembly Repair.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

19. While holding the clamping tool handle (Figure 26, Item 1) in the down position, strike the center punch anvil (Figure 26, Item 2) three to four times with a hammer.
20. While still holding the clamping tool handle (Figure 26, Item 1) in the down position, raise the entire clamping tool (Figure 26, Item 3) up to shear the tail of the band off of the clamp (Figure 26, Item 4).
21. Using hammer, tap the edge of the distorted clamp (Figure 26, Item 4) down to a level configuration.

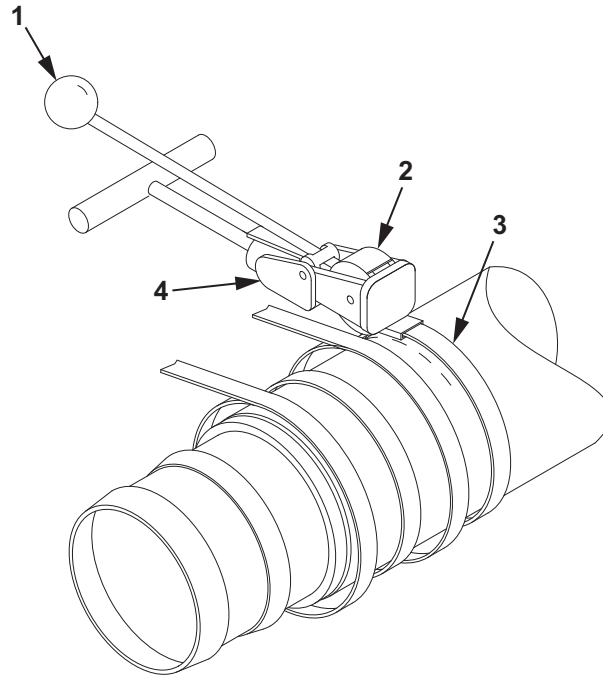


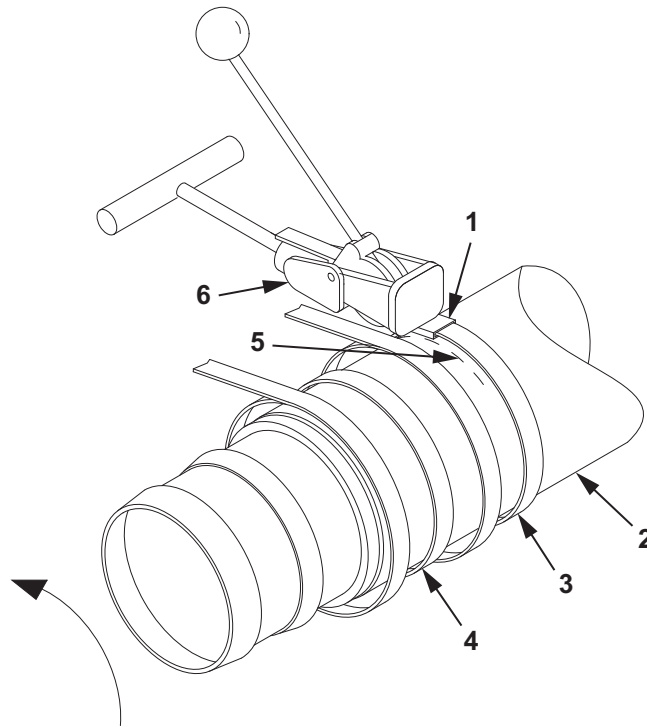
Figure 26. Hose Assembly Repair.

NOTE

All clamps should be installed so that the clamp buckle is oriented a minimum of 30° away from the previously installed clamp buckle.

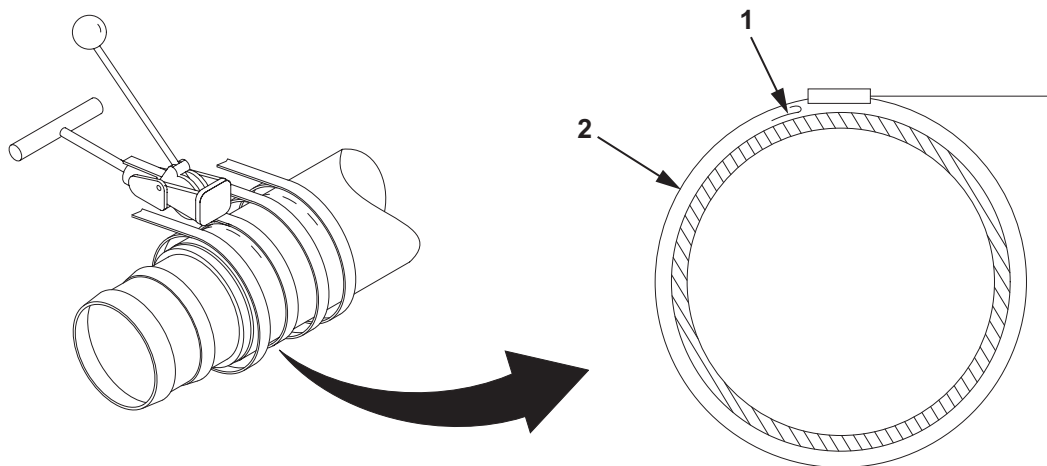
22. Position the second clamp (Figure 27, Item 3) on the hose assembly (Figure 27, Item 2) until it is aligned with the second mark (Figure 27, Item 5) previously made on the hose assembly (Figure 27, Item 2).
23. Rotate the hose assembly (Figure 27, Item 2) until clamp buckle (Figure 27, Item 1) on the second clamp (Figure 27, Item 3) is oriented a minimum of 30° away from the clamp buckle on the first clamp (Figure 27, Item 4).
24. Using clamping tool (Figure 27, Item 6), tighten the clamp (Figure 27, Item 3) until almost flush with the hose assembly (Figure 27, Item 2) surface.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

*Figure 27. Hose Assembly Repair.***NOTE**

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

25. Install the bridge buckle (Figure 28, Item 1) under clamp (Figure 28, Item 2).
26. Tighten clamp (Figure 28, Item 2) until the clamp (Figure 28, Item 2) cannot be tightened by hand any further.

*Figure 28. Hose Assembly Repair.*

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

27. While holding the clamping tool handle (Figure 29, Item 1) in the down position, strike the center punch anvil (Figure 29, Item 2) three to four times with a hammer.
28. While still holding the clamping tool handle (Figure 29, Item 1) in the down position, raise the entire clamping tool (Figure 29, Item 4) up to shear the tail of the band off of the clamp (Figure 29, Item 3).
29. Using hammer, tap the edge of the distorted clamp (Figure 29, Item 3) down to a level configuration.

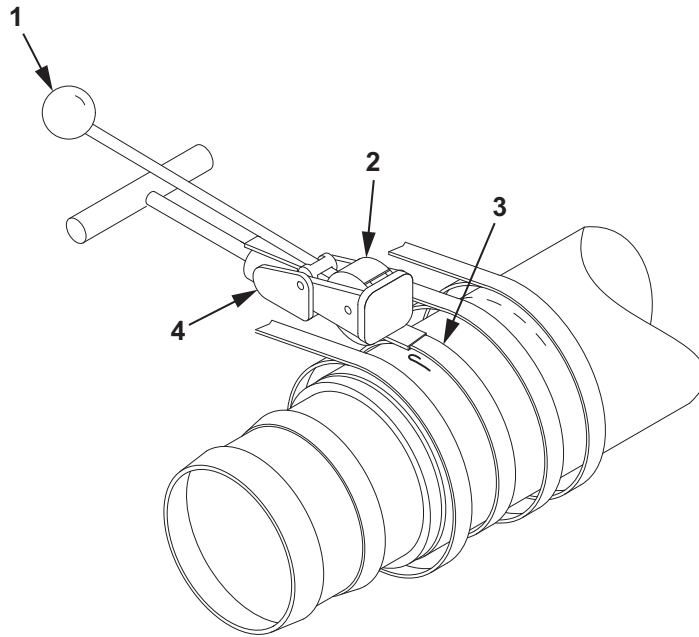


Figure 29. Hose Assembly Repair.

30. Position the third clamp (Figure 30, Item 4) on the hose assembly (Figure 30, Item 2) until it is positioned with a gap of 1/8–1/4 in. from the first clamp (Figure 30, Item 5).
31. Rotate the hose assembly (Figure 30, Item 2) until clamp buckle (Figure 30, Item 1) on the third clamp (Figure 30, Item 4) is oriented a minimum of 30° away from the clamp buckle on the second clamp (Figure 30, Item 3).
32. Using clamping tool (Figure 30, Item 6), tighten the clamp (Figure 30, Item 4) until almost flush with the hose assembly (Figure 30, Item 2) surface.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

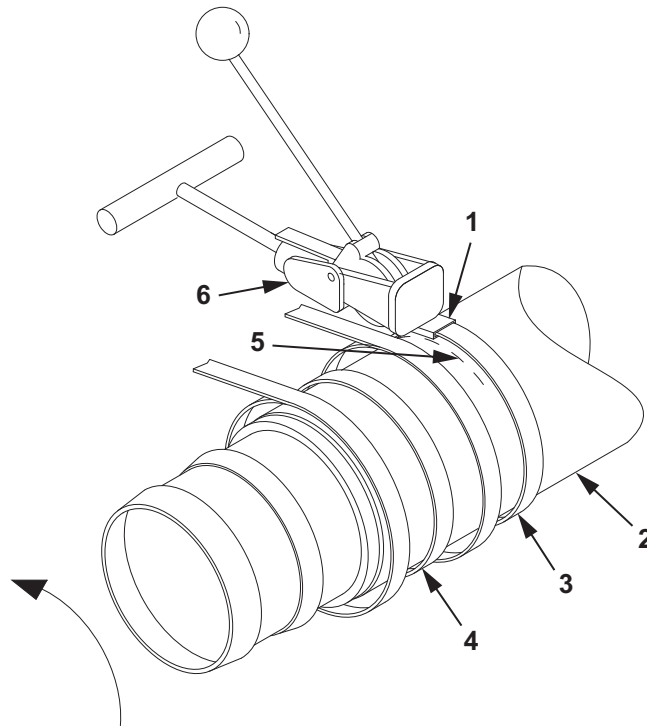


Figure 30. Hose Assembly Repair.

NOTE

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

33. Install the bridge buckle (Figure 31, Item 1) under clamp (Figure 31, Item 2).
34. Tighten clamp (Figure 31, Item 2) until the clamp (Figure 31, Item 2) cannot be tightened by hand any further.

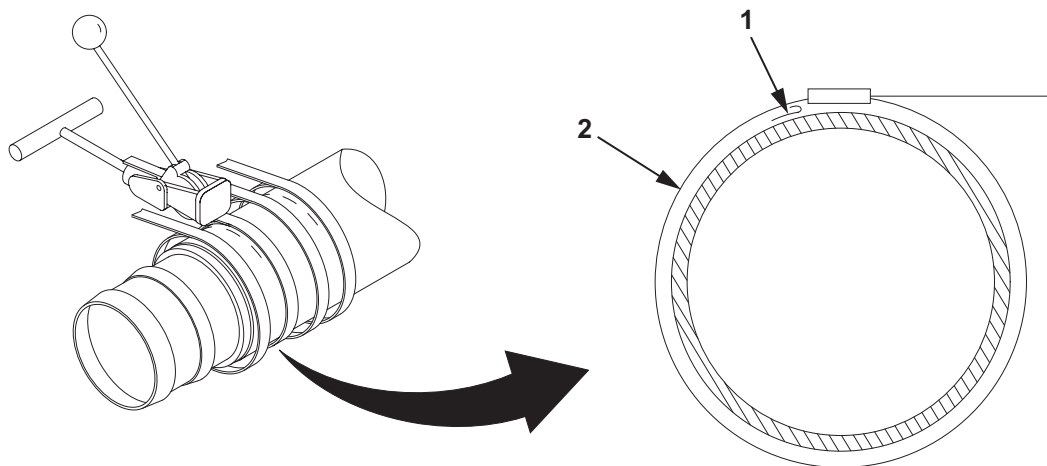


Figure 31. Hose Assembly Repair.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

35. While holding the clamping tool handle (Figure 32, Item 1) in the down position, strike the center punch anvil (Figure 32, Item 2) three to four times with a hammer.
36. While still holding the clamping tool handle (Figure 32, Item 1) in the down position, raise the entire clamping tool (Figure 32, Item 4) up to shear the tail of the band off of the clamp (Figure 32, Item 4).
37. Using hammer, tap the edge of the distorted clamp (Figure 32, Item 4) down to a level configuration.

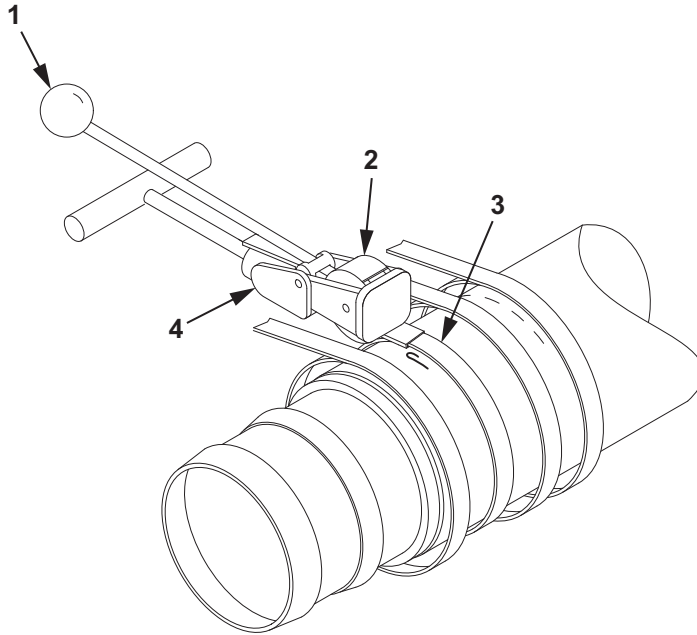
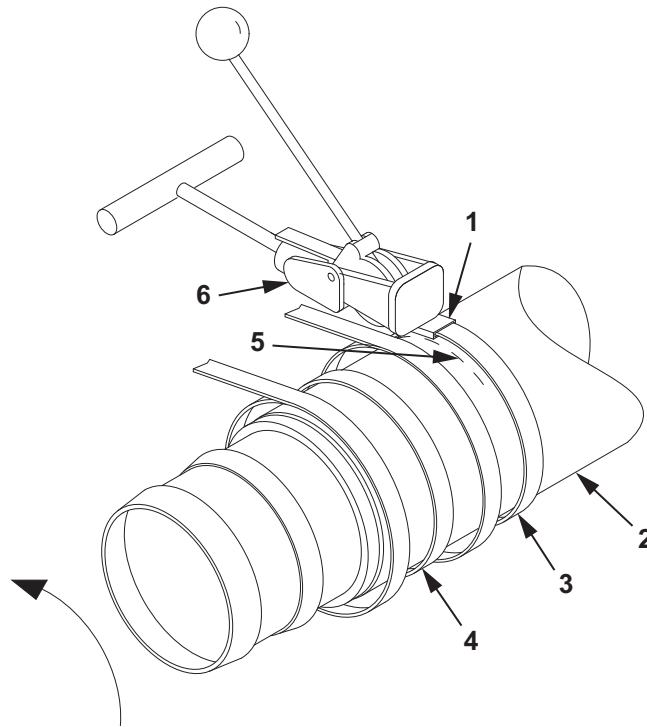


Figure 32. Hose Assembly Repair.

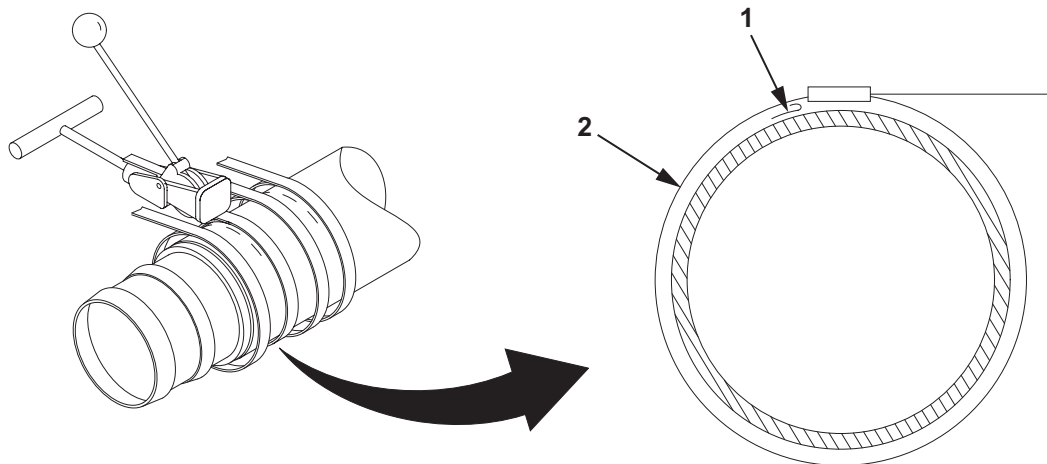
38. Position the fourth clamp (Figure 33, Item 5) on the hose assembly (Figure 33, Item 2) until it is positioned with a gap of 1/8–1/4 in. from the first clamp (Figure 33, Item 4).
39. Rotate the hose assembly (Figure 33, Item 2) until clamp buckle (Figure 33, Item 1) on the fourth clamp (Figure 33, Item 5) is oriented a minimum of 30° away from the clamp buckle on the third clamp (Figure 33, Item 3).
40. Using clamping tool (Figure 33, Item 6), tighten the clamp (Figure 33, Item 5) until almost flush with the hose assembly surface.

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

*Figure 33. Hose Assembly Repair.***NOTE**

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

41. Install the bridge buckle (Figure 34, Item 1) under clamp (Figure 34, Item 2).
42. Tighten clamp (Figure 34, Item 2) until the clamp (Figure 34, Item 2) cannot be tightened by hand any further.

*Figure 34. Hose Assembly Repair.*

4 IN. SUCTION HOSE (TITAN BRAND) REPAIR - CONTINUED

43. While holding the clamping tool handle (Figure 35, Item 1) in the down position, strike the center punch anvil (Figure 35, Item 2) three to four times with a hammer.
44. While still holding the clamping tool handle (Figure 35, Item 1) in the down position, raise the entire clamping tool (Figure 35, Item 3) up to shear the tail of the band off of the clamp (Figure 35, Item 4).
45. Using hammer, tap the edge of the distorted clamp (Figure 35, Item 4) down to a level configuration.
46. Repeat this procedure to splice the other hose assembly section to the hose splice (Figure 35, Item 5).
47. Remove drip pans and dispose of contents per local procedures.
48. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

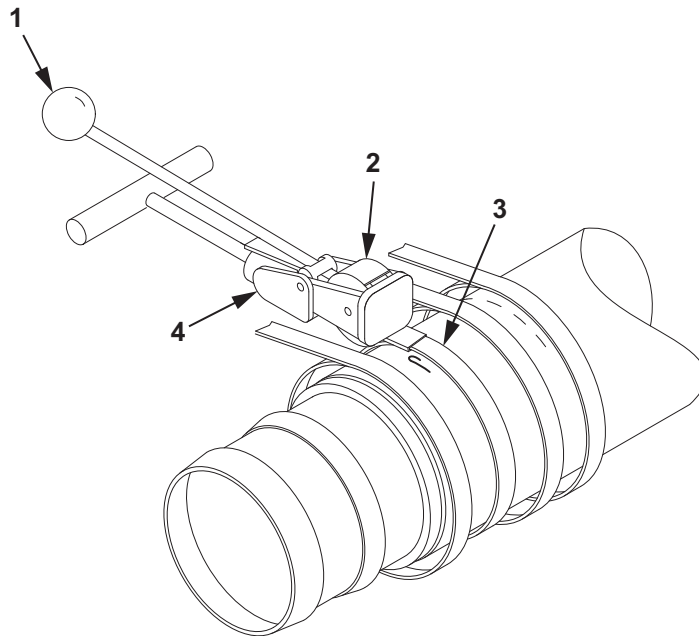


Figure 35. Hose Assembly Repair.

END OF TASK

END OF WORK PACKAGE

**OPERATOR MAINTENANCE
FUEL SYSTEM COMPONENTS REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:

Tools and Special Tools

- Fuel spill control kit (Item 24, WP 0212)
- Pan, drip (Item 24, WP 0212)
- Gloves, rubber, industrial (Item 24, WP 0212)
- Goggles, industrial (Item 24, WP 0212)

Equipment Condition

FSSP assembly shut down (WP 0005).

Personnel Required

- Petroleum Supply Specialist 92F
-

CAMLOCK CONNECTORS REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

NOTE

A hose clamp may be used on discharge hoses to reduce excess fuel spill.

1. Place drip pan or sufficient sized container under coupling halves (Figure 1, Item 3) to be disconnected.
2. Pull out on coupling half camlock levers (Figure 1, Item 2) to detach hose assembly (Figure 1, Item 1) from coupling half (Figure 1, Item 3).
3. Remove component (Figure 1, Item 4).
4. Install dust plugs (Figure 1, Item 5) in coupling halves (Figure 1, Item 3).

END OF TASK**CAMLOCK CONNECTORS INSTALLATION****WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Remove dust plugs (Figure 1, Item 5) from female coupling halves (Figure 1, Item 3).
2. Insert hose assembly (Figure 1, Item 1) into female coupling half (Figure 1, Item 3).
3. Push in on coupling half camlock levers (Figure 1, Item 2) to secure hose assembly (Figure 1, Item 1) into female coupling half (Figure 1, Item 3).

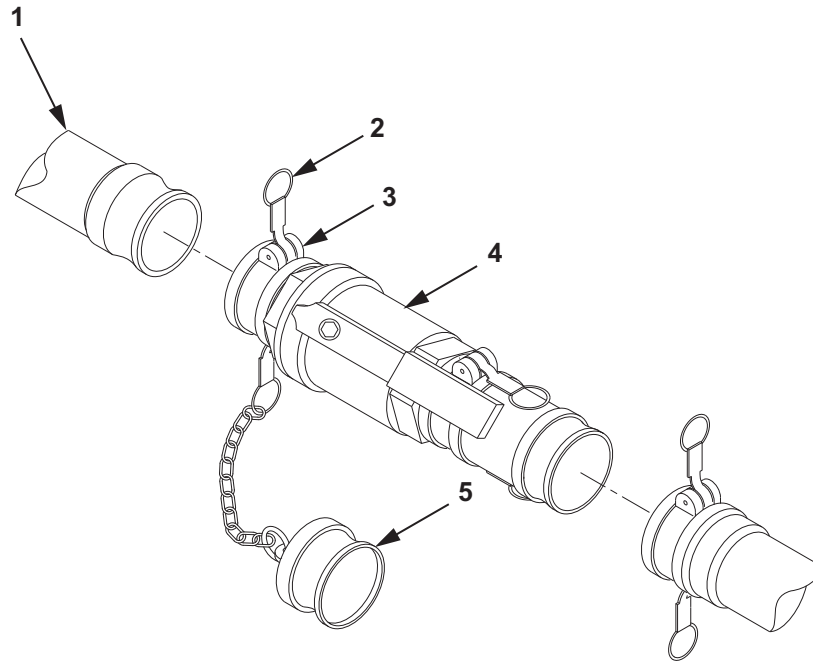
CAMLOCK CONNECTORS INSTALLATION - CONTINUED

Figure 1. Camlock Connectors Removal and Installation.

4. Remove drip pans and dispose of contents per local procedures.
5. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

NON-VALVED QUICK DISCONNECT COUPLING HALF REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drip pans under quick disconnect coupling halves (Figure 2, Item 2) to be disconnected.
2. Pull rings (Figure 2, Item 2) while rotating the quick disconnect coupling half (Figure 2, Item 2) counterclockwise.
3. While holding quick disconnect coupling halves (Figure 2, Item 1) in inverted position, detach quick disconnect coupling halves (Figure 2, Item 2).
4. Install dust caps (Figure 2, Item 3) on quick disconnect coupling halves (Figure 2, Item 1).

END OF TASK**NON-VALVED QUICK DISCONNECT COUPLING HALF INSTALLATION****WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Remove dust caps (Figure 2, Item 3) from quick disconnect coupling halves (Figure 2, Item 2).
2. Place quick disconnect coupling halves (Figure 2, Item 2) together and align quick disconnect coupling halves (Figure 2, Item 2).
3. Rotate one quick disconnect coupling half (Figure 2, Item 2) clockwise to connect quick disconnect coupling halves (Figure 2, Item 2).
4. Remove drip pans and dispose of contents per local procedures.
5. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

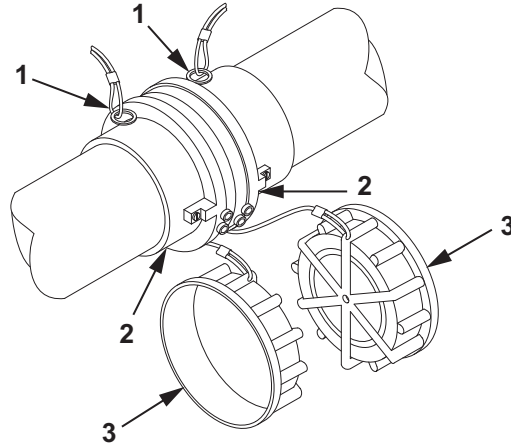
NON-VALVED QUICK DISCONNECT COUPLING HALF INSTALLATION - CONTINUED

Figure 2. Non-Valved Quick Disconnect Coupling Half Removal.

END OF TASK

FUEL SYSTEM COMPONENTS WITH VALVED QUICK DISCONNECT COUPLING HALF REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drip pans under quick disconnect coupling halves (Figure 3, Item 1) to be disconnected.
2. Position shutoff valves (Figure 3, Item 2) in the closed position.
3. Rotate the quick disconnect coupling half (Figure 3, Item 1) counterclockwise.
4. Detach quick disconnect coupling half (Figure 3, Item 1).
5. Install dust caps (Figure 3, Item 3) on quick disconnect coupling halves (Figure 3, Item 1).

END OF TASK**VALVED QUICK DISCONNECT COUPLING HALF INSTALLATION****WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Remove dust caps (Figure 3, Item 3) from quick disconnect coupling halves (Figure 3, Item 1).
2. Place quick disconnect coupling halves (Figure 3, Item 1) together and align quick disconnect coupling halves (Figure 3, Item 1).
3. Rotate one quick disconnect coupling half (Figure 3, Item 1) clockwise to connect quick disconnect coupling halves (Figure 3, Item 1).
4. Position shutoff valves (Figure 3, Item 2) in the open position.
5. Remove drip pans and dispose of contents per local procedures.
6. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

VALVED QUICK DISCONNECT COUPLING HALF INSTALLATION - CONTINUED

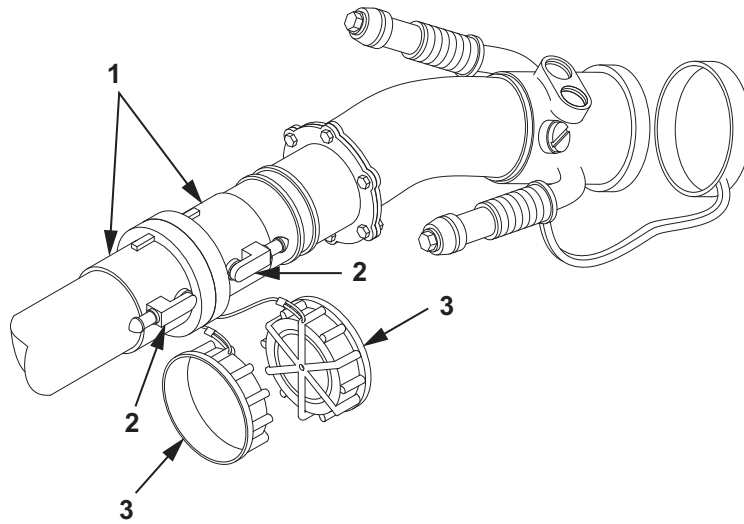


Figure 3. Valved Quick Disconnect Coupling Half Removal.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
FUEL SYSTEM COUPLINGS AND DUST CAP GASKETS REPLACEMENT
REMOVAL, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Fuel spill control kit (Item 24, WP 0212)
Pan, drip (Item 24, WP 0212)
Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

Personnel Required

Petroleum Supply Specialist 92F

Equipment Condition

FSSP assembly shut down (WP 0005).

Materials/Parts

Cloth, cleaning (Item 5, WP 0214)

CAMLOCK CONNECTORS GASKET REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****EXPLOSION**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

CAMLOCK CONNECTORS GASKET REMOVAL - CONTINUED

1. Place drip pan under coupling half (Figure 1, Item 1) to be disconnected.
2. Remove gasket (Figure 1, Item 2) from coupling half (Figure 1, Item 1).
 - a. Pull out on coupling half camlock levers (Figure 1, Item 3) to disconnect male and female coupling halves (Figure 1, Item 1).
 - b. Remove and discard defective gasket (Figure 1, Item 2).

END OF TASK**CAMLOCK CONNECTORS GASKET CLEANING**

1. Clean coupling half.

WARNING**EYE PROTECTION**

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

- a. Remove buildup of dirt, oil, and debris from all mating surfaces and clamping areas using a putty knife.
 - b. Clean all metallic parts with a cleaning cloth.
2. Remove drip pan and dispose of contents per local procedures.

END OF TASK

CAMLOCK CONNECTORS GASKET INSPECTION

Inspect coupling half.

- a. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
- b. Inspect all split rings and chains for cracks, distortion and corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK**CAMLOCK CONNECTORS GASKET INSTALLATION**

1. Install gasket (Figure 1, Item 2) in coupling half (Figure 1, Item 1).
 - a. Install new gasket (Figure 1, Item 2) on coupling half (Figure 1, Item 1).
 - b. Insert male coupling half (Figure 1, Item 1) into female coupling half (Figure 1, Item 1).
 - c. Push in on coupling half camlock levers (Figure 1, Item 3) to connect coupling halves (Figure 1, Item 1).
 - d. Ensure coupling halves (Figure 1, Item 1) are securely connected.
2. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

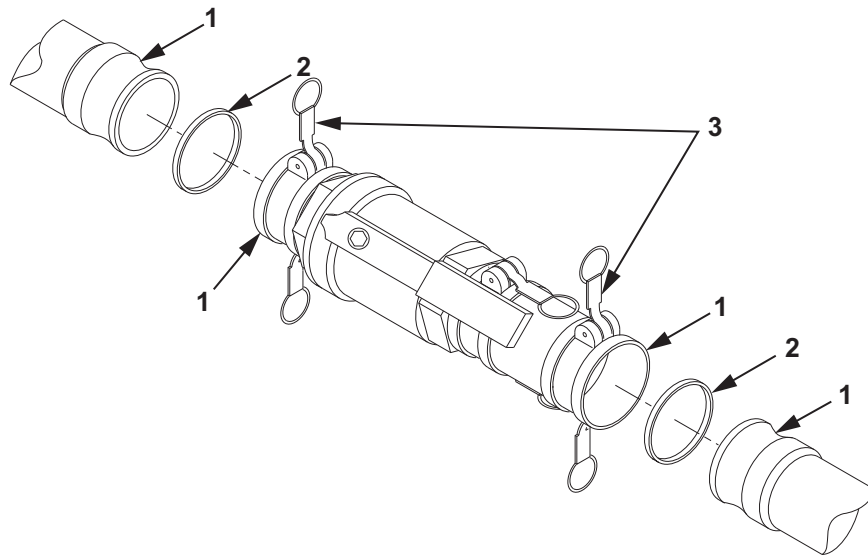


Figure 1. Camlock Connectors Gasket Removal.

END OF TASK

NON-VALVED QUICK DISCONNECT COUPLING HALF GASKET REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****EXPLOSION**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

NOTE

Hold coupling half in inverted position while disconnecting to avoid spilling excess fuel.

1. Place drip pan under quick disconnect coupling halves (Figure 2, Item 1) to be disconnected.
2. Pull rings (Figure 2, Item 2) while rotating one quick disconnect coupling half (Figure 2, Item 1) counterclockwise.
 - a. Disconnect quick disconnect coupling halves (Figure 2, Item 1).
 - b. Remove bumper (Figure 2, Item 4).
 - c. Remove and discard defective gaskets (Figure 2, Item 3).
3. Remove drip pan and dispose of contents per local procedures.

END OF TASK**NON-VALVED QUICK DISCONNECT COUPLING HALF CLEANING**

Clean coupling half.

WARNING**EYE PROTECTION**

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

- a. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
- b. Clean all metallic parts with a cleaning cloth.

END OF TASK**NON-VALVED QUICK DISCONNECT COUPLING HALF INSPECTION**

Inspect coupling half.

- a. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
- b. Inspect all split rings and chains for cracks, distortion and corrosion. If cracks, distortion, or corrosion is found, replace with a serviceable like item.

END OF TASK

NON-VALVED QUICK DISCONNECT COUPLING HALF INSTALLATION

1. Install gasket in coupling half.
 - a. Install new gaskets (Figure 2, Item 3) on coupling half (Figure 2, Item 1).
 - b. Install bumper (Figure 2, Item 4).
 - c. Align quick disconnect coupling halves (Figure 2, Item 1).
 - d. Rotate the one quick disconnect coupling half (Figure 2, Item 1) clockwise to connect quick disconnect coupling halves (Figure 2, Item 1).
 - e. Ensure quick disconnect coupling halves (Figure 2, Item 1) are securely connected.
2. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

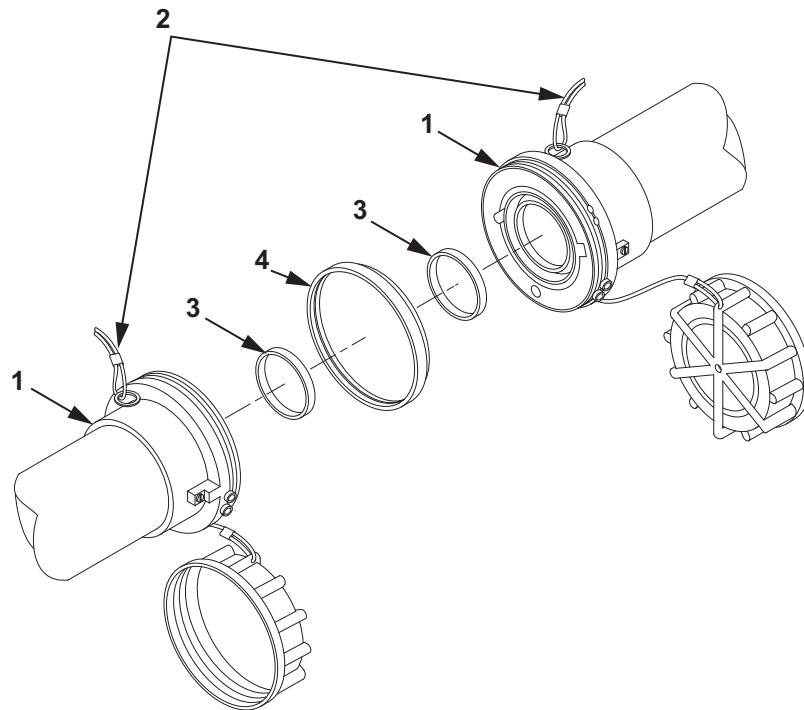


Figure 2. Non-Valved Quick Disconnect Coupling Halves Gasket Removal.

END OF TASK

VALVED QUICK DISCONNECT COUPLING HALF GASKET REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****EXPLOSION**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drip pan under quick disconnect coupling halves (Figure 3, Item 1) to be disconnected.
2. Position shutoff valves (Figure 3, Item 3) in the closed position.
3. Rotate one quick disconnect coupling half (Figure 3, Item 1) counterclockwise.
 - a. Disconnect quick disconnect coupling half (Figure 3, Item 1).
 - b. Remove and discard defective gaskets (Figure 3, Item 2).
4. Remove drip pan and dispose of content per local procedures.

END OF TASK**VALVED QUICK DISCONNECT COUPLING HALF GASKET CLEANING**

Clean quick disconnect coupling half.

WARNING**EYE PROTECTION**

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

- a. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
- b. Clean all metallic parts with a cleaning cloth.

END OF TASK**VALVED QUICK DISCONNECT COUPLING HALF GASKET INSPECTION**

Inspect quick disconnect coupling half.

- a. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
- b. Inspect all split rings and chains for cracks, distortion and corrosion. If cracks distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

VALVED QUICK DISCONNECT COUPLING HALF GASKET INSTALLATION

1. Install new gasket (Figure 3, Item 2) in quick disconnect coupling half (Figure 3, Item 1).
 - a. Install new gasket (Figure 3, Item 2) in quick disconnect coupling half (Figure 3, Item 1).
 - b. Align quick disconnect coupling halves (Figure 3, Item 1) together.
 - c. Rotate one quick disconnect coupling half (Figure 3, Item 1) clockwise to connect quick disconnect coupling halves (Figure 3, Item 1).
 - d. Ensure quick disconnect coupling halves (Figure 3, Item 1) are securely connected.
 - e. Position shutoff valves (Figure 3, Item 3) in the open position.

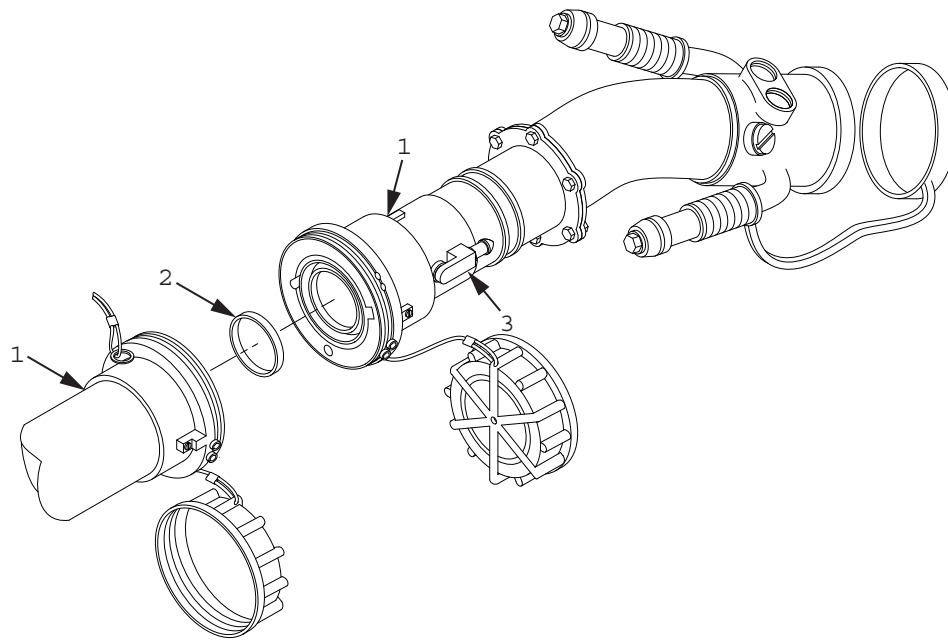


Figure 3. Valved Quick Disconnect Coupling Halves Gasket Removal.

2. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

DUST CAP GASKET REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****EXPLOSION**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drip pan under coupling half (Figure 4, Item 3).
2. Remove dust cap (Figure 4, Item 4) or dust plug (Figure 4, Item 1).
3. Discard defective gasket (Figure 4, Item 2).
4. Remove drip pan and dispose of contents per local procedures.

END OF TASK**DUST CAP GASKET CLEANING**

Clean coupling half.

WARNING**EYE PROTECTION**

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

- a. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
- b. Clean all metallic parts with a cleaning cloth.

END OF TASK**DUST CAP GASKET INSPECTION**

Inspect coupling half.

- a. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
- b. Inspect all split rings and chains for cracks, distortion and corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK**DUST CAP GASKET INSTALLATION**

1. Install new gasket (Figure 4, Item 2) in dust cap (Figure 4, Item 4) or coupling half (Figure 4, Item 5).
2. Install dust cap (Figure 4, Item 4) on coupling half (Figure 4, Item 3).
3. Install dust plug (Figure 4, Item 1) in coupling half (Figure 4, Item 5).
4. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

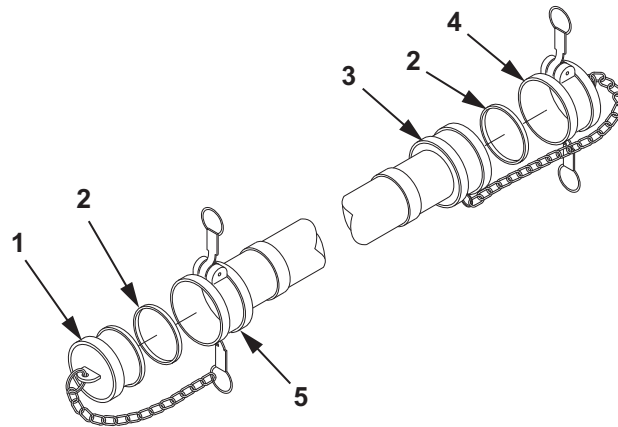
DUST CAP GASKET INSTALLATION - CONTINUED

Figure 4. Dust Cap Gasket Installation.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
4 IN. FEMALE X 3 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640301, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

Materials/Parts

Apron, utility (Item 2, WP 0214)
Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (Item 37, WP 0215)
Gasket (Item 38, WP 0215)

Personnel Required

Petroleum Supply Specialist 92F

Equipment Condition

Reducer assembly removed from FSSP
(WP 0066).

DISASSEMBLY

1. Remove 4 in. dust plug (Figure 1, Item 1) from reducer assembly (Figure 1, Item 2).
2. Remove 3 in. dust cap (Figure 1, Item 5) from reducer assembly (Figure 1, Item 3).
3. Remove gasket (Figure 1, Item 2) from reducer assembly (Figure 1, Item 3). Discard gasket (Figure 1, Item 2).
4. Remove gasket (Figure 1, Item 4) from 3 in. dust cap (Figure 1, Item 5). Discard gasket (Figure 1, Item 4).
5. Remove split rings (Figure 1, Item 8) from 4 in. dust plug (Figure 1, Item 1) and reducer assembly (Figure 1, Item 3).
6. Remove split rings (Figure 1, Item 8) from chain (Figure 1, Item 9).
7. Remove split rings (Figure 1, Item 6) from 3 in. dust cap (Figure 1, Item 5) and reducer assembly (Figure 1, Item 3).
8. Remove split rings (Figure 1, Item 6) from chain (Figure 1, Item 7)

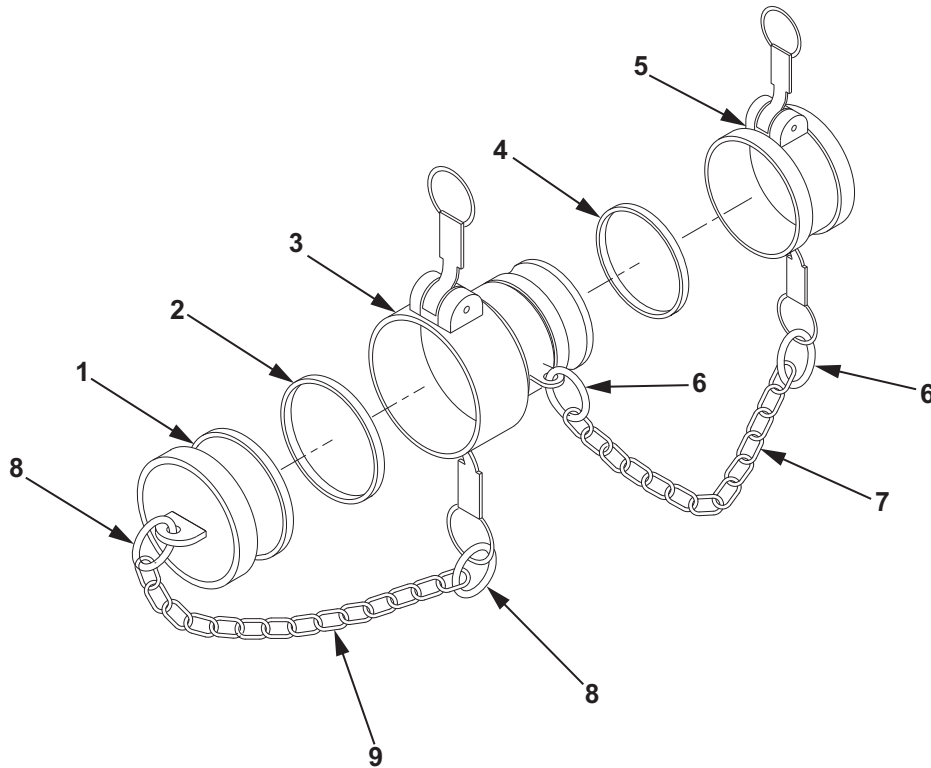


Figure 1. 4 In. Female X 3 In. Male Reducer Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install split rings (Figure 2, Item 6) on chain (Figure 2, Item 7).
2. Install split rings (Figure 2, Item 6) on 3 in. dust cap (Figure 2, Item 5) and reducer assembly (Figure 2, Item 3).
3. Install split rings (Figure 2, Item 6) on chain (Figure 2, Item 7).
4. Install split rings (Figure 2, Item 6) on 4 in. dust plug (Figure 2, Item 1) and reducer assembly (Figure 2, Item 3).
5. Install new gasket (Figure 2, Item 5) into 3 in. dust cap (Figure 2, Item 3).
6. Install new gasket (Figure 2, Item 4) into reducer assembly (Figure 2, Item 2).
7. Install 3 in. dust cap (Figure 2, Item 3) on reducer assembly (Figure 2, Item 2).
8. Install 4 in. dust plug (Figure 2, Item 1) in reducer assembly (Figure 2, Item 2).

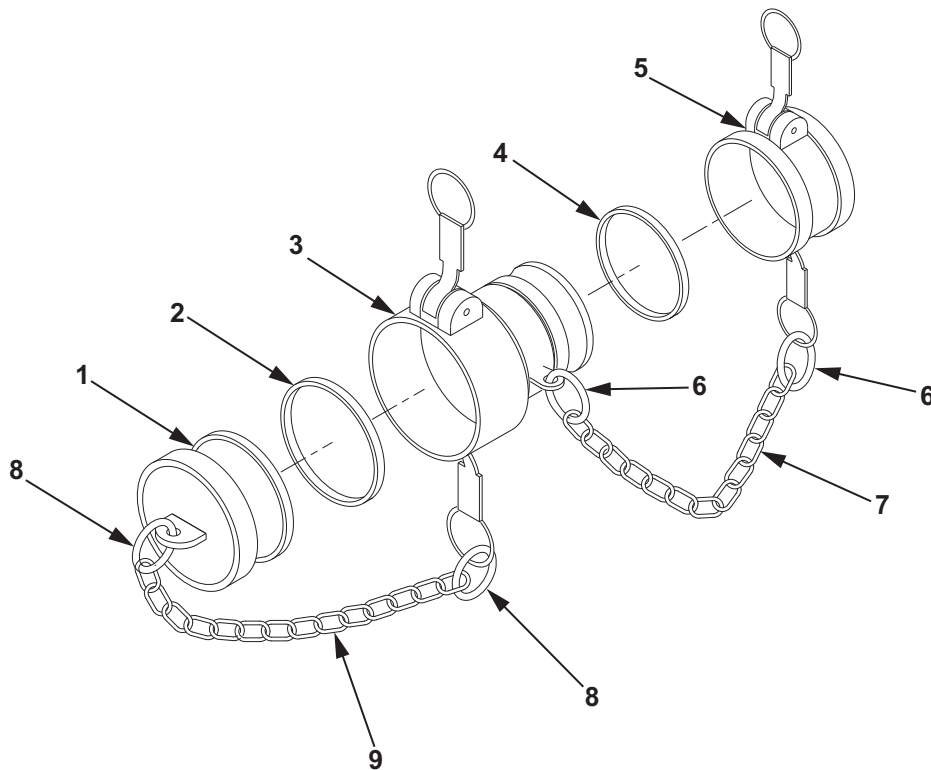


Figure 2. 4 In. Female X 3 In. Male Reducer Disassembly.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
4 IN. MALE X 3 IN. FEMALE REDUCER ASSEMBLY, PART NUMBER 602630401, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

Materials/Parts

Apron, utility (Item 2, WP 0214)
Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (Item 37, WP 0215)
Gasket (Item 38, WP 0215)

Personnel Required

Petroleum Supply Specialist 92F

Equipment Condition

Reducer assembly removed from FSSP
(WP 0066).

DISASSEMBLY

1. Remove 3 in. dust plug (Figure 1, Item 1) from reducer assembly (Figure 1, Item 5).
2. Remove 4 in. dust cap (Figure 1, Item 4) from reducer assembly (Figure 1, Item 5).
3. Remove gasket (Figure 1, Item 2) from reducer assembly (Figure 1, Item 5). Discard gasket (Figure 1, Item 2).
4. Remove gasket (Figure 1, Item 3) from 4 in. dust cap (Figure 1, Item 4). Discard gasket (Figure 1, Item 3).

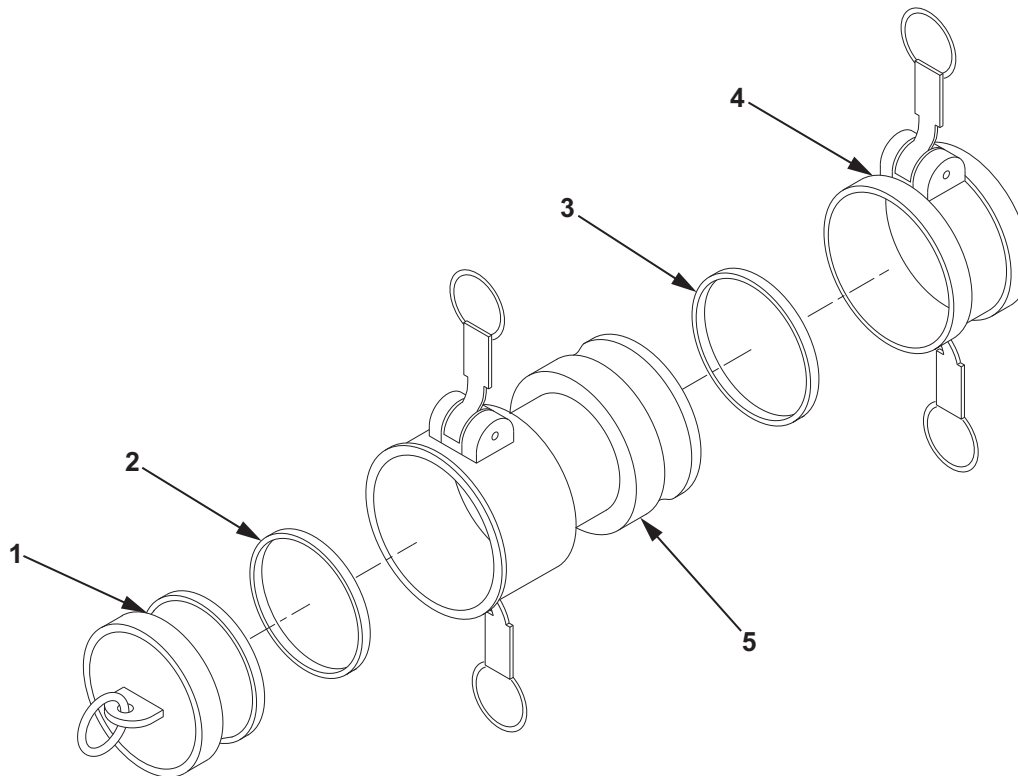


Figure 1. 4 In. Male X 3 In. Female Reducer Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install new gasket (Figure 2, Item 3) into 4 in. dust cap (Figure 2, Item 4).
2. Install new gasket (Figure 2, Item 2) into reducer assembly (Figure 2, Item 5).
3. Install 4 in. dust cap (Figure 2, Item 4) on reducer assembly (Figure 2, Item 5).
4. Install 3 in. dust plug (Figure 2, Item 1) in reducer assembly (Figure 2, Item 5).

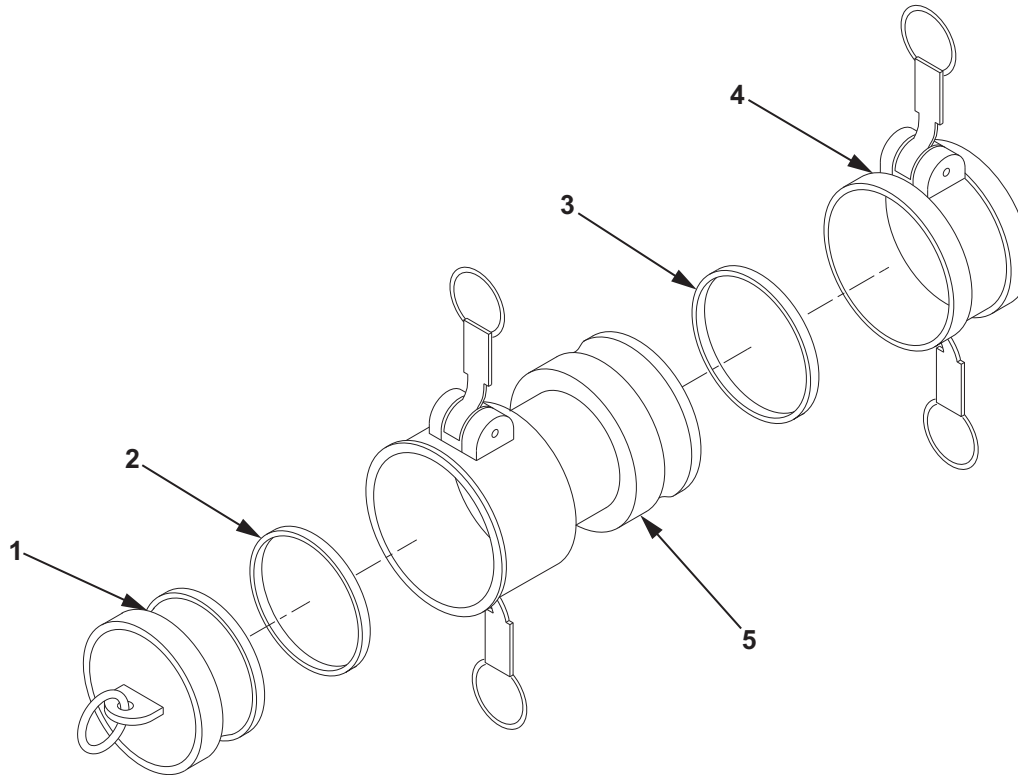


Figure 2. 4 In. Male X 3 In. Female Reducer Assembly.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
4 IN. FEMALE X 2 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602640201, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 24, WP 0212)
Goggles, industrial (Item 24, WP 0212)

Materials/Parts

Apron, utility (Item 2, WP 0214)
Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (Item 36, WP 0215)
Gasket (Item 38, WP 0215)

Personnel Required

Petroleum Supply Specialist 92F

Equipment Condition

Reducer assembly removed from FSSP
(WP 0066).

DISASSEMBLY

1. Remove 4 in. dust plug (Figure 1, Item 1) from reducer assembly (Figure 1, Item 5).
2. Remove 2 in. dust cap (Figure 1, Item 4) from reducer assembly (Figure 1, Item 5).
3. Remove gasket (Figure 1, Item 2) from reducer assembly (Figure 1, Item 5). Discard gasket (Figure 1, Item 2).
4. Remove gasket (Figure 1, Item 3) from 2 in. dust cap (Figure 1, Item 4). Discard gasket (Figure 1, Item 3).

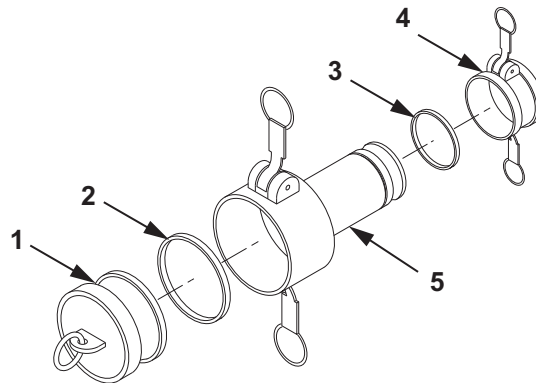


Figure 1. 4 In. Female X 2 In. Female Reducer Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK**ASSEMBLY**

1. Install new gasket (Figure 2, Item 3) into 2 in. dust cap (Figure 2, Item 4).
2. Install new gasket (Figure 2, Item 2) into reducer assembly (Figure 2, Item 5).
3. Install 4 in. dust cap (Figure 2, Item 4) on reducer assembly (Figure 2, Item 5).
4. Install 3 in. dust plug (Figure 2, Item 1) in reducer assembly (Figure 2, Item 5).

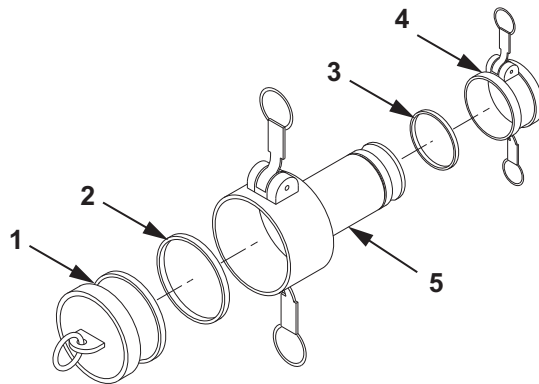


Figure 2. 4 In. Female X 2 In. Female Reducer Disassembly.

END OF TASK**END OF WORK PACKAGE**

OPERATOR MAINTENANCE
2 IN. FEMALE X 1.5 IN. MALE REDUCER ASSEMBLY, PART NUMBER 602620151, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools

Gloves, rubber, industrial (Item 24, WP 0212)
 Goggles, industrial (Item 24, WP 0212)

Materials/Parts

Apron, utility (Item 2, WP 0214)
 Cleaning compound, solvent (Item 4, WP 0214)
 Cloth, cleaning (Item 5, WP 0214)
 Gasket (Item 35, WP 0215)
 Gasket (Item 36, WP 0215)

Personnel Required

Petroleum Supply Specialist 92F

Equipment Condition

Reducer assembly removed from FSSP
 (WP 0066).

DISASSEMBLY

1. Remove 2 in. dust plug (Figure 1, Item 1) from reducer assembly (Figure 1, Item 5).
2. Remove 1.5 in. dust cap (Figure 1, Item 4) from reducer assembly (Figure 1, Item 5).
3. Remove gasket (Figure 1, Item 2) from reducer assembly (Figure 1, Item 5). Discard gasket (Figure 1, Item 2).
4. Remove gasket (Figure 1, Item 3) from 2 in. dust cap (Figure 1, Item 4). Discard gasket (Figure 1, Item 3).

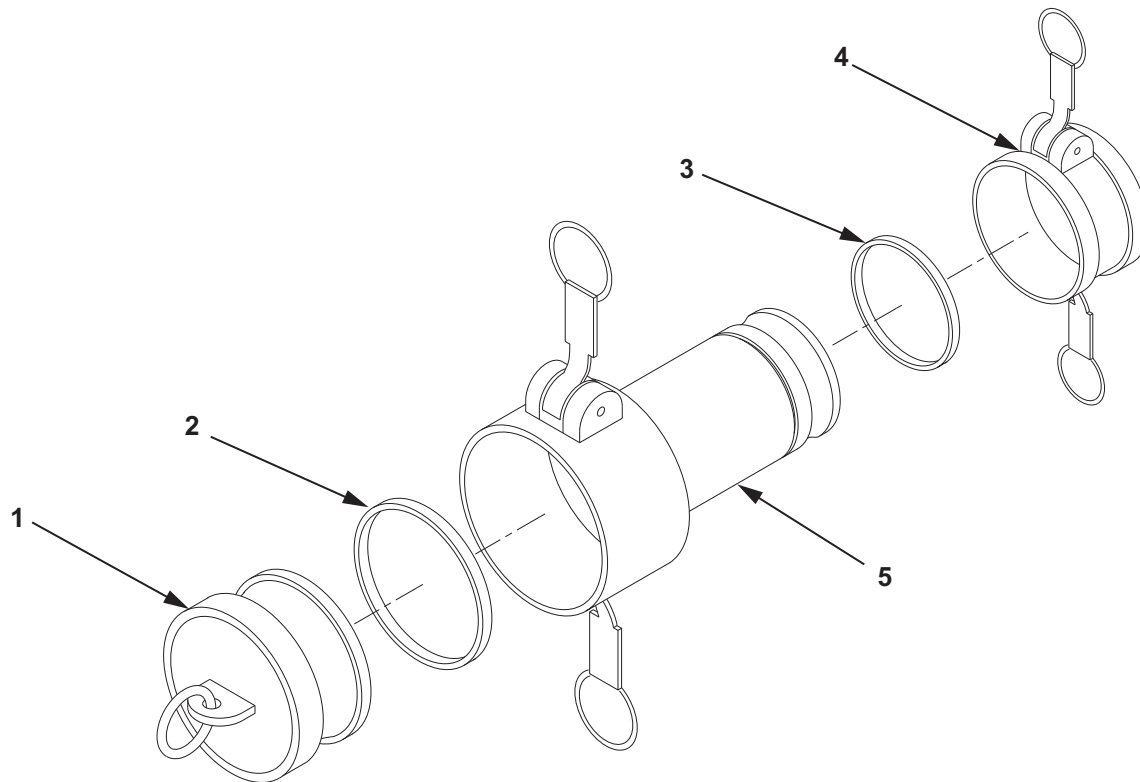


Figure 1. 2 In. Female X 1.5 In. Female Reducer Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install new gasket (Figure 2, Item 3) into 2 in. dust cap (Figure 2, Item 4).
2. Install new gasket (Figure 2, Item 2) into reducer assembly (Figure 2, Item 5).
3. Install 1.5 in. dust cap (Figure 2, Item 4) on reducer assembly (Figure 2, Item 5).
4. Install 2 in. dust plug (Figure 2, Item 1) in reducer assembly (Figure 2, Item 5).

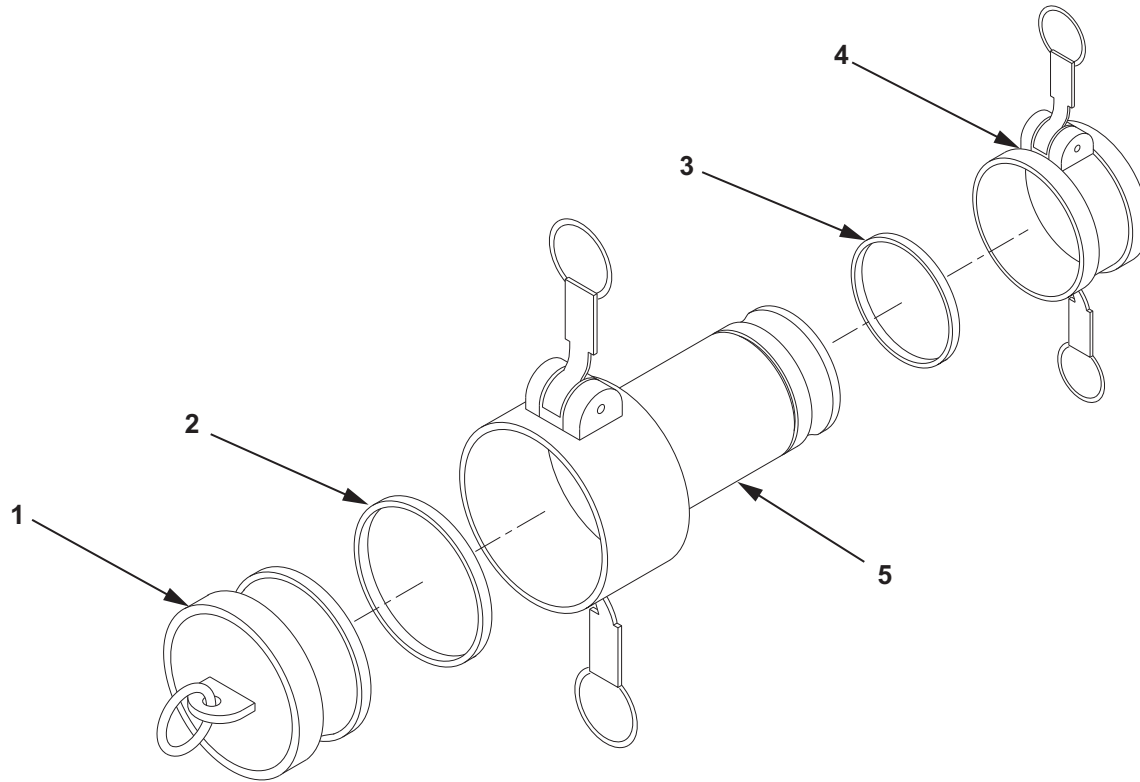


Figure 2. 2 In. Female X 1.5 In. Female Reducer Assembly.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
3 IN. DOUBLE MALE ADAPTER ASSEMBLY, PART NUMBER 602830301, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools

- Gloves, rubber, industrial (Item 24, WP 0212)
- Goggles, industrial (Item 24, WP 0212)

Materials/Parts

- Apron, utility (Item 2, WP 0214)
- Cleaning compound, solvent (Item 4, WP 0214)
- Cloth, cleaning (Item 5, WP 0214)
- Two gaskets (Item 37, WP 0215)

Personnel Required

- Petroleum Supply Specialist 92F

Equipment Condition

- Adapter assembly removed from FSSP (WP 0066).

DISASSEMBLY

1. Disconnect two dust caps (Figure 1, Item 1) from 3 in. double male adapter (Figure 1, Item 5).
2. Remove gasket (Figure 1, Item 2) from two dust caps (Figure 1, Item 1). Discard two gaskets (Figure 1, Item 2).
3. Remove split ring (Figure 1, Item 3) from each dust cap (Figure 1, Item 1) and 3 in. double male adapter (Figure 1, Item 5).
4. Remove split ring (Figure 1, Item 3) from two chains (Figure 1, Item 4).

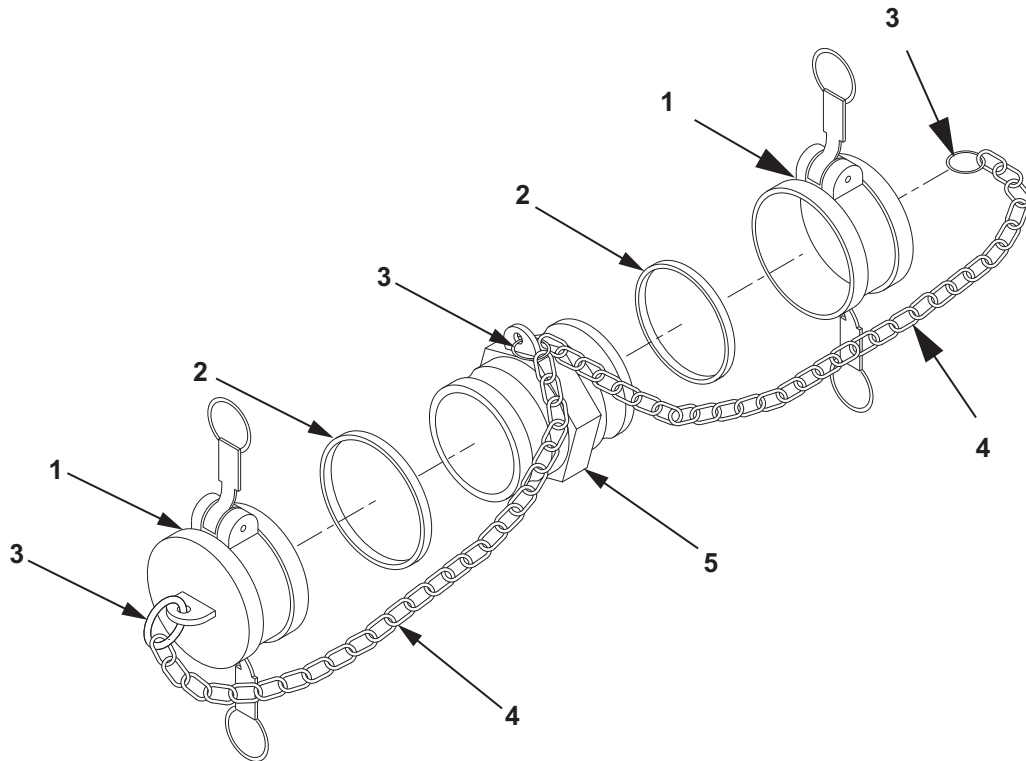


Figure 1. 3 In. Double Male Adapter Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install split rings (Figure 2, Item 3) on chains (Figure 2, Item 4).
2. Install split rings (Figure 2, Item 3) on two dust caps (Figure 2, Item 1) and 3 in. double male adapter (Figure 2, Item 5).
3. Install two new gaskets (Figure 2, Item 2) into dust caps (Figure 2, Item 1).
4. Install dust caps (Figure 2, Item 1) on 3 in. double male adapter assembly (Figure 2, Item 5).

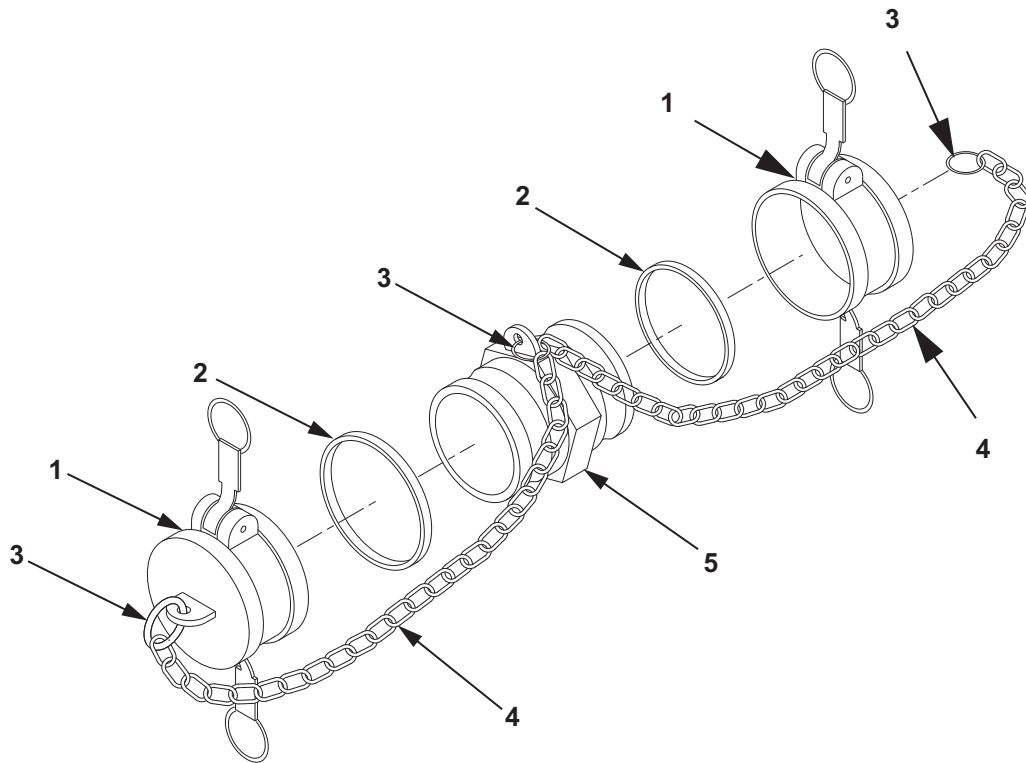


Figure 2. 3 In. Double Male Adapter Assembly.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
3 IN. DOUBLE FEMALE ADAPTER ASSEMBLY, PART NUMBER 602730301, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools

- Gloves, rubber, industrial (Item 24, WP 0212)
- Goggles, industrial (Item 24, WP 0212)

Materials/Parts

- Apron, utility (Item 2, WP 0214)
- Cleaning compound, solvent (Item 4, WP 0214)
- Cloth, cleaning (Item 5, WP 0214)
- Two gaskets (Item 37, WP 0215)

Personnel Required

- Petroleum Supply Specialist 92F

Equipment Condition

- Adapter assembly removed from FSSP (WP 0066).

DISASSEMBLY

1. Remove dust plugs (Figure 1, Item 1) from ends of double female adapter assembly (Figure 1, Item 2).
2. Remove two gaskets (Figure 1, Item 2) from double female adapter (Figure 1, Item 4). Discard gaskets (Figure 1, Item 2).
3. Remove four split rings (Figure 1, Item 3) from two dust plugs (Figure 1, Item 1) and double female adapter (Figure 1, Item 4).
4. Remove four split rings (Figure 1, Item 3) from two chains (Figure 1, Item 2).

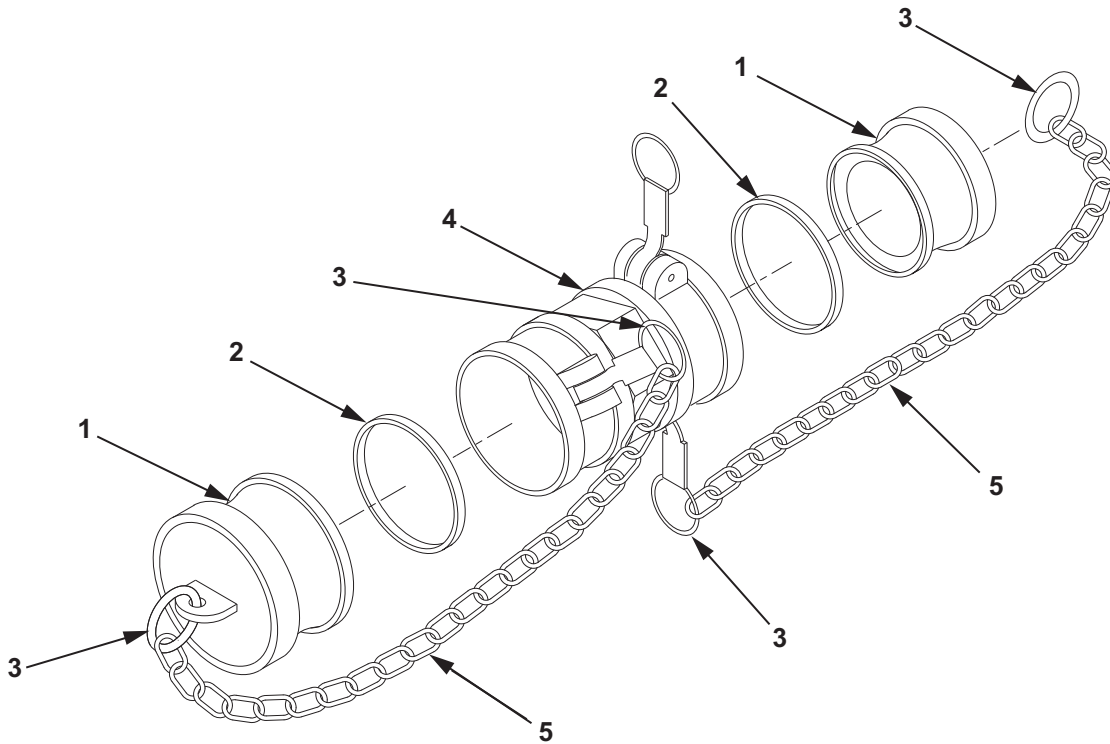


Figure 1. 3 In. Double Female Adapter Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install four split rings (Figure 2, Item 3) on two chains (Figure 2, Item 5).
2. Install four split rings (Figure 2, Item 3) on two dust plugs (Figure 2, Item 1) and double female adapter assembly (Figure 2, Item 4).
3. Install two gaskets (Figure 2, Item 2) into double female adapter assembly (Figure 2, Item 4).
4. Install two dust plugs (Figure 2, Item 1) into double female adapter assembly (Figure 2, Item 4).

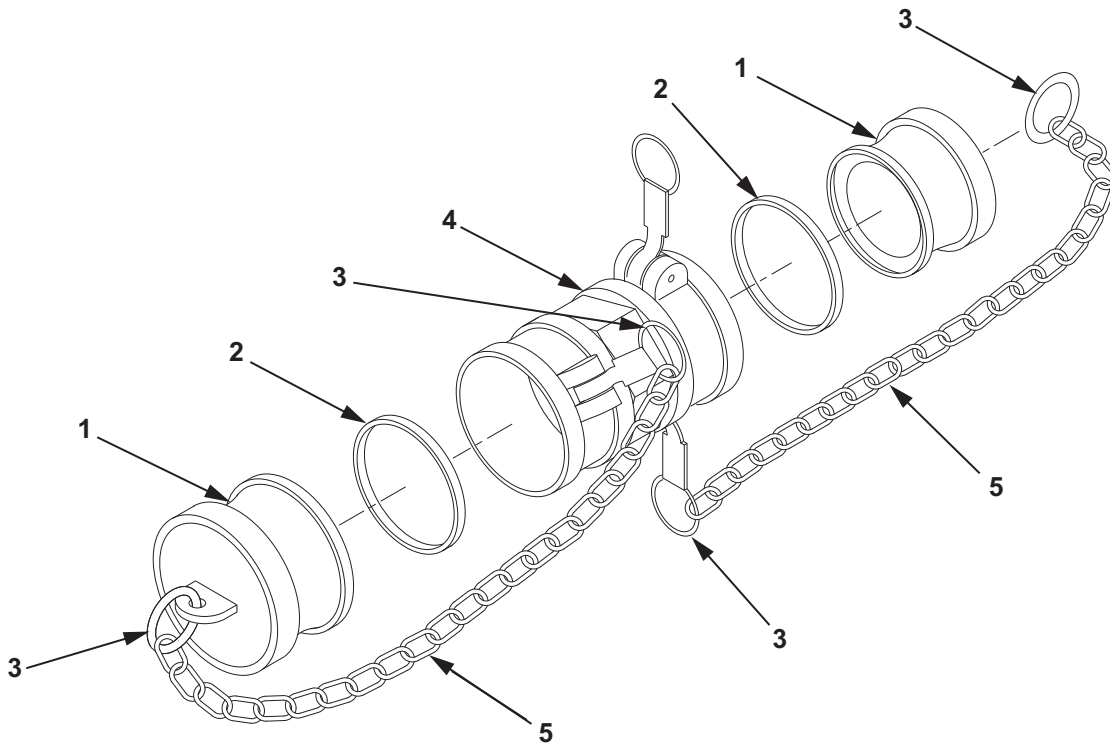


Figure 2. 3 In. Double Female Adapter Assembly.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
4 IN. DOUBLE MALE ADAPTER ASSEMBLY, PART NUMBER 602840401, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools

- Gloves, rubber, industrial (Item 24, WP 0212)
- Goggles, industrial (Item 24, WP 0212)

Materials/Parts

- Apron, utility (Item 2, WP 0214)
- Cleaning compound, solvent (Item 4, WP 0214)
- Cloth, cleaning (Item 5, WP 0214)
- Two gaskets (Item 38, WP 0215)

Personnel Required

- Petroleum Supply Specialist 92F

Equipment Condition

- Adapter assembly removed from FSSP (WP 0066).

DISASSEMBLY

1. Remove dust caps (Figure 1, Item 1) from adapter assembly (Figure 1, Item 2).
2. Remove two gaskets (Figure 1, Item 2) from two dust caps (Figure 1, Item 1). Discard gaskets (Figure 1, Item 2).
3. Remove four split rings (Figure 1, Item 4) from two dust caps (Figure 1, Item 1) and adapter assembly (Figure 1, Item 4).
4. Remove split rings (Figure 1, Item 3) from two chains (Figure 1, Item 5).

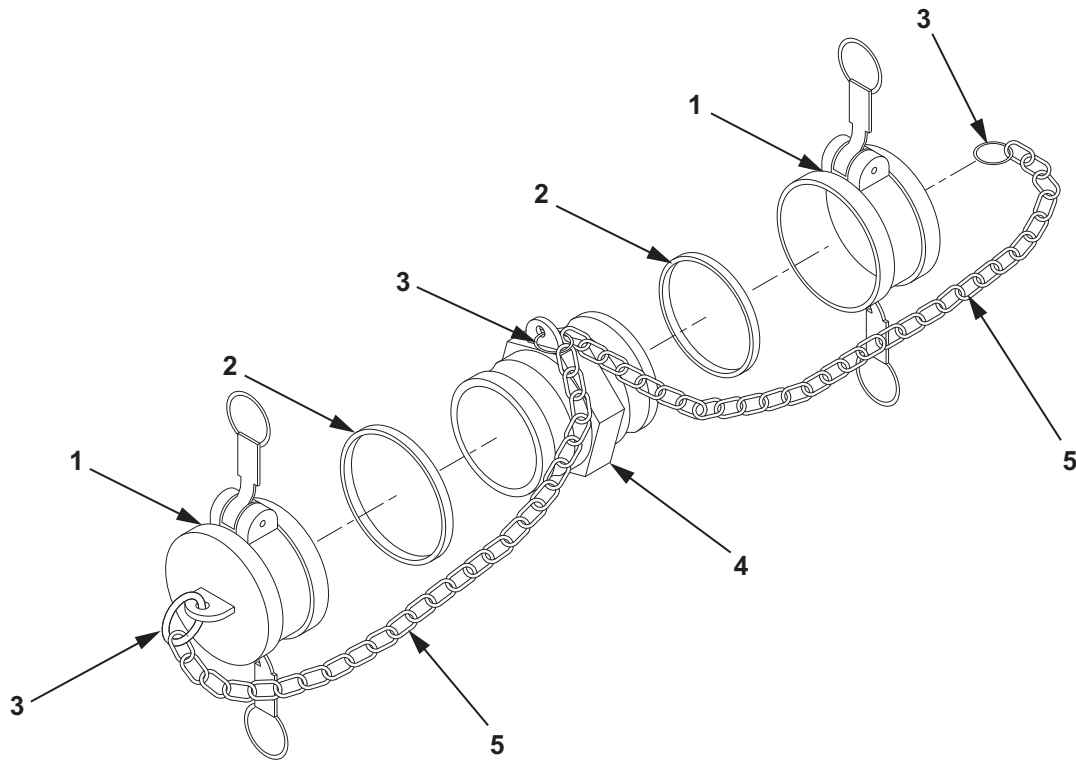


Figure 1. 4 In. Double Male Adapter Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install four split rings (Figure 2, Item 3) on chains (Figure 2, Item 5).
2. Install split rings (Figure 2, Item 3) on dust caps (Figure 2, Item 1) and adapter assembly (Figure 2, Item 4).
3. Install new gaskets (Figure 2, Item 2) in dust caps (Figure 2, Item 1).
4. Install dust caps (Figure 2, Item 1) on adapter assembly (Figure 2, Item 4).

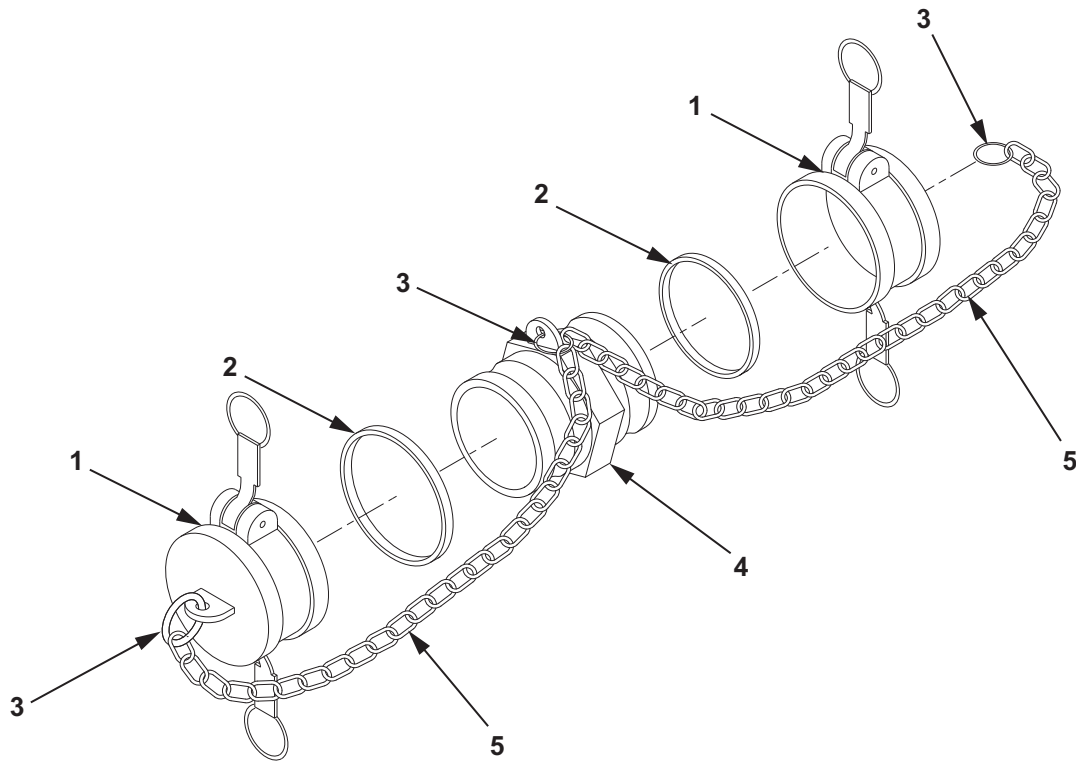


Figure 2. 4 In. Double Male Adapter Assembly.

END OF TASK

END OF WORK PACKAGE

OPERATOR MAINTENANCE
4 IN. DOUBLE FEMALE ADAPTER ASSEMBLY, PART NUMBER 602740401, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:

Tools and Special Tools

- Gloves, rubber, industrial (Item 24, WP 0212)
- Goggles, industrial (Item 24, WP 0212)

Materials/Parts

- Apron, utility (Item 2, WP 0214)
- Cleaning compound, solvent (Item 4, WP 0214)
- Cloth, cleaning (Item 5, WP 0214)
- Two gaskets (Item 38, WP 0215)

Personnel Required

- Petroleum Supply Specialist 92F

Equipment Condition

- Adapter assembly removed from FSSP (WP 0066).

DISASSEMBLY

1. Remove two dust plugs (Figure 1, Item 1) from ends of double female adapter assembly (Figure 1, Item 4).
2. Remove two gaskets (Figure 1, Item 2) from double female adapter assembly (Figure 1, Item 4). Discard two gaskets (Figure 1, Item 2).
3. Remove four split rings (Figure 1, Item 3) from two dust plugs (Figure 1, Item 1) and double female adapter assembly (Figure 1, Item 4).
4. Remove four split rings (Figure 1, Item 3) from two chains (Figure 1, Item 5).

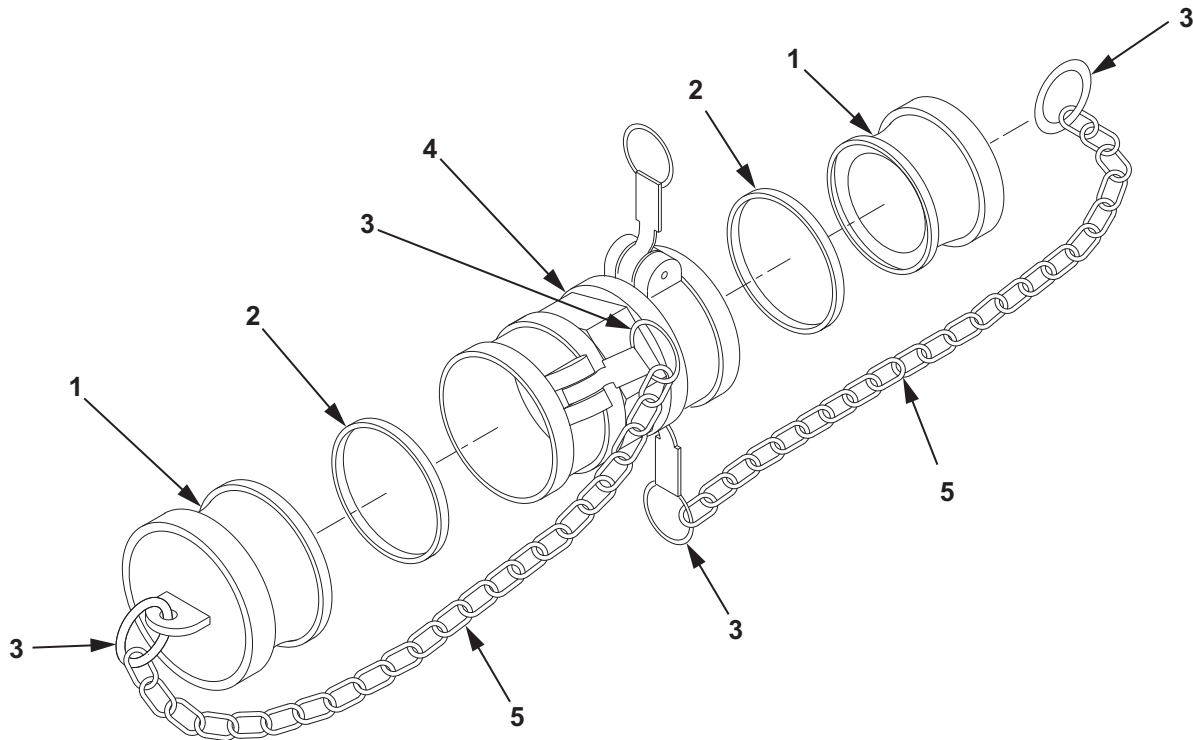


Figure 1. 4 In. Double Female Adapter Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion or corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install four split rings (Figure 2, Item 3) on two chains (Figure 2, Item 5).
2. Install four split rings (Figure 2, Item 3) on two dust plugs (Figure 2, Item 1) and double female adapter assembly (Figure 2, Item 4).
3. Install new gaskets (Figure 2, Item 2) into double female adapter assembly (Figure 2, Item 4).
4. Install dust plugs (Figure 2, Item 1) into double female adapter assembly (Figure 2, Item 4).

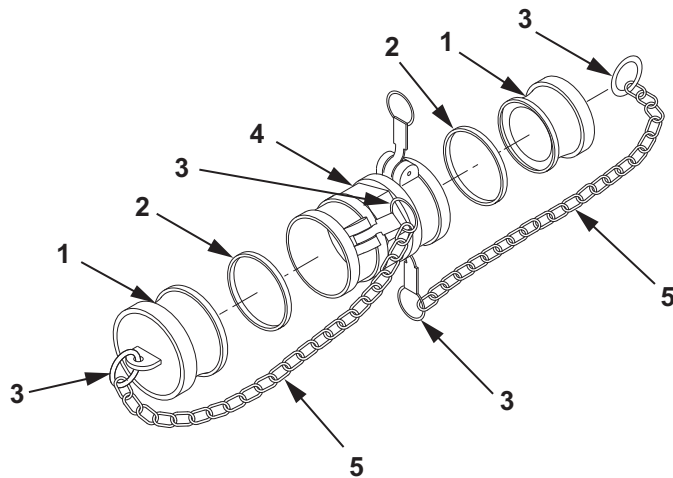


Figure 2. 4 In. Double Female Adapter Assembly.

END OF TASK

END OF WORK PACKAGE

CHAPTER 5

UNIT MAINTENANCE TROUBLESHOOTING PROCEDURES FOR FUEL SYSTEM SUPPLY POINT (FSSP)

UNIT MAINTENANCE UNIT MASTER MALFUNCTION/SYMPTOM INDEX

HOSE ASSEMBLY

4 In. X 10 Ft Suction Hose Assembly, Part Number 78003-100,
Leaks WP 0077

FILTER ASSEMBLY

Liquid Fuel Filter-Separator Assembly, Part Number 78019-100,
Leaks or Does Not Operate Properly WP 0078

PUMPING ASSEMBLY

Pumping Assembly, Part Number 78100-100,
Leaks or Does Not Operate Properly WP 0079

COMPONENTS

4 In. Female X 4 In. Male X 4 In. Female Tee Assembly, Part Number 78021-100,
Leaks or Will Not Connect With Other Components WP 0080

4 In. Butterfly Valve Assembly, Part Numbers 78042-100 and 78042-101,
Leaks or Does Not Operate Properly WP 0081

4 In. Gate Valve Assembly, Part Number 78011-100,
Leaks or Does Not Operate Properly WP 0082

4 In. Male X 4 In. Male X 4 In. Female Tee Assembly, Part Number 78024-100,
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Closed Circuit Refueling (CCR) Nozzle Assembly, Part Number 64017B,
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4 In. X 25 Ft Discharge Hose Assembly, Part Number 78007-102,
Leaks WP 0085

4 In. Female X 4 In. Female X 4 In. Male Tee Assembly, Part Number 78025-100,
Leaks or Will Not Connect With Other Components WP 0086

1 In. Fuel and Oil Servicing Nozzle Assembly, Part Number 64210,
Leaks or Will Not Connect With Other Components WP 0087

1 In. Fuel and Oil Servicing Nozzle Assembly, Part Number 64210,
Has Excessive Fuel Discharge Pressure WP 0088

4 In. X 10 Ft Discharge Hose Assembly, Part Number 78007-100,
Leaks WP 0089

20,000 Gallon Collapsible Fuel Tank, Part Number MPC-F-20K-22276,
Leaks or Does Not Operate Properly WP 0090

2 In. Tee Assembly (Valved Dry-Break Coupling Assembly), Part Number 64022D,
Leaks or Will Not Connect With Other Components WP 0091

2 In. Female Quick Disconnect X 2 In. Valved Dry-Break Adapter Assembly,
Part Number 64020GQ, Leaks or Will Not Connect With Other Components WP 0092

2 In. Male Quick Disconnect X 2 In. Valved Dry-Break Adapter Assembly,
Part Number 64020FQ, Leaks or Will Not Connect With Other Components WP 0093

2 In. X 50 Ft Discharge Hose Assembly, Part Number 78009-100,
Leaks WP 0094

1.5 In. Nozzle Assembly, Part Number 64199,
Leaks or Will Not Connect With Other Components WP 0095

2 In. Ball Valve Assembly, Part Number 78048-100,
Leaks or Will Not Connect With Other Components WP 0096

D1 Nozzle Assembly, Part Number 64201CF4GHX,
Leaks or Will Not Connect With Other Components WP 0097

D1 Nozzle Assembly, Part Number 64201CGH2MQ,
Leaks or Will Not Connect With Other Components WP 0098

D1 Nozzle Assembly, Part Number 64201CGH2KQ,
Leaks or Will Not Connect With Other Components WP 0099

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Will Not Turn	WP 0100
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Turns, But Will Not Pick Up Additive	WP 0101
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injectors are Primed and System is Running, But Injection is Either Low or Erratic	WP 0102
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injector is Running Slowly Even With High Fuel Flow Rates	WP 0103
Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1, Injector Will Not Flow and Appears to be Locked Up	WP 0104
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Amount of Fuel Pumped	WP 0105
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Correct Amount of Fuel Pumped	WP 0106
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Fuel Flow	WP 0107
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Leaks During Operation	WP 0108
Wet Wing Defueling Assembly, Part Number 78029-100, Components Leak or Will Not Connect With Other Components	WP 0109
50,000 Gallon Collapsible Fuel Tank, Part Number MPC-F-50K-22636, Leaks or Will Not Connect With Other Components	WP 0110
Tank Input Volume Meter Assembly, Part Number EAS-0400-IN, Leaks or Will Not Connect With Other Components	WP 0111
Tank Output Meter Assembly, Part Number EAS-0400-OUT, Leaks or Will Not Connect With Other Components	WP 0112
Tank Output Meter Assembly, Part Number EAS-0400-OUT, Monitor Does Not Indicate Correct Amount of Fuel Passing Through Meter	WP 0113
Tank Output Meter Assembly, Part Number EAS-0400-OUT, Flowmeter Does Not Generate Pulses	WP 0114
Tank Output Meter Assembly, Part Number EAS-0400-OUT, Flowmeter Generates Too Many Pulses	WP 0115
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Tank Output Meter Assembly, Part Number EAS-0400-OUT, Pulse Output Does Not Function	WP 0117
Tank Output Meter Assembly, Part Number EAS-0400-OUT, Flowrate Displays 0/Zero While There Is Flow (Total Is Counting)	WP 0118
Tank Output Meter Assembly, Part Number EAS-0400-OUT, Monitor Displays Low Battery Symbol	WP 0119
Tank Output Volume Meter Assembly, Part Number EAS-0400-OUT, Monitor Pass Code is Unknown	WP 0120

END OF WORK PACKAGE

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. X 10 FT SUCTION HOSE ASSEMBLY, PART NUMBER 78003-100,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0124

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. X 10 FT SUCTION HOSE ASSEMBLY, PART NUMBER 78003-100, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks at couplings.

MALFUNCTION

Hose assembly leaks at couplings.

CORRECTIVE ACTION

1. Repair hose assembly (WP 0124).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
LIQUID FUEL FILTER-SEPARATOR ASSEMBLY, PART NUMBER 78019-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 10-4330-235-13&P

LIQUID FUEL FILTER-SEPARATOR ASSEMBLY, PART NUMBER 78019-100, LEAKS OR DOES NOT OPERATE PROPERLY**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4330-235-13&P for troubleshooting the liquid fuel filter-separator assembly.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
PUMPING ASSEMBLY, PART NUMBER 78100-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 10-4320-372-14

PUMPING ASSEMBLY, PART NUMBER 78100-100, LEAKS OR DOES NOT OPERATE PROPERLY**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4320-372-14 for troubleshooting the pumping assembly.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78021-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0125

Personnel Required

Quartermaster and Chemical Repairman 63J

**4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78021-100, LEAKS OR WILL NOT
CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0125).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0126

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101, LEAKS OR DOES NOT OPERATE PROPERLY

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Valve assembly leaks at couplings.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0126).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Valve assembly will not join with other components.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0126).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101, LEAKS OR DOES NOT OPERATE PROPERLY - CONTINUED**SYMPTOM**

Valve assembly handle hard to operate or will not operate.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0126).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Valve assembly does not operate properly.

MALFUNCTION

Valve handle is hard to operate.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0126).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0127

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100, LEAKS OR DOES NOT OPERATE PROPERLY**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Valve assembly is leaking at couplings.

MALFUNCTION

Valve assembly leaks at couplings.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0127).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Valve assembly leaks.

MALFUNCTION

Joint gaskets leaking.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0127).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100, LEAKS OR DOES NOT OPERATE PROPERLY - CONTINUED**SYMPTOM**

Valve assembly will not join with other components.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0127).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Gate valve assembly handwheel hard to operate or will not operate.

MALFUNCTION

Component parts are defective or damaged.

CORRECTIVE ACTION

1. Repair valve assembly (WP 0127).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0130

Personnel Required

Quartermaster and Chemical Repairman 63J

**4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100, LEAKS OR WILL NOT
CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly couplings leak fuel.

MALFUNCTION

Tee assembly couplings still leak fuel.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0130).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0130).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Tee assembly leaks fuel.

MALFUNCTION

Joint gaskets leaking.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0130).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
CLOSED CIRCUIT REFUELING (CCR) NOZZLE ASSEMBLY, PART NUMBER 64017B**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 10-4930-248-13&P

CCR NOZZLE ASSEMBLY, PART NUMBER 64017B

Refer to TM 10-4930-248-13&P for troubleshooting the CCR nozzle assembly.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-102,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0131

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-102, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks at couplings.

MALFUNCTION

Gaskets are missing from hose couplings.

CORRECTIVE ACTION

1. Repair hose (WP 0131).
2. Perform operational checkout of the FSSP (WP 0015).
3. If hose assembly still leaks, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly couplings or hose is damaged.

CORRECTIVE ACTION

1. Repair hose (WP 0131).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78025-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0132

Personnel Required

Quartermaster and Chemical Repairman 63J

**4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78025-100, LEAKS OR WILL NOT
CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0132).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Tee assembly leaks fuel.

MALFUNCTION

Joint gaskets leaking.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0132).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0133

Personnel Required

Quartermaster and Chemical Repairman 63J

1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

NOTE

The 1 inch fuel and oil servicing nozzle assembly, part number 64210 is for filling fuel cans. Ensure correct size of nozzle is used during all procedures.

SYMPTOM

Nozzle assembly leaks fuel.

MALFUNCTION

Nozzle assembly leaks at couplings.

CORRECTIVE ACTION

1. Repair nozzle assembly (WP 0133).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Nozzle assembly will not connect with other components.

MALFUNCTION

Quick disconnect coupling half defective or damaged.

CORRECTIVE ACTION

1. Repair nozzle assembly (WP 0133).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Hose end control valve has external leakage or damage.

MALFUNCTION

Hose end control valve leaks or is damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210,
HAS EXCESSIVE FUEL DISCHARGE PRESSURE**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0133

Personnel Required

Quartermaster and Chemical Repairman 63J

1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, HAS EXCESSIVE FUEL DISCHARGE PRESSURE

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly has excessive discharge pressure.

MALFUNCTION

Hose End Control Valve (HECV) not operating properly.

CORRECTIVE ACTION

1. Repair nozzle assembly (WP 0133).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. X 10 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-100,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0134

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. X 10 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-100, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks at couplings.

MALFUNCTION

Hose assembly leaks at couplings.

CORRECTIVE ACTION

1. Repair hose assembly (WP 0134).
2. Perform operational checkout of the FSSP (WP 0015).
3. If hose assembly still leaks, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly couplings or hose is damaged.

CORRECTIVE ACTION

1. Repair hose assembly (WP 0134).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
20,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-20K-2276**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 5-5430-219-13

TM 10-5430-242-12&P

20,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-20K-22276

Refer to TM 5-5430-219-13 and TM 10-5430-242-12&P for troubleshooting the 20,000 gallon collapsible fuel tank.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. TEE ASSEMBLY (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64022D,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

**2 IN. TEE ASSEMBLY (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64022D, LEAKS OR WILL NOT
CONNECT WITH OTHER COMPONENTS****WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly leaks.

MALFUNCTION

Tee assembly leaks fuel.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY,
PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Adapter assembly couplings leaks fuel.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Adapter assembly will not connect with other components.

MALFUNCTION

Adapter assembly damaged or defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**MALFUNCTION**

Adapter assembly quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Male adapter assembly leaks.

MALFUNCTION

Adapter assembly leaks fuel.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Adapter assembly will not connect with other components.

MALFUNCTION

Adapter assembly damaged or defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**MALFUNCTION**

Adapter assembly quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. X 50 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78009-100,
LEAKS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0135

Personnel Required

Quartermaster and Chemical Repairman 63J

2 IN. X 50 FT DISCHARGE HOSE ASSEMBLY, PART NUMBER 78009-100, LEAKS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Hose assembly leaks at couplings.

MALFUNCTION

Hose assembly leaks at couplings.

CORRECTIVE ACTION

1. Replace hose assembly (WP 0135).
2. Perform operational checkout of the FSSP (WP 0015).
3. If hose assembly still leaks, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose assembly couplings or hose is damaged.

CORRECTIVE ACTION

1. Replace hose assembly (WP 0135).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
1.5 IN. NOZZLE ASSEMBLY, PART NUMBER 64199,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0136

Personnel Required

Quartermaster and Chemical Repairman 63J

1.5 IN. NOZZLE ASSEMBLY, PART NUMBER 64199, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Nozzle assembly will not connect with other components.

MALFUNCTION

Nozzle assembly components defective or damaged.

CORRECTIVE ACTION

1. Repair nozzle assembly (WP 0136).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Nozzle assembly leaks.

MALFUNCTION

Nozzle assembly leaks at coupling.

CORRECTIVE ACTION

1. Repair nozzle assembly (WP 0136).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. BALL VALVE ASSEMBLY, PART NUMBER 78048-100,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0137

Personnel Required

Quartermaster and Chemical Repairman 63J

2 IN. BALL VALVE ASSEMBLY, PART NUMBER 78048-100, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Ball valve assembly leaks.

MALFUNCTION

Ball valve assembly leaks.

CORRECTIVE ACTION

1. Repair ball valve assembly (WP 0137).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Quick disconnect coupling half will not connect with other components.

MALFUNCTION

Quick disconnect coupling half defective or damaged.

CORRECTIVE ACTION

1. Repair ball valve assembly (WP 0137).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

D1 nozzle assembly leaks at D1 receptacle when refueling.

MALFUNCTION

D1 nozzle assembly defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Quick disconnect unisex coupling half leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Nose seal leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Operating lever leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Swivel joint leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not connect with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Quick disconnect coupling half leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Nose seal leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Operating lever leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Swivel joint leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly leaks at D1 receptacle when refueling.

MALFUNCTION

If serviceable D1 nozzle does not leak when refueling the same aircraft or vehicle, the original D1 nozzle is defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not connect with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

D1 nozzle assembly defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Quick disconnect coupling half leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Nose seal leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

Operating lever leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Swivel joint leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly leaks at D1 receptacle when refueling.

MALFUNCTION

If serviceable D1 nozzle does not leak when refueling the same aircraft or vehicle, the original D1 nozzle is defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not connect with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

D1 nozzle assembly defective.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
WILL NOT TURN**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)

Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

References

WP 0015

WP 0149

WP 0150

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, WILL NOT TURN**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly will not turn.

MALFUNCTION

A line check valve is installed incorrectly or not functioning properly.

CORRECTIVE ACTION

1. Remove and install CI and SDA pump suction check valves (WP 0149), CI and SDA pump discharge check valves (WP 0150).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly still will not turn.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
TURNS, BUT WILL NOT PICK UP ADDITIVE**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

References

WP 0005
WP 0008
WP 0015
WP 0142
WP 0144
WP 0146

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly turns, but will not pick up additive.

MALFUNCTION

Stroke adjustment knob in the off position.

CORRECTIVE ACTION

1. Calibrate fuel additive injection assembly (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

FSII HI volume sight flow indicator leaking.

CORRECTIVE ACTION

1. Repair HI volume sight flow indicator (FSII) (WP 0142).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE - CONTINUED**MALFUNCTION**

CI sight flow indicator leaking.

CORRECTIVE ACTION

1. Repair sight flow indicator (CI) (WP 0144).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

SDA sight flow indicator leaking.

CORRECTIVE ACTION

1. Repair sight flow indicator (SDA) (WP 0146).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Check valves clogged with dried additive.

CORRECTIVE ACTION

1. Purge fuel additive injection assembly (WP 0008).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly turns, but still will not pick up additive.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0005
WP 0008
WP 0015
WP 0149

Personnel Required

Quartermaster and Chemical Repairman 63J

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC

WARNING

CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

System is primed and running, but injection is either low or erratic.

MALFUNCTION

Suction check valves not functioning properly.

CORRECTIVE ACTION

1. Remove and install CI and SDA pump suction check valves (WP 0149).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Pump power frame assembly mounting screws have worked loose, causing stroke adjustment knobs to slip or move around.

CORRECTIVE ACTION

1. Tighten pump power frame mounting screws.
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC - CONTINUED**MALFUNCTION**

Check valves clogged with dried additive.

CORRECTIVE ACTION

1. Purge fuel additive injection assembly (WP 0008).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Performance ratio of the fluid motor is out of tolerance.

CORRECTIVE ACTION

1. Calibrate the fuel additive injection assembly (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

System is still operating low or erratic.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR IS RUNNING SLOWLY EVEN WITH HIGH FUEL FLOW RATES

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)

Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTOR IS RUNNING SLOWLY EVEN WITH HIGH FUEL FLOW RATES

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Injector is running slowly even with high flow rates.

MALFUNCTION

Performance ratio of the fluid motor is out of tolerance.

CORRECTIVE ACTION

1. Remove the FSII pump power frame cover and check the fluid motor performance ratio. The fluid motor will rotate 0.4 revolutions for every gallon of fuel that passes through the system.
2. Establish a flow rate in gallons per minute and count the revolutions for 30–60 seconds. If the counted RPM is off by more than 20%, contact Direct Support Maintenance.

END OF TASK**MALFUNCTION**

Fluid motor vanes are damaged or excessively worn.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR WILL NOT FLOW AND APPEARS TO BE LOCKED UP**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTOR WILL NOT FLOW AND APPEARS TO BE LOCKED UP

SYMPTOM

Fuel additive injector is locked up.

MALFUNCTION

Fluid motor vanes are loose.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK

END OF WORK PACKAGE

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE AMOUNT OF FUEL PUMPED**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0154

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE AMOUNT OF FUEL PUMPED**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly does not indicate amount of fuel pumped.

MALFUNCTION

Register readout faulty.

CORRECTIVE ACTION

1. Replace register readout (WP 0154).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter assembly still does not indicate amount of fuel pumped after replacing register readout, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Flowmeter assembly still does not indicate amount of fuel pumped.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0154

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly does not indicate the correct amount of fuel pumped.

MALFUNCTION

Register readout is not functioning properly.

CORRECTIVE ACTION

1. Replace register readout (WP 0154).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter assembly still does not indicate the correct amount of fuel pumped after replacing register readout, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Flowmeter assembly still does not indicate the correct amount of fuel pumped.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE FUEL FLOW**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0066
WP 0154

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE FUEL FLOW**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly does not indicate fuel flow.

MALFUNCTION

Flowmeter assembly clogged with debris at inlet hose connection.

CORRECTIVE ACTION

1. Remove components with camlock connectors (WP 0066).
2. Clean debris from opening.
3. Install components with camlock connectors (WP 0066).
4. Perform operational checkout of the FSSP (WP 0015).
5. If flowmeter assembly still does not indicate fuel flow, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Register readout is inoperative.

CORRECTIVE ACTION

1. Replace register readout (WP 0154).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter assembly still does not indicate amount of fuel pumped after replacing register readout, proceed to next malfunction.

END OF TASK

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE FUEL FLOW - CONTINUED**MALFUNCTION**

Flowmeter assembly still does not indicate fuel flow.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK

END OF WORK PACKAGE

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
LEAKS DURING OPERATION**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0154

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, LEAKS DURING OPERATION**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly leaks.

MALFUNCTION

Flowmeter leaks between readout device and front cover.

CORRECTIVE ACTION

1. Remove and install the register readout (WP 0154).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter assembly still leaks, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Flowmeter assembly still leaks during operation.

CORRECTIVE ACTION

Contact Direct Support Maintenance.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100,
COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0065
WP 0066
WP 0067

Personnel Required

Quartermaster and Chemical Repairman 63J

WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100, COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

3 in. hose assembly leaking.

MALFUNCTION

Hose leaks.

CORRECTIVE ACTION

1. Repair hose assembly (WP 0065).
2. Perform operational checkout of the FSSP (WP 0015).
3. If hose assembly still leaks, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Hose valved dry-break coupling leaks.

CORRECTIVE ACTION

1. Replace gasket in valved quick disconnect coupling half (WP 0067).
2. Perform operational checkout of the FSSP (WP 0015).
3. If hose valved dry-break coupling still leaks, contact Direct Support Maintenance.

END OF TASK

WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100, COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

4 in. male camlock X 3 in. quick disconnect coupling half adapter leaks.

MALFUNCTION

Adapter valved quick disconnect coupling half or gasket is defective or damaged.

CORRECTIVE ACTION

1. Replace gasket in valved quick disconnect coupling half (WP 0067).
2. Perform operational checkout of the FSSP (WP 0015).
3. If adapter valved quick disconnect coupling half still leaks, contact Direct Support Maintenance.

END OF TASK**MALFUNCTION**

Adapter camlock connector or gasket is defective or damaged.

CORRECTIVE ACTION

1. Replace gasket in camlock connectors (WP 0067).
2. Perform operational checkout of the FSSP (WP 0015).
3. If adapter camlock connector still leaks, contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

4 in. female camlock X 3 in. quick disconnect coupling half adapter leaks.

MALFUNCTION

Adapter valved quick disconnect coupling half or gasket is defective or damaged.

CORRECTIVE ACTION

1. Replace gaskets in valved quick disconnect coupling half (WP 0067).
2. Perform operational checkout of the FSSP (WP 0015).
3. If adapter valved quick disconnect coupling half still leaks, contact Direct Support Maintenance.

END OF TASK**MALFUNCTION**

Adapter camlock connector or gasket is defective or damaged.

CORRECTIVE ACTION

1. Replace gasket in camlock connectors (WP 0067).
2. Perform operational checkout of the FSSP (WP 0015).
3. If adapter camlock connector still leaks, contact Direct Support Maintenance.

END OF TASK**SYMPTOM**

3 in. hose assembly will not connect with other components.

MALFUNCTION

Hose quick disconnect coupling halves damaged.

WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100, COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**CORRECTIVE ACTION**

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Install replacement components with valved quick disconnect coupling half (WP 0066).
3. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

4 in. male camlock X 3 in. quick disconnect coupling half adapter will not connect with other components.

MALFUNCTION

Adapter valved quick disconnect coupling halves damaged.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Install replacement components with valved quick disconnect coupling half (WP 0066).
3. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**MALFUNCTION**

Adapter camlock connectors damaged.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Install replacement components with valved quick disconnect coupling half (WP 0066).
3. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

4 in. female camlock X 3 in. quick disconnect coupling half adapter will not connect with other components.

MALFUNCTION

Adapter valved quick disconnect coupling halves damaged.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Install replacement components with valved quick disconnect coupling half (WP 0066).
3. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

WET WING DEFUELING ASSEMBLY, PART NUMBER 78029-100, COMPONENTS LEAK OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**MALFUNCTION**

Adapter camlock connectors damaged.

CORRECTIVE ACTION

1. Remove components with valved quick disconnect coupling half (WP 0066).
2. Install replacement components with valved quick disconnect coupling half (WP 0066).
3. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
50,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-50K-22636**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 5-5430-219-13

TM 10-5430-242-12&P

50,000 GALLON COLLAPSIBLE FUEL TANK, PART NUMBER MPC-F-50K-22636

Refer to TM 5-5430-219-13 and TM 10-5430-242-12&P for troubleshooting the 50,000 gallon collapsible fuel tanks.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK INPUT VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-IN,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0159

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK INPUT VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-IN, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank input volume meter assembly leaks.

MALFUNCTION

Flange gaskets are defective or damaged.

CORRECTIVE ACTION

1. Repair tank input volume meter assembly (WP 0159).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Tank input volume meter assembly will not connect with other components.

MALFUNCTION

Tank input volume meter assembly coupling halves damaged or defective.

CORRECTIVE ACTION

1. Repair tank input volume meter assembly (WP 0159).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK OUTPUT VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0160

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK OUTPUT VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank output volume meter assembly leaks.

MALFUNCTION

Flange gaskets are defective or damaged.

CORRECTIVE ACTION

1. Repair tank output volume meter assembly (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**SYMPTOM**

Tank output volume meter assembly will not connect with other components.

MALFUNCTION

Tank output volume meter assembly coupling halves damaged or defective.

CORRECTIVE ACTION

1. Repair tank output volume meter assembly (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
MONITOR DOES NOT INDICATE CORRECT AMOUNT OF FUEL PASSING THROUGH METER**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

References

WP 0006
WP 0015
WP 0156
WP 0159
WP 0160

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR DOES NOT INDICATE CORRECT AMOUNT OF FUEL PASSING THROUGH METER

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel is flowing through tank volume meter assembly, but monitor does not indicate correct amount of fuel flow.

MALFUNCTION

Tank volume meter monitor improperly configured.

CORRECTIVE ACTION

1. Configure tank volume meter monitor (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If fuel is flowing through tank volume meter assembly, but monitor still does not indicate correct amount of fuel flow, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter monitor cable damaged or defective.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter monitor cable is still damaged or defective, proceed to next malfunction.

END OF TASK

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR DOES NOT INDICATE CORRECT AMOUNT OF FUEL PASSING THROUGH METER - CONTINUED**MALFUNCTION**

Tank input volume meter assembly magnetic pickup is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace magnetic pickup (WP 0159).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter assembly still does not indicate the correct amount of fuel passing through the meter, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank output volume meter assembly magnetic pickup is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace magnetic pickup (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter still does not indicate the correct amount of fuel passing through the meter, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank output volume meter assembly monitor is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter still does not indicate the correct amount of fuel passing through the meter, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter does not indicate the correct amount of fuel passing through the meter.

CORRECTIVE ACTION

1. Repair tank input volume meter (WP 0159) and tank output volume meter (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
FLOWMETER DOES NOT GENERATE PULSES**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

References

WP 0006
WP 0015
WP 0156
WP 0157
WP 0159
WP 0160

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, FLOWMETER DOES NOT GENERATE PULSES**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel is flowing through tank volume meter assembly, but flowmeter does not generate pulses.

MALFUNCTION

Signal selection incorrect.

CORRECTIVE ACTION

1. Configure the COIL signal selection (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter does not generate pulses, proceed to the next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meters, input or output, is not turning when fuel flows through the meter.

CORRECTIVE ACTION

1. Remove tank volume meters (WP 0157) and check turbine for freedom of movement. If turbine will not rotate, repair tank input volume meter (WP 0159) and tank output volume meter (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter turbines rotated freely, proceed to next malfunction.

END OF TASK

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, FLOWMETER DOES NOT GENERATE PULSES - CONTINUED**MALFUNCTION**

Tank volume meter monitor cable damaged or defective.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter does not generate pulses, proceed to the next malfunction.

END OF TASK**MALFUNCTION**

Tank input volume meter assembly magnetic pickup is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace magnetic pickup (WP 0159).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter assembly still does not indicate the correct amount of fuel passing through the meter, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank output volume meter assembly magnetic pickup is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace magnetic pickup (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter still does not indicate the correct amount of fuel passing through the meter, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank output volume meter assembly monitor is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
FLOWMETER GENERATES TOO MANY PULSES**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

References

WP 0005
WP 0006
WP 0015
WP 0156
WP 0159
WP 0160

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, FLOWMETER GENERATES TOO MANY PULSES**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank volume meter assembly generates too many pulses.

MALFUNCTION

Tank volume meter assembly improperly grounded.

CORRECTIVE ACTION

1. Ground tank volume meter assembly (WP 0005).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter still generates too many pulses, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Signal selection incorrect.

CORRECTIVE ACTION

1. Configure the tank volume meter monitor COIL signal selection (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter still generates too many pulses, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Settings for total and flowrate are incorrect.

CORRECTIVE ACTION

1. Configure tank volume meter monitor total and flowrate (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, FLOWMETER GENERATES TOO MANY PULSES - CONTINUED

3. If flowmeter still generates too many pulses, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank input volume meter assembly magnetic pickup is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace magnetic pickup (WP 0159).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter still generates too many pulses, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank output volume meter assembly magnetic pickup is defective or is malfunctioning.

CORRECTIVE ACTION

1. Replace magnetic pickup (WP 0160).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowmeter still generates too many pulses, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank output volume meter assembly monitor is defective.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
MONITOR ANALOG OUTPUT DOES NOT FUNCTION PROPERLY**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0006
WP 0015
WP 0156

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR ANALOG OUTPUT DOES NOT FUNCTION PROPERLY

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank volume meter monitor analog output does not function properly.

MALFUNCTION

Tank volume meter monitor function not enabled.

CORRECTIVE ACTION

1. Configure tank volume meter monitor DISABLE function (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter monitor analog output still does not function properly, proceed to next malfunction.

END OF TASK

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR ANALOG OUTPUT DOES NOT FUNCTION PROPERLY - CONTINUED**MALFUNCTION**

Flow levels improperly programmed.

CORRECTIVE ACTION

1. Configure tank volume meter monitor FLOWR A levels (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter monitor analog output still does not function properly, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter monitor analog output still does not function properly.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
PULSE OUTPUT DOES NOT FUNCTION**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0006
WP 0015
WP 0156

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, PULSE OUTPUT DOES NOT FUNCTION**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank volume meter assembly pulse output does not function.

MALFUNCTION

Tank volume meter monitor pulse for X quantity is unreasonably programmed.

CORRECTIVE ACTION**NOTE**

Maximum output must be below 60 Hz.

1. Configure tank volume meter monitor (pulse per X quantity) (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter assembly pulse output still does not function, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Impulse width incorrect.

CORRECTIVE ACTION

1. Configure tank volume meter monitor (impulse width) (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If tank volume meter assembly pulse output still does not function, proceed to next malfunction.

END OF TASK

**TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, PULSE OUTPUT DOES NOT FUNCTION -
CONTINUED****MALFUNCTION**

Tank volume meter assembly pulse output still does not function.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK

END OF WORK PACKAGE

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
FLOWRATE DISPLAYS 0/ZERO WHILE THERE IS FLOW (TOTAL IS COUNTING)**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0006
WP 0015
WP 0156

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, FLOWRATE DISPLAYS 0/ZERO WHILE THERE IS FLOW (TOTAL IS COUNTING)

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowrate displays 0/zero while there is flow (total is counting).

MALFUNCTION

Tank volume meter monitor K-factor improperly configured.

CORRECTIVE ACTION

1. Configure the tank volume meter monitor (K-factor) (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowrate still displays 0/zero, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter monitor time unit improperly configured.

CORRECTIVE ACTION

1. Configure tank volume meter monitor (time unit) (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowrate still displays 0/ zero, proceed to next malfunction.

END OF TASK

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, FLOWRATE DISPLAYS 0/ZERO WHILE THERE IS FLOW (TOTAL IS COUNTING) - CONTINUED**MALFUNCTION**

Tank volume meter monitor improperly configured.

CORRECTIVE ACTION

1. Configure tank volume meter monitor (WP 0006).
2. Perform operational checkout of the FSSP (WP 0015).
3. If flowrate still displays 0/zero, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Flowrate still displays 0/zero.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
MONITOR DISPLAYS LOW BATTERY SYMBOL**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0158

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR DISPLAYS LOW BATTERY SYMBOL**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tank volume meter monitor displays low battery symbol.

MALFUNCTION

Tank volume meter monitor battery discharged.

CORRECTIVE ACTION

1. Replace tank volume meter monitor battery (WP 0158).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
TROUBLESHOOTING PROCEDURES
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT,
MONITOR PASS CODE IS UNKNOWN**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)

Goggles, industrial (Item 2, WP 0211)

References

WP 0015

WP 0156

Personnel Required

Quartermaster and Chemical Repairman 63J

TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MONITOR PASS CODE IS UNKNOWN**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Cannot change tank volume meter monitor menu parameters because pass code is unknown.

MALFUNCTION

Tank volume meter monitor pass code has been changed.

CORRECTIVE ACTION

Enter 1234. If access to change menu parameters cannot be accessed, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter monitor pass code has been changed.

CORRECTIVE ACTION

Attempt to determine who has changed the pass code and obtain the pass code. If the new pass code cannot be determined, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Tank volume meter monitor pass code cannot be determined.

CORRECTIVE ACTION

1. Replace tank volume meter monitor (WP 0156).
2. Perform operational checkout of the FSSP (WP 0015).

END OF TASK**END OF WORK PACKAGE**

CHAPTER 6

UNIT MAINTENANCE INSTRUCTIONS FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**UNIT MAINTENANCE
SERVICE UPON RECEIPT OF MATERIAL**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TB 10-4930-232-25

SF 361

DA PAM 750-8

GENERAL INFORMATION

The following paragraphs contain the procedures for unloading, unpacking and general checking of the unpacked FSSP.

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 361, Transportation Discrepancy Report.

Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies in accordance with applicable service instructions (e.g., for Army instructions, see DA PAM 750-8).

SITING REQUIREMENTS

The FSSP should be assembled on a level area free of debris and large rocks. Special care should be taken to ensure that no hose assemblies will be placed on or near rocks or other objects that may have sharp points or edges which may damage the hose assemblies when the FSSP is operated. Be sure that the site allows for enough room to assemble the fuel system. When configured as shown in this technical manual, the FSSP will take up an area about 400 ft X 500 ft.

UNLOADING**UNLOADING METAL CONTAINERS**

The components of the FSSP are shipped in TRICON containers. The containers may be lifted by forklift, crane or sling. To unload the fuel system, perform the following steps:

1. Check all containers for damage. Damaged containers indicate probable damage to equipment.
2. Remove all blocking and tie downs that may have been used to secure the containers onto the carrier.

CAUTION

Ensure forklift lifting capacity exceeds weight of containers. Max Gross Weight (MGW) is 14,900 lb. (6,759 KG).

3. Use a forklift truck or other suitable material handling equipment to remove the containers from the carrier.

NOTE

Containers will be positioned in relation to site layout plan.

4. If a special design reusable container is involved for either the end item or components which are authorized for replacements, instructions shall be prepared to report or reenter the empty container through supply channels. Instructions shall be prepared on how to package the unserviceable component in the empty container in the same manner that the new component was packaged if a component is being replaced.

UNPACKING

Unpack TRICON containers. Refer to TB 10-4930-232-25. Each TRICON contains a laminated card clipped inside the document holder (box) mounted on the inside right door. The card contains an illustration of each component and its location in the TRICON. Tiedown points are also depicted.

CHECK UNPACKED EQUIPMENT**Table 1. Equipment Inspection.**

COMPONENT	ACCEPTABLE	REPAIRABLE	NONREPAIRABLE
FSSP TRICON			
Exterior	Minor rust, cracks, indentations or splits that would not impair waterproofing or serviceability of containers.	Dents or bending that does not affect access door operation.	Damage or bending that will not allow doors to open.
Interior	Items within the container have remained in stowed position. No broken, dented or cracked equipment.	Broken or missing hardware or handles.	Damage to pallets that would prevent storage of equipment.
Hardware	Hardware is present and tight.	Hardware is missing or loose.	None.
	Nuts, bolts, screws and fasteners present and in good condition.	Nuts, bolts, screws and fasteners that can be replaced or properly sealed.	None.
Container	Free from damage.	Broken or missing handles.	None.
FSSP Components			
Hoses	Minor cuts, cracks and deterioration that would not impair serviceability of hoses.	Minor cuts, cracks and deterioration that does not affect serviceability of hoses.	Cuts, cracks and deterioration that affect serviceability of hoses.
Couplings	Minor rust or corrosion that would not impair serviceability of couplings.	Minor rust or corrosion that can be removed without affecting the serviceability of the couplings.	Rust, damage or corrosion that affect serviceability of the couplings.
Wye Assemblies	Minor rust or corrosion that would not impair serviceability of wye assemblies.	Minor rust or corrosion that can be removed without affecting the serviceability of the wye assemblies.	Rust, damage or corrosion that affect serviceability of the wye assemblies.
Tee Assemblies	Minor rust or corrosion that would not impair serviceability of tee assemblies.	Minor rust or corrosion that can be removed without affecting the serviceability of the tee assemblies.	Rust, damage or corrosion that affect serviceability of the tee assemblies.
Valve Assemblies	Minor rust or corrosion that would not impair serviceability of valve assemblies.	Minor rust or corrosion that can be removed without affecting the serviceability of the valve assemblies.	Rust, damage or corrosion that affect serviceability of the valve assemblies.
Adapter Assemblies	Minor rust or corrosion that would not impair serviceability of adapter assemblies.	Minor rust or corrosion that can be removed without affecting the serviceability of the adapter assemblies.	Rust, damage or corrosion that affect serviceability of the adapter assemblies.

Table 1. Equipment Inspection. - Continued.

COMPONENT	ACCEPTABLE	REPAIRABLE	NONREPAIRABLE
Nozzle Assemblies	Minor rust or corrosion that would not impair serviceability of nozzle assemblies.	Minor rust or corrosion that can be removed without affecting the serviceability of the nozzle assemblies.	Rust, damage or corrosion that affect serviceability of the nozzle assemblies.
Tank Assemblies	Minor cuts, tears or deterioration that would not impair serviceability of the tank assemblies.	Minor cuts, tears or deterioration that would not impair serviceability of the tank assemblies.	Cuts, tears or deterioration that affect serviceability of the tank assemblies.
Pumping Assembly	Free from major damage.	Any damage that does not affect the serviceability of the pump.	Major damage that affects the serviceability of the pump.
Filter-Separator	Free from major damage.	Any damage that does not affect the serviceability of the filter-separator.	Major damage that affects the serviceability of the filter-separator.

INSTALLATION INSTRUCTIONS

Tools, test equipment, and materials needed for installation. The FSSP can be assembled by hand and no special tools, test equipment or other materials are needed for assembly of the fuel system.

ASSEMBLE EQUIPMENT

1. Refer to the operator instructions in Chapter 2 of this technical manual.
2. Place all components of the FSSP into position.

PRELIMINARY SERVICING OF EQUIPMENT

Refer to the operator PMCS procedures in Chapter 4 of this technical manual for instructions on lubricating requirements prior to operating equipment.

END OF WORK PACKAGE

**UNIT MAINTENANCE
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) INTRODUCTION**

**INTRODUCTION
GENERAL**

Systematic, periodic, Preventive Maintenance Checks and Services (PMCS) are essential to ensure that the FSSP is ready for operation at all times. The purpose of a preventive maintenance program is to discover and correct defects and deficiencies before they can cause serious damage or complete failure of the equipment. Any effective preventive maintenance program must begin with the indoctrination of operators to report all unusual conditions noted during daily checks or actual operation to Unit Maintenance. All defects and deficiencies discovered during maintenance inspections must be recorded, together with corrective action taken, on DA Form 2404 (Equipment Inspection and Maintenance Worksheet). Pay attention to WARNING and CAUTION statements. A WARNING means someone could be injured or killed. A CAUTION means equipment could get damaged.

A schedule for unit preventive maintenance inspection and service should be established immediately after installation of the fuel system. When operating under unusual conditions, such as a very dusty or sandy environment, it may be necessary to reduce the interval to monthly or even less if conditions are extreme.

WARNING**FIRE****EXPLOSION**

Severe injury or death can occur from fire and explosion caused by fuel and fuel fumes. NEVER allow open flames or hot objects to get near the FSSP.

The FSSP has very few requirements for unit PMCS. However, the D1 nozzle, pumping assemblies, filter-separators and fuel tanks do have unit PMCS contained in their own separate manuals. These manuals are listed in the PMCS table. Refer to the applicable technical manual for these items for proper unit PMCS procedures and perform those procedures.

If you find something wrong when performing PMCS, fix it, if you can, using troubleshooting procedures and/or maintenance procedures.

The right-hand column of the PMCS table list conditions that make the equipment not fully mission capable. Write up items not-fixed on DA Form 2404 for Direct Support Maintenance. For further information on how to use this form, see DA PAM 750-8.

LEAKAGE DEFINITION**CAUTION**

Equipment operation is allowed with minor leakages (Class I or II), except for fuel leaks. Of course, consideration must be given to the fluid capacity of the item or system being checked. When in doubt, ask your supervisor.

When operating with Class I or II leaks, continue to check fluid levels as required in your PMCS.

Class III leaks should be reported immediately to your supervisor.

It is necessary for you to know how fluid leakage affects the status of the vehicle. Following are definitions of the classes of leakage a mechanic needs to know to be able to determine the condition of the leak. Learn and then be familiar with them, and remember - when in doubt, ask your supervisor.

Leakage Definitions for Unit PMCS.

CLASS I - Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

CLASS II - Leakage of fluid great enough to form drops but not enough to cause drops to drip from item being checked.

CLASS III - Leakage of fluid great enough to form drops that fall from the item being checked.

Inspection

Look for signs of a problem or trouble. Senses help here. You can feel, smell, hear or see many problems. Be alert when using the equipment.

Inspect to see if items are in good condition. Are they correctly assembled, stowed, secured, excessively worn, leaking, corroded or properly lubricated? Correct any problems found or notify Direct Support Maintenance.

There are some common items to check all over the equipment. These include the following:

1. Bolts, clamps, nuts and screws: Continuously check for looseness. Look for chipped paint, bare metal, rust or corrosion around bolt and screw heads and nuts. Tighten them when you find them loose. If tools are not available, contact Direct Support Maintenance.
2. Welds: Many items on the equipment are welded. To check these welds, look for chipped paint, rust, corrosion or gaps. When these conditions exist, notify Direct Support Maintenance on DA Form 2404.
3. Electrical wires, connectors and harnesses: Tighten loose connectors. Look for cracked or broken insulation, bare wires and broken connectors. If any are found, notify Direct Support Maintenance.
4. Hoses and fluid lines: Look for wear, damage and leaks, and make sure clamps and fittings are tight. Wet spots mean a leak. A stain by a fitting or connector can also mean a leak. When you find a leak, notify Direct Support Maintenance.

Inspection

Look for signs of a problem or trouble. Senses help here. You can feel, smell, hear or see many problems. Be alert when using the equipment.

Inspect to see if items are in good condition. Are they correctly assembled, stowed, secured, excessively worn, leaking, corroded or properly lubricated? Correct any problems found or notify Direct Support Maintenance.

LUBRICATION SERVICE INTERVALS - NORMAL CONDITIONS

For safer, more trouble-free operations, make sure that your equipment is serviced when it needs it. For the proper lubrication and service intervals, refer to the operator's PMCS (WP 0064).

LUBRICATION SERVICE INTERVALS - UNUSUAL CONDITIONS

Your equipment will require extra service and care when you operate under unusual conditions. High or low temperatures, long periods of hard use or continued use in sand, water, mud or snow will break down the lubricant, requiring you to add or change lubricant more often.

CLEANING AND LUBRICATION

Proper cleaning and lubrication can aid in avoiding possible problems or trouble, so make it a habit to do the following:

CAUTION

Follow all cleaning and lubrication instructions carefully, failure to do so can result in damage to equipment.

1. Thoroughly wash all equipment exposed to salt spray with clean, fresh water.
2. Clean parts to be lubricated with solvent cleaning compound, MIL-PRF-680 or equivalent. Do not use fluid or semi-fluid lubricant on SFD coated surfaces. Wipe surface dry before lubricating.
3. Clean grease fittings before lubrication.
4. Lubricate all equipment at conclusion of the operation before equipment storage.
5. Always use the PMCS lubrication instructions as a guide
6. Never use too much lubricant.
7. Never use the wrong type or grade of lubricant
8. Lubricate more during constant use and less during inactive periods.
9. Use the correct grade of lubricant for seasonal temperature expected.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) 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.

Corrosion is typically associated with rusting of metals or galvanic corrosion which produces a white powder. Corrosion also includes deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of the materials may be a corrosion problem. If a corrosion problem is identified, it can be reported using SF 368, Product Quality Deficiency Report. Use of key words, such as "corrosion, rust, deterioration" or "cracking," will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 750-8.

OIL FILTERS

The FSSP contains no oil filters.

ARMY OIL ANALYSIS PROGRAM (AOAP)

The FSSP is not enrolled in the Army Oil Analysis Program.

WARRANTY INFORMATION

The FSSP is not under warranty.

END OF WORK PACKAGE

**UNIT MAINTENANCE
PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION PROCEDURES**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 5-5430-219-13

TM 10-4330-235-13&P

TM 10-4320-372-14

TM 10-4930-248-13&P

PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) AND LUBRICATION PROCEDURES

ITEM NO.	INTERVAL	MAN-HOURS	ITEM TO BE CHECKED OR SERVICED	PROCEDURE	EQUIPMENT NOT READY/ AVAILABLE IF:
1			Pumping Assembly	Perform unit PMCS per TM 10-4320-372-14.	
2			Filter-Separator Assembly	Perform unit PMCS in accordance with TM 10-4330-235-13&P.	
3			Tank Assembly	Perform unit PMCS in accordance with TM 5-5430-219-13.	
			Nozzle Assembly, Part Number 64017B	Perform unit PMCS in accordance with TM 10-4930-248-13&P.	
4	2 Weeks	.3	1 In. Fuel and Oil Servicing Nozzle Assembly	Remove, inspect, clean and install nozzle strainer (WP 0133).	
5	2 Weeks	.3	D1 Nozzle Assembly, Part Number 64201CGH5	Remove, inspect, clean and install nozzle assembly strainer (WP 0138).	
6	2 Weeks	.3	D1 Nozzle Assembly, Part Number 64201CGH2MQ	Remove, inspect, clean and install nozzle strainer (WP 0139).	
7	2 Weeks	.3	D1 Nozzle Assembly, Part Number 64201CGH2KQ	Remove, inspect, clean and install nozzle assembly strainer (WP 0140).	

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
4 IN. X 10 FT SUCTION HOSE ASSEMBLY, PART NUMBER 78003-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, REPAIR, ASSEMBLY

INITIAL SETUP:**Test Equipment**

Multimeter (Item 10, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Tools and Special Tools

Tool Kit, General Mechanic's (Item 1, WP 0211)

Hose repair kit (Item 30, WP 0211)

Apron, utility (Item 2, WP 0211)

Gloves, rubber, industrial (Item 2, WP 0211)

Goggles, industrial (Item 2, WP 0211)

Equipment Condition

Hose assembly removed from fuel system
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)

Cloth, cleaning (Item 5, WP 0214)

Gasket (2) (Item 38, WP 0215)

Clamp preformed (8) (Item 3, WP 0214)

DISASSEMBLY

NOTE

Repair is limited to replacement of parts found defective during inspection.

1. Cut and remove hose clamps (Figure 1, Item 8) from hose (Figure 1, Item 9) and discard hose clamps (Figure 1, Item 8).
2. Remove female coupling half (Figure 1, Item 10) and male coupling half (Figure 1, Item 7) from hose (Figure 1, Item 9).
3. Remove quick disconnect dust plug (Figure 1, Item 14) from female coupling half (Figure 1, Item 10).
4. Remove quick disconnect dust cap (Figure 1, Item 3) from male coupling half (Figure 1, Item 7).
5. Remove gaskets (Figure 1, Item 1, 2) from female coupling half (Figure 1, Item 10) and quick disconnect dust cap (Figure 1, Item 3).
6. Discard gaskets (Figure 1, Item 1, 2).
7. Remove split ring (Figure 1, Item 4) from quick disconnect dust cap (Figure 1, Item 3).
8. Remove split ring (Figure 1, Item 4) from chain (Figure 1, Item 5).
9. Remove split ring (Figure 1, Item 6) from male coupling half (Figure 1, Item 7).
10. Remove split ring (Figure 1, Item 6) from chain (Figure 1, Item 5).
11. Remove split ring (Figure 1, Item 11) from female coupling half (Figure 1, Item 10).
12. Remove split ring (Figure 1, Item 11) from chain (Figure 1, Item 12).
13. Remove split ring (Figure 1, Item 13) from quick disconnect dust plug (Figure 1, Item 14).
14. Remove split ring (Figure 1, Item 13) from chain (Figure 1, Item 12).

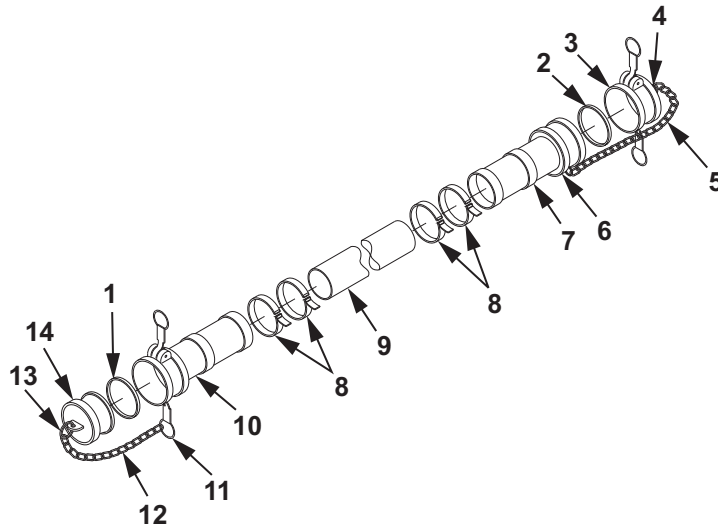


Figure 1. 4 In. X 10 Ft. Suction Hose Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect rubber hose for tears, cuts, holes or deterioration. If found, replace with a serviceable like item.
3. Inspect ends of hose for damaged or missing ground wires. Using a multimeter, perform continuity test of ground wire from one end of hose to the other. Continuity must exist.

END OF TASK

ASSEMBLY

1. Obtain the correct length of replacement hose (Figure 2, Item 1).
2. Identify the ground wire (Figure 2, Item 2) in each end of the hose (Figure 2, Item 1).
3. Using needle nose pliers, pull the ground wire (Figure 2, Item 2) approximately 1/2 inch (13 mm) out of the hose (Figure 2, item 1) so the ground wire (Figure 2, Item 2) is loose.
4. Using needle nose pliers, cut a piece of copper wire (Figure 2, Item 3) approximately 1 1/2 inches (38 mm) long.

NOTE

If two ground wires exist, insert and wrap a piece of copper wire on both.

5. Insert the piece of copper wire (Figure 2, Item 3) into the hose (Figure 2, Item 1) approximately 1/2 inch (13 mm) away from the ground wire (Figure 2, Item 2).
6. Using needle nose pliers, wrap the copper wire (Figure 2, Item 3) and ground wire (Figure 2, Item 2) together, forming a pigtail.

NOTE

The ground wires must be exposed at the other end of the hose in the same manner before proceeding to the next step.

7. Using needle nose pliers, carefully bend the ground wire (Figure 2, Item 2) inside the hose (Figure 2, Item 1).

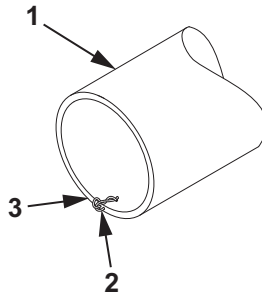


Figure 2. Figure 1. 4 In. X 10 Ft. Suction Hose Repair.

8. Using the male or female coupling half (Figure 3, Item 1) as a guide, align the cut end of one section of hose (Figure 3, Item 2) with the machined stop (Figure 3, Item 3) of the male or female coupling half (Figure 3, Item 1).

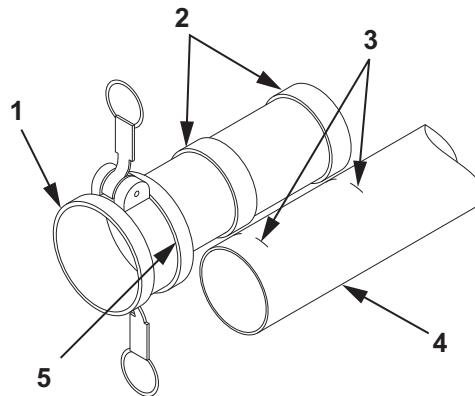


Figure 3. 4 X 10 Ft Suction Hose Assembly Repair.

ASSEMBLY - CONTINUED

NOTE

The four clamps are to be positioned so that there is one clamp on either side of the two barbs. There should be a gap of 1/8–1/4 in. between the two middle clamps.

9. Using a marking pen, mark two lines (Figure 3, Item 4) on the hose (Figure 3, Item 2) where the hose barbs (Figure 3, Item 5) will be located.
10. Place four clamps (Figure 4, Item 3) loosely on the hose assembly (Figure 4, Item 2).
11. Install female coupling half or male coupling half (Figure 4, Item 1) into hose assembly (Figure 4, Item 2) until it is flush with the machined stop (Figure 4, Item 4).

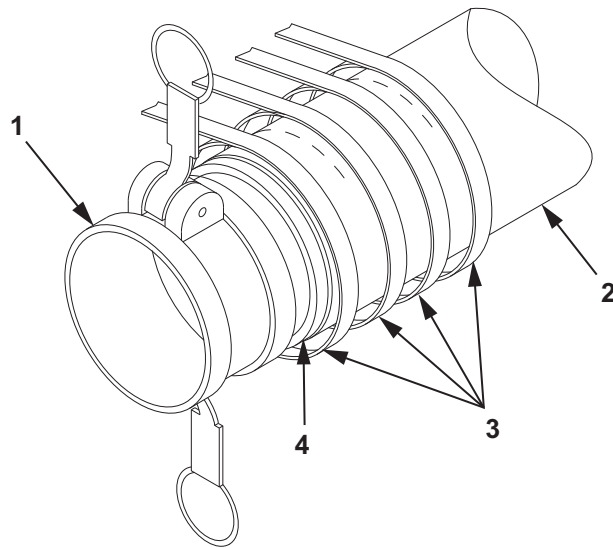


Figure 4. 4 X 10 Ft Suction Hose Assembly Repair.

12. Using a multimeter, perform continuity test between male and female coupling assemblies (Figure 5, Item 10, 7) at each end of the hose assembly to ensure ground wires are firmly seated. Continuity must exist.

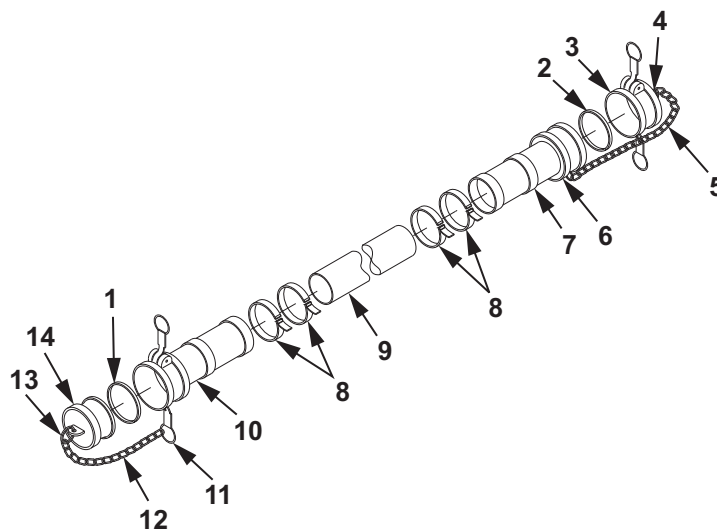


Figure 5. 4 X 10 Ft Suction Hose Assembly Repair.

ASSEMBLY - CONTINUED

NOTE

All clamps should be installed so that the clamp buckle is oriented a minimum of 30° away from the previously installed clamp buckle.

13. Position the first clamp (Figure 6, Item 1) on the hose assembly (Figure 6, Item 2) until it is aligned with the first mark (Figure 6, Item 3) previously made on the hose assembly (Figure 6, Item 2).
14. Using clamping tool (Figure 6, Item 4) from hose repair kit, tighten the clamp (Figure 6, Item 1) until almost flush with the hose assembly (Figure 6, Item 2) surface.

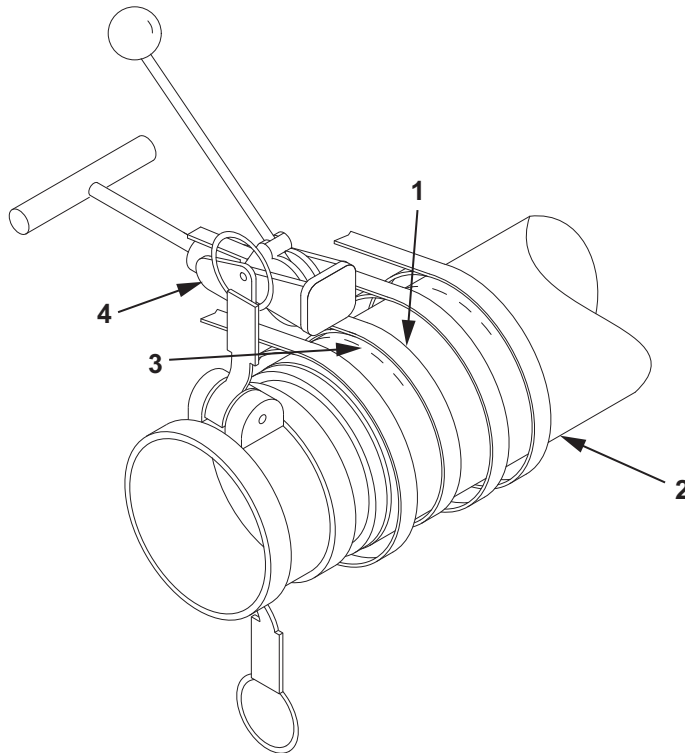


Figure 6. 4 X 10 Ft Suction Hose Assembly Repair.

NOTE

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

15. Install the bridge buckle (Figure 7, Item 1) under clamp (Figure 7, Item 2).
16. Tighten clamp (Figure 7, Item 2) until the clamp (Figure 7, Item 2) cannot be tightened by hand any further.
17. While holding the clamping tool handle (Figure 8, Item 1) in the down position, strike the center punch anvil (Figure 7, Item 2) three to four times with a hammer.

ASSEMBLY - CONTINUED

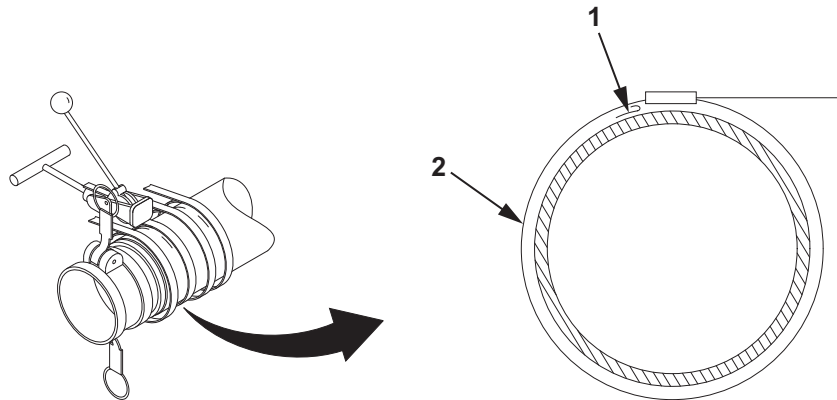


Figure 7. 4 X 10 Ft Suction Hose Assembly Repair.

18. While still holding the clamping tool handle (Figure 8, Item 1) in the down position, raise the entire clamping tool (Figure 8, Item 4) up to shear the tail of the band off of the clamp (Figure 8, Item 3).
19. Using hammer, tap the edge of the distorted clamp (Figure 8, Item 3) down to a level configuration.

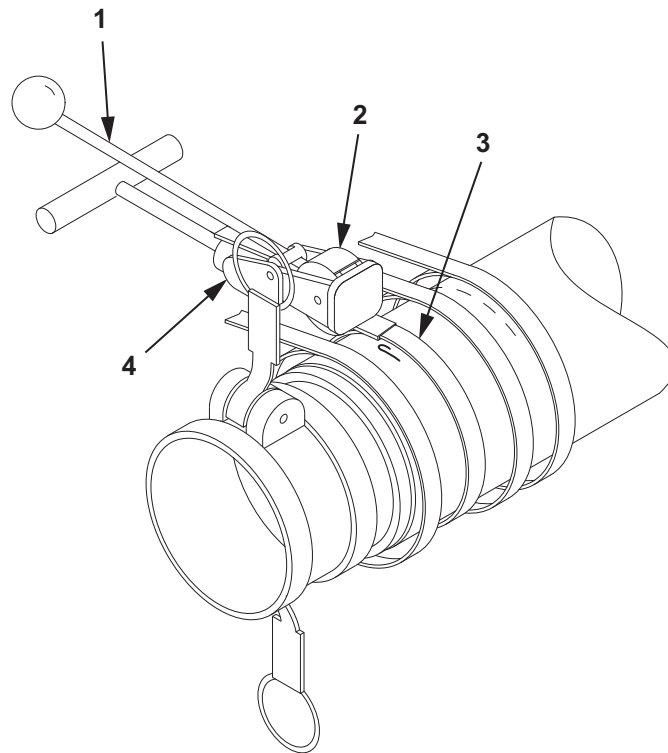


Figure 8. 4 X 10 Ft Suction Hose Assembly Repair.

ASSEMBLY - CONTINUED

20. Perform steps 11 through 19 to install the remaining three clamps and coupling at opposite end of hose.
21. Install new gaskets (Figure 9, Item 1, 2) into quick disconnect dust cap (Figure 9, Item 3) and female coupling half (Figure 9, Item 10).
22. Install quick disconnect dust cap (Figure 9, Item 3) onto male coupling half (Figure 9, Item 7).
23. Install quick disconnect dust plug (Figure 9, Item 14) into female coupling half (Figure 9, Item 10).
24. Install split ring (Figure 9, Item 13) on quick disconnect dust plug (Figure 9, Item 14).
25. Install split ring (Figure 9, Item 13) on chain (Figure 9, Item 12).
26. Install split ring (Figure 9, Item 11) on chain (Figure 9, Item 12).
27. Install split ring (Figure 9, Item 11) on female coupling half (Figure 9, Item 10).
28. Install split ring (Figure 9, Item 6) on chain (Figure 9, Item 5).
29. Install split ring (Figure 9, Item 6) on male coupling half (Figure 9, Item 7).
30. Install split ring (Figure 9, Item 4) on chain (Figure 9, Item 5).
31. Install split ring (Figure 9, Item 4) on quick disconnect dust cap (Figure 9, Item 3).

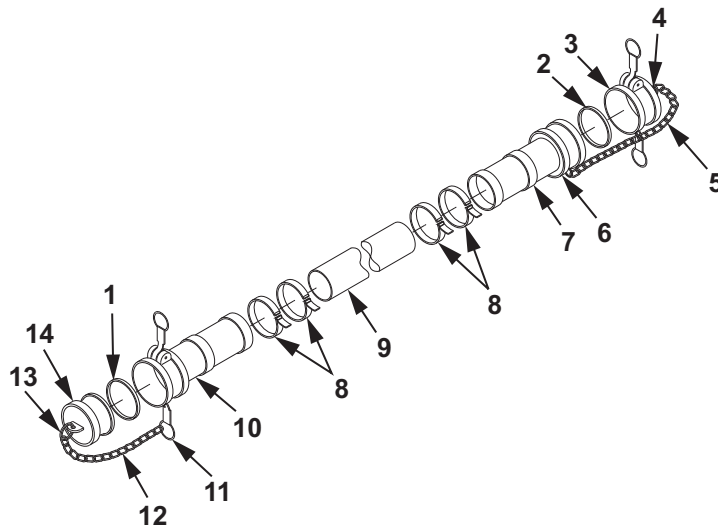


Figure 9. 4 X 10 Ft Suction Hose Assembly Repair.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78021-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 3/8 sqdr 5-75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tee assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (3) (Item 34, WP 0215)
Gasket (3) (Item 38, WP 0215)
Washer, lock (24) (Item 61, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust cap (Figure 1, Item 12) and gasket (Figure 1, Item 11) from coupling (Figure 1, Item 16).
2. Remove quick disconnect dust plug (Figure 1, Item 22) and gasket (Figure 1, Item 21) from coupling (Figure 1, Item 20).
3. Remove quick disconnect dust plug (Figure 1, Item 36) and gasket (Figure 1, Item 37) from coupling (Figure 1, Item 32).
4. Discard gaskets (Figure 1, Item 11, 21, 37).
5. Remove eight nuts (Figure 1, Item 8), lockwashers (Figure 1, Item 7), washers (Figure 1, Item 6), screws (Figure 1, Item 10), washers (Figure 1, Item 9), coupling (Figure 1, Item 16) and gasket (Figure 1, Item 17) from tee (Figure 1, Item 18).
6. Discard gasket (Figure 1, Item 17) and lockwashers (Figure 1, Item 7).
7. Remove eight nuts (Figure 1, Item 28), lockwashers (Figure 1, Item 29), washers (Figure 1, Item 30), screws (Figure 1, Item 26), washers (Figure 1, Item 27), coupling (Figure 1, Item 20) and gasket (Figure 1, Item 19) from tee (Figure 1, Item 18).
8. Discard gasket (Figure 1, Item 19) and lockwashers (Figure 1, Item 29).
9. Remove eight nuts (Figure 1, Item 3), lockwashers (Figure 1, Item 4), washers (Figure 1, Item 5), screws (Figure 1, Item 1), washers (Figure 1, Item 2), coupling (Figure 1, Item 32) and gasket (Figure 1, Item 31) from tee (Figure 1, Item 18).
10. Discard gasket (Figure 1, Item 31) and lockwashers (Figure 1, Item 4).
11. Remove split ring (Figure 1, Item 13) from quick disconnect dust cap (Figure 1, Item 12).
12. Remove split ring (Figure 1, Item 13) from chain (Figure 1, Item 14).
13. Remove split ring (Figure 1, Item 15) from coupling (Figure 1, Item 16).
14. Remove split ring (Figure 1, Item 15) from chain (Figure 1, Item 14).
15. Remove split ring (Figure 1, Item 23) from quick disconnect dust plug (Figure 1, Item 22).
16. Remove split ring (Figure 1, Item 23) from chain (Figure 1, Item 24).
17. Remove split ring (Figure 1, Item 25) from coupling (Figure 1, Item 20).
18. Remove split ring (Figure 1, Item 25) from chain (Figure 1, Item 24).
19. Remove split ring (Figure 1, Item 35) from quick disconnect dust plug (Figure 1, Item 36).
20. Remove split ring (Figure 1, Item 35) from chain (Figure 1, Item 34).
21. Remove split ring (Figure 1, Item 33) from coupling (Figure 1, Item 32).
22. Remove split ring (Figure 1, Item 33) from chain (Figure 1, Item 34).

DISASSEMBLY - CONTINUED

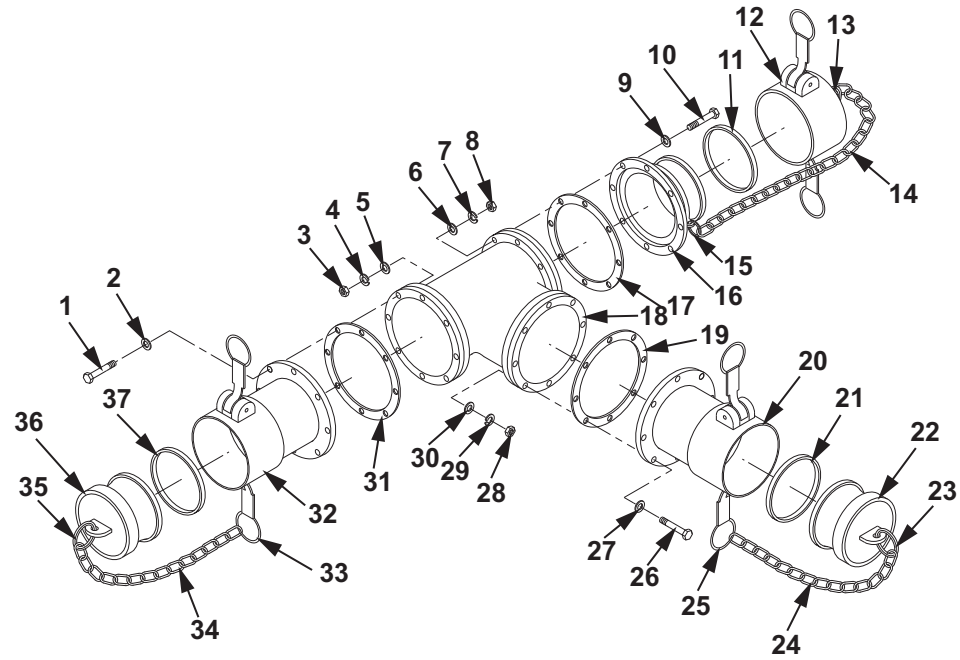


Figure 1. 4 In. Female X 4 In. Male X 4 In. Female Tee Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect tee for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect couplings and split rings for cracks or corrosion. If cracks or corrosion is found, replace with a serviceable like item.
3. Inspect quick disconnect dust caps for cracks, corrosion or stripped threads. If cracks, corrosion or stripped threads are found, replace with a serviceable like item.

END OF TASK**ASSEMBLY**

1. Install split ring (Figure 2, Item 33) on chain (Figure 2, Item 34).
2. Install split ring (Figure 2, Item 33) on coupling (Figure 2, Item 32).
3. Install split ring (Figure 2, Item 35) on chain (Figure 2, Item 34).
4. Install split ring (Figure 2, Item 35) on quick disconnect dust plug (Figure 2, Item 36).
5. Install split ring (Figure 2, Item 25) on chain (Figure 2, Item 24).
6. Install split ring (Figure 2, Item 25) on coupling (Figure 2, Item 20).
7. Install split ring (Figure 2, Item 23) on chain (Figure 2, Item 24).
8. Install split ring (Figure 2, Item 23) on quick disconnect dust plug (Figure 2, Item 22).
9. Install split ring (Figure 2, Item 15) on chain (Figure 2, Item 14).
10. Install split ring (Figure 2, Item 15) on coupling (Figure 2, Item 16).
11. Install split ring (Figure 2, Item 13) on chain (Figure 2, Item 14).

ASSEMBLY - CONTINUED

12. Install split ring (Figure 2, Item 13) on quick disconnect dust cap (Figure 2, Item 12).
13. Install eight screws (Figure 2, Item 1) and washers (Figure 2, Item 2) through coupling (Figure 2, Item 9), new gasket (Figure 2, Item 31) and tee (Figure 2, Item 18).
14. Install eight washers (Figure 2, Item 5), new lockwashers (Figure 2, Item 4) and nuts (Figure 2, Item 3) on screws (Figure 2, Item 1). Hand tighten eight nuts (Figure 2, Item 3).
15. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 3) to 37–43 ft lb (50–58 N·m).
16. Install eight screws (Figure 2, Item 26) and washers (Figure 2, Item 27) through coupling (Figure 2, Item 20), new gasket (Figure 2, Item 19) and tee (Figure 2, Item 18).
17. Install eight washers (Figure 2, Item 30), new lockwashers (Figure 2, Item 29) and nuts (Figure 2, Item 28) on screws (Figure 2, Item 26). Hand tighten eight nuts (Figure 2, Item 28).
18. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 28) to 37–43 ft lb (50–58 N·m).
19. Install eight screws (Figure 2, Item 10) and washers (Figure 2, Item 9) through coupling (Figure 2, Item 16), new gasket (Figure 2, Item 17) and tee (Figure 2, Item 18).
20. Install eight washers (Figure 2, Item 6), new lockwashers (Figure 2, Item 7) and nuts (Figure 2, Item 8) on screws (Figure 2, Item 10). Hand tighten eight nuts (Figure 2, Item 8).
21. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 8) to 37–43 ft lb (50–58 N·m).
22. Install new gasket (Figure 2, Item 37) and quick disconnect dust plug (Figure 2, Item 36) into coupling (Figure 2, Item 32).
23. Install new gasket (Figure 2, Item 21) and quick disconnect dust plug (Figure 2, Item 22) into coupling (Figure 2, Item 20).
24. Install new gasket (Figure 2, Item 11) and quick disconnect dust cap (Figure 2, Item 12) onto coupling (Figure 2, Item 16).

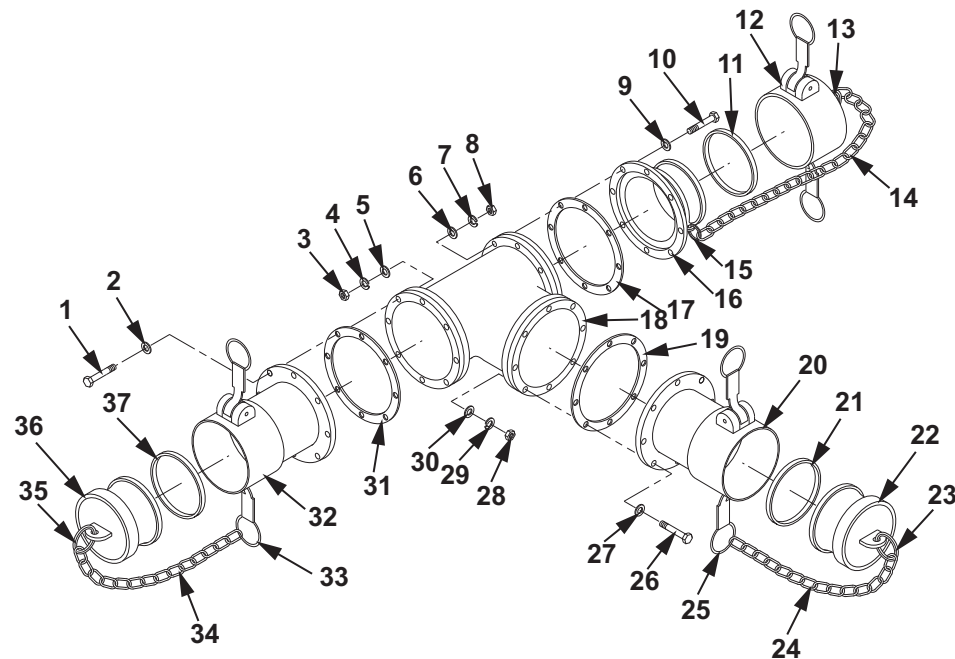


Figure 2. 4 In. Female X 4 In. Male X 4 In. Female Tee Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. BUTTERFLY VALVE ASSEMBLY, PART NUMBERS 78042-100 AND 78042-101 MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 3/8 sq dr 5-75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Butterfly valve assembly removed from FSSP
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (2) (Item 38, WP 0215)
Washer, lock (8) (Item 61, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust cap (Figure 1, Item 2) and gasket (Figure 1, Item 3) from coupling (Figure 1, Item 4).
2. Remove quick disconnect dust plug (Figure 1, Item 8) and gasket (Figure 1, Item 7) from coupling (Figure 1, Item 6).
3. Remove eight nuts (Figure 1, Item 12), lockwashers (Figure 1, Item 13), washers (Figure 1, Item 14) and coupling (Figure 1, Item 6) from butterfly valve (Figure 1, Item 5).
4. Remove eight screws (Figure 1, Item 16), washers (Figure 1, Item 15) and coupling (Figure 1, Item 4) from butterfly valve (Figure 1, Item 5).
5. Discard gaskets (Figure 1, Item 3, 7) and lockwashers (Figure 1, Item 13).
6. Remove split rings (Figure 1, Item 9, 11) from quick disconnect dust plug (Figure 1, Item 8) and coupling (Figure 1, Item 6).
7. Remove split rings (Figure 1, Item 9, 11) from chain (Figure 1, Item 10).
8. Remove split rings (Figure 1, Item 1, 17) from coupling (Figure 1, Item 4) and quick disconnect dust cap (Figure 1, Item 2).
9. Remove split rings (Figure 1, Item 1, 17) from chain (Figure 1, Item 18).

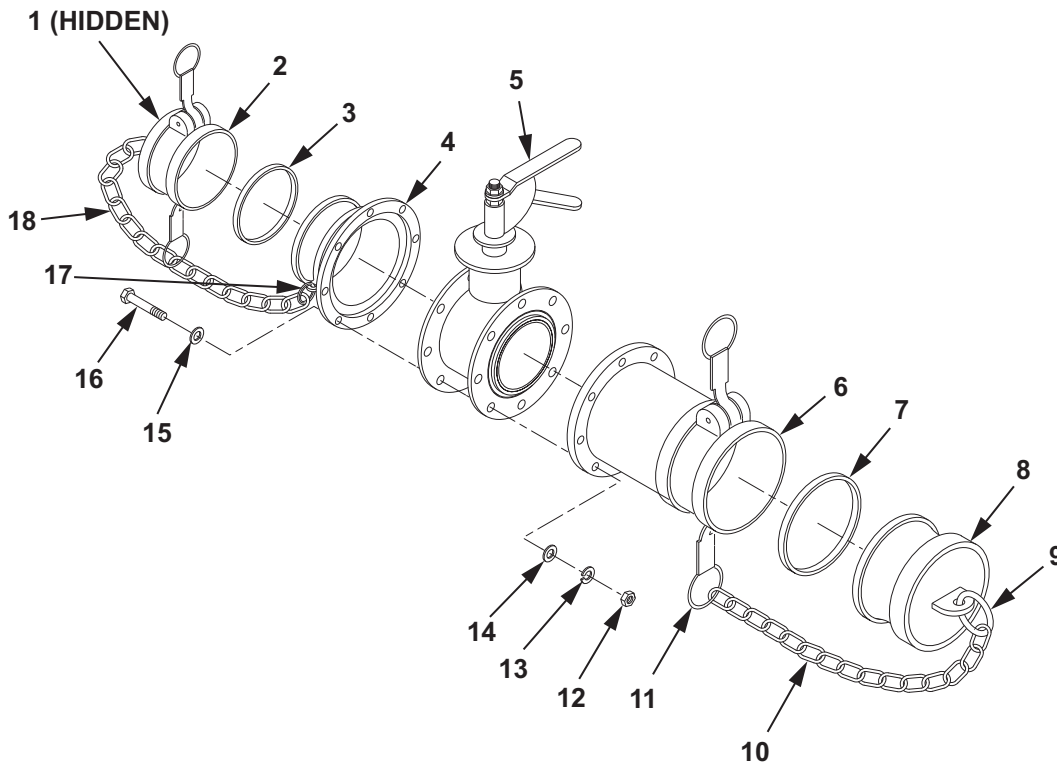


Figure 1. Butterfly Valve Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion and corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.
3. Check butterfly valve assembly for cracked surfaces, bent handle and for smooth operation. If cracked surfaces, bent handle are found or valve does not operate smoothly, replace butterfly valve with a serviceable like item.
4. Check butterfly valve for fuel leakage at shutoff valve. If shutoff valve leaks fuel, replace butterfly valve with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install split rings (Figure 2, Item 1, 17) on chain (Figure 2, Item 18).
2. Install split rings (Figure 2, Item 1, 17) on coupling (Figure 2, Item 4) and quick disconnect dust cap (Figure 2, Item 2).
3. Install split rings (Figure 2, Item 9, 11) on chain (Figure 2, Item 10).
4. Install split rings (Figure 2, Item 9, 11) on quick disconnect dust plug (Figure 2, Item 8) and coupling (Figure 2, Item 6).
5. Install new gasket (Figure 2, Item 7) in coupling (Figure 2, Item 6).
6. Install eight screws (Figure 2, Item 16) and washers (Figure 2, Item 15) through coupling (Figure 2, Item 4), butterfly valve (Figure 2, Item 5) and coupling (Figure 2, Item 6).
7. Install eight washers (Figure 2, Item 14), new lockwashers (Figure 2, Item 13) and nuts (Figure 2, Item 12) on screws (Figure 2, Item 16). Hand tighten eight nuts (Figure 2, Item 12).
8. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 12) to 37–43 ft lb (50–58 N·m).
9. Install quick disconnect dust plug (Figure 2, Item 8) and gasket (Figure 2, Item 7) on coupling (Figure 2, Item 6).
10. Install quick disconnect dust cap (Figure 2, Item 2) and new gasket (Figure 2, Item 3) on coupling (Figure 2, Item 4).

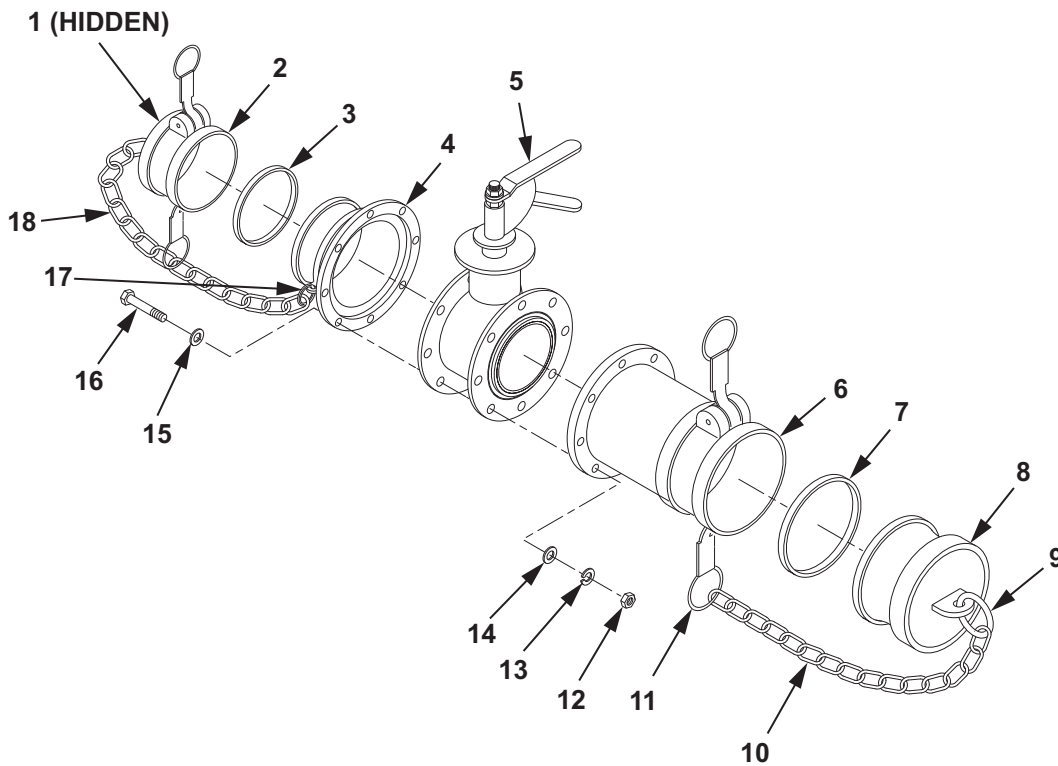


Figure 2. Butterfly Valve Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. GATE VALVE ASSEMBLY, PART NUMBER 78011-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 3/8 sqdr 5-75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Gate valve assembly removed from FSSP
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (2) (Item 34, WP 0215)
Gasket (2) (Item 38, WP 0215)
Washer, lock (16) (Item 61, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust cap (Figure 1, Item 2) and gasket (Figure 1, Item 3) from coupling (Figure 1, Item 4).
2. Remove quick disconnect dust plug (Figure 1, Item 14) and gasket (Figure 1, Item 13) from coupling (Figure 1, Item 12).
3. Remove eight screws (Figure 1, Item 24), washers (Figure 1, Item 22), washers (Figure 1, Item 20), lockwashers (Figure 1, Item 19), nuts (Figure 1, Item 18), coupling (Figure 1, Item 4) and gasket (Figure 1, Item 21) from gate valve (Figure 1, Item 5) flange.
4. Discard gaskets (Figure 1, Item 3, 13 and 21) and lockwashers (Figure 1, Item 10).
5. Remove eight screws (Figure 1, Item 11), washers (Figure 1, Item 10), washers (Figure 1, Item 8), lockwashers (Figure 1, Item 7), nuts (Figure 1, Item 6), coupling (Figure 1, Item 12) and gasket (Figure 1, Item 9) from gate valve (Figure 1, Item 5) flange.
6. Discard gasket (Figure 1, Item 9) and lockwashers (Figure 1, Item 7).
7. Remove split ring (Figure 1, Item 1) from quick disconnect dust cap (Figure 1, Item 2).
8. Remove split ring (Figure 1, Item 1) from chain (Figure 1, Item 25).
9. Remove split ring (Figure 1, Item 23) from chain (Figure 1, Item 25).
10. Remove split ring (Figure 1, Item 23) from coupling (Figure 1, Item 4).
11. Remove split ring (Figure 1, Item 15) from quick disconnect dust plug (Figure 1, Item 14).
12. Remove split ring (Figure 1, Item 15) from chain (Figure 1, Item 16).
13. Remove split ring (Figure 1, Item 17) from coupling (Figure 1, Item 12).
14. Remove split ring (Figure 1, Item 17) from chain (Figure 1, Item 16).

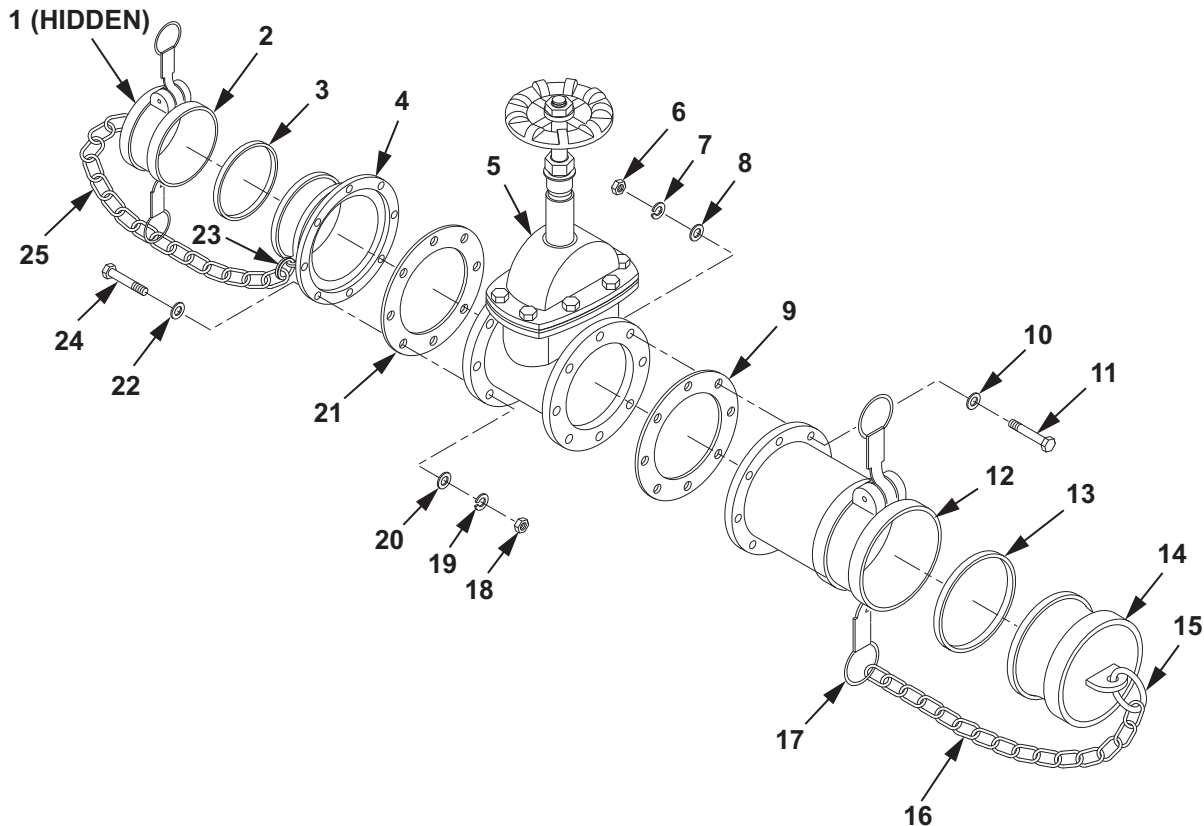


Figure 1. 4 In. Gate Valve Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Check gate valve assembly for cracked surfaces, bent handwheel and for smooth handwheel operation. If cracked surfaces, bent handwheel are found or handwheel does not operate smoothly, repair gate valve.

END OF TASK

ASSEMBLY

1. Install split ring (Figure 2, Item 17) on coupling (Figure 2, Item 12).
2. Install split ring (Figure 2, Item 17) on chain (Figure 2, Item 16).
3. Install split ring (Figure 2, Item 15) on chain (Figure 2, Item 16).
4. Install split ring (Figure 2, Item 15) on quick disconnect dust plug (Figure 2, Item 14).
5. Install split ring (Figure 2, Item 23) on chain (Figure 2, Item 25).
6. Install split ring (Figure 2, Item 23) on coupling (Figure 2, Item 4).
7. Install split ring (Figure 2, Item 1) on chain (Figure 2, Item 25).
8. Install split ring (Figure 2, Item 1) on quick disconnect dust cap (Figure 2, Item 2).
9. Install eight screws (Figure 2, Item 11) and washers (Figure 2, Item 10) through coupling (Figure 2, Item 12), new gasket (Figure 2, Item 9) and gate valve (Figure 2, Item 5) flange.
10. Install eight washers (Figure 2, Item 8), new lockwashers (Figure 2, Item 7) and nuts (Figure 2, Item 6) on screws (Figure 2, Item 11). Hand tighten eight nuts (Figure 2, Item 6).
11. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 6) to 37–43 ft lb (50–58 N•m).
12. Install eight screws (Figure 2, Item 24) and washers (Figure 2, Item 22) through coupling (Figure 2, Item 4), new gasket (Figure 2, Item 21) and gate valve (Figure 2, Item 5) flange.
13. Install eight washers (Figure 2, Item 20), new lockwashers (Figure 2, Item 19) and nuts (Figure 2, Item 18) on screws (Figure 2, Item 7). Hand tighten eight nuts (Figure 2, Item 18).

NOTE

Verify torque on eight nuts a minimum of 24 hours after torque was applied.

14. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 18) to 37–43 ft lb (50–58 N•m).
15. Install new gasket (Figure 2, Item 13) and quick disconnect dust plug (Figure 2, Item 14) in coupling (Figure 2, Item 12).
16. Install new gasket (Figure 2, Item 3) and quick disconnect dust cap (Figure 2, Item 2) on coupling (Figure 2, Item 4).

ASSEMBLY - CONTINUED

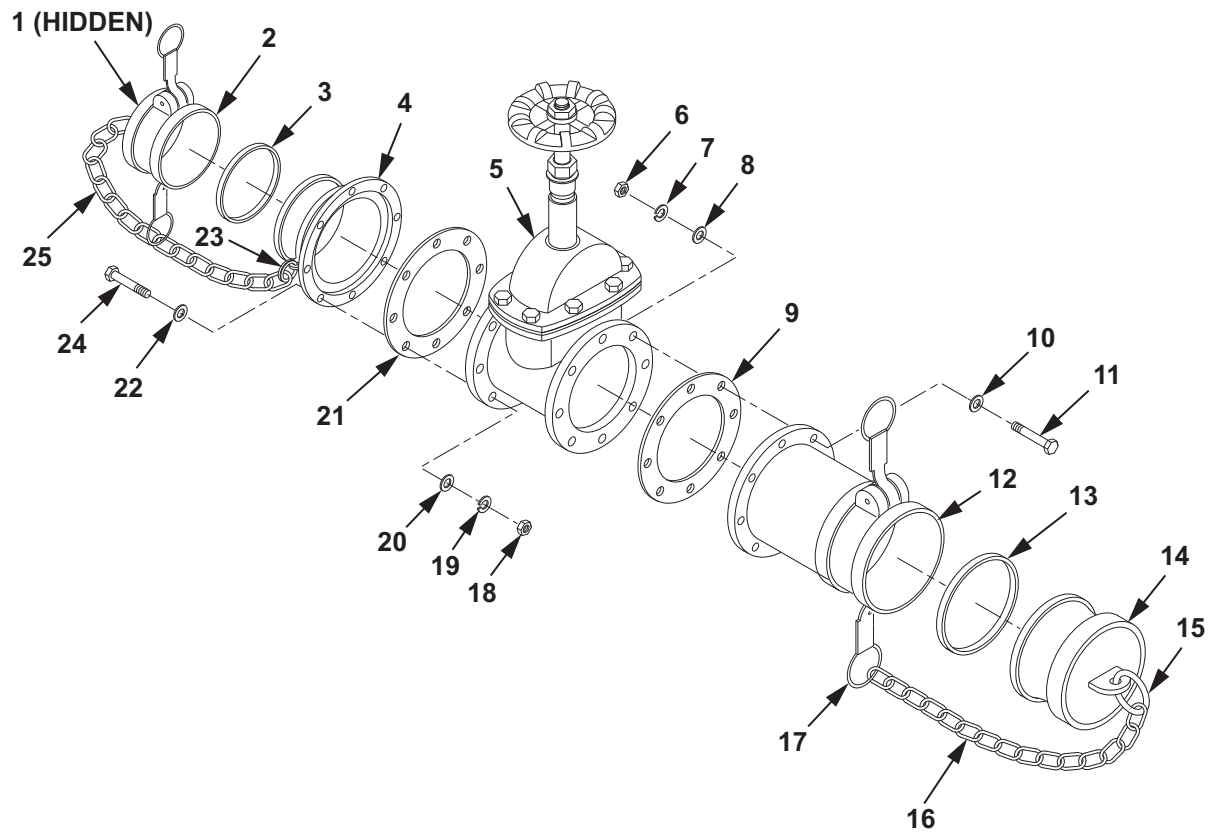


Figure 2. 4 In. Gate Valve Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. GATE VALVE, PART NUMBER 235RF-0200AVAJ, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Wrench, torque, 3/8 sq dr 5–75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

4 in. gate valve assembly disassembled
(WP 0217).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Ring, packing (3) (Item 29, WP 0215)
Gasket, valve bonnet (Item 30, WP 0215)
Retainer, packing (Item 28, WP 0215)
Washer, lock (8) (Item 31, WP 0215)

DISASSEMBLY

1. Remove wheel nut (Figure 1, Item 1) and handwheel (Figure 1, Item 12) from gate valve (Figure 1, Item 5).
2. Remove packing nut (Figure 1, Item 11) by hand. Remove gland spring (Figure 1, Item 10), packing retainer (Figure 1, Item 9) and three packing rings (Figure 1, Item 8) from bonnet (Figure 1, Item 3).
3. Discard packing rings (Figure 1, Item 8) and packing retainer (Figure 1, Item 9).
4. Remove eight nuts (Figure 1, Item 6), lockwashers (Figure 1, Item 7) and screws (Figure 1, Item 2) from bonnet (Figure 1, Item 3).
5. Discard lockwashers (Figure 1, Item 7).
6. Remove bonnet (Figure 1, Item 3) and bonnet gasket (Figure 1, Item 4) from gate valve (Figure 1, Item 5).
7. Discard bonnet gasket (Figure 1, Item 4).

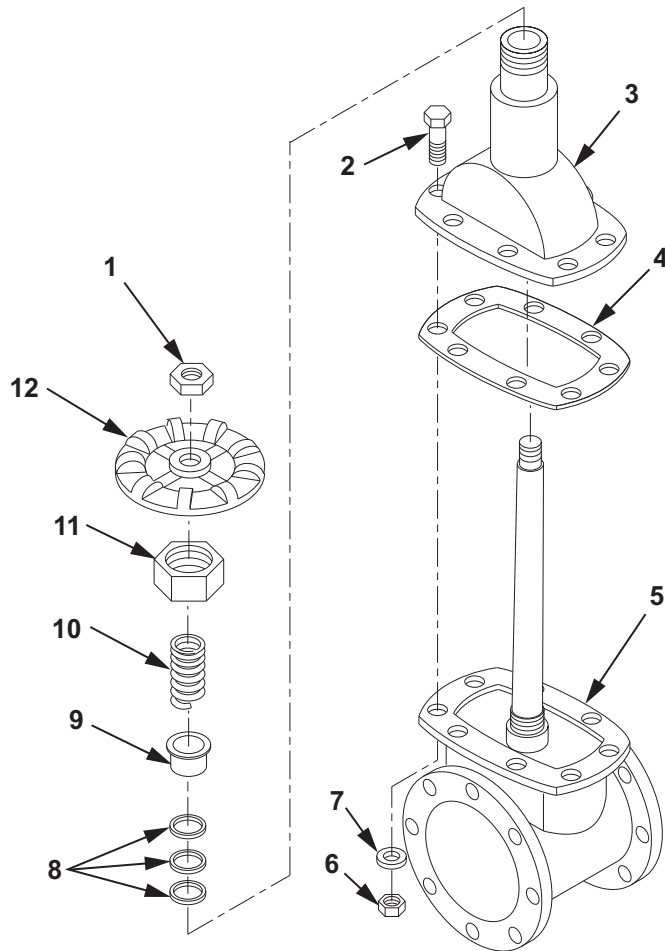


Figure 1. 4 In. gate Valve Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Using a putty knife, remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas.
2. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Check for smooth operation of gate valve by turning shaft. If shaft is bent or does not operate smoothly, replace component with serviceable like item.

END OF TASK

ASSEMBLY

1. Install new bonnet gasket (Figure 2, Item 4) and bonnet (Figure 2, Item 3) onto gate valve (Figure 2, Item 5).
2. Install eight screws (Figure 2, Item 2), new lockwashers (Figure 2, Item 7) and nuts (Figure 2, Item 6) through bonnet (Figure 2, Item 3) and gate valve (Figure 2, Item 5). Hand tighten nuts (Figure 2, Item 6).

NOTE

Verify torque on eight nuts a minimum of 24 hours after torque was applied.

3. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 6) to 40 ft lb (54 N·m).
4. Install new packing rings (Figure 2, Item 8), new packing retainer (Figure 2, Item 9), gland spring (Figure 2, Item 10) and packing nut (Figure 2, Item 11) onto bonnet (Figure 2, Item 3). Hand tighten packing nut (Figure 2, Item 11).
5. Install handwheel (Figure 2, Item 12) and wheel nut (Figure 2, Item 1) on gate valve (Figure 2, Item 5). Tighten wheel nut (Figure 2, Item 1).

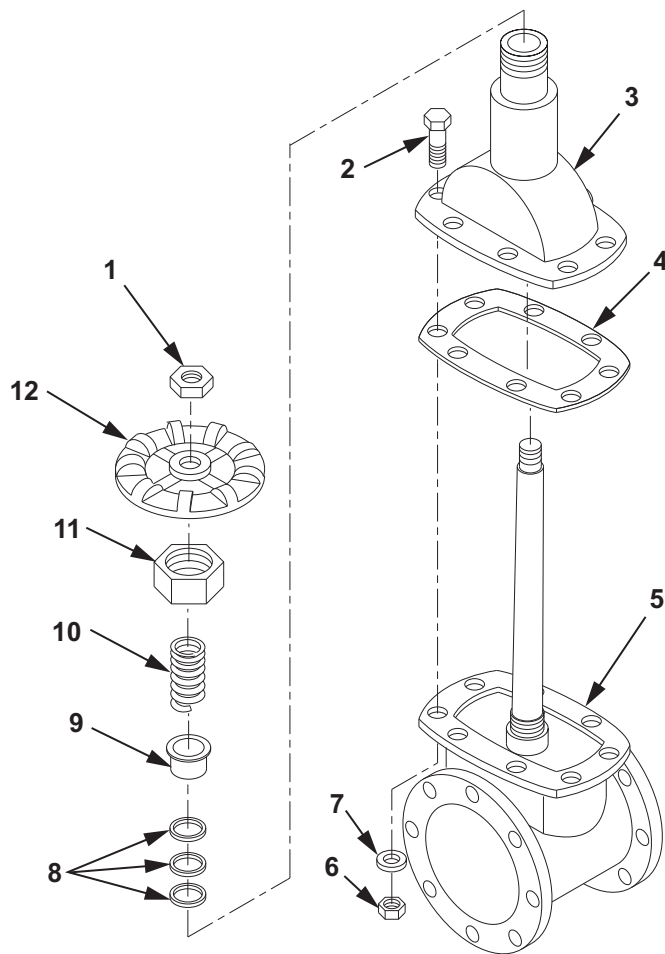


Figure 2. 4 In. gate Valve Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. FEMALE X 4 IN. MALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78022-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 3/8 sq dr 5-75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tee assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (3) (Item 34, WP 0215)
Gasket (3) (Item 38, WP 0215)
Washer, lock (24) (Item 61, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust cap (Figure 1, Item 1) and gasket (Figure 1, Item 37) from coupling (Figure 1, Item 5).
2. Remove quick disconnect dust cap (Figure 1, Item 10) and gasket (Figure 1, Item 9) from coupling (Figure 1, Item 8).
3. Remove quick disconnect dust plug (Figure 1, Item 25) and gasket (Figure 1, Item 26) from coupling (Figure 1, Item 21).
4. Discard gaskets (Figure 1, Item 9, 26, 37).
5. Remove eight nuts (Figure 1, Item 34), lockwashers (Figure 1, Item 33), washers (Figure 1, Item 32), screws (Figure 1, Item 36), washers (Figure 1, Item 35), coupling (Figure 1, Item 5) and gasket (Figure 1, Item 6) from tee (Figure 1, Item 7).
6. Discard gasket (Figure 1, Item 6) and lockwashers (Figure 1, Item 33).
7. Remove eight nuts (Figure 1, Item 17), lockwashers (Figure 1, Item 18), washers (Figure 1, Item 19), screws (Figure 1, Item 12), washers (Figure 1, Item 13), coupling (Figure 1, Item 8) and gasket (Figure 1, Item 16) from tee (Figure 1, Item 7).
8. Discard gasket (Figure 1, Item 16) and lockwashers (Figure 1, Item 18).
9. Remove eight nuts (Figure 1, Item 29), lockwashers (Figure 1, Item 30), washers (Figure 1, Item 31), screws (Figure 1, Item 27), washers (Figure 1, Item 28), coupling (Figure 1, Item 21) and gasket (Figure 1, Item 20) from tee (Figure 1, Item 7).
10. Discard gasket (Figure 1, Item 20) and lockwashers (Figure 1, Item 30).
11. Remove split ring (Figure 1, Item 2) from quick disconnect dust cap (Figure 1, Item 1).
12. Remove split ring (Figure 1, Item 2) from chain (Figure 1, Item 3).
13. Remove split ring (Figure 1, Item 4) from chain (Figure 1, Item 3).
14. Remove split ring (Figure 1, Item 4) from coupling (Figure 1, Item 5).
15. Remove split ring (Figure 1, Item 11) from quick disconnect dust cap (Figure 1, Item 10).
16. Remove split ring (Figure 1, Item 11) from chain (Figure 1, Item 14).
17. Remove split ring (Figure 1, Item 15) from coupling (Figure 1, Item 8).
18. Remove split ring (Figure 1, Item 15) from chain (Figure 1, Item 14).
19. Remove split ring (Figure 1, Item 24) from quick disconnect dust plug (Figure 1, Item 25).
20. Remove split ring (Figure 1, Item 24) from chain (Figure 1, Item 23).
21. Remove split ring (Figure 1, Item 22) from coupling (Figure 1, Item 21).
22. Remove split ring (Figure 1, Item 22) from chain (Figure 1, Item 25).

DISASSEMBLY - CONTINUED

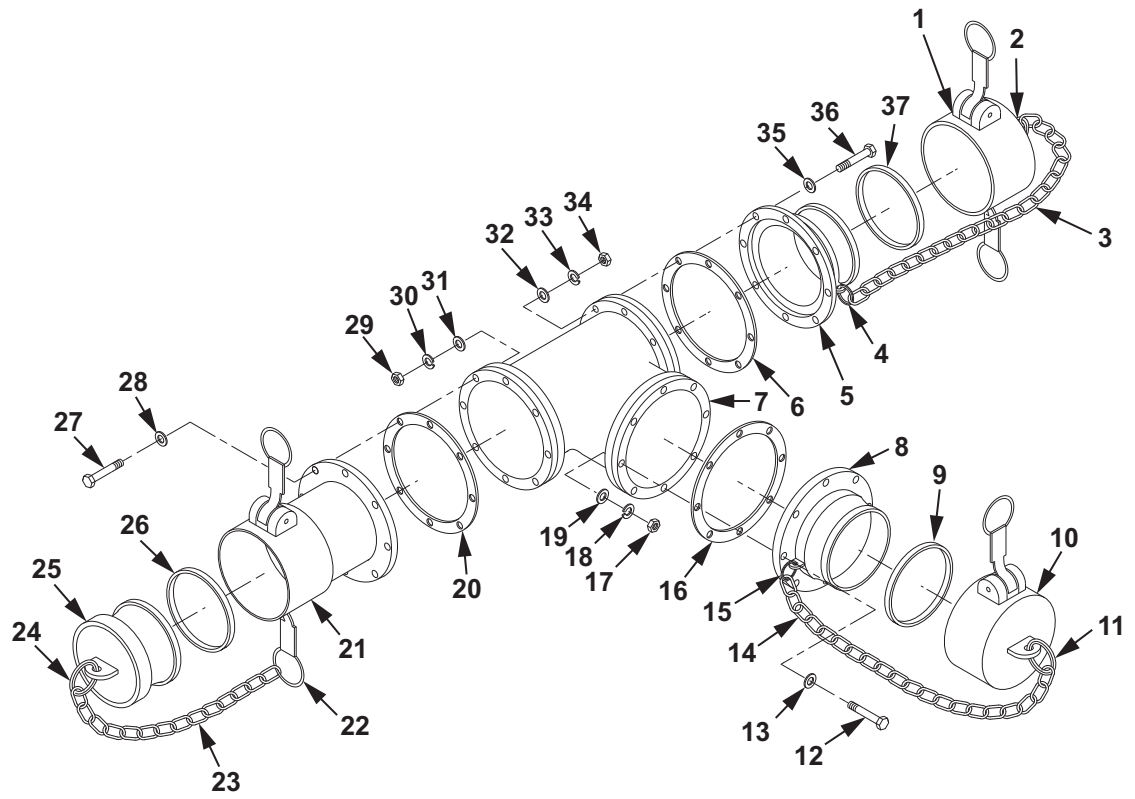


Figure 1. 4 In. Female X 4 In. Male X 4 In. Male Tee Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect tee for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect couplings and split rings for cracks or corrosion. If cracks or corrosion is found, replace with a serviceable like item.
3. Inspect quick disconnect dust caps for cracks or corrosion. If cracks or corrosion is found, replace with a serviceable like item.

END OF TASK**ASSEMBLY**

1. Install split ring (Figure 2, Item 22) on chain (Figure 2, Item 25).
2. Install split ring (Figure 2, Item 22) on coupling (Figure 2, Item 21).
3. Install split ring (Figure 2, Item 24) on chain (Figure 2, Item 23).
4. Install split ring (Figure 2, Item 24) on quick disconnect dust plug (Figure 2, Item 25).
5. Install split ring (Figure 2, Item 15) on chain (Figure 2, Item 14).
6. Install split ring (Figure 2, Item 15) on coupling (Figure 2, Item 8).
7. Install split ring (Figure 2, Item 11) on chain (Figure 2, Item 14).
8. Install split ring (Figure 2, Item 11) on quick disconnect dust cap (Figure 2, Item 10).
9. Install split ring (Figure 2, Item 4) on chain (Figure 2, Item 3).
10. Install split ring (Figure 2, Item 4) on coupling (Figure 2, Item 5).
11. Install split ring (Figure 2, Item 2) on chain (Figure 2, Item 3).

ASSEMBLY - CONTINUED

12. Install split ring (Figure 2, Item 2) on quick disconnect dust cap (Figure 2, Item 1).
13. Install eight screws (Figure 2, Item 27) and flat washers (Figure 2, Item 28) through coupling (Figure 2, Item 21), new gasket (Figure 2, Item 20) and tee (Figure 2, Item 7).
14. Install eight washers (Figure 2, Item 31), new lockwashers (Figure 2, Item 30) and nuts (Figure 2, Item 29) on screws (Figure 2, Item 27). Hand tighten eight nuts (Figure 2, Item 29).
15. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 29) to 37–43 ft lb (50–58 N·m).
16. Install eight screws (Figure 2, Item 12) and flat washers (Figure 2, Item 13) through coupling (Figure 2, Item 8), new gasket (Figure 2, Item 16) and tee (Figure 2, Item 7).
17. Install eight washers (Figure 2, Item 19), new lockwashers (Figure 2, Item 18) and nuts (Figure 2, Item 17) on screws (Figure 2, Item 12). Hand tighten eight nuts (Figure 2, Item 17).
18. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 17) to 37–43 ft lb (50–58 N·m).
19. Install eight screws (Figure 2, Item 36) and washers (Figure 2, Item 35) through coupling (Figure 2, Item 5), new gasket (Figure 2, Item 6) and tee (Figure 2, Item 7).
20. Install eight washers (Figure 2, Item 32), new lockwashers (Figure 2, Item 33) and nuts (Figure 2, Item 34) on screws (Figure 2, Item 36). Hand tighten eight nuts (Figure 2, Item 34).
21. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 34) to 37–43 ft lb (50–58 N·m).
22. Install new gasket (Figure 2, Item 26) and quick disconnect dust plug (Figure 2, Item 25) into coupling (Figure 2, Item 21).
23. Install new gasket (Figure 2, Item 9) and quick disconnect dust cap (Figure 2, Item 10) into coupling (Figure 2, Item 8).
24. Install new gasket (Figure 2, Item 37) and quick disconnect dust cap (Figure 2, Item 1) onto coupling (Figure 2, Item 5).

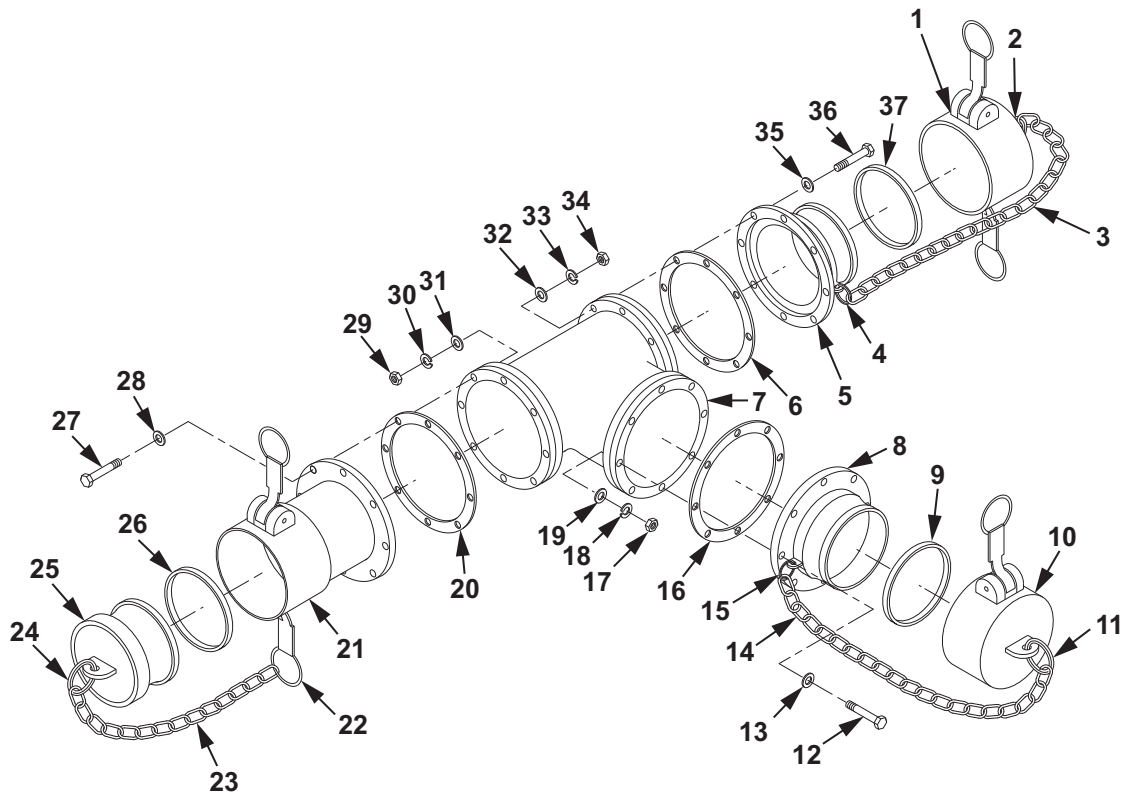


Figure 2. 4 In. Female X 4 In. Male X 4 In. Male Tee Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE TEE ASSEMBLY, PART NUMBER 78024-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 3/8 sqdr 5-75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tee assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (3) (Item 34, WP 0215)
Gasket (3) (Item 38, WP 0215)
Washer, lock (24) (Item 61, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust cap (Figure 1, Item 1) and gasket (Figure 1, Item 37) from coupling (Figure 1, Item 5).
2. Remove quick disconnect dust plug (Figure 1, Item 10) and gasket (Figure 1, Item 9) from coupling (Figure 1, Item 8).
3. Remove quick disconnect dust cap (Figure 1, Item 24) and gasket (Figure 1, Item 27) from coupling (Figure 1, Item 28).
4. Discard gaskets (Figure 1, Item 9, 27, 37).
5. Remove eight nuts (Figure 1, Item 34), lockwashers (Figure 1, Item 33), washers (Figure 1, Item 32), screws (Figure 1, Item 36), washers (Figure 1, Item 35), coupling (Figure 1, Item 5) and gasket (Figure 1, Item 6) from tee (Figure 1, Item 7).
6. Discard gasket (Figure 1, Item 6) and lockwashers (Figure 1, Item 33).
7. Remove eight nuts (Figure 1, Item 17), lockwashers (Figure 1, Item 18), washers (Figure 1, Item 19), screws (Figure 1, Item 14), washers (Figure 1, Item 15), coupling (Figure 1, Item 8) and gasket (Figure 1, Item 16) from tee (Figure 1, Item 7).
8. Discard gasket (Figure 1, Item 16) and lockwashers (Figure 1, Item 18).
9. Remove eight nuts (Figure 1, Item 29), lockwashers (Figure 1, Item 30), washers (Figure 1, Item 31), screws (Figure 1, Item 25), washers (Figure 1, Item 26), coupling (Figure 1, Item 28) and gasket (Figure 1, Item 20) from tee (Figure 1, Item 7).
10. Discard gasket (Figure 1, Item 20) and lockwashers (Figure 1, Item 30).
11. Remove split ring (Figure 1, Item 2) from quick disconnect dust cap (Figure 1, Item 1).
12. Remove split ring (Figure 1, Item 2) from chain (Figure 1, Item 3).
13. Remove split ring (Figure 1, Item 4) from coupling (Figure 1, Item 5).
14. Remove split ring (Figure 1, Item 4) from chain (Figure 1, Item 3).
15. Remove split ring (Figure 1, Item 11) from quick disconnect dust plug (Figure 1, Item 10).
16. Remove split ring (Figure 1, Item 11) from chain (Figure 1, Item 12).
17. Remove split ring (Figure 1, Item 13) from coupling (Figure 1, Item 8).
18. Remove split ring (Figure 1, Item 13) from chain (Figure 1, Item 12).
19. Remove split ring (Figure 1, Item 23) from quick disconnect dust cap (Figure 1, Item 24).
20. Remove split ring (Figure 1, Item 23) from chain (Figure 1, Item 22).
21. Remove split ring (Figure 1, Item 21) from coupling (Figure 1, Item 28).
22. Remove split ring (Figure 1, Item 21) from chain (Figure 1, Item 22).

DISASSEMBLY - CONTINUED

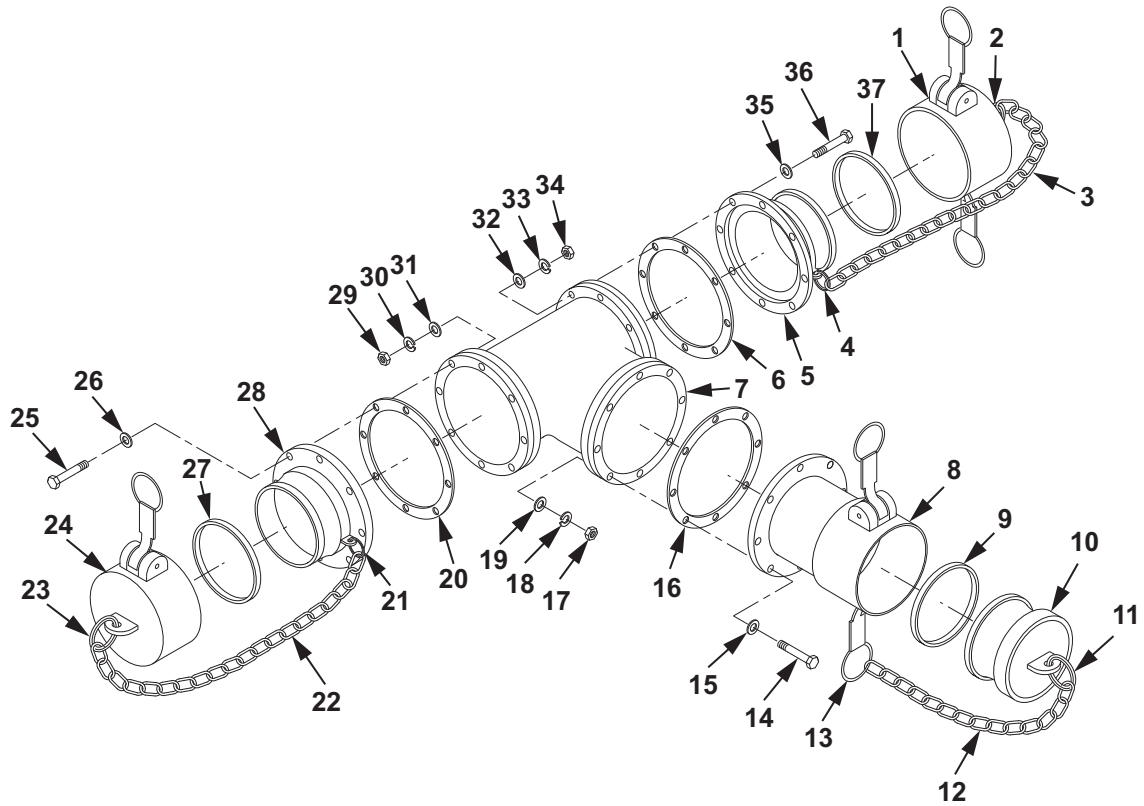


Figure 1. 4 In. Male X 4 In. Male X 4 In. Female Tee Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect tee assembly for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect quick disconnect dust caps and split rings for cracks or corrosion. If cracks or corrosion are found, replace with a serviceable like item.

END OF TASK**ASSEMBLY**

1. Install split ring (Figure 2, Item 21) on chain (Figure 2, Item 22).
2. Install split ring (Figure 2, Item 21) on coupling (Figure 2, Item 28).
3. Install split ring (Figure 2, Item 23) on chain (Figure 2, Item 22).
4. Install split ring (Figure 2, Item 23) on quick disconnect dust cap (Figure 2, Item 24).
5. Install split ring (Figure 2, Item 13) on chain (Figure 2, Item 12).
6. Install split ring (Figure 2, Item 13) on coupling (Figure 2, Item 8).
7. Install split ring (Figure 2, Item 11) on chain (Figure 2, Item 12).
8. Install split ring (Figure 2, Item 11) on quick disconnect dust plug (Figure 2, Item 10).
9. Install split ring (Figure 2, Item 4) on chain (Figure 2, Item 3).
10. Install split ring (Figure 2, Item 4) on coupling (Figure 2, Item 5).
11. Install split ring (Figure 2, Item 2) on chain (Figure 2, Item 3).
12. Install split ring (Figure 2, Item 2) on quick disconnect dust cap (Figure 2, Item 1).
13. Install eight screws (Figure 2, Item 26) and washers (Figure 2, Item 27) through coupling (Figure 2, Item 9), new gasket (Figure 2, Item 28) and tee (Figure 2, Item 16).

ASSEMBLY - CONTINUED

14. Install eight washers (Figure 2, Item 31), new lockwashers (Figure 2, Item 30) and nuts (Figure 2, Item 29) on screws (Figure 2, Item 25). Hand tighten eight nuts (Figure 2, Item 29).
15. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 29) to 37–43 ft lb (50–58 N·m).
16. Install eight screws (Figure 2, Item 14) and washers (Figure 2, Item 15) through coupling (Figure 2, Item 8), new gasket (Figure 2, Item 16) and tee (Figure 2, Item 7).
17. Install eight washers (Figure 2, Item 19), new lockwashers (Figure 2, Item 18) and nuts (Figure 2, Item 17) on screws (Figure 2, Item 14). Hand tighten eight nuts (Figure 2, Item 17).
18. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 17) to 37–43 ft lb (50–58 N·m).
19. Install eight screws (Figure 2, Item 13) and washers (Figure 2, Item 35) through coupling (Figure 2, Item 5), new gasket (Figure 2, Item 6) and tee (Figure 2, Item 7).
20. Install eight washers (Figure 2, Item 32), new lockwashers (Figure 2, Item 33) and nuts (Figure 2, Item 34) on screws (Figure 2, Item 36). Hand tighten eight nuts (Figure 2, Item 34).
21. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 34) to 37–43 ft lb (50–58 N·m).
22. Install new gasket (Figure 2, Item 27) and quick disconnect dust cap (Figure 2, Item 24) into coupling (Figure 2, Item 28).
23. Install new gasket (Figure 2, Item 9) and quick disconnect dust plug (Figure 2, Item 10) into coupling (Figure 1, Item 8).
24. Install new gasket (Figure 2, Item 37) and quick disconnect dust cap (Figure 2, Item 1) onto coupling (Figure 2, Item 5).

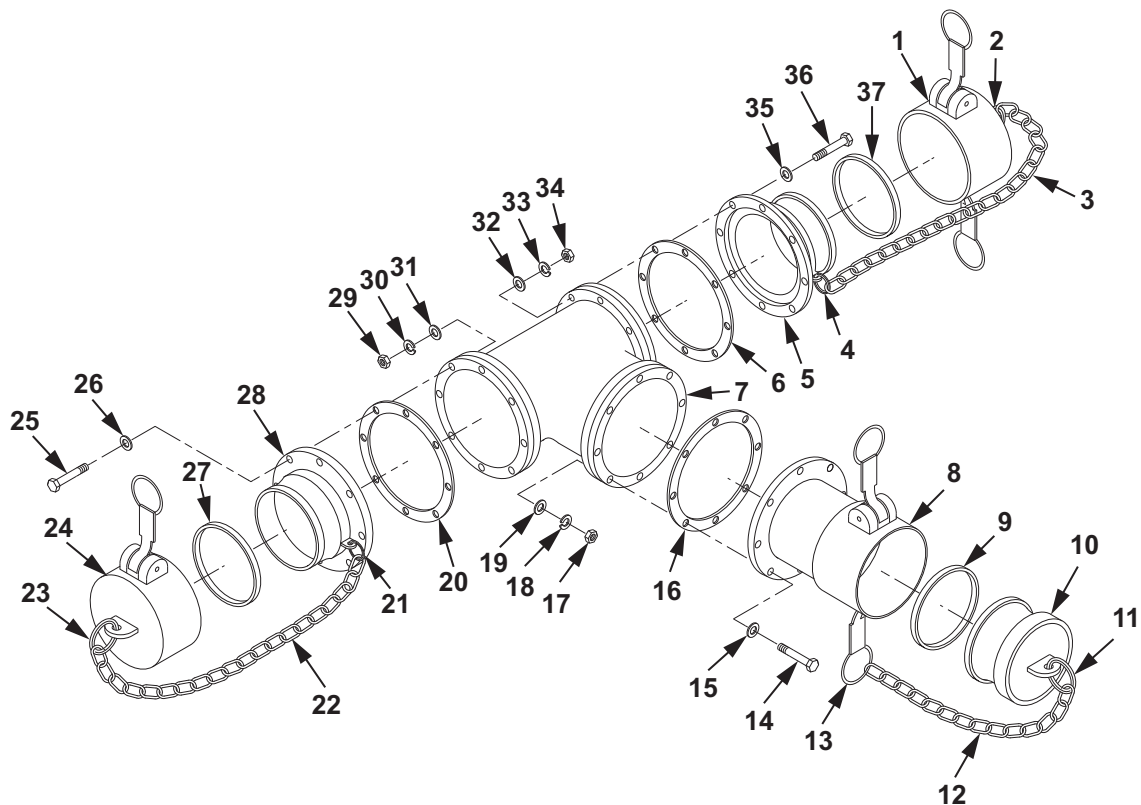


Figure 2. 4 In. Male X 4 In. Male X 4 In. Female Tee Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. X 25 FT. DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-102, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Multimeter (Item 10, WP 0211)
Hose repair kit (Item 30, WP 0212)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Hose assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (2) (Item 38, WP 0215)
Clamp preformed (8) (Item 3, WP 0214)

DISASSEMBLY

1. Cut and remove hose clamps (Figure 1, Item 1) from hose assembly (Figure 1, Item 2). Discard hose clamps (Figure 1, Item 1).
2. Remove female coupling half (Figure 1, Item 9) and male coupling half (Figure 1, Item 8) from hose (Figure 1, Item 2).
3. Remove quick disconnect dust plug (Figure 1, Item 13) from female coupling half (Figure 1, Item 9).
4. Remove quick disconnect dust cap (Figure 1, Item 4) from male coupling half (Figure 1, Item 8).
5. Remove gaskets (Figure 1, Item 14, 3) from female coupling half (Figure 1, Item 9) and quick disconnect dust cap (Figure 1, Item 4).
6. Discard gaskets (Figure 1, Item 14, 3).
7. Remove split ring (Figure 1, Item 5) from quick disconnect dust cap (Figure 1, Item 4).
8. Remove split ring (Figure 1, Item 5) from chain (Figure 1, Item 6).
9. Remove split ring (Figure 1, Item 7) from male coupling half (Figure 1, Item 8).
10. Remove split ring (Figure 1, Item 7) from chain (Figure 1, Item 6).
11. Remove split ring (Figure 1, Item 10) from female coupling half (Figure 1, Item 9).
12. Remove split ring (Figure 1, Item 10) from chain (Figure 1, Item 11).
13. Remove split ring (Figure 1, Item 12) from quick disconnect dust plug (Figure 1, Item 13).
14. Remove split ring (Figure 1, Item 12) from chain (Figure 1, Item 11).

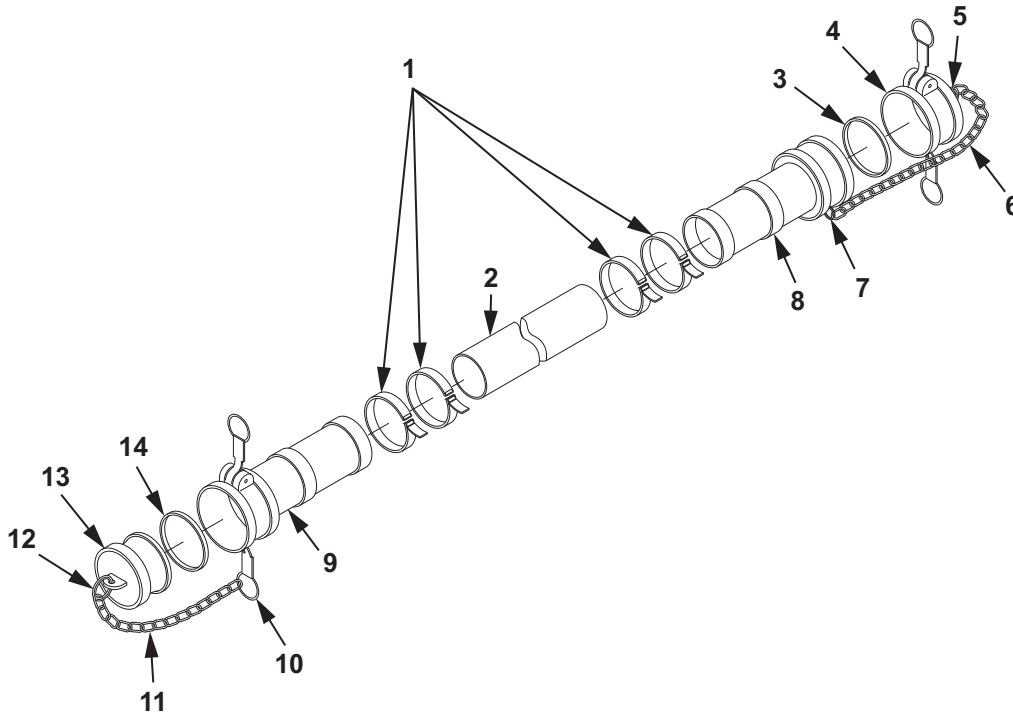


Figure 1. 4 In. Discharge Hose Disassembly.

END OF TASK

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY AND FITTINGS CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect rubber hose for tears, cuts, holes or deterioration. If found, replace with a serviceable like item.
3. Inspect ends of hose for damaged or missing ground wires. Using a multimeter, perform continuity test of ground wire from one end of hose to the other. Continuity must exist.

END OF TASK

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY

1. Obtain the correct length of replacement hose (Figure 2, Item 1).
2. Identify the ground wire (Figure 2, Item 2) in each end of the hose (Figure 2, Item 1).
3. Using needle nose pliers, pull the ground wire (Figure 2, Item 2) approximately 1/2 in. out of the hose (Figure 2, item 1) so the ground wire (Figure 2, Item 2) is loose.
4. Using needle nose pliers, cut a piece of copper wire (Figure 2, Item 3) approximately 1-1/2 inches long.

NOTE

If two ground wires exist, insert and wrap a piece of copper wire on both.

5. Insert the piece of copper wire (Figure 2, Item 3) into the hose (Figure 2, Item 1) approximately 1/2 in. away from the ground wire (Figure 2, Item 2).
6. Using needle nose pliers, wrap the copper wire (Figure 2, Item 3) and ground wire (Figure 2, Item 2) together, forming a pigtail.

NOTE

The ground wires must be exposed from the other end of the hose in the same manner before proceeding to the next step.

7. Using needle nose pliers, carefully bend the ground wire (Figure 2, Item 2) inside the hose (Figure 2, Item 1).

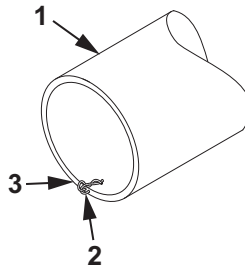


Figure 2. 4 In. Discharge Hose Repair.

8. Using the male or female coupling half (Figure 3, Item 1) as a guide, align the cut end of one section of hose (Figure 3, Item 4) with the machined stop (Figure 3, Item 5) of the male or female coupling half (Figure 3, Item 1).
9. Using a marking pen, mark two lines (Figure 3, Item 3) on the hose (Figure 3, Item 4) where the hose barbs (Figure 3, Item 2) will be located.

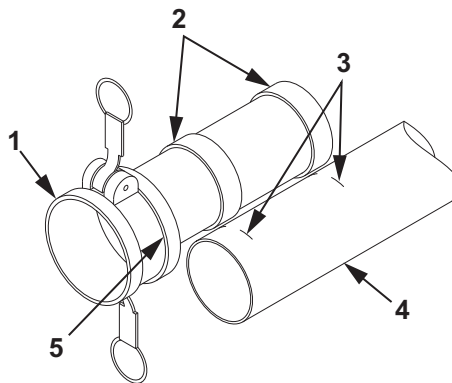


Figure 3. 4 In. Discharge Hose Repair.

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY - CONTINUED**NOTE**

The four clamps are to be positioned so that there is one clamp on either side of the two barbs. There should be a gap of 1/8–1/4 in. between the two middle clamps.

10. Place four clamps (Figure 4, Item 2) loosely on the hose assembly (Figure 4, Item 1).
11. Install female coupling half or male coupling half (Figure 4, Item 4) into hose assembly (Figure 4, Item 1) until it is flush with the machined stop (Figure 4, Item 3).

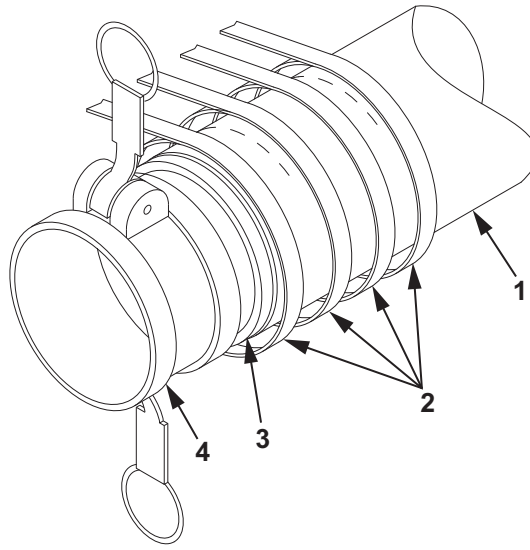


Figure 4. 4 In. Discharge Hose Repair.

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY - CONTINUED

12. Using a multimeter, perform continuity test between male and female coupling assemblies (Figure 5, Item 9, 8) at each end of the hose assembly to ensure ground wires are firmly seated. Continuity must exist.

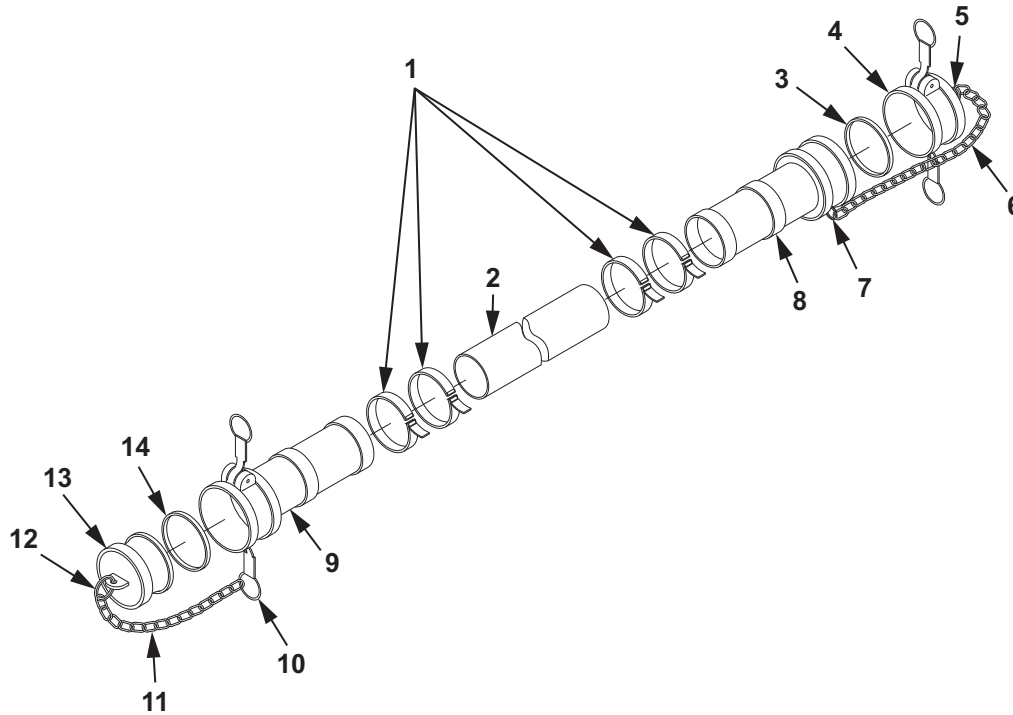


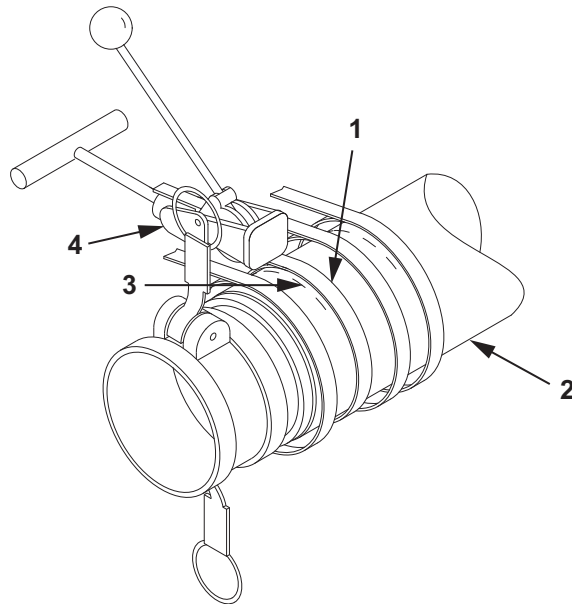
Figure 5. 4 In. Discharge Hose Repair.

NOTE

All clamps should be installed so that the clamp buckle is oriented a minimum of 30° away from the previously installed clamp buckle.

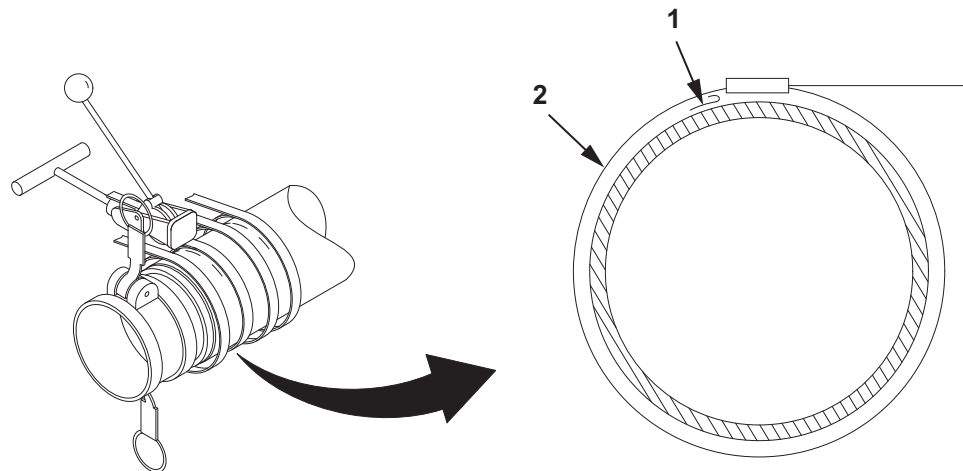
13. Position the first clamp (Figure 6, Item 1) on the hose assembly (Figure 6, Item 2) until it is aligned with the first mark (Figure 6, Item 3) previously made on the hose assembly (Figure 6, Item 2).
14. Using clamping tool (Figure 6, Item 4) from hose repair kit, tighten the clamp (Figure 6, Item 1) until almost flush with the hose assembly (Figure 6, Item 2) surface.

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY - CONTINUED

*Figure 6. 4 In. Discharge Hose Repair.***NOTE**

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

15. Install the bridge buckle (Figure 7, Item 1) under clamp (Figure 7, Item 2).

*Figure 7. 4 In. Discharge Hose Repair.*

4 IN. X 25 FT DISCHARGE HOSE ASSEMBLY - CONTINUED

16. Tighten clamp (Figure 6, Item 2) until the clamp (Figure 6, Item 2) cannot be tightened by hand any further.
17. While holding the clamping tool handle (Figure 8, Item 1) in the down position, strike the center punch anvil (Figure 8, Item 2) three to four times with a hammer.

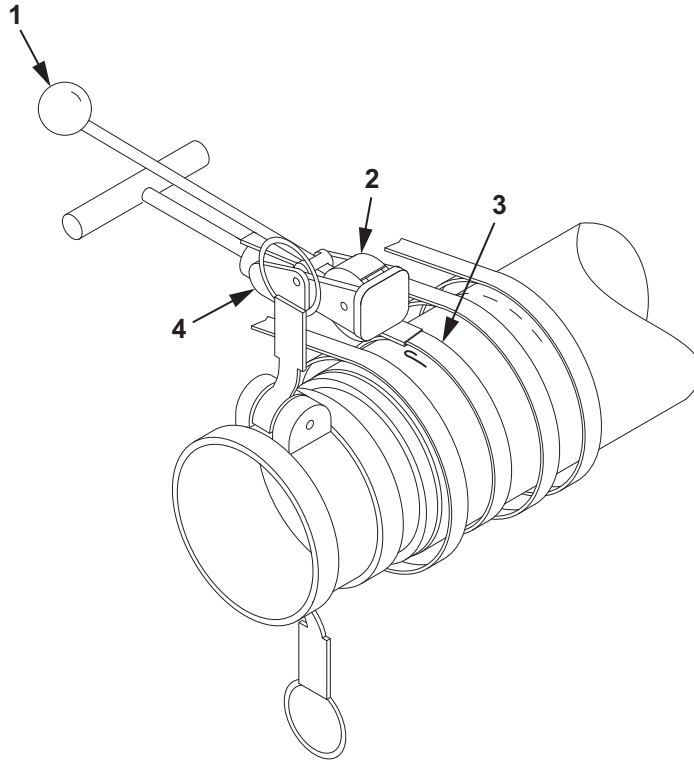


Figure 8. 4 In. Discharge Hose Repair.

18. While still holding the clamping tool handle (Figure 8, Item 1) in the down position, raise the entire clamping tool (Figure 8, Item 4) up to shear the tail of the band off of the clamp (Figure 8, Item 3).
19. Using hammer, tap the edge of the distorted clamp (Figure 8, Item 3) down to a level configuration.
20. Perform steps 11 through 19 to install the remaining three clamps and coupling at opposite end of hose.
21. Install new gaskets (Figure 9, Item 14, 3) into quick disconnect dust cap (Figure 9, Item 6) and female coupling half (Figure 9, Item 3).
22. Install quick disconnect dust cap (Figure 9, Item 4) onto male coupling half (Figure 9, Item 8).
23. Install quick disconnect dust plug (Figure 9, Item 13) into female coupling half (Figure 9, Item 9).
24. Install split ring (Figure 9, Item 12) on quick disconnect dust plug (Figure 9, Item 13).
25. Install split ring (Figure 9, Item 12) on chain (Figure 9, Item 11).
26. Install split ring (Figure 9, Item 10) on chain (Figure 9, Item 11).
27. Install split ring (Figure 9, Item 10) on female coupling half (Figure 9, Item 9).
28. Install split ring (Figure 9, Item 7) on chain (Figure 9, Item 6).
29. Install split ring (Figure 9, Item 7) on male coupling half (Figure 9, Item 8).
30. Install split ring (Figure 9, Item 5) on chain (Figure 9, Item 6).
31. Install split ring (Figure 9, Item 5) on quick disconnect dust cap (Figure 9, Item 4).

This diagram shows an exploded perspective view of a mechanical assembly. The components are numbered as follows:

- 1**: Points to a central shaft or tube.
- 2**: Points to a cylindrical component with a break in the middle.
- 3**: Points to a flange or ring.
- 4**: Points to a flange or ring.
- 5**: Points to a flange or ring.
- 6**: Points to a chain or belt.
- 7**: Points to a flange or ring.
- 8**: Points to a flange or ring.
- 9**: Points to a flange or ring.
- 10**: Points to a flange or ring.
- 11**: Points to a chain or belt.
- 12**: Points to a flange or ring.
- 13**: Points to a flange or ring.
- 14**: Points to a flange or ring.

END OF TASK

0131-9/10 blank

UNIT MAINTENANCE
4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE TEE ASSEMBLY, PART NUMBER 78025-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 3/8 sqdr 5-75 ft lb
(Item 11, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tee assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (3) (Item 34, WP 0215)
Gasket (3) (Item 38, WP 0215)
Washer, lock (24) (Item 61, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust plug (Figure 1, Item 1) and gasket (Figure 1, Item 37) from coupling (Figure 1, Item 5).
2. Remove quick disconnect dust cap (Figure 1, Item 10) and gasket (Figure 1, Item 9) from coupling (Figure 1, Item 8).
3. Remove quick disconnect dust plug (Figure 1, Item 25) and gasket (Figure 1, Item 26) from coupling (Figure 1, Item 21).
4. Discard gaskets (Figure 1, Item 37, 9, 26).
5. Remove eight nuts (Figure 1, Item 34), lockwashers (Figure 1, Item 33), washers (Figure 1, Item 32), screws (Figure 1, Item 36), washers (Figure 1, Item 35), coupling (Figure 1, Item 5) and gasket (Figure 1, Item 6) from tee (Figure 1, Item 7).
6. Discard gasket (Figure 1, Item 6) and lockwashers (Figure 1, Item 33).
7. Remove eight nuts (Figure 1, Item 17), lockwashers (Figure 1, Item 18), washers (Figure 1, Item 19), screws (Figure 1, Item 12) washers (Figure 1, Item 13), coupling (Figure 1, Item 8) and gasket (Figure 1, Item 16) from tee (Figure 1, Item 7).
8. Discard gasket (Figure 1, Item 16) and lockwashers (Figure 1, Item 18).
9. Remove eight nuts (Figure 1, Item 29), lockwashers (Figure 1, Item 30), washers (Figure 1, Item 31), screws (Figure 1, Item 27), washers (Figure 1, Item 28), coupling (Figure 1, Item 21) and gasket (Figure 1, Item 20) from tee (Figure 1, Item 7).
10. Discard gasket (Figure 1, Item 20) and lockwashers (Figure 1, Item 30).
11. Remove split ring (Figure 1, Item 2) from quick disconnect dust plug (Figure 1, Item 1).
12. Remove split ring (Figure 1, Item 2) from chain (Figure 1, Item 3).
13. Remove split ring (Figure 1, Item 4) from coupling (Figure 1, Item 5).
14. Remove split ring (Figure 1, Item 4) from chain (Figure 1, Item 3).
15. Remove split ring (Figure 1, Item 11) from quick disconnect dust cap (Figure 1, Item 10).
16. Remove split ring (Figure 1, Item 11) from chain (Figure 1, Item 14).
17. Remove split ring (Figure 1, Item 15) from coupling (Figure 1, Item 8).
18. Remove split ring (Figure 1, Item 15) from chain (Figure 1, Item 14).
19. Remove split ring (Figure 1, Item 24) from quick disconnect dust plug (Figure 1, Item 25).
20. Remove split ring (Figure 1, Item 24) from chain (Figure 1, Item 23).
21. Remove split ring (Figure 1, Item 22) from coupling (Figure 1, Item 21).
22. Remove split ring (Figure 1, Item 22) from chain (Figure 1, Item 23).

DISASSEMBLY - CONTINUED

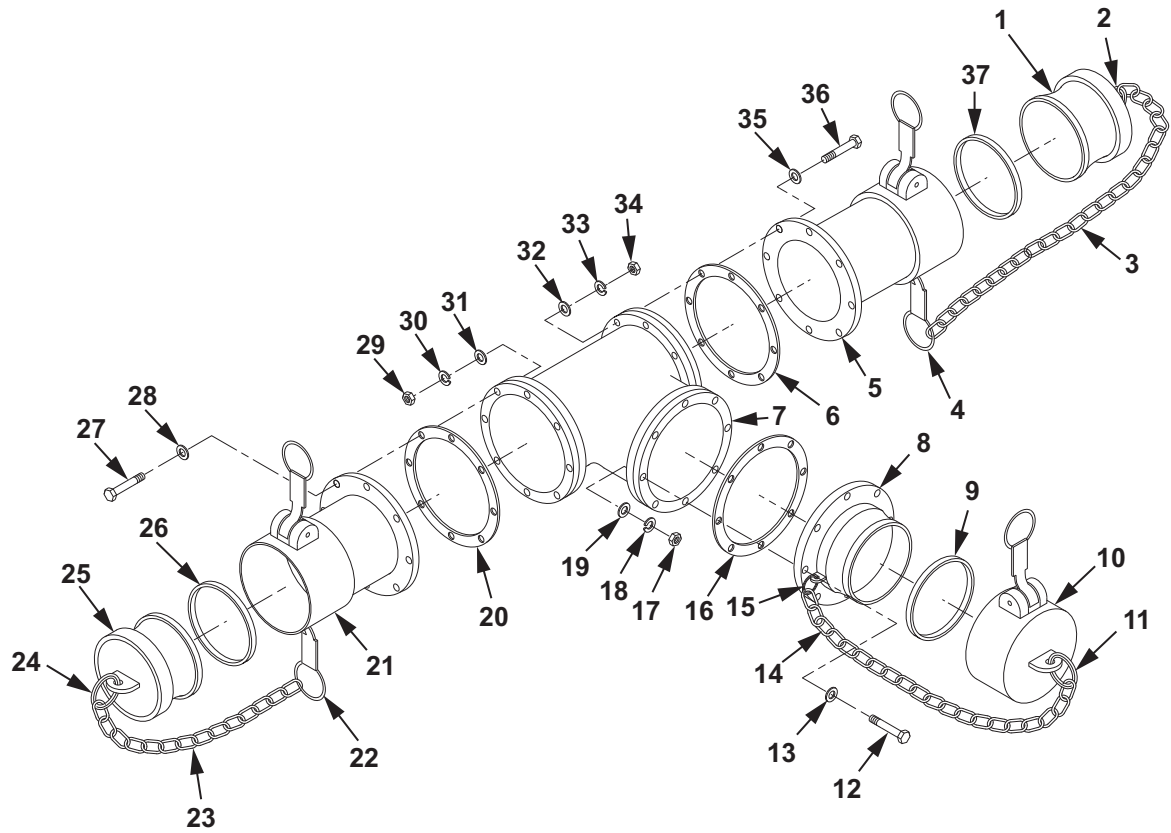


Figure 1. 4 In. Female X 4 In. Female X 4 In. Male Tee Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect tee assembly for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect quick disconnect dust caps and split rings for cracks or corrosion. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.

END OF TASK**ASSEMBLY**

1. Install split ring (Figure 2, Item 22) on chain (Figure 2, Item 23).
2. Install split ring (Figure 2, Item 22) on coupling (Figure 2, Item 21).
3. Install split ring (Figure 2, Item 24) on chain (Figure 2, Item 23).
4. Install split ring (Figure 2, Item 24) on quick disconnect dust plug (Figure 2, Item 25).
5. Install split ring (Figure 2, Item 15) on chain (Figure 2, Item 14).
6. Install split ring (Figure 2, Item 15) on coupling (Figure 2, Item 8).
7. Install split ring (Figure 2, Item 11) on chain (Figure 2, Item 14).
8. Install split ring (Figure 2, Item 11) on quick disconnect dust cap (Figure 2, Item 10).
9. Install split ring (Figure 2, Item 4) on chain (Figure 2, Item 3).
10. Install split ring (Figure 2, Item 4) on coupling (Figure 2, Item 5).
11. Install split ring (Figure 2, Item 2) on chain (Figure 2, Item 3).
12. Install split ring (Figure 2, Item 2) on quick disconnect dust plug (Figure 2, Item 1).
13. Install eight screws (Figure 2, Item 27) and washers (Figure 2, Item 28) through coupling (Figure 2, Item 21), new gasket (Figure 2, Item 20) and tee (Figure 2, Item 7).

ASSEMBLY - CONTINUED

14. Install eight washers (Figure 2, Item 31), new lockwashers (Figure 2, Item 30) and nuts (Figure 2, Item 29) on screws (Figure 2, Item 27). Hand tighten nuts (Figure 2, Item 29).
15. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 29) to 37–43 ft lb (50–58 N·m).
16. Install eight screws (Figure 2, Item 12) and washers (Figure 2, Item 13) through coupling (Figure 2, Item 8), new gasket (Figure 2, Item 16) and tee (Figure 2, Item 7).
17. Install eight washers (Figure 2, Item 19), new lockwashers (Figure 2, Item 18) and nuts (Figure 2, Item 17) on screws (Figure 2, Item 12). Hand tighten eight nuts (Figure 2, Item 17).
18. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 17) to 37–43 ft lb (50–58 N·m).
19. Install eight screws (Figure 2, Item 36) and washers (Figure 2, Item 35) through coupling (Figure 2, Item 5), new gasket (Figure 2, Item 6) and tee (Figure 2, Item 7).
20. Install eight washers (Figure 2, Item 32), new lockwashers (Figure 2, Item 33) and nuts (Figure 2, Item 34) on screws (Figure 2, Item 36). Hand tighten eight nuts (Figure 2, Item 34).
21. Using torque wrench and adapter, torque eight nuts (Figure 2, Item 34) to 37–43 ft lb (50–58 N·m).
22. Install new gasket (Figure 2, Item 26) and quick disconnect dust plug (Figure 2, Item 25) into coupling (Figure 2, Item 21).
23. Install new gasket (Figure 2, Item 9) and quick disconnect dust cap (Figure 2, Item 10) into coupling (Figure 2, Item 8).
24. Install new gasket (Figure 2, Item 37) and quick disconnect dust plug (Figure 2, Item 1) into coupling (Figure 2, Item 5).

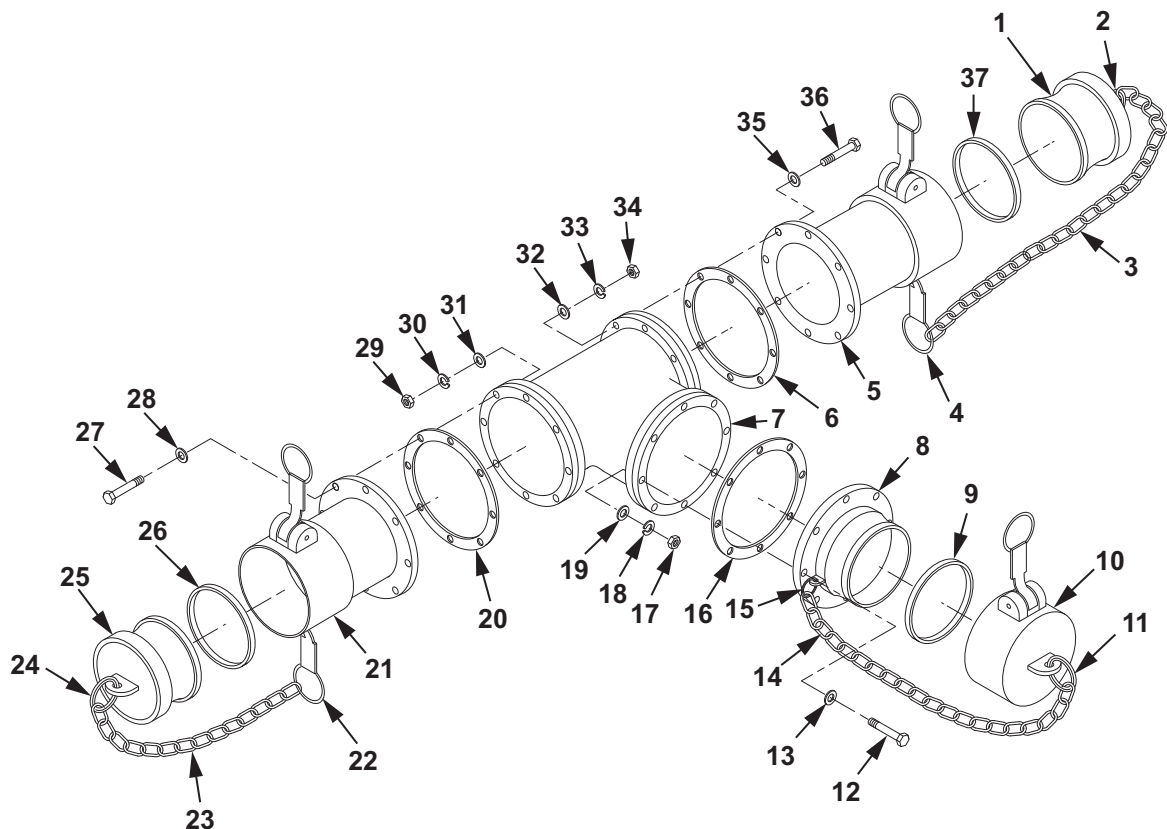


Figure 2. 4 In. Female X 4 In. Female X 4 In. Male Tee Disassembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, PART NUMBER 64210, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, strap (Item 3, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J
Petroleum Supply Specialist 92F

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (2) (Item 20, WP 0215)
Tape, teflon (Item 13, WP 0214)

WARNING

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

DISASSEMBLY

1. Remove six screws (Figure 1, Item 6) and washers (Figure 1, Item 5) securing quick disconnect coupling half (Figure 1, Item 10) to hose end control valve (Figure 1, Item 12).
2. Remove O-ring (Figure 1, Item 11) from hose end control valve (Figure 1, Item 12) and discard.
3. Remove six screws (Figure 1, Item 4), washers (Figure 1, Item 3) and ground cable ring (Figure 1, Item 2) securing hose end control valve (Figure 1, Item 12) to nozzle adapter (Figure 1, Item 14).
4. Remove O-ring (Figure 1, Item 13) from nozzle adapter (Figure 1, Item 14) and discard.
5. Using an assistant to hold the nozzle (Figure 1, Item 1), use a strap wrench to remove nozzle adapter (Figure 1, Item 14) from nozzle (Figure 1, Item 1).
6. Remove dust cap (Figure 1, Item 8) from quick disconnect coupling half (Figure 1, Item 10).
7. Remove snap ring (Figure 1, Item 7) from quick disconnect coupling half (Figure 1, Item 10).
8. Remove strainer (Figure 1, Item 9) from quick disconnect coupling half (Figure 1, Item 10).

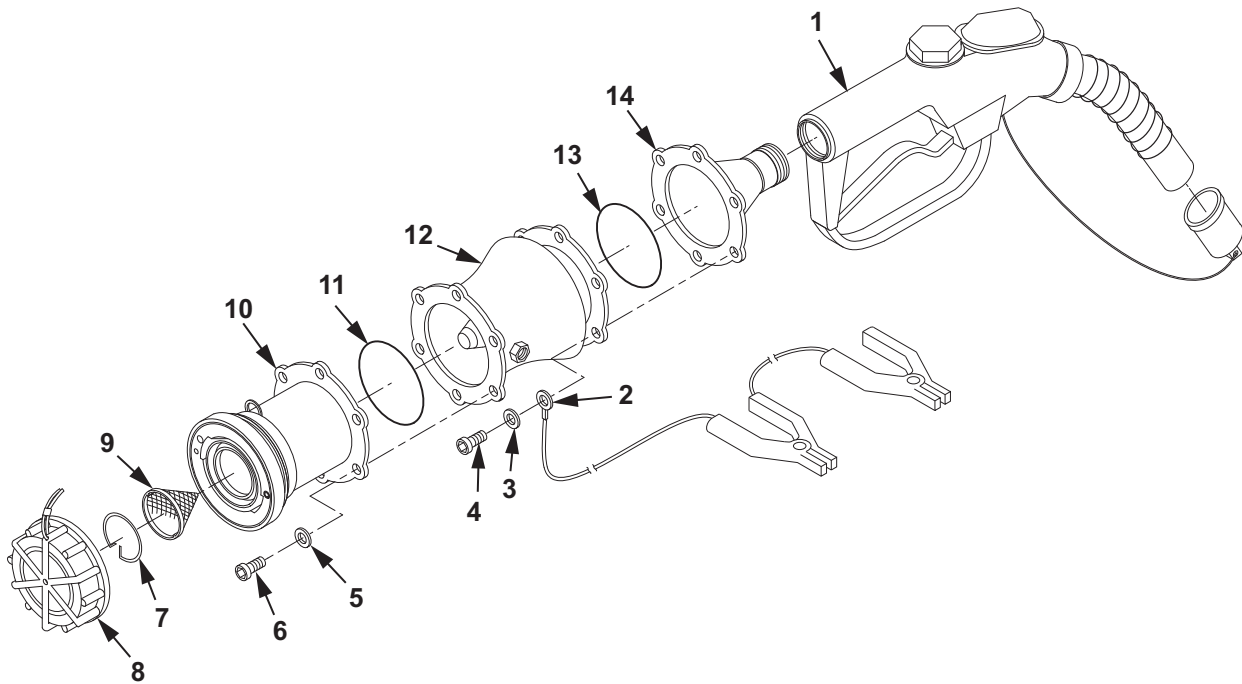


Figure 1. 1 In. Fuel and Oil Servicing Nozzle Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

WARNING**CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

3. Clean strainer with a cleaning cloth and solvent cleaning compound.
4. Allow strainer to thoroughly dry.

END OF TASK

INSPECTION

1. Inspect all metallic parts for cracks and corrosion. If cracks or corrosion is found, replace with a serviceable like item.
2. Inspect quick disconnect coupling half for leakage or damage. If leakage or damage is found, contact Direct Support Maintenance.
3. Inspect ground wire assembly for frayed ground wire and for bent or inoperative grounding clamps. If ground wire is frayed or grounding clamps are bent or inoperative, replace with a serviceable ground wire assembly.
4. Inspect hose end control valve for evidence of damage. If damaged, replace with a serviceable like item.
5. Inspect strainer for cracks, corrosion or damage. If cracks, corrosion or damage is found, replace with a serviceable like item.
6. Inspect strainer for holes in screen and deformation. If holes are found or strainer is deformed, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install strainer (Figure 2, Item 9) in quick disconnect coupling half (Figure 2, Item 10).
2. Install snap ring (Figure 2, Item 7) in quick disconnect coupling half (Figure 2, Item 10).
3. Install dust cap (Figure 2, Item 8) on quick disconnect coupling half (Figure 2, Item 10).

CAUTION

Do not apply more than one and one half wraps of teflon tape to nozzle adapter. Failure to comply could result in cracking of the nozzle port.

4. Apply teflon tape to threads of nozzle adapter (Figure 2, Item 14).
5. Install nozzle adapter (Figure 2, Item 14) into nozzle (Figure 2, Item 1).
6. Using an assistant to hold the nozzle (Figure 2, Item 1), use a strap wrench to tighten nozzle adapter (Figure 2, Item 14).
7. Install new O-ring (Figure 2, Item 13) on nozzle adapter (Figure 2, Item 14) flange.
8. Align holes in hose end control valve (Figure 2, Item 12) with mounting holes in nozzle adapter (Figure 2, Item 14).
9. Install six screws (Figure 2, Item 4), washers (Figure 2, Item 3) and ground cable ring (Figure 2, Item 2) to attach hose end control valve (Figure 2, Item 12) to nozzle adapter (Figure 2, Item 14). Tighten screws (Figure 2, Item 4).
10. Install new O-ring (Figure 2, Item 11) on quick disconnect coupling half (Figure 2, Item 10) flange.
11. Align holes in quick disconnect coupling half (Figure 2, Item 10) flange with mounting holes in hose end control valve (Figure 2, Item 12).
12. Install six screws (Figure 2, Item 6) and washers (Figure 2, Item 5) to attach quick disconnect coupling half (Figure 2, Item 10) to hose end control valve (Figure 2, Item 12). Tighten screws (Figure 2, Item 6).

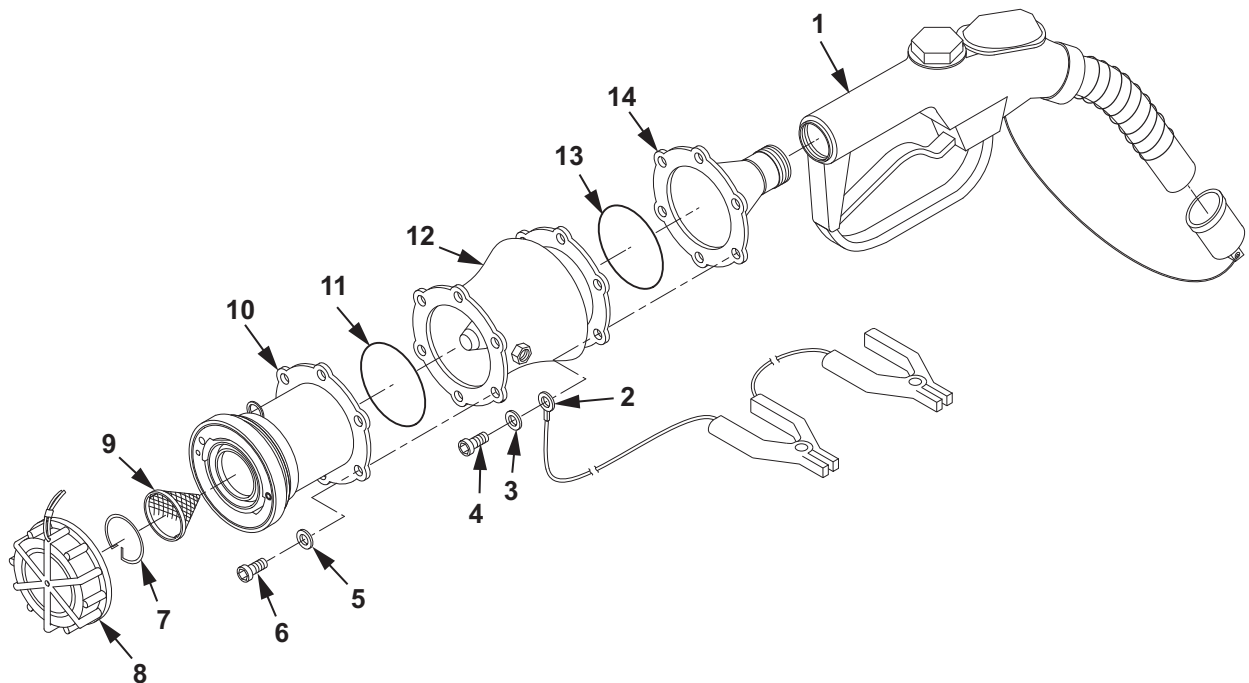


Figure 2. 1 In. Fuel and Oil Servicing Nozzle Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
4 IN. X 10 FT. DISCHARGE HOSE ASSEMBLY, PART NUMBER 78007-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, REPAIR, ASSEMBLY

INITIAL SETUP:**Test Equipment**

Multimeter (Item 10, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Tools and Special Tools

Tool Kit, General Mechanic's (Item 1, WP 0211)

Hose repair kit (Item 30, WP 0212)

Apron, utility (Item 2, WP 0211)

Gloves, rubber, industrial (Item 2, WP 0211)

Goggles, industrial (Item 2, WP 0211)

Equipment Condition

Hose assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)

Cloth, cleaning (Item 5, WP 0214)

Gasket (2) (Item 38, WP 0215)

Clamp preformed (8) (Item 3, WP 0214)

DISASSEMBLY

1. Cut and remove hose clamps (Figure 1, Item 1) from hose assembly (Figure 1, Item 2). Discard hose clamps (Figure 1, Item 1).
2. Remove female coupling half (Figure 1, Item 9) and male coupling half (Figure 1, Item 8) from hose assembly (Figure 1, Item 2).
3. Remove quick disconnect dust plug (Figure 1, Item 13) from female coupling half (Figure 1, Item 9).
4. Remove quick disconnect dust cap (Figure 1, Item 4) from male coupling half (Figure 1, Item 8).
5. Remove gaskets (Figure 1, Item 14, 3) from female coupling half (Figure 1, Item 9) and quick disconnect dust cap (Figure 1, Item 4).
6. Discard gaskets (Figure 1, Item 14, 3).
7. Remove split ring (Figure 1, Item 5) from quick disconnect dust cap (Figure 1, Item 4).
8. Remove split ring (Figure 1, Item 5) from chain (Figure 1, Item 6).
9. Remove split ring (Figure 1, Item 7) from male coupling half (Figure 1, Item 8).
10. Remove split ring (Figure 1, Item 7) from chain (Figure 1, Item 6).
11. Remove split ring (Figure 1, Item 10) from female coupling half (Figure 1, Item 9).
12. Remove split ring (Figure 1, Item 10) from chain (Figure 1, Item 11).
13. Remove split ring (Figure 1, Item 12) from quick disconnect dust plug (Figure 1, Item 13).
14. Remove split ring (Figure 1, Item 12) from chain (Figure 1, Item 11).

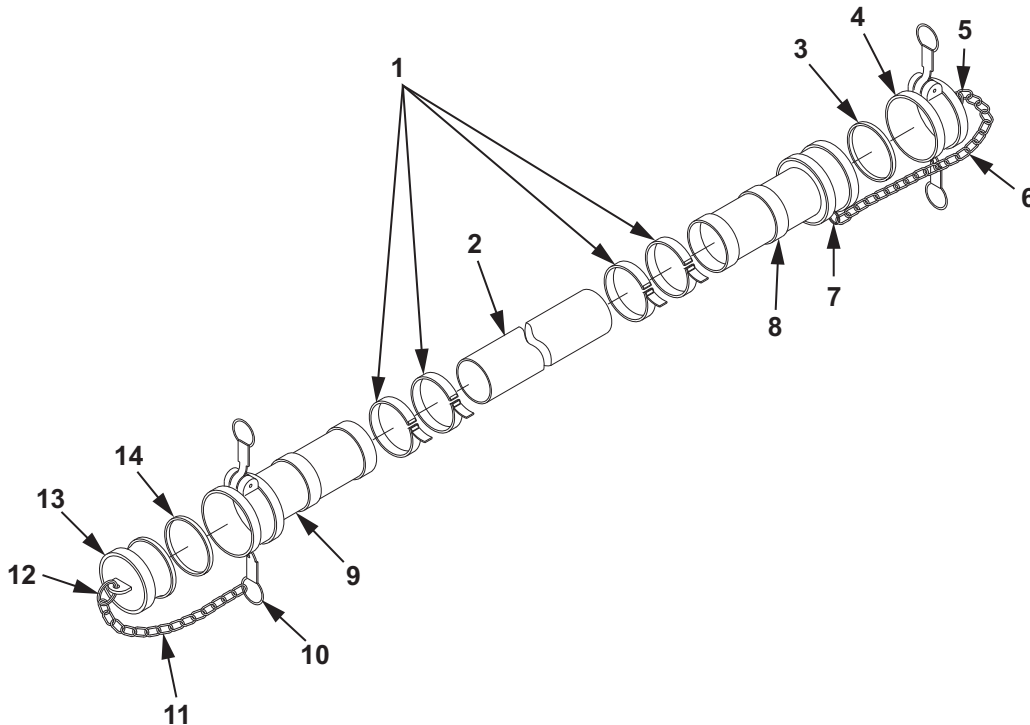


Figure 1. 4 In. X 10 Ft. Discharge Hose Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect all split rings and chains for cracks, distortion and corrosion. If cracks, distortion or corrosion is found, replace with a serviceable like item.
3. Inspect ends of hose for damaged or missing ground wires. Using a multimeter, perform continuity test of ground wire from one end of hose to the other. Continuity must exist.

END OF TASK

ASSEMBLY

1. Obtain the correct length of replacement hose (Figure 2, Item 1).
2. Identify the ground wire (Figure 2, Item 2) in each end of the hose (Figure 1, Item 1).
3. Using needle nose pliers, pull the ground wire (Figure 2, Item 2) approximately 1/2 in. out of the hose (Figure 2, Item 1) so the ground wire (Figure 2, Item 2) is loose.
4. Using needle nose pliers, cut a piece of copper wire (Figure 2, Item 3) approximately 1 1/2 inches long.
5. Insert the piece of copper wire (Figure 2, Item 3) into the hose (Figure 2, Item 1) approximately 1/2 in. away from the ground wire (Figure 2, Item 2).

NOTE

If two ground wires exist, insert and wrap a piece of copper wire on both.

6. Using needle nose pliers, wrap the copper wire (Figure 2, Item 3) and ground wire (Figure 2, Item 2) together, forming a pigtail.
7. Using needle nose pliers, carefully bend the ground wire (Figure 2, Item 2) inside the hose (Figure 2, Item 1).

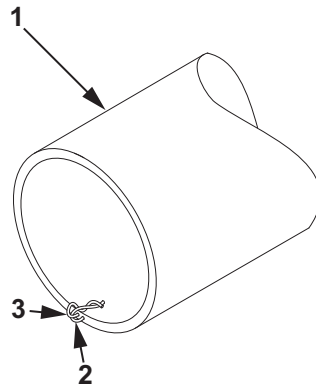


Figure 2. 4 In. X 10 Ft. Discharge Hose Repair.

NOTE

The ground wires must be exposed at the other end of the hose in the same manner before proceeding to the next step.

8. Using the male or female coupling half (Figure 3, Item 1) as a guide, align the end of the hose (Figure 3, Item 4) with the machined stop (Figure 3, Item 5) of the male or female coupling half (Figure 3, Item 1).

NOTE

The four clamps are to be positioned so that there is one clamp on either side of the two barbs. There should be a gap of 1/8–1/4 in. between the two middle clamps.

9. Using a marking pen, mark two lines (Figure 3, Item 4) on the hose (Figure 3, Item 2) where the hose barbs (Figure 3, Item 5) will be located.

ASSEMBLY - CONTINUED

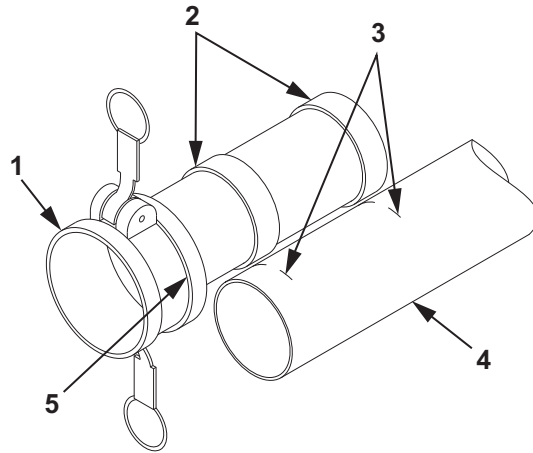


Figure 3. 4 In. X 10 Ft. Discharge Hose Repair.

10. Place four clamps (Figure 4, Item 2) loosely on the hose assembly (Figure 4, Item 1).
11. Install female coupling half or male coupling half (Figure 4, Item 4) into hose assembly (Figure 4, Item 1) until it is flush with the machined stop (Figure 4, Item 3).

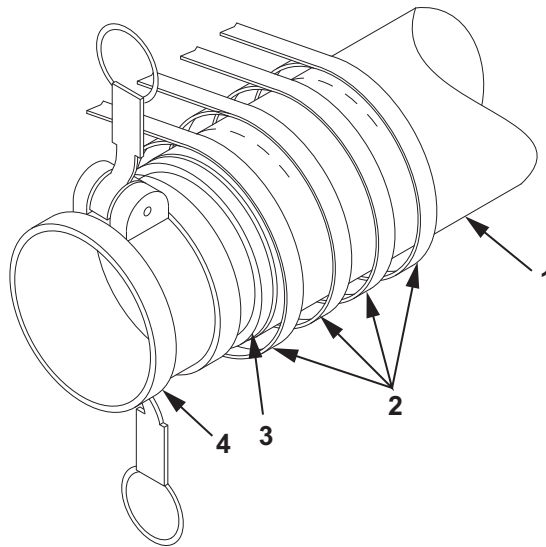


Figure 4. 4 In. X 10 Ft. Discharge Hose Repair.

ASSEMBLY - CONTINUED

12. Using a multimeter, perform continuity test between male and female coupling assemblies (Figure 5, Item 3, 4) at each end of the hose assembly to ensure ground wires are firmly seated. Continuity must exist.

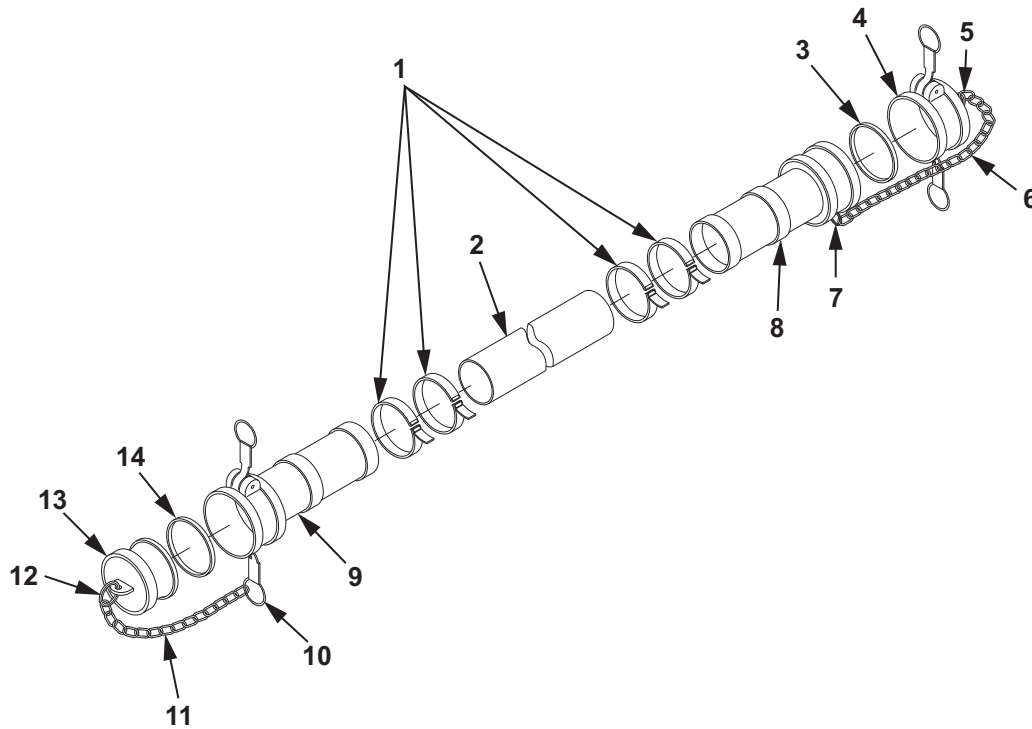


Figure 5. 4 In. X 10 Ft. Discharge Hose Repair.

NOTE

All clamps should be installed so that the clamp buckle is oriented a minimum of 30° away from the previously installed clamp buckle.

13. Position the first clamp (Figure 6, Item 1) on the hose assembly (Figure 6, Item 2) until it is aligned with the first mark (Figure 6, Item 3) previously made on the hose assembly (Figure 6, Item 2).
14. Using clamping tool (Figure 6, Item 4) from hose repair kit, tighten the clamp (Figure 6, Item 1) until almost flush with the hose assembly (Figure 6, Item 2) surface.

ASSEMBLY - CONTINUED

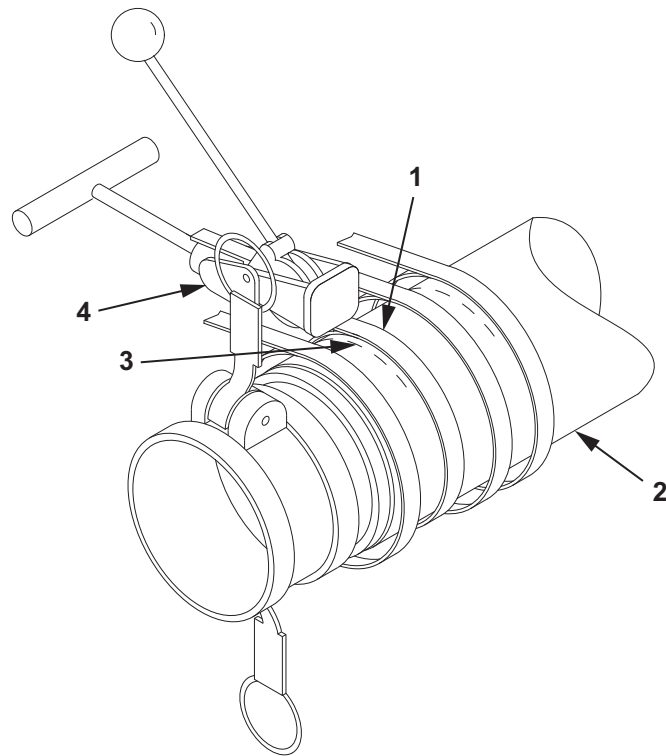


Figure 6. 4 In. X 10 Ft. Discharge Hose Repair.

NOTE

Prior to the clamp reaching the surface of the hose assembly, the bridge buckle must be installed.

15. Install the bridge buckle (Figure 7, Item 1) under clamp (Figure 7, Item 2).
16. Tighten clamp (Figure 7, Item 2) until the clamp (Figure 7, Item 2) cannot be tightened by hand any further.

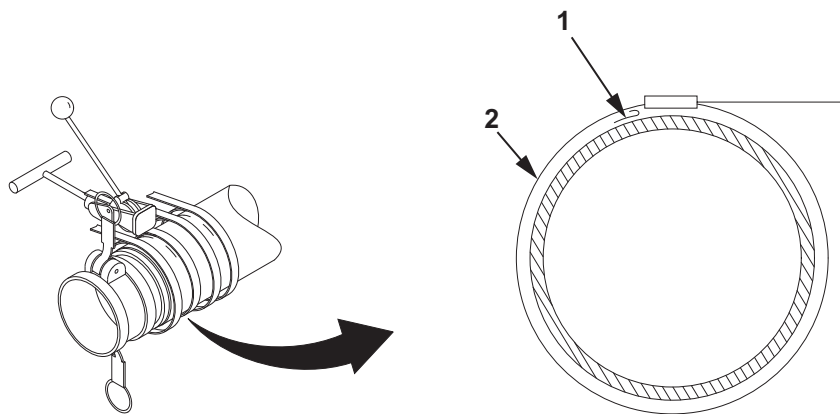


Figure 7. 4 In. X 10 Ft. Discharge Hose Repair.

ASSEMBLY - CONTINUED

17. While holding the clamping tool handle (Figure 8, Item 1) in the down position, strike the center punch anvil (Figure 8, Item 2) three to four times with a hammer.
18. While still holding the clamping tool handle (Figure 8, Item 1) in the down position, raise the entire clamping tool (Figure 8, Item 4) up to shear the tail of the band off of the clamp (Figure 8, Item 3).
19. Using hammer, tap the edge of the distorted clamp (Figure 8, Item 3) down to a level configuration.

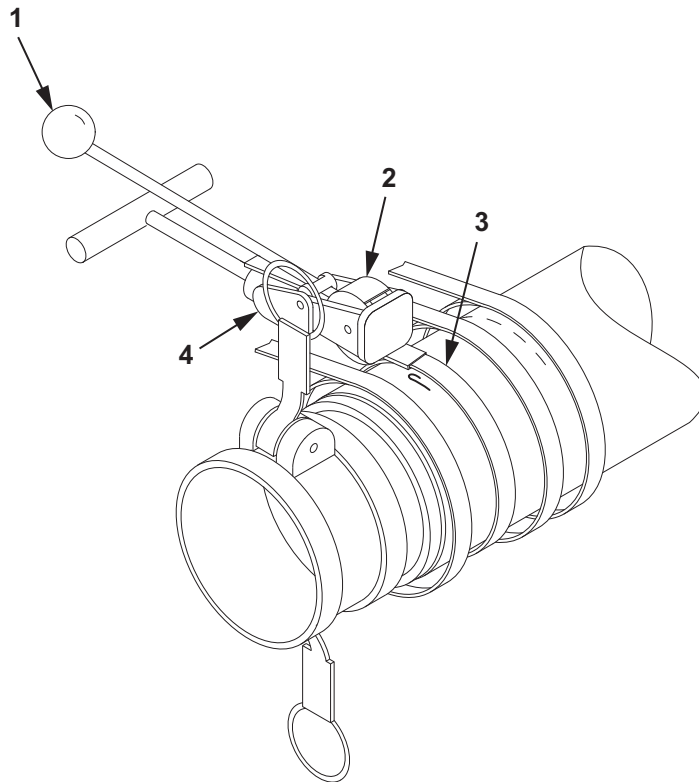


Figure 8. 4 In. X 10 Ft. Discharge Hose Repair.

20. Perform steps 11 through 19 to install the remaining three clamps and coupling at opposite end of hose.
21. Install new gaskets (Figure 9, Item 14, 3) into quick disconnect dust cap (Figure 9, Item 4) and female coupling half (Figure 9, Item 9).
22. Install quick disconnect dust cap (Figure 9, Item 4) onto male coupling half (Figure 9, Item 8).
23. Install quick disconnect dust plug (Figure 9, Item 13) into female coupling half (Figure 9, Item 9).
24. Install split ring (Figure 9, Item 12) on quick disconnect dust plug (Figure 9, Item 13).
25. Install split ring (Figure 9, Item 12) on chain (Figure 9, Item 11).
26. Install split ring (Figure 9, Item 10) on chain (Figure 9, Item 11).
27. Install split ring (Figure 9, Item 10) on female coupling half (Figure 9, Item 9).
28. Install split ring (Figure 9, Item 7) on chain (Figure 9, Item 6).
29. Install split ring (Figure 9, Item 7) on male coupling half (Figure 9, Item 8).
30. Install split ring (Figure 9, Item 5) on chain (Figure 9, Item 6).
31. Install split ring (Figure 9, Item 5) on quick disconnect dust cap (Figure 9, Item 4).

ASSEMBLY - CONTINUED

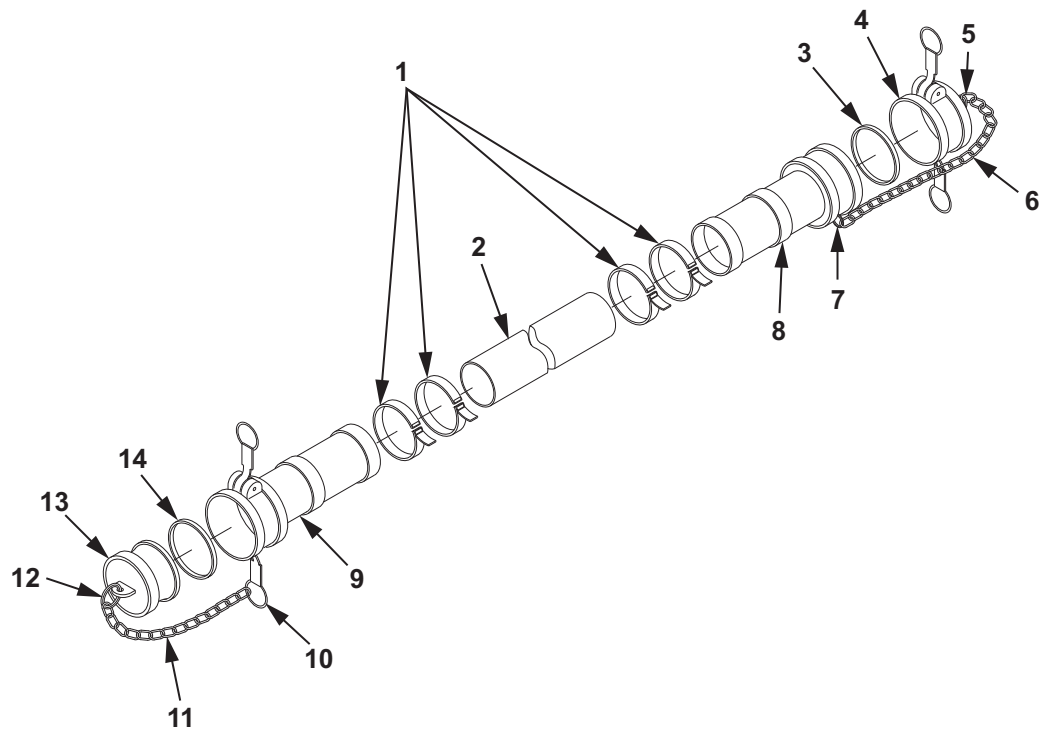


Figure 9. 4 In. X 10 Ft. Discharge Hose Repair.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
2 IN. X 50 FT. DISCHARGE HOSE ASSEMBLY, PART NUMBER 78009-100, REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Materials/Parts

Pan, drain (Item 8, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP assembly shut down (WP 0005).

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drain pan under quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) to be disconnected.
2. Position shutoff valves (Figure 1, Item 3) on quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) to the closed position.
3. Position shutoff valves (Figure 1, Item 4) on 2 in. dry-break tee assembly (Figure 1, Item 5) (or component hose is being removed from) to the closed position.
4. Rotate the quick disconnect coupling half (Figure 1, Item 1) on hose assembly (Figure 1, Item 2) counterclockwise.
5. Detach quick disconnect coupling half (Figure 1, Item 1) and remove hose assembly (Figure 1, Item 2).
6. Install dust caps (Figure 1, Item 6) on quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) and dry-break tee assembly (Figure 1, Item 5) (or component hose is being removed from).
7. Remove drain pan and dispose of contents per local procedures.

INSTALLATION

1. Remove dust caps (Figure 1, Item 6) from quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) and dry-break tee assembly (Figure 1, Item 5).
2. Position the quick disconnect coupling half (Figure 1, Item 1) from hose assembly (Figure 1, Item 2) on the 2 in. dry-break tee assembly (Figure 1, Item 5) and rotate clockwise to attach.
3. Position shutoff valves (Figure 1, Item 4) on 2 in. dry-break tee assembly (Figure 1, Item 5) to the open position.
4. Position shutoff valves (Figure 1, Item 3) on quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) to the open position.

INSTALLATION - CONTINUED

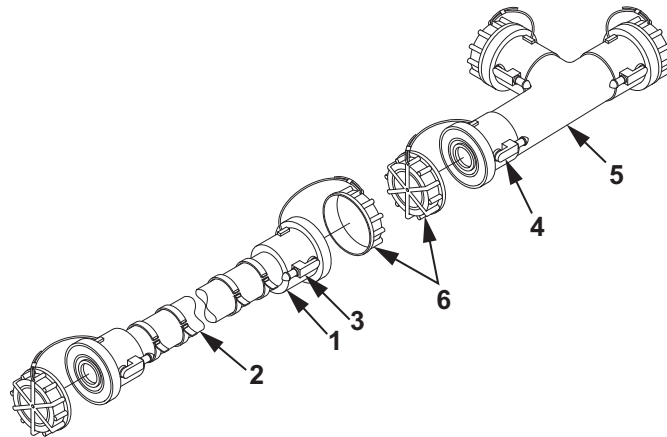


Figure 1. 2 In. X 50 Ft. Discharge Hose Replacement.

WARNING



CHEMICAL



EYE PROTECTION



VAPOR



POISON

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

5. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
1.5 IN. NOZZLE ASSEMBLY, PART NUMBER 64199
AND NOZZLE STAND ASSEMBLY, PART NUMBER 13225E9140, MAINTENANCE
NOZZLE DISASSEMBLY, NOZZLE STAND LEG REMOVAL, CLEANING, INSPECTION,
NOZZLE STAND LEG INSTALLATION, NOZZLE ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, strap (Item 3, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J
Petroleum Supply Specialist 92F

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)

WARNING

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

NOZZLE DISASSEMBLY

1. Position arm assembly (Figure 1, Item 3) to the closed position.
2. Using an assistant to hold the nozzle, use a strap wrench to remove valved dry-break coupling assembly (Figure 1, Item 2) from nozzle (Figure 1, Item 1).

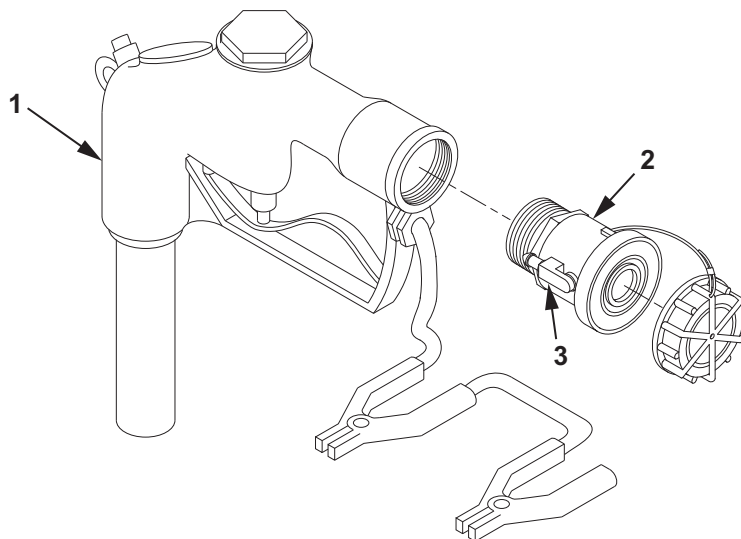


Figure 1. 1.5 In. Nozzle Disassembly.

END OF TASK

NOZZLE STAND LEG REMOVAL

1. Remove straight pin (Figure 2, Item 2) and leg (Figure 2, Item 3) from nozzle stand (Figure 2, Item 1).
2. Repeat step 1 if additional legs need to be replaced.

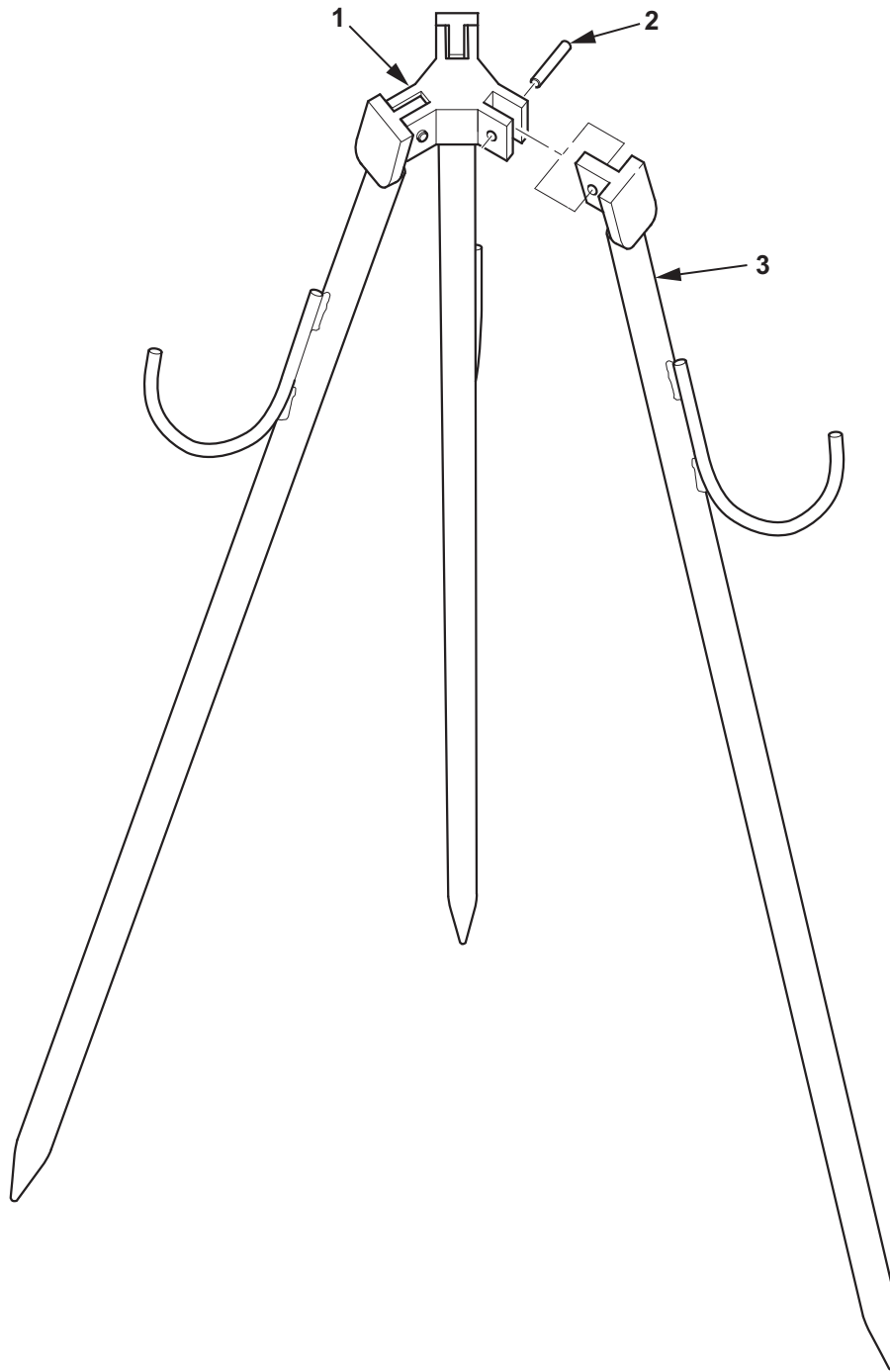


Figure 2. Nozzle Stand Leg Removal.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks and corrosion. If cracks or corrosion is found, replace with a serviceable like item.
2. Inspect valved dry-break coupling assembly for leakage or damage. If leakage or damage is found, contact Direct Support Maintenance.
3. Inspect ground wire assembly for frayed ground wire and for bent or inoperative grounding clamps. If ground wire is frayed or grounding clamps are bent or inoperative, replace ground wire.

END OF TASK

NOZZLE STAND LEG INSTALLATION

Install leg (Figure 3, Item 3) on nozzle stand (Figure 3, Item 1) with straight pin (Figure 3, Item 2).

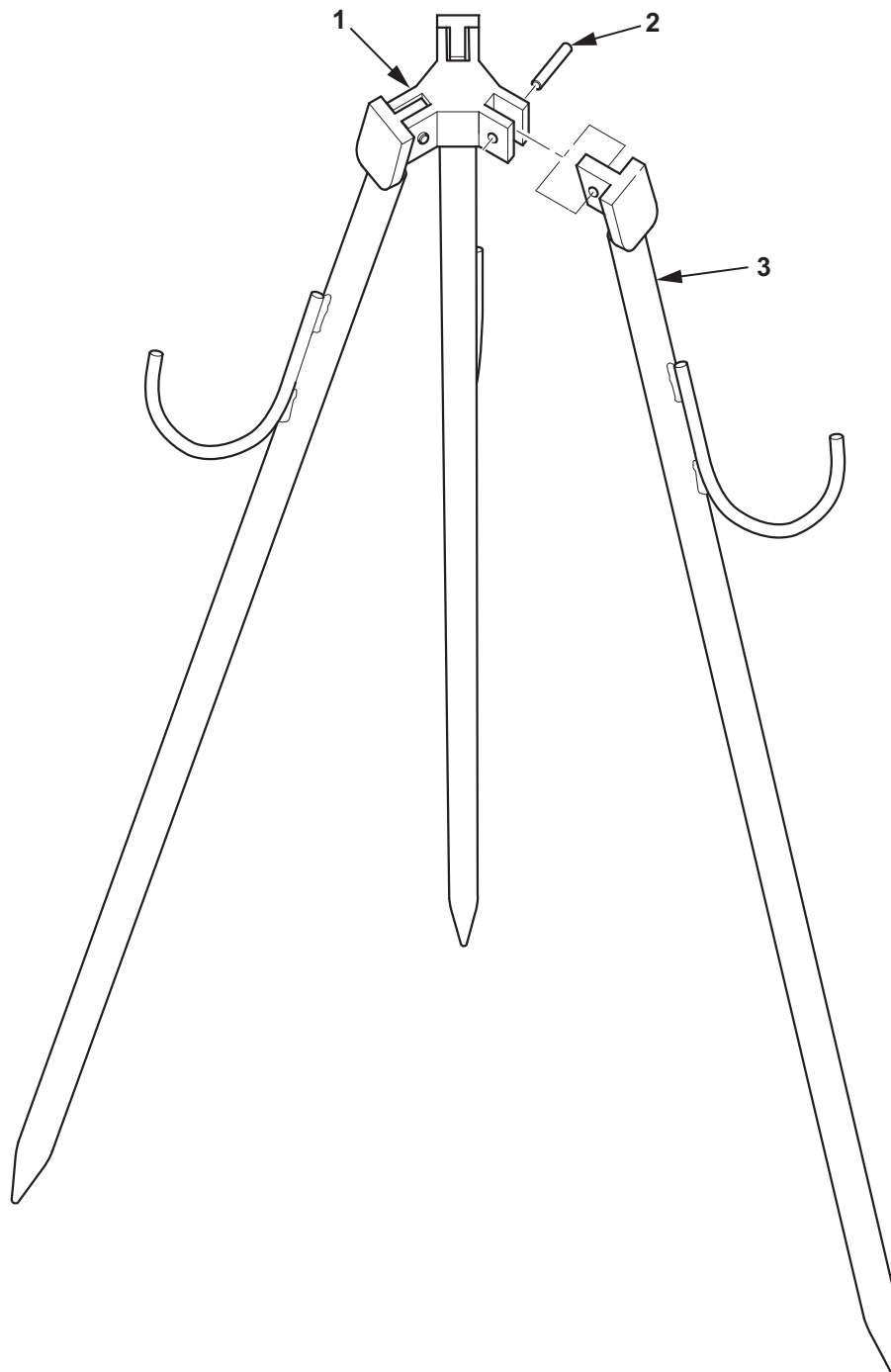


Figure 3. Nozzle Stand Leg Installation.

END OF TASK

NOZZLE ASSEMBLY

1. Apply teflon tape to threads of valved dry-break coupling assembly (Figure 4, Item 2).
2. Install valved dry-break coupling assembly (Figure 4, Item 2) into nozzle (Figure 4, Item 1).
3. Using an assistant to hold the nozzle (Figure 4, Item 1), use a strap wrench to tighten valved dry-break coupling assembly (Figure 4, Item 2).

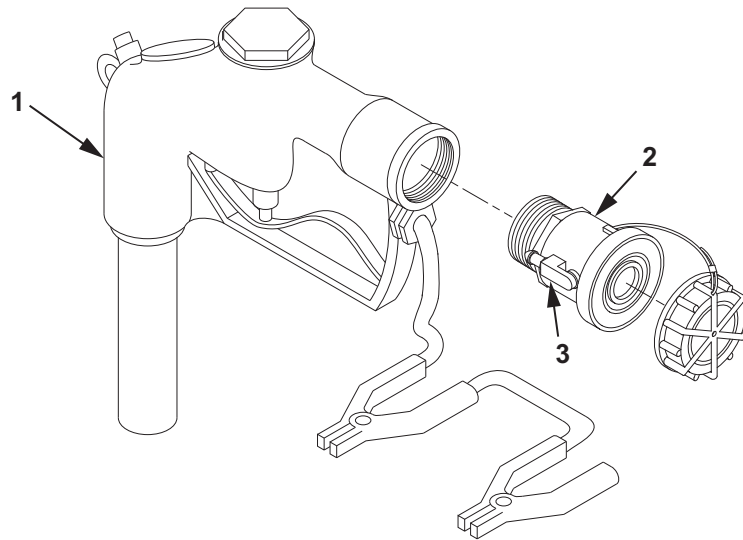


Figure 4. 1.5 In. Nozzle Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
2 IN. BALL VALVE ASSEMBLY, PART NUMBER 78048-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, strap (Item 3, WP 0211)
Wrench, adjustable (Item 3, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J
Petroleum Supply Specialist 92F

Equipment Condition

Ball valve assembly removed from FSSP
installation (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Sealing compound (Item 11, WP 0214)
Gasket (2) (Item 36, WP 0215)

DISASSEMBLY

1. Remove quick disconnect dust cap (Figure 1, Item 2) and gasket (Figure 1, Item 3) from male coupling half (Figure 1, Item 4).
2. Remove quick disconnect dust plug (Figure 1, Item 8) and gasket (Figure 1, Item 7) from female coupling half (Figure 1, Item 6).
3. Discard gaskets (Figure 1, Item 3, 7).
4. Using an assistant, one strap wrench and one adjustable wrench, remove male coupling half (Figure 1, Item 4) and female coupling half (Figure 1, Item 6) from 2 in. ball valve (Figure 1, Item 5).
5. Remove split ring (Figure 1, Item 1) from quick disconnect dust cap (Figure 1, Item 2).
6. Remove split ring (Figure 1, Item 12) from male coupling half (Figure 1, Item 4).
7. Remove split ring (Figure 1, Item 1) from chain (Figure 1, Item 13).
8. Remove split ring (Figure 1, Item 12) from chain (Figure 1, Item 17).
9. Remove split ring (Figure 1, Item 9) from quick disconnect dust plug (Figure 1, Item 8).
10. Remove split ring (Figure 1, Item 11) from female coupling half (Figure 1, Item 6).
11. Remove split ring (Figure 1, Item 9) from chain (Figure 1, Item 10).
12. Remove split ring (Figure 1, Item 11) from chain (Figure 1, Item 10).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install split ring (Figure 1, Item 11) onto chain (Figure 1, Item 10).
2. Install split ring (Figure 1, Item 9) onto chain (Figure 1, Item 10).
3. Install split ring (Figure 1, Item 11) onto female coupling half (Figure 1, Item 6).
4. Install split ring (Figure 1, Item 9) onto quick disconnect dust plug (Figure 1, Item 8).
5. Install split ring (Figure 1, Item 12) onto chain (Figure 1, Item 13).
6. Install split ring (Figure 1, Item 1) onto chain (Figure 1, Item 13).
7. Install split ring (Figure 1, Item 12) onto male coupling half (Figure 1, Item 4).
8. Install split ring (Figure 1, Item 1) onto quick disconnect dust cap (Figure 1, Item 2).

WARNING



CHEMICAL



EYE PROTECTION

When working with sealing compound, 567, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Avoid breathing vapors. Use with adequate ventilation.

9. Apply sealing compound to external threads of female coupling half (Figure 1, Item 6) and male coupling half (Figure 1, Item 4).
10. Install female coupling half (Figure 1, Item 6) and male coupling half (Figure 1, Item 4) into 2 in. ball valve (Figure 1, Item 5).
11. Using an assistant, one strap wrench and one adjustable wrench, tighten female coupling half (Figure 1, Item 6) and male coupling half (Figure 1, Item 4).
12. Install new gasket (Figure 1, Item 7) and quick disconnect dust plug (Figure 1, Item 8) onto female coupling half (Figure 1, Item 6).
13. Install new gasket (Figure 1, Item 3) and quick disconnect dust cap (Figure 1, Item 2) onto male coupling half (Figure 1, Item 4).

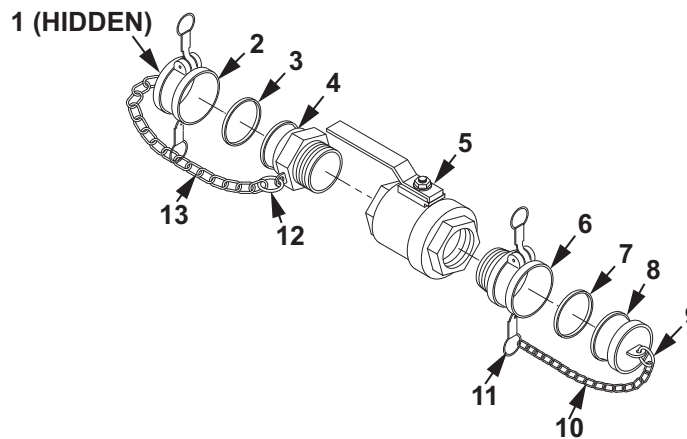


Figure 1. 2 In. Ball Valve Maintenance.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
D1 NOZZLE STRAINER ASSEMBLY, PART NUMBER 64201CF4GHX, MAINTENANCE
REMOVAL, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Pliers, snap ring (Item 3, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
O-ring (Item 57, WP 0215)
O-ring (Item 58, WP 0215)

REMOVAL

1. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 8). If running torque is less than 3.5 in. lb (0.45 N-m), discard screw (Figure 1, Item 8).

NOTE

Screw (Figure 1, Item 8) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 8), then screw (Figure 1, Item 8) should be replaced.

Keep inlet hole in the up position when removing screw (Figure 1, Item 8) to prevent loss of ball bearings (Figure 1, Item 6) inside coupling (Figure 1, Item 5).

2. Remove screw (Figure 1, Item 8) from coupling (Figure 1, Item 5).
3. Remove O-ring (Figure 1, Item 7) from screw (Figure 1, Item 8).
4. Discard O-ring (Figure 1, Item 7).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 6) are accounted for during disassembly.

5. Hold coupling (Figure 1, Item 5) with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 6) to fall onto the cleaning cloth.
6. Remove coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 1).
7. Remove O-ring (Figure 1, Item 4) from coupling (Figure 1, Item 5).
8. Discard O-ring (Figure 1, Item 4).
9. Using snap ring pliers, remove snap ring (Figure 1, Item 3) from male adapter (Figure 1, Item 1).
10. Remove strainer (Figure 1, Item 2) from male adapter (Figure 1, Item 1).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean strainer (Figure 1, Item 2) with a cleaning cloth and solvent cleaning compound.
2. Allow strainer to thoroughly dry.

END OF TASK

INSPECTION

1. Inspect all metallic parts for cracks, corrosion or damage. If cracks, corrosion or damage is found, replace with a serviceable like item.
2. Inspect coupling assembly and nozzle assembly for signs of leakage. If signs of leakage exist, replace D1 nozzle assembly.

END OF TASK**INSTALLATION**

1. Install strainer (Figure 1, Item 2) in male adapter (Figure 1, Item 1).
2. Using snap ring pliers, install snap ring (Figure 1, Item 3) in male adapter (Figure 1, Item 1).
3. Lightly lubricate new O-ring (Figure 1, Item 4) with petrolatum and install O-ring (Figure 1, Item 4) in coupling (Figure 1, Item 5).
4. Install coupling (Figure 1, Item 5) on male adapter (Figure 1, Item 1).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 6) are accounted for before assembly.

5. Hold coupling (Figure 1, Item 5) over cleaning cloth with screw hole up and insert ball bearings (Figure 1, Item 6) into hole.
6. Lightly lubricate new O-ring (Figure 1, Item 7) with petrolatum and install O-ring (Figure 1, Item 7) on screw (Figure 1, Item 8).
7. Install screw (Figure 1, Item 8) into coupling (Figure 1, Item 5).
8. Using torque wrench and screwdriver bit, torque screw (Figure 1, Item 8) to 25 in. lb (2.8 N·m).

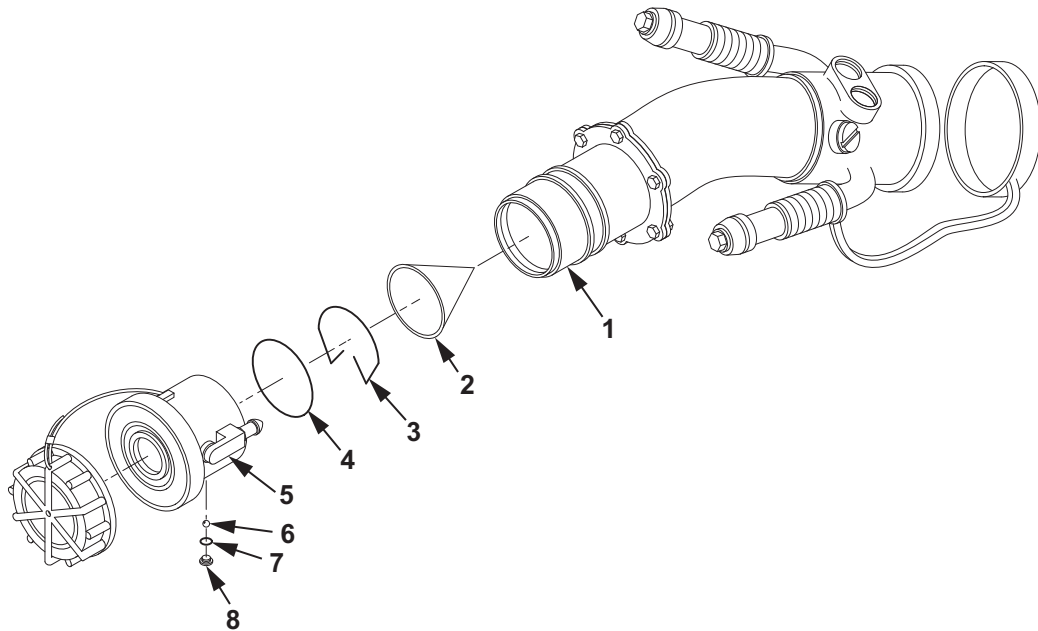


Figure 1. D1 Nozzle Strainer Maintenance.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
D1 NOZZLE STRAINER ASSEMBLY, PART NUMBER 64201CGH2MQ, MAINTENANCE
REMOVAL, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Tool Kit, General Mechanic's (Item 1, WP 0211)
 Apron, utility (Item 2, WP 0211)
 Gloves, rubber, industrial (Item 2, WP 0211)
 Goggles, industrial (Item 2, WP 0211)
 Pliers, snap ring (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
 Cloth, cleaning (Item 5, WP 0214)

REMOVAL

1. Remove dust plug (Figure 1, Item 6) from quick disconnect coupling (Figure 1, Item 5).
2. Remove quick disconnect coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 2) by performing the following steps:
 - a. Remove lock wire (Figure 1, Item 7) from screws (Figure 1, Item 8).
 - b. Loosen screws (Figure 1, Item 8) on retaining ring (Figure 1, Item 10).
 - c. Using snap ring pliers, move lock ring (Figure 1, Item 9) down to lowest notch.

NOTE

Keep quick disconnect coupling over cleaning cloth when moving retaining ring to prevent loss of ball bearings (Figure 1, Item 1).

- d. Move retaining ring (Figure 1, Item 10) down far enough to release quick disconnect coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 2).

NOTE

Ensure all 16 ball bearings are accounted for during disassembly.

- e. Remove quick disconnect coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 2).
3. Remove snap ring (Figure 1, Item 4) from male adapter (Figure 1, Item 2).
4. Remove strainer (Figure 1, Item 3) from male adapter (Figure 1, Item 2).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean strainer with a cleaning cloth and solvent cleaning compound.
2. Allow strainer to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or damage. If cracks, corrosion or damage is found, replace with a serviceable like item.

2. Inspect quick disconnect coupling for signs of leakage. If signs of leakage exists, replace gasket in quick disconnect coupling as necessary (WP 0067).

END OF TASK

INSTALLATION

1. Install strainer (Figure 1, Item 3) in male adapter (Figure 1, Item 2).
2. Install snap ring (Figure 1, Item 4) in male adapter (Figure 1, Item 2).

NOTE

Ensure all 16 ball bearings (Figure 1, Item 1) are accounted for during assembly.

3. Install quick disconnect coupling (Figure 1, Item 5) on male adapter (Figure 1, Item 2) by performing the following steps:
 - a. Using snap-ring pliers, move retaining ring (Figure 1, Item 10) up far enough to secure quick disconnect coupling (Figure 1, Item 5) on male adapter (Figure 1, Item 2).
 - b. Move lock ring (Figure 1, Item 9) up to highest notch.
 - c. Tighten screws (Figure 1, Item 8) on retaining ring (Figure 1, Item 10).
 - d. Install lock wire (Figure 1, Item 7) on screws (Figure 1, Item 8).
4. Install dust plug (Figure 1, Item 6) on quick disconnect coupling (Figure 1, Item 5).

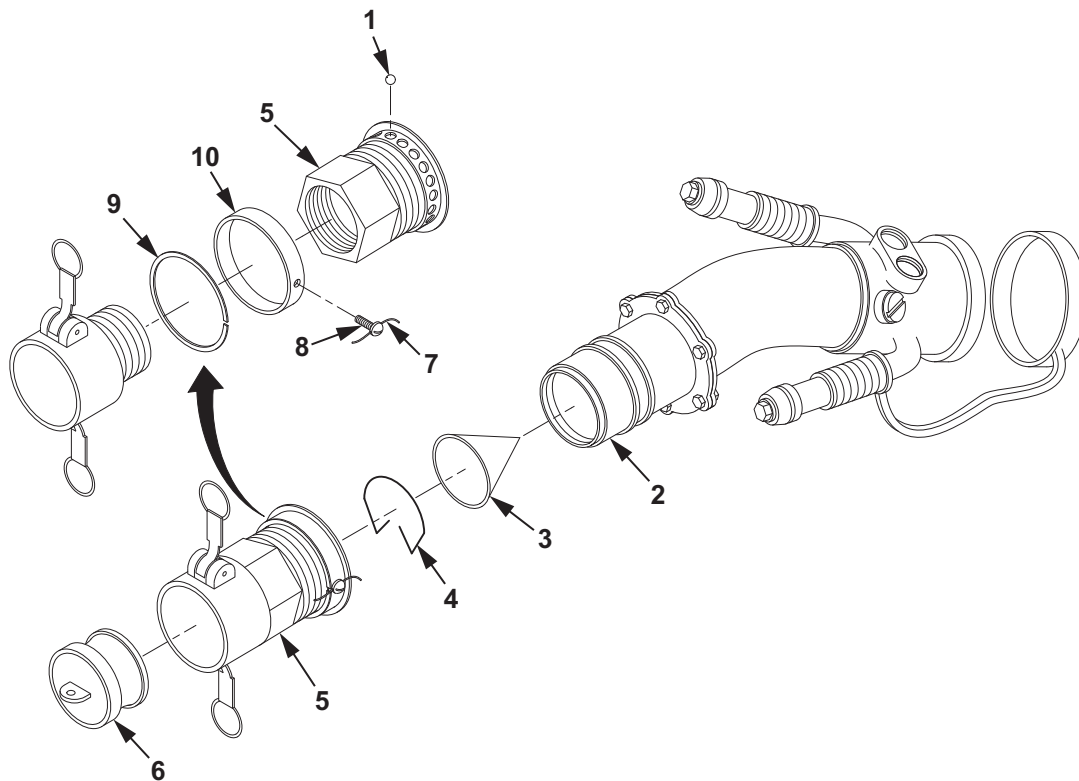


Figure 1. D1 Nozzle Strainer Maintenance.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
D1 NOZZLE STRAINER ASSEMBLY, PART NUMBER 64201CGH2KQ, MAINTENANCE
REMOVAL, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Pliers, snap ring (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Wire, non-electrical (Item 16, WP 0214)

REMOVAL

1. Remove quick disconnect dust cap (Figure 1, Item 1) from quick disconnect coupling (Figure 1, Item 2).
2. Remove quick disconnect coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 2) by performing the following steps:
 - a. Remove lock wire (Figure 1, Item 7) from screws (Figure 1, Item 8). Discard lockwire (Figure 1, Item 7).
 - b. Loosen screws (Figure 1, Item 8) on retaining ring (Figure 1, Item 10).
 - c. Using snap ring pliers, move lock ring (Figure 1, Item 9) down to lowest notch.

NOTE

Keep quick disconnect coupling (Figure 1, Item 5) over cleaning cloth when moving retaining ring (Figure 1, Item 10) to prevent loss of ball bearings (Figure 1, Item 1).

Ensure all 16 ball bearings (Figure 1, Item 8) are accounted for during disassembly.

- d. Move retaining ring (Figure 1, Item 10) down far enough to release quick disconnect coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 2).
 - e. Remove quick disconnect coupling (Figure 1, Item 5) from male adapter (Figure 1, Item 2).
3. Remove snap ring (Figure 1, Item 4) from male adapter (Figure 1, Item 2).
4. Remove strainer (Figure 1, Item 3) from male adapter (Figure 1, Item 2).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean strainer with a cleaning cloth and solvent cleaning compound.
2. Allow strainer to thoroughly dry.

END OF TASK

INSPECTION

1. Inspect all metallic parts for cracks, corrosion or damage. If cracks, corrosion or damage is found, replace with a serviceable like item.
2. Inspect quick disconnect coupling for signs of leakage. If signs of leakage are found, replace with a serviceable like item.
3. Inspect nozzle assembly for signs of leakage. If signs of leakage are found, replace with a serviceable like item.

END OF TASK**INSTALLATION**

1. Install strainer (Figure 1, Item 3) in male adapter (Figure 1, Item 2).
2. Install snap ring (Figure 1, Item 4) in male adapter (Figure 1, Item 2).
3. Install quick disconnect coupling (Figure 1, Item 5) on male adapter (Figure 1, Item 2) by performing the following steps:

NOTE

Ensure all 16 ball bearings (Figure 1, Item 1) are accounted for during assembly.

- a. Place 16 ball bearings (Figure 1, Item 1) on quick disconnect coupling (Figure 1, Item 5).
 - b. Move retaining ring (Figure 1, Item 10) up far enough to secure quick disconnect coupling (Figure 1, Item 5) on male adapter (Figure 1, Item 2).
 - c. Using snap-ring pliers, move lock ring (Figure 1, Item 9) up to highest notch.
 - d. Tighten screws (Figure 1, Item 8) on retaining ring (Figure 1, Item 10).
 - e. Install new lock wire (Figure 1, Item 7) on screws (Figure 1, Item 8).
4. Install quick disconnect dust cap (Figure 1, Item 6) on quick disconnect coupling (Figure 1, Item 5).

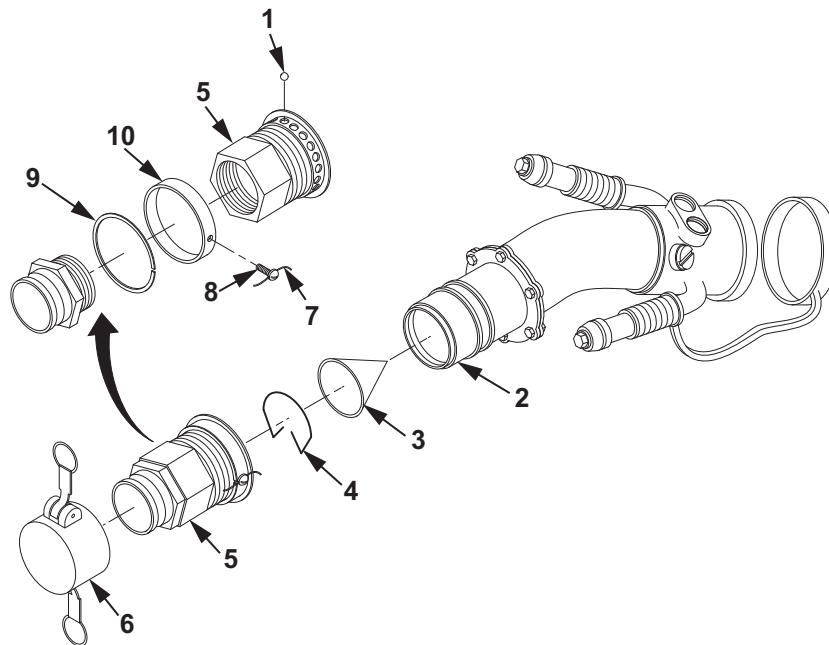


Figure 1. D1 Nozzle Strainer Maintenance.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, HI VOLUME SIGHT FLOW INDICATOR (FSII),
REPAIR
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
O-ring (2) (Item 9, WP 0215)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (2) (Item 8, WP 0214)

DISASSEMBLY

WARNING

CHEMICAL



EYE PROTECTION



VAPOR



POISON

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pans under HI volume sight flow indicator (Figure 1, Item 1).
2. Remove cap (Figure 1, Item 1) from body (Figure 1, Item 4) of HI volume sight flow indicator (Figure 1, Item 2).
3. Remove O-ring (Figure 1, Item 7) from cap (Figure 1, Item 1). Discard O-ring (Figure 1, Item 7).
4. Remove glass (Figure 1, Item 6) from body (Figure 1, Item 4).
5. Remove O-ring (Figure 1, Item 5) from body (Figure 1, Item 4). Discard O-ring (Figure 1, Item 5).
6. Remove filter element (Figure 1, Item 3) from body (Figure 1, Item 4).
7. Remove drain pans under HI volume sight flow indicator (Figure 1, Item 2) and dispose of contents per local procedures.

END OF TASK

CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using a dry cleaning cloth, clean the glass free of all dirt and debris.
2. Clean all metallic parts and filter element with a cleaning cloth and solvent cleaning compound.

CLEANING - CONTINUED

3. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect filter element for torn or bent mesh. If mesh is torn or bent, replace with serviceable like item.
2. Inspect glass for broken or cracked condition. If broken or cracked, replace with serviceable like item.
3. Inspect cap for stripped or damaged threads, cracks or corrosion. If stripped or damaged threads, cracks or corrosion are found, replace with serviceable like item.

END OF TASK**ASSEMBLY**

1. Install filter element (Figure 1, Item 3) in body (Figure 1, Item 4).
2. Apply thin coat of petrolatum to new O-rings (Figure 1, Item 7, 5).
3. Install new O-ring (Figure 1, Item 5) on body (Figure 1, Item 4) of HI volume sight flow indicator (Figure 1, Item 2).
4. Install glass (Figure 1, Item 6) on body (Figure 1, Item 4).
5. Install new O-ring (Figure 1, Item 7) on cap (Figure 1, Item 1).
6. Install cap (Figure 1, Item 1) on body (Figure 1, Item 4) of HI volume sight flow indicator (Figure 1, Item 2). Hand tighten cap (Figure 1, Item 1).

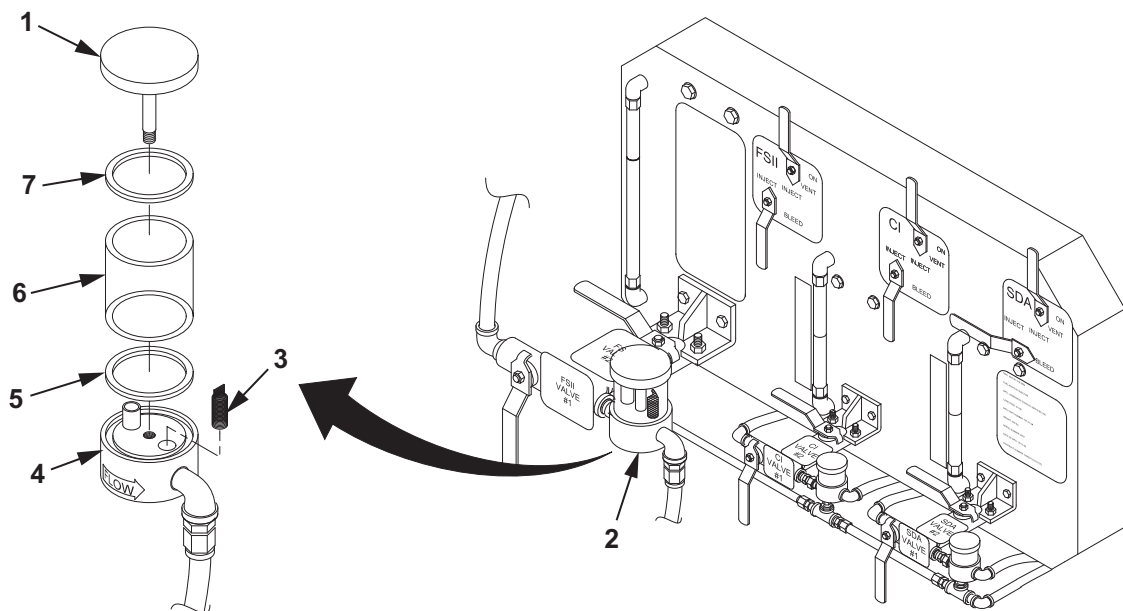


Figure 1. High Volume Sight Flow Indicator Maintenance.

ASSEMBLY - CONTINUED

WARNING

CHEMICAL



EYE PROTECTION



VAPOR



POISON

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

7. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, HI VOLUME SIGHT FLOW INDICATOR (FSII),
MAINTENANCE
REMOVAL, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Wrench 1 1/4" (Item 2, WP 0211)
Wrench 1 1/8" (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSII HI volume sight flow indicator disassembled (WP 0141).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
O-ring (2) (Item 9, WP 0215)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (2) (Item 8, WP 0214)

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to disconnect fittings from tubes and hoses. Failure to comply could result in damage to equipment.

REMOVAL - CONTINUED

1. Place drain pans under HI volume sight flow indicator (Figure 1, Item 8).
2. Disconnect hose assembly (Figure 1, Item 3) from reducer (Figure 1, Item 2).
3. Remove reducer (Figure 1, Item 2) from elbow assembly (Figure 1, Item 1).
4. Disconnect tube (Figure 1, Item 4) from 90° elbow (Figure 1, Item 5) at bottom of HI volume sight flow indicator (Figure 1, Item 6).
5. Remove 90° elbow (Figure 1, Item 5) from bottom of HI volume sight flow indicator (Figure 1, Item 6).
6. Remove HI volume sight flow indicator (Figure 1, Item 6) from valve (Figure 1, Item 6).
7. Remove drain pan under HI volume sight flow indicator (Figure 1, Item 6) and dispose of contents per local procedures.

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect body for cracks, corrosion or wear. If cracks, corrosion or wear is found, replace with a serviceable like item.
2. Inspect body for stripped or damaged threads or broken fittings. If stripped or damaged threads or broken fittings are found, replace with a serviceable like item.

END OF TASK**INSTALLATION****CAUTION**

Use two wrenches to install fittings to prevent damage.

1. Apply teflon tape to threads of fitting on side of HI volume sight flow indicator (Figure 1, Item 6).
2. Apply teflon tape to threads of 90° elbow (Figure 1, Item 5) at bottom of HI volume sight flow indicator (Figure 1, Item 6).

INSTALLATION - CONTINUED

3. Install HI volume sight flow indicator (Figure 1, Item 6) on valve (Figure 1, Item 7).
4. Connect 90° elbow (Figure 1, Item 5) to bottom of HI volume sight flow indicator (Figure 1, Item 6).
5. Connect tube (Figure 1, Item 4) to 90° elbow (Figure 1, Item 5) at bottom of HI volume sight flow indicator (Figure 1, Item 6). Tighten tube (Figure 1, Item 4).
6. Apply teflon tape to threads of reducer (Figure 1, Item 2) at bottom of HI volume sight flow indicator (Figure 1, Item 6).
7. Install reducer (Figure 1, Item 2) on elbow assembly (Figure 1, Item 1).
8. Connect hose assembly (Figure 1, Item 3) to reducer (Figure 1, Item 2) on elbow assembly (Figure 1, Item 1).

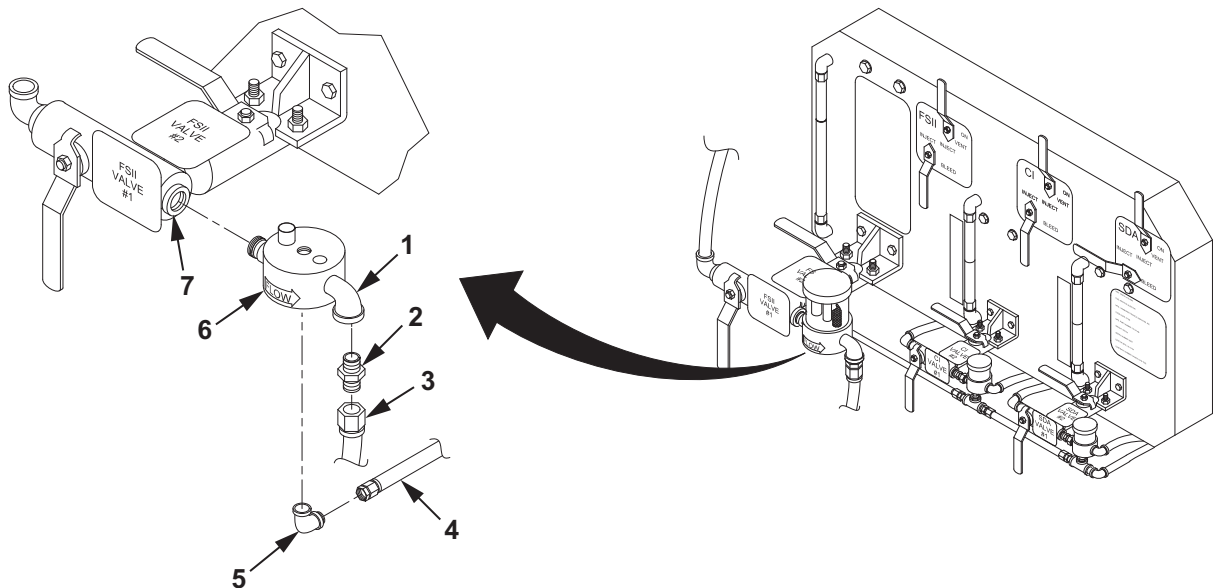


Figure 1. FSII HI Volume Sight Flow Indicator Maintenance.

WARNING**CHEMICAL****EYE PROTECTION****POISON**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

9. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.
10. Assemble FSII HI volume sight flow indicator (WP 0141).

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, SIGHT FLOW INDICATOR (CI), REPAIR
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
O-ring (2) (Item 9, WP 0215)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Pan, drain (Item 8, WP 0214)

DISASSEMBLY

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pan under sight flow indicator (Figure 1, Item 3).
2. Remove cap (Figure 1, Item 1) from body (Figure 1, Item 4) of sight flow indicator (Figure 1, Item 3).
3. Remove O-ring (Figure 1, Item 7) from cap (Figure 1, Item 1). Discard O-ring (Figure 1, Item 7).
4. Remove glass (Figure 1, Item 6).
5. Remove O-ring (Figure 1, Item 5) from body (Figure 1, Item 4). Discard O-ring (Figure 1, Item 5).
6. Remove filter element (Figure 1, Item 2) from body (Figure 1, Item 4).
7. Remove drain pan from under sight flow indicator (Figure 1, Item 3) and dispose of contents per local procedures.

END OF TASK

CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using a dry cleaning cloth, clean the glass free of all dirt and debris.
2. Clean all metallic parts and filter element with a cleaning cloth and solvent cleaning compound.
3. Allow parts to dry thoroughly.

END OF TASK

INSPECTION

1. Inspect filter element for torn or bent mesh. If mesh is torn or bent, replace with serviceable like item.
2. Inspect glass for broken or cracked condition. If broken or cracked, replace with serviceable like item.
3. Inspect cap for stripped or damaged threads, cracks or corrosion. If stripped or damaged threads, cracks or is found, replace with serviceable like item.

END OF TASK**ASSEMBLY**

1. Install filter element (Figure 1, Item 2) on body (Figure 1, Item 4).
2. Apply thin coat of petrolatum to new O-rings (Figure 1, Item 7, 5).
3. Install new O-ring (Figure 1, Item 5) on body (Figure 1, Item 4) of sight flow indicator (Figure 1, Item 3).
4. Install glass (Figure 1, Item 6) on body (Figure 1, Item 4).
5. Install new O-ring (Figure 1, Item 7) on cap (Figure 1, Item 1).
6. Install cap (Figure 1, Item 1) on body (Figure 1, Item 4) of sight flow indicator (Figure 1, Item 3). Hand tighten.

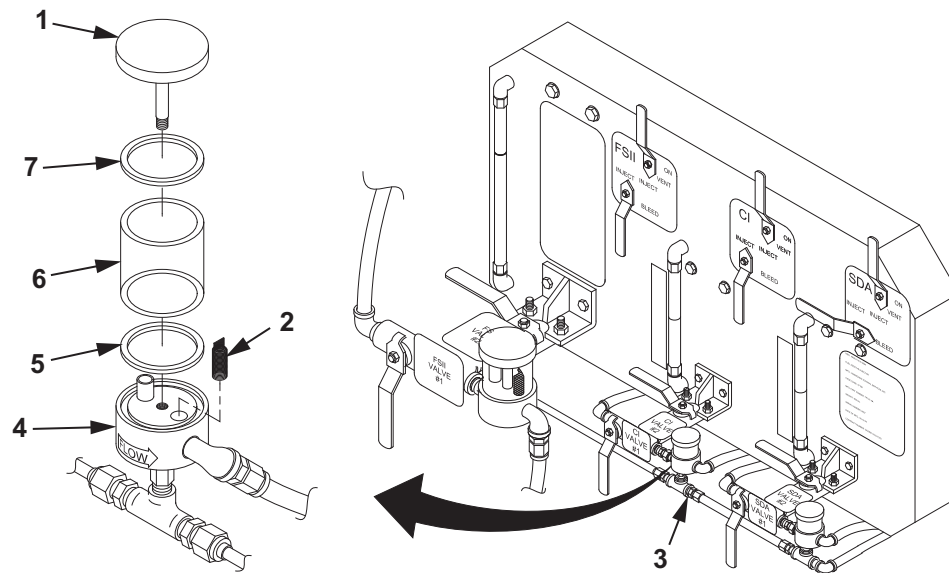


Figure 1. CI Sight Flow Indicator Maintenance.

ASSEMBLY - CONTINUED

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

7. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, SIGHT FLOW INDICATOR (CI), REPAIR
REMOVAL, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

CI sight flow indicator disassembled (WP 0143).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Tape, teflon (Item 14, WP 0214)
Pan, drain (2) (Item 8, WP 0214)

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to disconnect fittings from tubes and hoses. Failure to comply could result in damage to equipment.

REMOVAL - CONTINUED

1. Place drain pans under CI sight flow indicator (Figure 1, Item 2).
2. Disconnect hose assembly (Figure 1, Item 4) from reducer (Figure 1, Item 3).
3. Remove reducer (Figure 1, Item 3) from CI sight flow indicator (Figure 1, Item 2).
4. Disconnect tube (Figure 1, Item 9) from tee assembly (Figure 1, Item 8) and from bottom of FSII sight flow indicator (Figure 1, Item 5).
5. Disconnect tube (Figure 1, Item 7) from tee assembly (Figure 1, Item 8) and from bottom of SDA sight flow indicator (Figure 1, Item 6).
6. Turn SDA sight flow indicator (Figure 1, Item 6) slightly counterclockwise until tube (Figure 1, Item 7) is easily removed.
7. Remove tee assembly (Figure 1, Item 8) from CI sight flow indicator (Figure 1, Item 2).
8. Remove CI sight flow indicator (Figure 1, Item 2) from valve (Figure 1, Item 1).
9. Remove drain pans under CI volume sight flow indicator (Figure 1, Item 2) and dispose of contents per local procedures.

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
2. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect body for cracks, corrosion or wear. If cracks, corrosion or wear is found, replace with a serviceable like item.
2. Inspect body for stripped or damaged threads or broken fittings. If stripped or damaged threads or broken fittings are found, replace with a serviceable like item.

END OF TASK

INSTALLATION

CAUTION

Use two wrenches to connect fittings to tubes and hoses. Failure to comply could result in damage to equipment.

1. Apply teflon tape to threads of tee assembly (Figure 1, Item 8).
2. Install tee assembly (Figure 1, Item 8) on CI sight flow indicator (Figure 1, Item 2).
3. Connect tube (Figure 1, Item 7) to SDA sight flow indicator (Figure 1, Item 6) and turn clockwise slightly until tube (Figure 1, Item 7) can be connected to tee assembly figure 2, Item 8).
4. Connect tube (Figure 1, Item 7) to tee assembly (Figure 1, Item 8) at bottom of CI sight flow indicator (Figure 1, Item 2). Tighten tube (Figure 1, Item 7).
5. Connect tube (Figure 1, Item 9) to tee assembly (Figure 1, Item 8) and bottom of FSII sight flow indicator (Figure 1, Item 5). Tighten tube (Figure 1, Item 9).
6. Apply teflon tape to threads on reducer (Figure 1, Item 3).
7. Install reducer (Figure 1, Item 3) on CI sight flow indicator (Figure 1, Item 2).
8. Connect hose assembly (Figure 1, Item 4) to reducer (Figure 1, Item 3) on CI sight flow indicator (Figure 1, Item 2). Tighten hose assembly (Figure 1, Item 4).

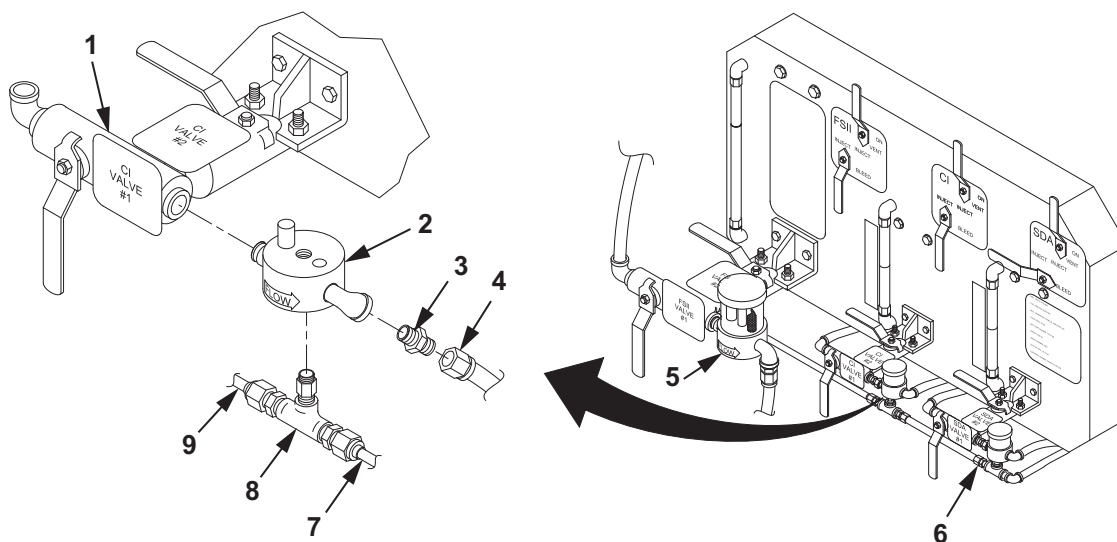


Figure 1. CI Sight Flow Indicator Maintenance.

INSTALLATION - CONTINUED

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

9. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.
10. Assemble CI sight flow indicator (WP 0143).

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, SIGHT FLOW INDICATOR (SDA), REPAIR
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
O-ring (2) (Item 9, WP 0215)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (2) (Item 8, WP 0214)

DISASSEMBLY**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

DISASSEMBLY - CONTINUED

1. Place drain pans under sight flow indicator (Figure 1, Item 2).
2. Remove cap (Figure 1, Item 1) from body (Figure 1, Item 4) of sight flow indicator (Figure 1, Item 2).
3. Remove O-ring (Figure 1, Item 7) from cap (Figure 1, Item 1). Discard O-ring (Figure 1, Item 7).
4. Remove glass (Figure 1, Item 6).
5. Remove O-ring (Figure 1, Item 5) from body (Figure 1, Item 4). Discard O-ring (Figure 1, Item 5).
6. Remove filter element (Figure 1, Item 3) from body (Figure 1, Item 4).
7. Remove drain pans under sight flow indicator (Figure 1, Item 2) and dispose of contents per local procedures.

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using a dry cleaning cloth, clean the glass free of all dirt and debris.
2. Clean all metallic parts and filter element with a cleaning cloth and solvent cleaning compound.
3. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect filter element for torn or bent mesh. If mesh is torn or bent, replace with serviceable like item.
2. Inspect glass for broken or cracked condition. If broken or cracked, replace with serviceable like item.
3. Inspect cap for stripped or damaged threads, cracks or corrosion. If stripped or damaged threads, cracks or corrosion are found, replace with serviceable like item.

END OF TASK**ASSEMBLY**

1. Install filter element (Figure 1, Item 3) in body (Figure 1, Item 4).
2. Apply thin coat of petrolatum to new O-rings (Figure 1, Item 7, 5).
3. Install new O-ring (Figure 1, Item 5) on body (Figure 1, Item 4) of sight flow indicator (Figure 1, Item 2).

ASSEMBLY - CONTINUED

4. Install glass (Figure 1, Item 6).
5. Install new O-ring (Figure 1, Item 7) on cap (Figure 1, Item 1).
6. Install cap (Figure 1, Item 1) on body (Figure 1, Item 4) of sight flow indicator (Figure 1, Item 2). Hand tighten.

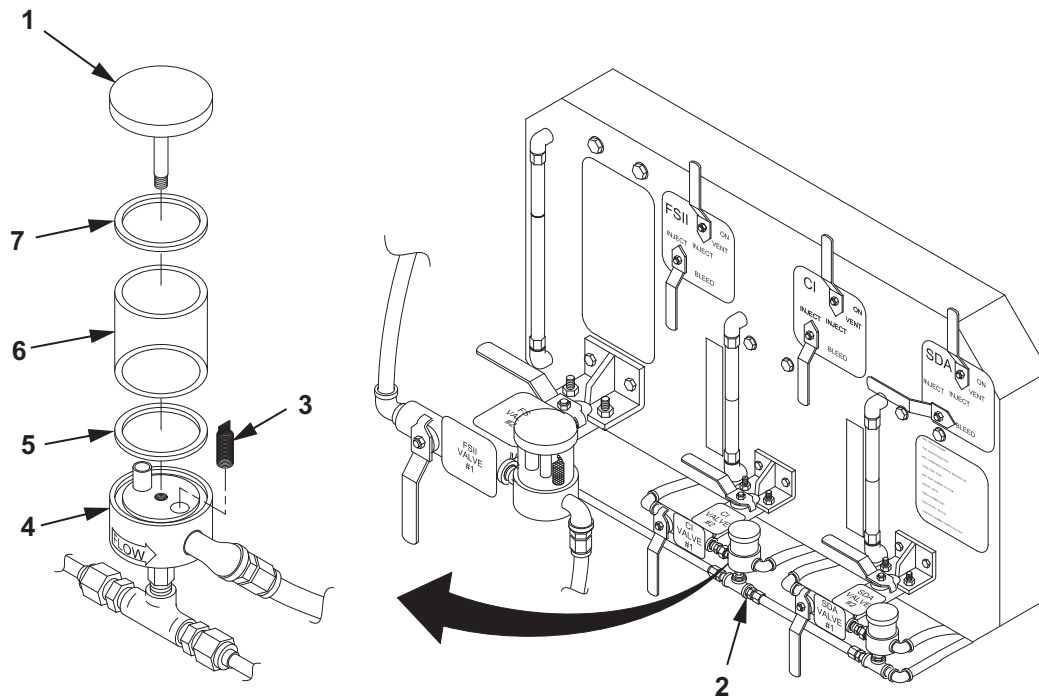


Figure 1. SDA Sight flow Indicator Maintenance.

WARNING



CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

7. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, SIGHT FLOW INDICATOR (SDA), MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

SDA sight flow indicator disassembled
(WP 0145).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
Pan, drain (2) (Item 8, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)

DISASSEMBLY**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to disconnect fittings from tubes and hoses. Failure to comply could result in damage to equipment.

DISASSEMBLY - CONTINUED

1. Place drain pans under SDA sight flow indicator (Figure 1, Item 2).
2. Disconnect hose assembly (Figure 1, Item 4) from reducer (Figure 1, Item 3).
3. Remove reducer (Figure 1, Item 3) from SDA sight flow indicator (Figure 1, Item 2).
4. Disconnect tube (Figure 1, Item 4) from tee assembly (Figure 1, Item 5) at bottom of SDA sight flow indicator (Figure 1, Item 1).
5. Disconnect tube (Figure 1, Item 6) from tee assembly (Figure 1, Item 5) and from CI sight flow indicator (Figure 1, Item 7).
6. Turn SDA sight flow indicator (Figure 1, Item 1) slightly counterclockwise until tube (Figure 1, Item 6) is easily removed.
7. Remove tee assembly (Figure 1, Item 5) from SDA sight flow indicator (Figure 1, Item 1).
8. Remove SDA sight flow indicator (Figure 1, Item 1) from valve (Figure 1, Item 8).
9. Remove drain pans under SDA sight flow indicator (Figure 1, Item 1) and dispose of contents per local procedures.

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect body for cracks, corrosion or wear. If cracks, corrosion or wear is found, replace with a serviceable like item.
2. Inspect body for stripped or damaged threads or broken fittings. If stripped or damaged threads or broken fittings are found, replace with a serviceable like item.

END OF TASK

INSTALLATION**CAUTION**

Use two wrenches to connect fittings to tubes and hoses. Failure to comply could result in damage to equipment.

1. Apply teflon tape to threads of SDA sight flow indicator (Figure 1, Item 2).
2. Install SDA sight flow indicator (Figure 1, Item 2) on valve (Figure 1, Item 1).
3. Apply teflon tape to threads of tee assembly (Figure 1, Item 7).
4. Install tee assembly (Figure 1, Item 7) to bottom of SDA sight flow indicator (Figure 1, Item 2).
5. Connect tube (Figure 1, Item 8) to tee assembly figure 2, Item 7) and turn SDA sight flow indicator (Figure 1, Item 2) clockwise slightly until tube (Figure 1, Item 8) can be connected to CI sight flow indicator (Figure 1, Item 5). Tighten tube (Figure 1, Item 8).
6. Connect tube (Figure 1, Item 6) to tee assembly (Figure 1, Item 7) at bottom of sight flow indicator (Figure 1, Item 2). Tighten tube (Figure 1, Item 4).
7. Install reducer (Figure 1, Item 3) on SDA sight flow indicator (Figure 2, Item 2). Tighten reducer (Figure 1, Item 3).
8. Connect hose assembly (Figure 1, Item 4) to reducer (Figure 1, Item 3). Tighten hose assembly (Figure 1, Item 4).

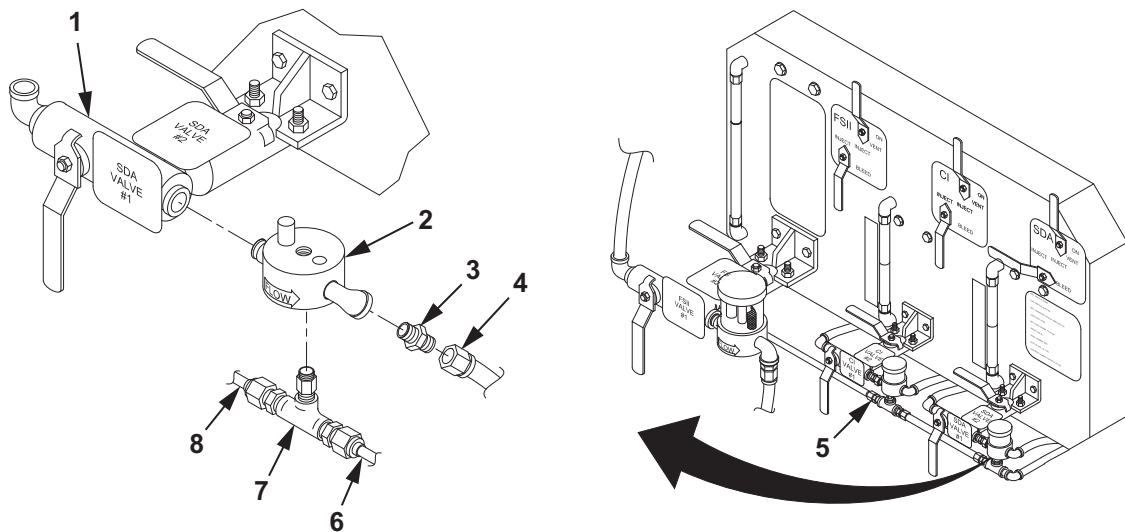


Figure 1. SDA Sight Flow Indicator Maintenance.

INSTALLATION - CONTINUED

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

9. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.
10. Assemble SDA sight flow indicator (WP 0145).

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, CALIBRATION GAUGE, MAINTENANCE
REMOVAL, CLEANING, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

Tool Kit, General Mechanic's (Item 1, WP 0211)
 Apron, utility (Item 2, WP 0211)
 Gloves, rubber, industrial (Item 2, WP 0211)
 Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
 Cloth, cleaning (Item 5, WP 0214)
 Kit, fuel spill control (Item 8, WP 0214)
 Pan, drain (2) (Item 8, WP 0214)

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pans under calibration gauge (Figure 1, Item 1).
2. Disconnect calibration gauge (Figure 1, Item 1) from upper and lower elbows (Figure 1, Item 2).
3. Remove calibration gauge (Figure 1, Item 1).
4. Remove drain pans from under calibration gauge (Figure 1, Item 1) and dispose of contents per local procedures.

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using a dry cleaning cloth dampened with solvent cleaning compound, clean the calibration gauge (Figure 1, Item 1) until free of all dirt and debris.
2. Allow parts to dry thoroughly.

END OF TASK**INSTALLATION**

1. Connect calibration gauge (Figure 1, Item 1) to upper and lower elbows (Figure 1, Item 2). Tighten calibration gauge (Figure 1, Item 1) tube fittings.

INSTALLATION - CONTINUED

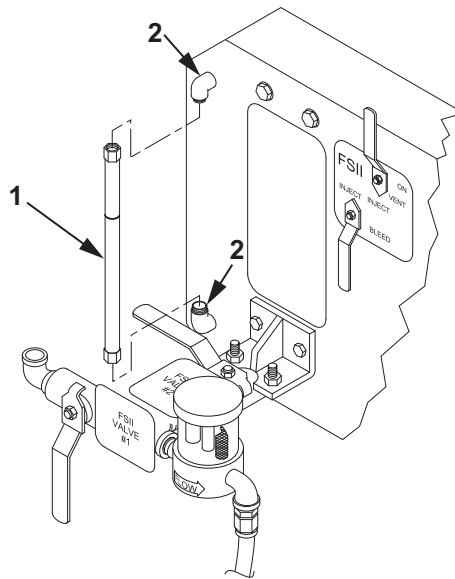


Figure 1. Calibration Gauge.

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

2. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, CALIBRATION GAUGE, REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

- Tool Kit, General Mechanic’s (Item 1, WP 0211)
- Apron, utility (Item 2, WP 0211)
- Gloves, rubber, industrial (Item 2, WP 0211)
- Goggles, industrial (Item 2, WP 0211)

Personnel Required

- Quartermaster and Chemical Repairman 63J

Equipment Condition

- FSSP system shut down.

Materials/Parts

- Cleaning compound, solvent (Item 4, WP 0214)
 - Cloth, cleaning (Item 5, WP 0214)
 - Kit, fuel spill control (Item 8, WP 0214)
 - Pan, drain (2) (Item 8, WP 0214)
-

REMOVAL

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pans under calibration gauge (Figure 1, Item 1).
2. Disconnect calibration gauge (Figure 1, Item 1) from upper and lower elbows (Figure 1, Item 2).
3. Remove calibration gauge (Figure 1, Item 1).
4. Discard calibration gauge (Figure 1, Item 1).
5. Remove drain pans from under calibration gauge (Figure 1, Item 1) and dispose of contents per local procedures.

END OF TASK

INSTALLATION

1. Position new calibration gauge (Figure 1, Item 1) between upper and lower elbows (Figure 1, Item 2).
2. Tighten calibration gauge (Figure 1, Item 1) on upper and lower elbows (Figure 1, Item 2).

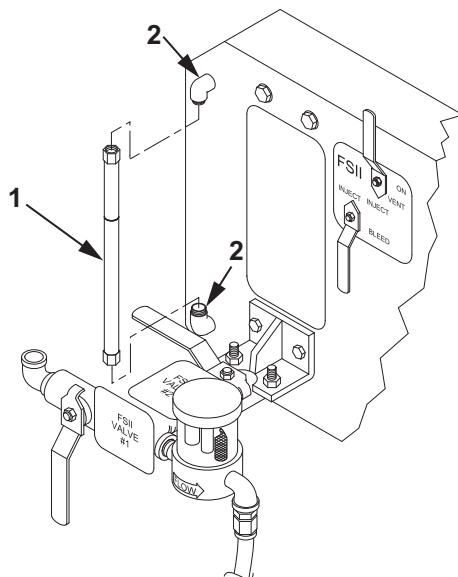


Figure 1. Calibration Gauge Replacement.

INSTALLATION - CONTINUED

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

3. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, CI AND SDA PUMP SUCTION CHECK VALVES,
REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Tape, teflon (Item 14, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (2) (Item 8, WP 0214)

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pans under CI and SDA pump (Figure 1, Item 1) suction check valve (Figure 1, Item 2).
2. Tag and disconnect suction tube assembly (Figure 1, Item 5) from tube adapter (Figure 1, Item 4).
3. Remove tube adapter (Figure 1, Item 4) from 90° elbow (Figure 1, Item 3).
4. Disconnect 90° elbow assembly (Figure 1, Item 3) from suction check valve (Figure 1, Item 2).
5. Remove suction check valve (Figure 1, Item 2) from CI and SDA pump (Figure 1, Item 1).
6. Discard suction check valve (Figure 1, Item 2).
7. Remove drain pans and dispose of contents per local procedures.

END OF TASK**INSTALLATION****CAUTION**

Ensure suction check valves are installed with stamped arrow in direction of fluid flow. Failure to do so may cause damage to pump.

1. Apply teflon tape to the threads of new suction check valve (Figure 1, Item 2).
2. Install new suction check valve (Figure 1, Item 2) on CI and SDA pump (Figure 1, Item 1).
3. Connect 90° elbow assembly (Figure 1, Item 3) to suction check valve (Figure 1, Item 2).
4. Apply teflon tape to the threads of tube adapter (Figure 1, Item 4).
5. Install tube adapter (Figure 1, Item 4) on 90° elbow (Figure 1, Item 3).
6. Connect suction tube assembly (Figure 1, Item 5) to tube adapter (Figure 1, Item 4) and remove tags.

INSTALLATION - CONTINUED

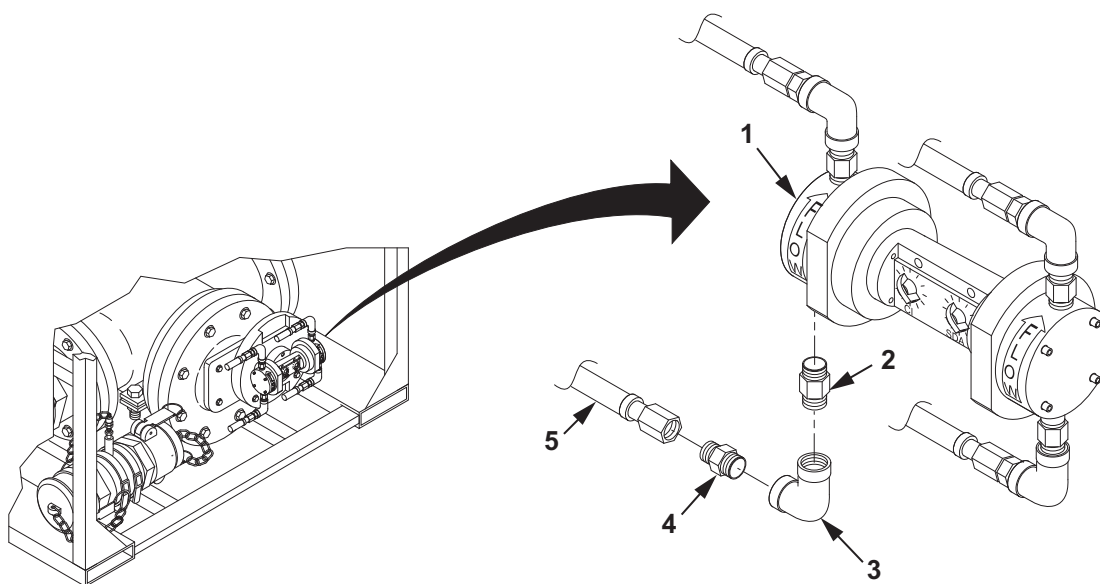


Figure 1. CI and SDA Pump Suction Check Valves Replacement.

WARNING**CHEMICAL EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

7. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER, TPI-4T-4A-1, CI AND SDA PUMP DISCHARGE CHECK VALVE,
REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Tape, teflon (Item 14, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (2) (Item 8, WP 0214)

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pans under CI and SDA pump (Figure 1, Item 5) discharge check valve (Figure 1, Item 4).
2. Tag and disconnect tube assembly (Figure 1, Item 1) from tube adapter (Figure 1, Item 2).
3. Remove tube adapter (Figure 1, Item 2) from 90° elbow assembly (Figure 1, Item 3).
4. Disconnect 90° elbow assembly (Figure 1, Item 3) from discharge check valve (Figure 1, Item 4).
5. Remove discharge check valve (Figure 1, Item 4) from CI and SDA pump (Figure 1, Item 5).
6. Discard discharge check valve (Figure 1, Item 4).
7. Remove drain pans and dispose of contents per local procedures.

END OF TASK**INSTALLATION****CAUTION**

Ensure discharge check valve is installed with stamped arrow in direction of fluid flow. Failure to do so may cause damage to pump.

1. Apply teflon tape to threads of new discharge check valve (Figure 1, Item 4).
2. Install new discharge check valve (Figure 1, Item 4) on CI and SDA pump (Figure 1, Item 5). Tighten discharge check valve (Figure 1, Item 2).
3. Connect 90° elbow assembly (Figure 1, Item 3) to discharge check valve (Figure 1, Item 4). Tighten elbow assembly (Figure 1, Item 1).
4. Apply teflon tape to threads of tube adapter (Figure 1, Item 2).
5. Install tube adapter (Figure 1, Item 2) on 90° elbow assembly (Figure 1, Item 3). Tighten tube adapter (Figure 1, Item 2).
6. Connect discharge tube assembly (Figure 1, Item 1) to tube adapter (Figure 1, Item 2). Tighten discharge tube assembly (Figure 1, Item 1) and remove tags.

INSTALLATION - CONTINUED

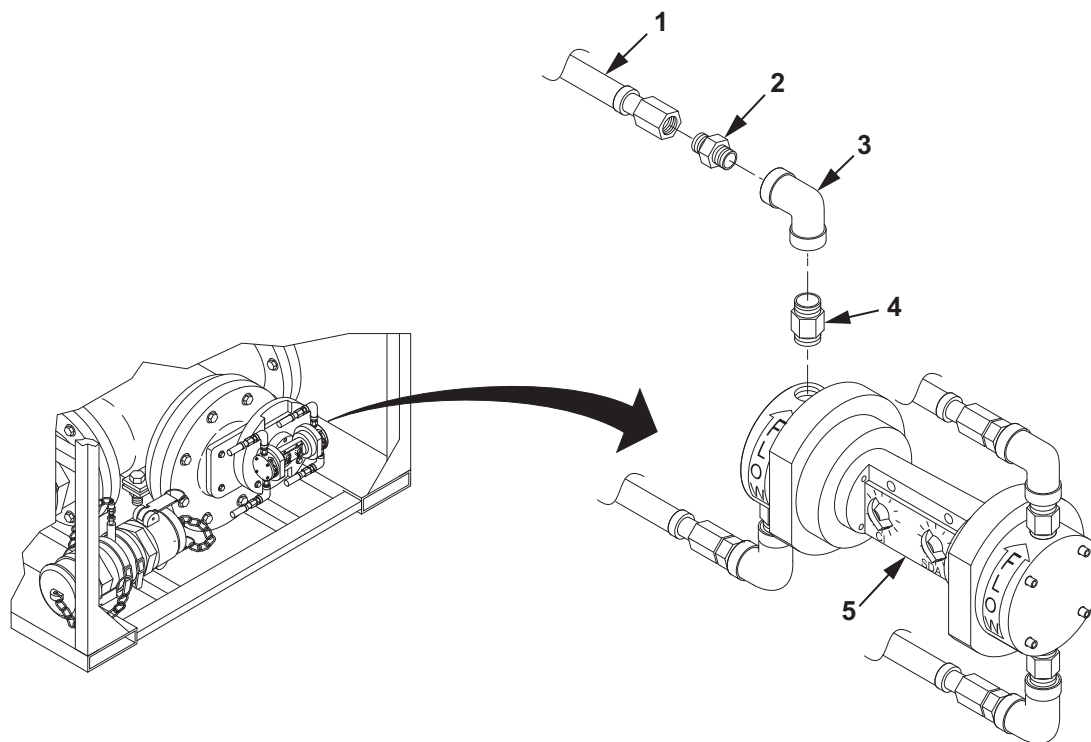


Figure 1. Fuel Additive Injection Discharge Check Valve Replacement.

WARNING



CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

7. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, FUEL ADDITIVE INJECTION PUMP DRIVE
BEARING, LUBRICATION
POWER FRAME COVER REMOVAL, LUBRICATING, POWER FRAME COVER INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Lubricating gun, hand (Item 9, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Grease, ball and roller bearing (Item 6, WP 0214)
Washer, lock (4) (Item 16, WP 0215)

POWER FRAME COVER REMOVAL

1. Mark position of stroke two adjustment knobs (Figure 1, Item 5) on the power frame cover (Figure 1, Item 1) for assembly purposes.
2. Loosen two stroke adjustment screws (Figure 1, Item 4) on bottom of power frame (Figure 1, Item 3).
3. Loosen two setscrews (Figure 1, Item 6) on two stroke adjustment knobs (Figure 1, Item 5).
4. Remove two stroke adjustment knobs (Figure 1, Item 5) from two stroke adjustment cams (Figure 1, Item 2).
5. Remove four screws (Figure 1, Item 8) and lockwashers (Figure 1, Item 7) from power frame cover (Figure 1, Item 1). Discard lockwashers (Figure 1, Item 7).
6. Remove power frame cover (Figure 1, Item 1) from power frame (Figure 1, Item 3).

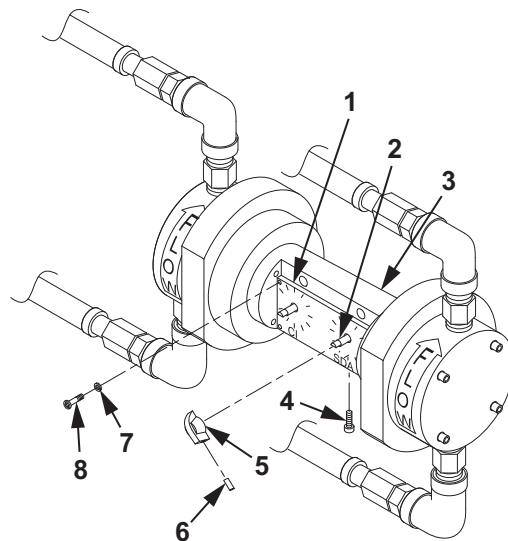


Figure 1. Fuel Additive Injection Pump Power Frame Cover Removal.

END OF TASK

LUBRICATION**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

When working with ball and roller bearing grease, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use only with adequate ventilation. Injection under skin can cause local necrosis. Accidental ingestion of this material may cause irritation of digestive tract.

1. Flush area around the drive bearing (Figure 2, Item 1) and between power frame and crosshead (Figure 2, Item 2) with solvent cleaning compound to remove old grease and contaminants.
2. Hand pack the area around the drive bearing (Figure 2, Item 1) and between power frame and crosshead (Figure 2, Item 2) with ball and roller bearing grease.
3. Using hand lubricating gun, lube gear reduction fitting (Figure 2, Item 3) on CI and SDA side of pumping assembly until excess exits the hole next to the fitting (Figure 2, Item 4).
4. Wipe off excess grease with cleaning cloth to prevent contamination of pumping assembly.

END OF TASK**INSTALLATION**

1. Position power frame cover (Figure 2, Item 1) onto power frame (Figure 2, Item 3).
2. Install four new lockwashers (Figure 2, Item 8) and screws (Figure 2, Item 7) on power frame cover (Figure 2, Item 1). Tighten screws (Figure 2, Item 8).
3. Position two stroke adjustment knobs (Figure 2, Item 5) on two stroke adjustment cams (Figure 2, Item 2). Tighten screws (Figure 2, Item 6).
4. Turn two stroke adjustment knobs (Figure 2, Item 5) to previously marked positions on power frame cover (Figure 2, Item 1).
5. Tighten two stroke adjustment setscrews (Figure 2, Item 4) in bottom of power frame (Figure 2, Item 3).

INSTALLATION - CONTINUED

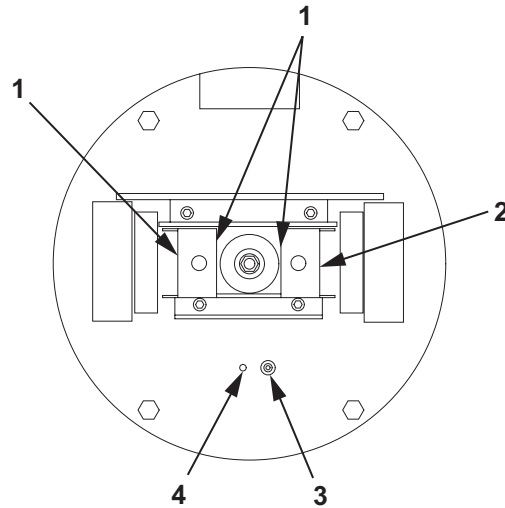


Figure 2. Fuel Additive Injection Pump and Bearing.

WARNING

CHEMICAL



EYE PROTECTION

When working with ball and roller bearing grease, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use only with adequate ventilation. Injection under skin can cause local necrosis. Accidental ingestion of this material may cause irritation of digestive tract.

6. Clean up any grease with a cleaning cloth and dispose of waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
CI AND SDA ADDITIVE TANK, PART NUMBER 212013, VENT FILTER, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (Item 8, WP 0214)

VENT FILTER DISASSEMBLY

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pan under vent filter (Figure 1, Item 3) and additive tank (Figure 1, Item 2).
2. Remove vent filter (Figure 1, Item 3) from 90° elbow (Figure 1, Item 1).
3. Remove drain pan under vent filter (Figure 1, Item 3) and dispose of contents per local procedures.

END OF TASK**CLEANING****WARNING**

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using a cleaning cloth dampened with solvent cleaning compound, clean vent filter (Figure 1, Item 1) free of all dirt and debris.
2. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect the vent filter for broken or cracked condition. If broken or cracked, replace with a serviceable like item.

2. Inspect vent filter fitting for stripped or damaged threads. If threads are stripped or damaged, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Apply teflon tape to the threads of the vent filter (Figure 2, Item 3).
2. Install vent filter (Figure 2, Item 3) on 90° elbow (Figure 2, Item 1) on additive tank (Figure 2, Item 2).
3. Tighten vent filter (Figure 2, Item 3).

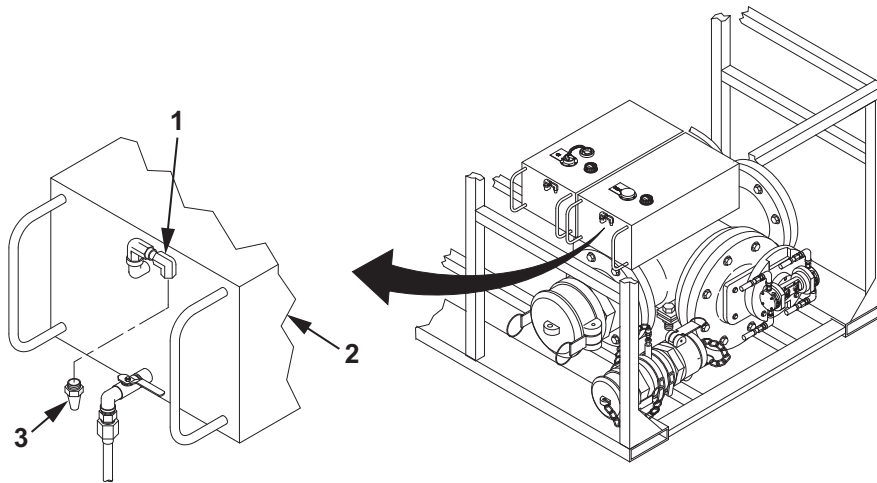


Figure 1. CI and SDA Additive Tank Vent Filters Disassembly.

WARNING



CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

4. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, ADDITIVE TANK, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP system shut down.

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (Item 8, WP 0214)
Gasket (2) (Item 4, WP 0215)
Gasket (Item 6, WP 0215)

DISASSEMBLY

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pan under additive tank (Figure 1, Item 6).
2. Remove vent filter (Figure 1, Item 12) from 90° elbow (Figure 1, Item 13).
3. Remove filler/strainer (Figure 1, Item 15) from additive tank (Figure 1, Item 6).
 - a. Remove cap (Figure 1, Item 1) from filler/strainer (Figure 1, Item 15).
 - b. Remove chain (Figure 1, Item 2) from retainer ring (Figure 1, Item 4).
 - c. Remove gasket (Figure 1, Item 3) from cap (Figure 1, Item 1).
 - d. Discard gasket (Figure 1, Item 3).
 - e. Remove six screws (Figure 1, Item 17) securing filler/strainer (Figure 1, Item 15) to additive tank (Figure 1, Item 6).
 - f. Remove tank tag (Figure 1, Item 18) from filler/strainer (Figure 1, Item 15).
 - g. Remove retainer ring (Figure 1, Item 4) from filler/strainer (Figure 1, Item 15).
 - h. Remove gasket (Figure 1, Item 16) from filler/strainer (Figure 1, Item 15).
 - i. Discard gasket (Figure 1, Item 16).
 - j. Remove filler/strainer (Figure 1, Item 15) from additive tank (Figure 1, Item 6).
 - k. Remove gasket (Figure 1, Item 14) from filler/strainer (Figure 1, Item 15).
 - l. Discard gasket (Figure 1, Item 14).
4. Remove level gauge (Figure 1, Item 5) from additive tank (Figure 1, Item 6).
5. Remove additive shutoff valve (Figure 1, Item 8) from additive tank (Figure 1, Item 6).
 - a. Disconnect hose (Figure 1, Item 10) from adapter (Figure 1, Item 11).
 - b. Remove adapter (Figure 1, Item 11) from 90° elbow (Figure 1, Item 9).
 - c. Remove 90° elbow (Figure 1, Item 9) from additive shutoff valve (Figure 1, Item 8).
 - d. Remove additive shutoff valve (Figure 1, Item 8) and nipple (Figure 1, Item 7) from additive tank (Figure 1, Item 6).
 - e. Remove nipple (Figure 1, Item 7) from additive shutoff valve (Figure 1, Item 8).
6. Remove drain pan under additive tank (Figure 1, Item 6) and dispose of contents per local procedures.

DISASSEMBLY - CONTINUED

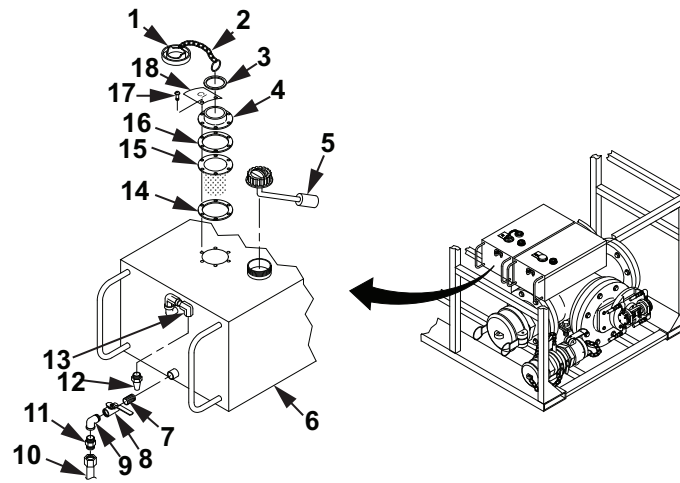


Figure 1. Fuel Additive Injection Assembly CI and SDA Additive Tank Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts using a cleaning cloth and solvent cleaning compound.
2. Clean filler/strainer free of all dirt and debris using a cleaning cloth and solvent cleaning compound.
3. Clean vent filter free of all dirt and debris using a cleaning cloth dampened with solvent cleaning compound.
4. Clean additive shutoff valve using a cleaning cloth and solvent cleaning compound.
5. Clean level gauge using a cleaning cloth and solvent cleaning compound.
6. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect the level gauge for stripped threads and broken or cracked condition. If level gauge is broken or cracked or threads are stripped, replace with serviceable like item.
3. Inspect fittings on additive tank for stripped or damaged threads. If threads are stripped or damaged, replace with serviceable like item.
4. Inspect additive shutoff valve for cracks and stripped threads. If cracks or stripped threads are found, replace with serviceable like item.
5. Inspect additive shutoff valve handle for proper operation. If handle does not operate properly, replace with serviceable like item.
6. Inspect vent filter for broken or cracked condition. If broken or cracked, replace with serviceable like item.
7. Inspect vent filter fitting for stripped or damaged threads. If threads are stripped or damaged, replace with serviceable like item.
8. Inspect additive shutoff valve adapter for cracks, corrosion, broken fittings or stripped threads. If found, replace with serviceable like item.
9. Inspect filler/strainer for cracks, corrosion or torn screen. If found, replace with serviceable like item.

END OF TASK**ADDITIVE TANK ASSEMBLY**

1. Install additive shutoff valve (Figure 2, Item 8) into additive tank (Figure 2, Item 6).

ADDITIVE TANK ASSEMBLY - CONTINUED

- a. Apply teflon tape to threads of nipple (Figure 2, Item 7).
- b. Install nipple (Figure 2, Item 7) in additive shutoff valve (Figure 2, Item 8). Tighten nipple (Figure 2, Item 7).
- c. Install additive shutoff valve (Figure 2, Item 14) and nipple (Figure 2, Item 7) into additive tank (Figure 2, Item 6). Tighten additive shutoff valve (Figure 2, Item 8).
- d. Apply teflon tape to threads of 90° elbow (Figure 2, Item 9).
- e. Install 90° elbow (Figure 2, Item 9) on additive shutoff valve (Figure 2, Item 8). Tighten 90° elbow (Figure 2, Item 9).
- f. Apply teflon tape to threads of adapter (Figure 2, Item 11).
- g. Install adapter (Figure 2, Item 11) on 90° elbow (Figure 2, Item 9).
- h. Connect hose (Figure 2, Item 10) to adapter (Figure 2, Item 11).
2. Install level gauge (Figure 2, Item 5) in additive tank (Figure 2, Item 6).
3. Install filler/strainer (Figure 2, Item 15) on additive tank (Figure 2, Item 6).
 - a. Install new gasket (Figure 2, Item 14) on filler/strainer (Figure 2, Item 15).
 - b. Install filler/strainer (Figure 2, Item 15) in additive tank (Figure 2, Item 6).
 - c. Install new gasket (Figure 2, Item 16) on filler/strainer (Figure 2, Item 15).
 - d. Install new gasket (Figure 2, Item 3) on cap (Figure 2, Item 1).
 - e. Install chain (Figure 2, Item 2) on retainer ring (Figure 2, Item 4).
 - f. Install retainer ring (Figure 2, Item 4) on filler/strainer (Figure 2, Item 15).
 - g. Install tank tag (Figure 2, Item 18) on filler/strainer (Figure 2, Item 15).
 - h. Install six screws (Figure 2, Item 17) to secure tank tag (Figure 2, Item 18) and filler/strainer (Figure 2, Item 15) to additive tank (Figure 2, Item 6). Tighten six screws (Figure 2, Item 17).
 - i. Install cap (Figure 2, Item 1) on filler/strainer (Figure 2, Item 15).
4. Apply teflon tape to threads of vent filter (Figure 2, Item 12).
5. Install vent filter (Figure 2, Item 12) on 90° elbow (Figure 2, Item 13).

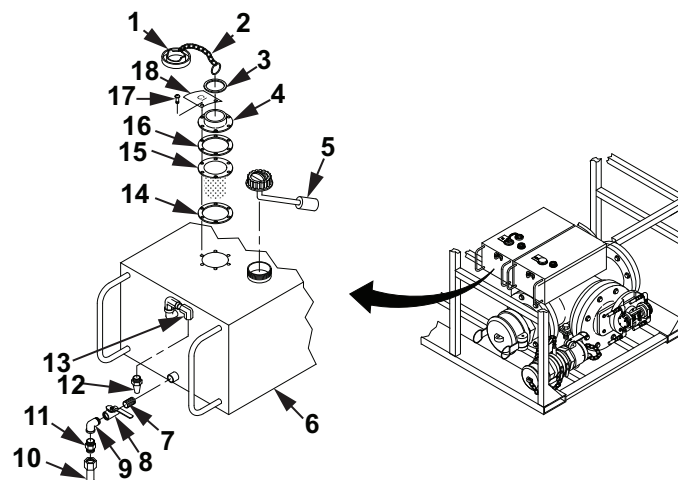


Figure 2. Fuel Additive Injection Assembly CI and SDA Additive Tank Disassembly.

ADDITIVE TANK ASSEMBLY - CONTINUED

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

6. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, REGISTER READOUT, REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)

Equipment Condition

Flowmeter assembly removed from FSSP
(WP 0066).

Personnel Required

Quartermaster and Chemical Repairman 63J

REGISTER READOUT REMOVAL

1. Loosen three locknuts (Figure 1, Item 1) and three setscrews (Figure 1, Item 4) on register readout (Figure 1, Item 2).
2. Turn the register readout (Figure 1, Item 2) counterclockwise and remove from flowmeter (Figure 1, Item 3).

END OF TASK**REGISTER READOUT INSTALLATION**

1. Position register readout (Figure 1, Item 2) on flowmeter (Figure 1, Item 3).
2. Install register readout (Figure 1, Item 2) by turning counterclockwise on flowmeter (Figure 1, Item 3).
3. Using torque wrench and screwdriver bit, torque three setscrews (Figure 1, Item 4) to 40 in. lb (4.5 N·m).
4. Tighten three locknuts (Figure 1, Item 1) on register readout (Figure 1, Item 2).

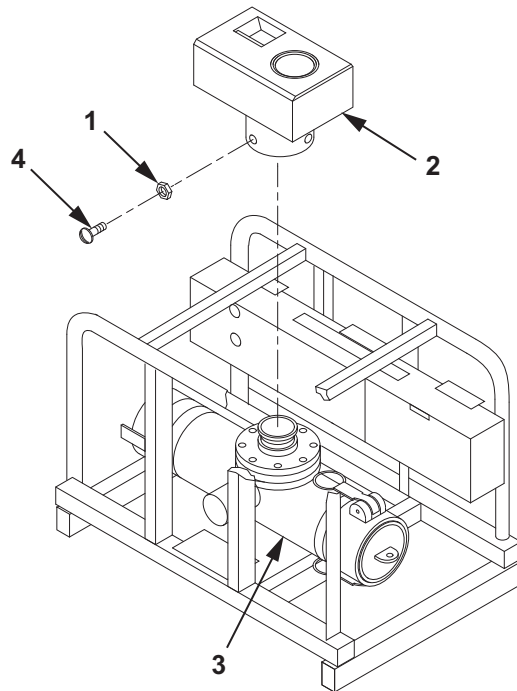


Figure 1. Register Readout Removal.

END OF TASK**END OF WORK PACKAGE**

**UNIT MAINTENANCE
WET WING DEFUELING ASSEMBLY
3 IN. X 50 FT HOSE ASSEMBLY, PART NUMBER 78010-100, REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSSP assembly shut down (WP 0005).

Materials/Parts

Pan, drain (Item 8, WP 0214)

REMOVAL**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

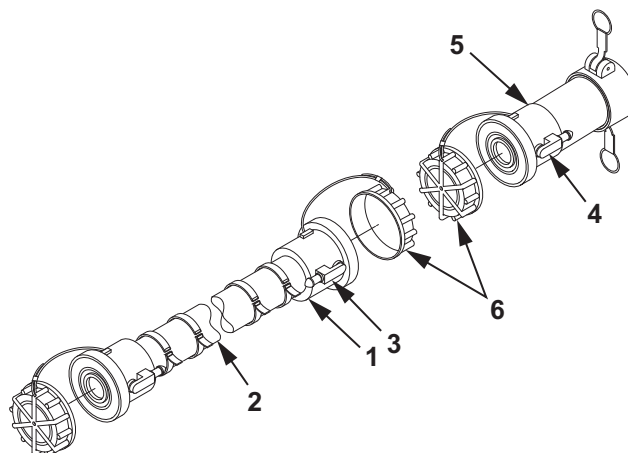
When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

1. Place drain pan under quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) to be disconnected.
2. Position shutoff valves (Figure 1, Item 3) on quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) to the closed position.
3. Position shutoff valves (Figure 1, Item 4) on 4 in. female camlock X 3 in. valved dry-break adapter (Figure 1, Item 5) (or component hose is being removed from) to the closed position.
4. Rotate the quick disconnect coupling half (Figure 1, Item 1) on hose assembly (Figure 1, Item 2) counterclockwise.
5. Detach quick disconnect coupling half (Figure 1, Item 1) and remove hose assembly (Figure 1, Item 2).
6. Install dust caps (Figure 1, Item 6) on quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) and 4 in. female camlock X 3 in. valved dry-break adapter (Figure 1, Item 5) (or component hose is being removed from).
7. Remove drain pan and dispose of contents per local procedures.

END OF TASK**INSTALLATION**

1. Remove dust caps (Figure 1, Item 6) from quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) and 4 in. female camlock X 3 in. valved dry-break adapter (Figure 1, Item 5).
2. Position the quick disconnect coupling half (Figure 1, Item 1) from hose assembly (Figure 1, Item 2) on the 4 in. female camlock X 3 in. valved dry-break adapter (Figure 1, Item 5) and rotate clockwise to attach.
3. Position shutoff valves (Figure 1, Item 4) on 4 in. female camlock X 3 in. valved dry-break adapter (Figure 1, Item 5) to the open position.
4. Position shutoff valves (Figure 1, Item 3) on quick disconnect coupling halves (Figure 1, Item 1) of hose assembly (Figure 1, Item 2) to the open position.

INSTALLATION - CONTINUED

*Figure 1. 3 In. X 50 Ft Hose Removal.***WARNING****CHEMICAL EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

5. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
TANK VOLUME METER MONITOR, PART NUMBER EAS-0400-OUT, REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

REMOVAL**CAUTION**

Before touching the volume meter touch a well grounded object to discharge static electricity. Failure to discharge static electricity will damage the electronics of the volume meter monitor.

1. Loosen wire nut (Figure 1, Item 1) from weatherproof housing (Figure 1, Item 10).
2. Remove weatherproof housing (Figure 1, Item 10) from amphenol connector (Figure 1, Item 9).

CAUTION

Pull up on the amphenol connector and not on the cable to disconnect the amphenol connector from the cable. Failure to comply will result in damage to the cable.

3. Disconnect amphenol connector (Figure 1, Item 9) from the tank input volume meter (Figure 1, Item 8).

NOTE

The nut must be loosened enough to be able to separate the top and bottom half of the union.

4. While keeping the tank volume meter monitor (Figure 1, Item 2) stationary, loosen union (Figure 1, Item 4) by turning the nut (Figure 1, Item 3) counterclockwise in the direction of the arrow.

CAUTION

Do not pull on the green or blue wires while disconnecting the wire harness from the magnetic pickup. Failure to comply will result in damaging the wire harness.

5. Raise the tank volume meter monitor (Figure 1, Item 2) slightly to allow access to the wire harness (Figure 1, Item 7).
6. Disconnect wire harness (Figure 1, Item 7) from magnetic pickup (Figure 1, Item 6) by pulling up on the white nylon connector (Figure 1, Item 5).
7. Remove tank volume meter monitor (Figure 1, Item 2).

END OF TASK**INSTALLATION**

1. Align the tank volume meter monitor (Figure 1, Item 2) over magnetic pickup (Figure 1, Item 6).
2. Connect wire harness (Figure 1, Item 7) to magnetic pickup (Figure 1, Item 6) by pushing down on the white nylon connector (Figure 1, Item 5).

CAUTION

Ensure wires are not damaged when installing the tank volume meter monitor on the tank output volume meter.

3. Position the tank volume meter monitor (Figure 1, Item 2) on the magnetic pickup (Figure 1, Item 6).
4. While keeping the tank volume meter monitor (Figure 1, Item 2) stationary, tighten union (Figure 1, Item 4) by turning the nut (Figure 1, Item 3) clockwise in the opposite direction of the arrow.
5. Connect amphenol connector (Figure 1, Item 9) to the tank input volume meter (Figure 1, Item 8).

CAUTION

Do not allow the cable to move while installing the weatherproof housing to the magnetic pickup. Failure to comply will result in damage to the cable.

6. Slide weatherproof housing (Figure 1, Item 10) over amphenol connector (Figure 1, Item 3) and hand tighten weatherproof housing (Figure 1, Item 10).
7. Tighten wire nut (Figure 1, Item 1) on weatherproof housing (Figure 1, Item 10).

INSTALLATION - CONTINUED

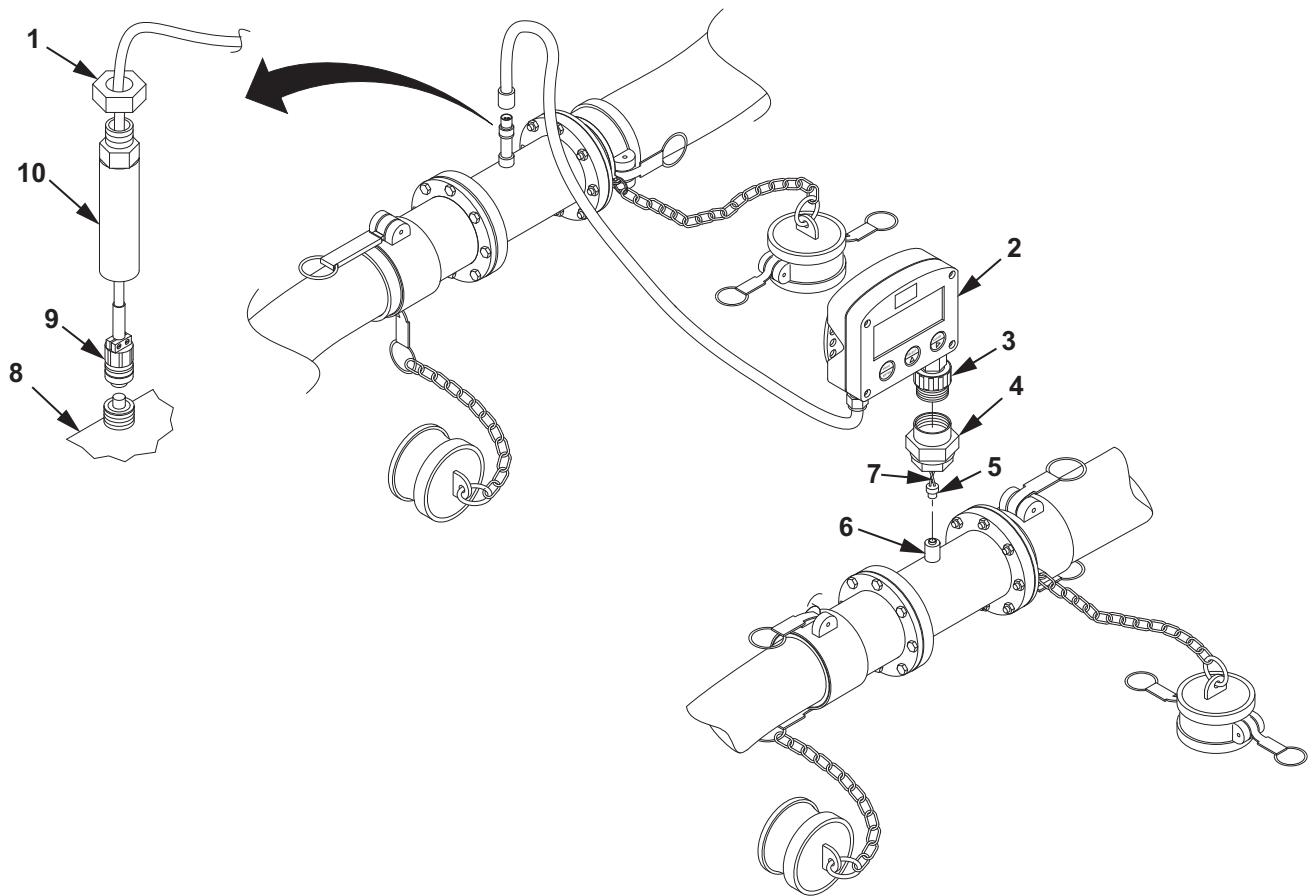


Figure 1. Tank Volume Meter Monitor Removal.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MAINTENANCE
REMOVAL, INSTALLATION

INITIAL SETUP:

Tools and Special Tools

- Gloves, rubber, industrial (Item 2, WP 0211)
- Goggles, industrial (Item 2, WP 0211)

Materials/Parts

- Kit, fuel spill control (Item 8, WP 0211)
- Pan, drain (4) (Item 8, WP 0211)

Personnel Required

- Quartermaster and Chemical Repairman 63J

Equipment Condition

- Tank volume meter monitor removed (WP 0156).

REMOVAL

1. Place drain pans under coupling halves (Figure 1, Item 4) on the tank volume meter assembly (Figure 1, Item 2).
2. Pull out on coupling half camlock levers (Figure 1, Item 1) to detach tank volume meter assembly (Figure 1, Item 2) from two 4 in. X 10 ft hoses (Figure 1, Item 3).
3. Remove tank volume meter assembly (Figure 1, Item 2) from FSSP installation.
4. Remove drain pans and dispose of contents per local procedures.

END OF TASK**INSTALLATION**

1. Position tank volume meter assembly (Figure 1, Item 2) between two 4 in. X 10 ft hoses (Figure 1, Item 3).
2. Connect two 4 in. X 10 ft hoses (Figure 1, Item 3) to tank volume meter assembly (Figure 1, Item 2).
3. Push in on coupling half camlock levers (Figure 1, Item 1) to secure tank volume meter (Figure 1 item 2) to 4 in. X 10 ft hoses (Figure 1, Item 3).

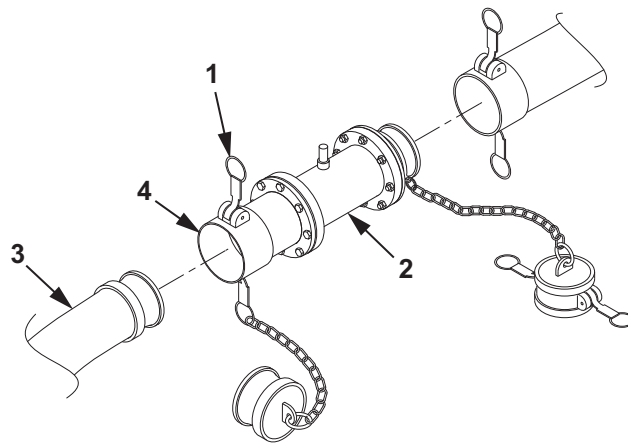


Figure 1. Tank Volume Meter Removal.

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

4. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.
5. Install tank volume meter monitor (WP 0156).

END OF TASK**END OF WORK PACKAGE**

UNIT MAINTENANCE
TANK VOLUME METER MONITOR BATTERY REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)

Equipment Condition

Tank volume meter monitor removed (WP 0156).

Personnel Required

Quartermaster and Chemical Repairman 63J

REMOVAL**CAUTION**

Before opening volume meter touch a well grounded object to discharge static electricity. Failure to discharge static electricity will damage the electronics of the volume meter monitor.

1. Remove four screws (Figure 1, Item 3) from front of volume meter (Figure 1, Item 1).
2. Remove cover (Figure 1, Item 2) from volume meter (Figure 1, Item 1).

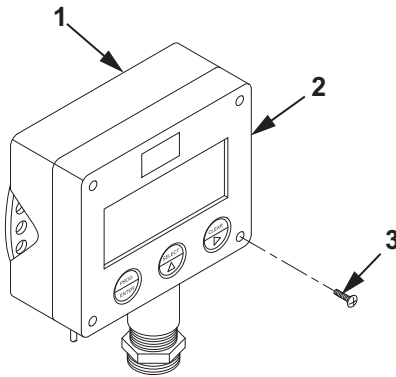


Figure 1. Tank Volume Meter Monitor Removal.

REMOVAL - CONTINUED

3. Disconnect cable connectors (Figure 2, Item 1 and 2) from connector (Figure 2, Item 5).
4. Remove screw (Figure 2, Item 4) from circuit board cover (Figure 2, Item 3).
5. Remove circuit board cover (Figure 2, Item 3) from volume meter (Figure 2, Item 6).

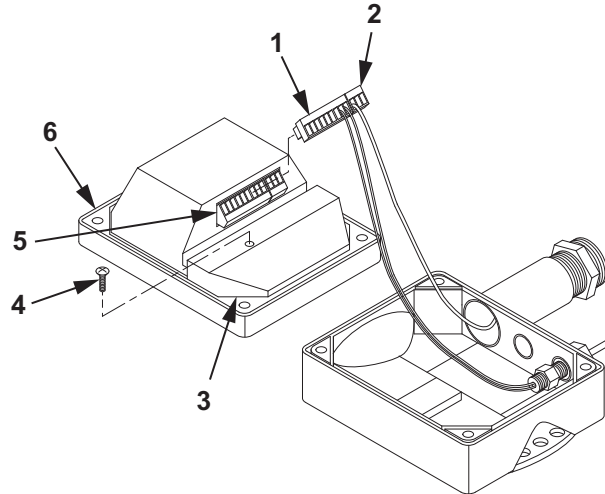


Figure 2. Tank Volume Meter Monitor Cable Connectors.

REMOVAL - CONTINUED

6. Disconnect battery cable connector (Figure 3, Item 4) from circuit board (Figure 3, Item 3).
7. Remove battery (Figure 3, Item 1) from volume meter (Figure 3, Item 2).
8. Dispose of battery (Figure 3, Item 1) per local procedures.

END OF TASK**INSTALLATION**

1. Install new battery (Figure 3, Item 1) in volume meter (Figure 3, Item 2).
2. Connect battery cable connector (Figure 3, Item 4) to circuit board (Figure 3, Item 3).

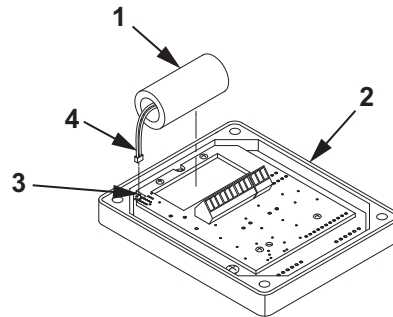


Figure 3. Tank Volume Meter Monitor Battery.

3. Install circuit board cover (Figure 4, Item 5) in volume meter (Figure 4, Item 6).
4. Install screw (Figure 4, Item 4) through circuit board cover (Figure 4, Item 5).
5. Connect cable connectors (Figure 4, Item 1 and 2) to connector (Figure 4, Item 3).

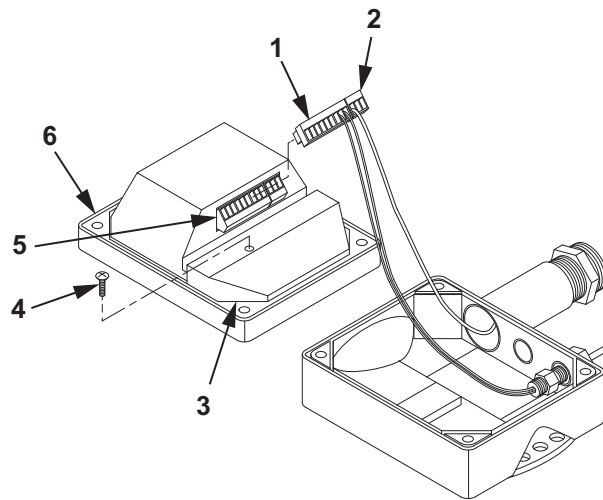


Figure 4. Tank Volume Meter Monitor Cable Connectors.

INSTALLATION - CONTINUED

6. Position cover (Figure 5, Item 2) on volume meter (Figure 5, Item 1).
7. Install four screws (Figure 5, Item 3) to secure cover (Figure 5, Item 2) to volume meter (Figure 5, Item 1).
8. Tighten four screws (Figure 5, Item 3).

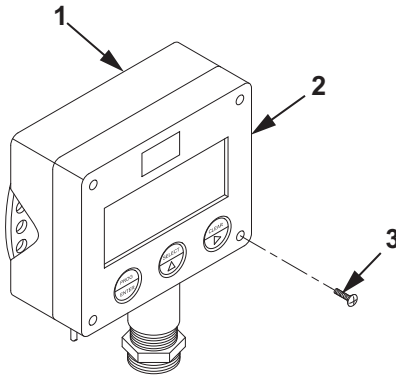


Figure 5. Tank Volume Meter Monitor Removal.

NOTE

It may be necessary to reconfigure tank volume meter monitor after battery is installed.

9. Install tank volume meter monitor (WP 0156).
10. Check configuration of tank volume meter monitor (WP 0006).

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-IN, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–175 ft lb (Item 5, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end
(Item 12, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tank input volume meter assembly removed
(WP 0157).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (2) (Item 34, WP 0215)
Gasket (2) (Item 38, WP 0215)
Washer, lock (16) (Item 61, WP 0215)

DISASSEMBLY**QUICK DISCONNECT DUST CAP AND CHAIN ASSEMBLY REMOVAL**

1. Remove split ring (Figure 1, Item 2) from quick disconnect dust cap (Figure 1, Item 1).
2. Remove split ring (Figure 1, Item 4) from chain (Figure 1, Item 3).
3. Remove split ring (Figure 1, Item 2) from chain (Figure 1, Item 3).
4. Remove split ring (Figure 1, Item 4) from male coupling (Figure 1, Item 5).
5. Remove split ring (Figure 1, Item 12) from quick disconnect dust plug (Figure 1, Item 13).
6. Remove split ring (Figure 1, Item 12) from chain (Figure 1, Item 11).
7. Remove split ring (Figure 1, Item 10) from female coupling (Figure 1, Item 9).
8. Remove split ring (Figure 1, Item 10) from chain (Figure 1, Item 11).
9. Remove quick disconnect dust cap (Figure 1, Item 1) and gasket (Figure 1, Item 26) from male coupling (Figure 1, Item 5).
10. Remove quick disconnect dust plug (Figure 1, Item 13) and gasket (Figure 1, Item 14) from female coupling (Figure 1, Item 9).
11. Discard gaskets (Figure 1, Item 26, 14).

END OF TASK**MAGNETIC PICKUP REMOVAL**

1. Rotate magnetic pickup (Figure 1, Item 23) counterclockwise.
2. Remove magnetic pickup (Figure 1, Item 23) from flowmeter (Figure 1, Item 7).

END OF TASK**MALE AND FEMALE COUPLINGS REMOVAL**

1. Remove eight nuts (Figure 1, Item 22), lockwashers (Figure 1, Item 21), washers (Figure 1, Item 20), screws (Figure 1, Item 25) and washers (Figure 1, Item 24) from male coupling (Figure 1, Item 5) and flowmeter (Figure 1, Item 7).
2. Remove male coupling (Figure 1, Item 5) and gasket (Figure 1, Item 6) from flowmeter (Figure 1, Item 7).
3. Discard gasket (Figure 1, Item 6) and lockwashers (Figure 1, Item 21).
4. Remove eight nuts (Figure 1, Item 17), lockwashers (Figure 1, Item 18), washers (Figure 1, Item 19), screws (Figure 1, Item 15) and washers (Figure 1, Item 16) from female coupling (Figure 1, Item 9) and flowmeter (Figure 1, Item 7).
5. Remove female coupling (Figure 1, Item 9) and gasket (Figure 1, Item 8) from flowmeter (Figure 1, Item 7).
6. Discard gasket (Figure 1, Item 8) and lockwashers (Figure 1, Item 18).

MALE AND FEMALE COUPLINGS REMOVAL - CONTINUED

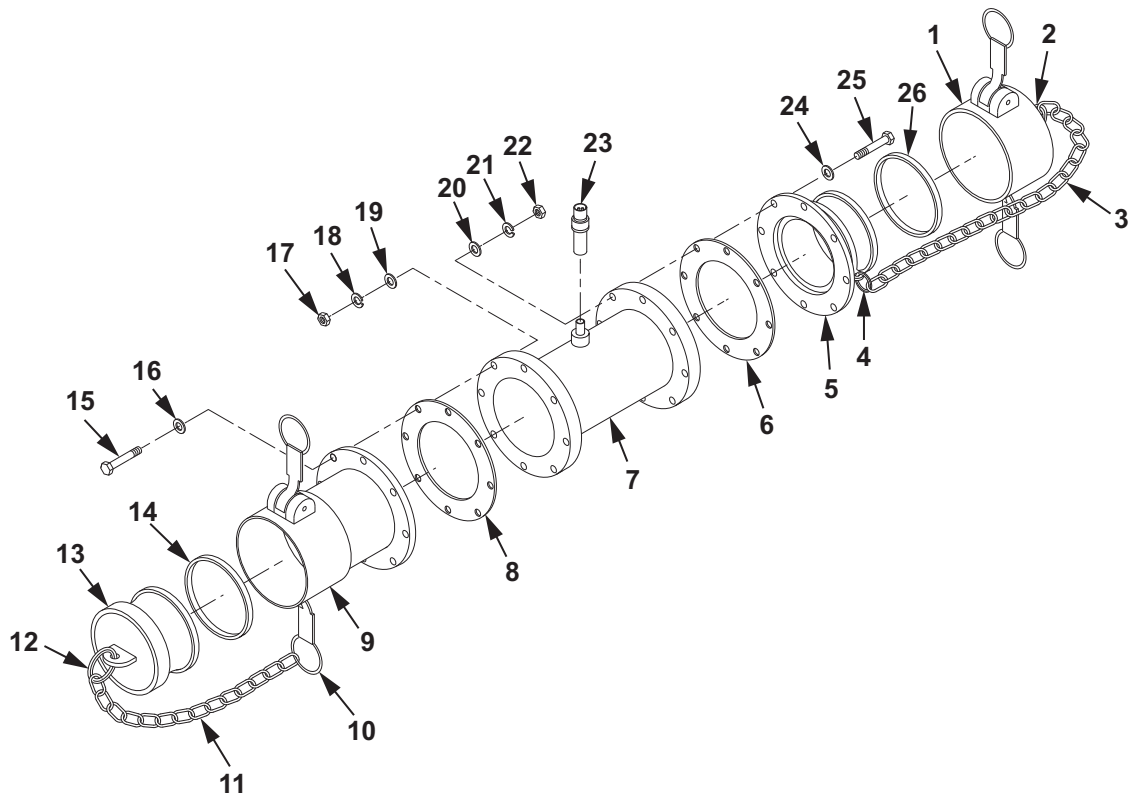


Figure 1. Tank Input Volume Meter Disassembly.

END OF TASK

ROTOR AND ROTOR SUPPORT REMOVAL

1. Remove two retaining rings (Figure 2, Item 1) from the flowmeter (Figure 2, Item 5).
2. Remove the forward rotor support (Figure 2, Item 2) from the flowmeter (Figure 2, Item 5).
3. Remove the rear rotor support (Figure 2, Item 6) from the flowmeter (Figure 2, Item 5).
4. Remove retaining ring (Figure 2, Item 3) from the flowmeter (Figure 2, Item 5).
5. Remove the rotor (Figure 2, Item 4) from the flowmeter (Figure 2, Item 5).

END OF TASK**CLEANING****WARNING****EYE PROTECTION**

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.

WARNING**CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

2. Clean all parts with a cleaning cloth dampened with solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect flowmeter rotors and rotor support for corrosion, evidence of wear, foreign object damage or entanglement, nicks, dents, scratches, misalignment of blades and freedom of movement. If rotors are corroded, nicked, scratched, excessively worn, binding or the blades are out of alignment, the flowmeter may produce incorrect readings. Replace flowmeter.

END OF TASK

**ASSEMBLY
ROTOR AND ROTOR SUPPORT INSTALLATION****NOTE**

When installing rear rotor support, ensure the rotor support blades are engaged in the grooves in the flowmeter housing and do not spin after installation is complete.

Ensure the rotor spins freely in the flowmeter housing after installation of the rotor and rotor support assembly is complete.

1. Install the rear rotor support (Figure 2, Item 6) in the flowmeter (Figure 2, Item 5).
2. Install retaining rings (Figure 2, Item 3) in the flowmeter (Figure 2, Item 5).
3. Position the rotor (Figure 2, Item 4) on the rear rotor support (Figure 2, Item 6).
4. Install the forward rotor support (Figure 2, Item 2) on the rotor (Figure 2, Item 4).

NOTE

Ensure retaining rings are fully seated in the grooves after installation.

5. Install retaining rings (Figure 2, Item 1) in the flowmeter (Figure 2, Item 2).

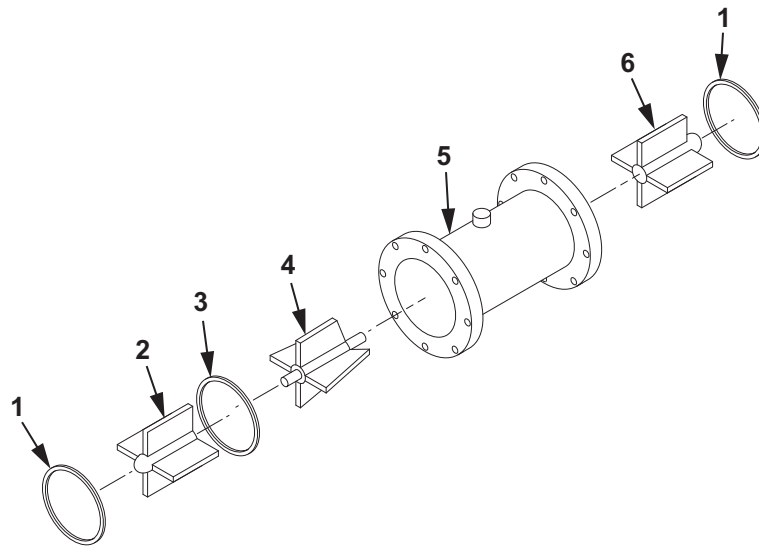


Figure 2. Tank Input Volume Flowmeter Disassembly.

END OF TASK

MALE AND FEMALE COULINGS INSTALLATION

1. Position new gasket (Figure 3, Item 8) and female coupling (Figure 3, Item 9) on flowmeter (Figure 3, Item 7).
2. Install eight washers (Figure 3, Item 16), screws (Figure 3, Item 15), washers (Figure 3, Item 19), new lockwashers (Figure 1, Item 18) and nuts (Figure 1, Item 17) on female coupling (Figure 3, Item 9) and flowmeter (Figure 3, Item 7). Hand tighten eight nuts (Figure 3, Item 17).
3. Using torque wrench and adapter, torque eight nuts (Figure 3, Item 17) to 90–110 ft lb (122–149 N•m).
4. Position new gasket (Figure 3, Item 6) and male coupling (Figure 3, Item 5) on flowmeter (Figure 3, Item 7).
5. Install eight washers (Figure 3, Item 24), screws (Figure 3, Item 25), washers (Figure 3, Item 20), new lockwashers (Figure 1, Item 21) and nuts (Figure 1, Item 22) on male coupling (Figure 1, Item 5) and flowmeter (Figure 3, Item 7). Hand tighten eight nuts (Figure 1, Item 22).
6. Using torque wrench and adapter, torque eight nuts (Figure 3, Item 22) to 90–110 ft lb (122–149 N•m).

END OF TASK**MAGNETIC PICKUP INSTALLATION**

1. Position magnetic pickup (Figure 3, Item 23) into flowmeter (Figure 3, Item 7).
2. Hand tighten magnetic pickup (Figure 3, Item 23) by turning in a clockwise direction.

END OF TASK**QUICK DISCONNECT DUST CAP AND CHAIN ASSEMBLY INSTALLATION**

1. Position new gasket (Figure 3, Item 14) and quick disconnect dust plug (Figure 3, Item 13) on female coupling (Figure 3, Item 9).
2. Install split ring (Figure 3, Item 12) on quick disconnect dust plug (Figure 3, Item 13).
3. Install split ring (Figure 3, Item 12) on chain (Figure 3, Item 11).
4. Install split ring (Figure 3, Item 10) on chain (Figure 3, Item 11).
5. Install split ring (Figure 3, Item 10) on female coupling (Figure 3, Item 9).
6. Position new gasket (Figure 3, Item 26) and quick disconnect dust cap (Figure 3, Item 1) on male coupling (Figure 3, Item 5).
7. Install split ring (Figure 3, Item 4) on chain (Figure 3, Item 3).
8. Install split ring (Figure 3, Item 2) on chain (Figure 3, Item 3).
9. Install split ring (Figure 3, Item 4) on male coupling (Figure 3, Item 5).
10. Install split ring (Figure 3, Item 2) on quick disconnect dust cap (Figure 3, Item 1).
11. Install tank input volume meter assembly (WP 0157).

QUICK DISCONNECT DUST CAP AND CHAIN ASSEMBLY INSTALLATION - CONTINUED

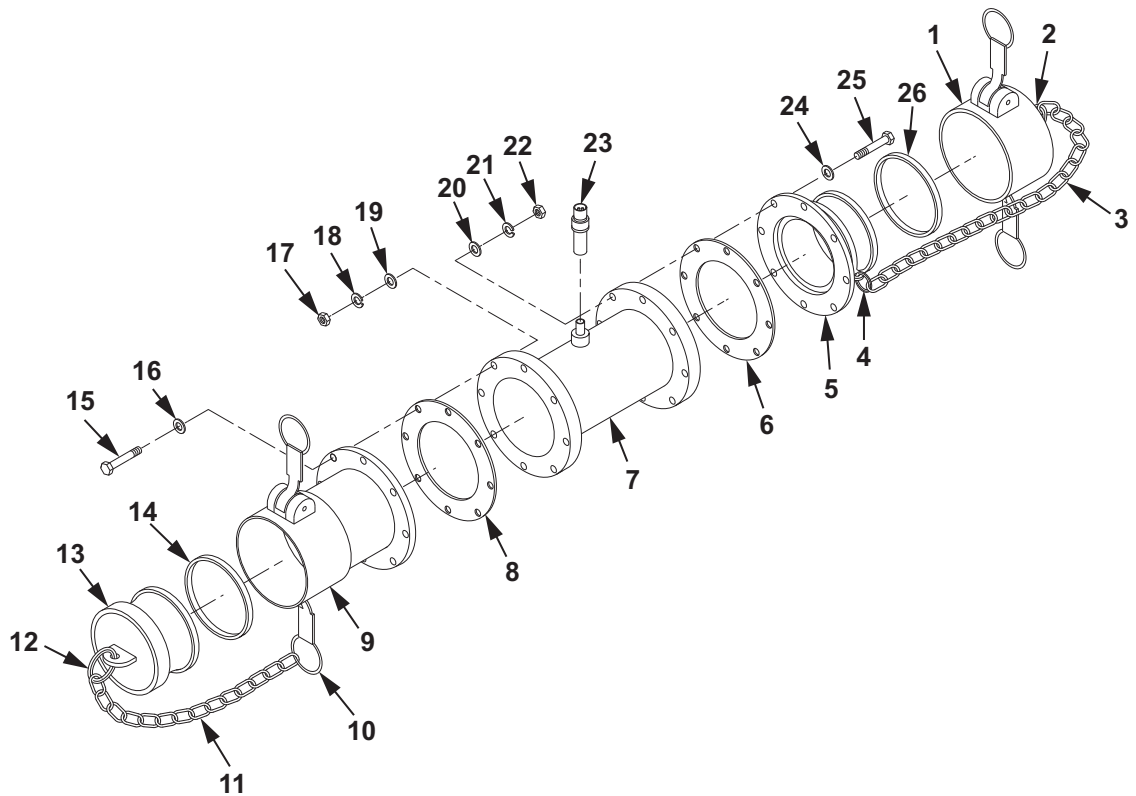


Figure 3. Tank Input Volume Meter Assembly.

END OF TASK

END OF WORK PACKAGE

UNIT MAINTENANCE
TANK VOLUME METER ASSEMBLY, PART NUMBER EAS-0400-OUT, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–175 ft lb (Item 5, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Adapter, socket wrench, 3/8 in. female square
end, 1/2 in. male square end (Item 12, WP
0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tank output volume meter assembly removed
(WP 0157).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Gasket (2) (Item 34, WP 0215)
Gasket (2) (Item 38, WP 0215)
Washer, lock (16) (Item 61, WP 0215)

DISASSEMBLY**QUICK DISCONNECT DUST CAP AND CHAIN ASSEMBLY REMOVAL**

1. Remove split ring (Figure 1, Item 2) from quick disconnect dust cap (Figure 1, Item 1).
2. Remove split ring (Figure 1, Item 4) from chain (Figure 1, Item 3).
3. Remove split ring (Figure 1, Item 2) from chain (Figure 1, Item 3).
4. Remove split ring (Figure 1, Item 4) from male coupling (Figure 1, Item 5).
5. Remove split ring (Figure 1, Item 12) from quick disconnect dust plug (Figure 1, Item 13).
6. Remove split ring (Figure 1, Item 12) from chain (Figure 1, Item 11).
7. Remove split ring (Figure 1, Item 10) from female coupling (Figure 1, Item 9).
8. Remove split ring (Figure 1, Item 10) from chain (Figure 1, Item 11).
9. Remove quick disconnect dust cap (Figure 1, Item 1) and gasket (Figure 1, Item 31) from male coupling (Figure 1, Item 5).
10. Remove quick disconnect dust plug (Figure 1, Item 13) and gasket (Figure 1, Item 14) from female coupling (Figure 1, Item 9).
11. Discard gaskets (Figure 1, Item 31, 14).

END OF TASK**TANK VOLUME METER MONITOR REMOVAL****CAUTION**

Before touching the volume meter touch a well grounded object to discharge static electricity. Failure to discharge static electricity will damage the electronics of the volume meter monitor.

NOTE

The nut must be loosened enough to be able to separate the top and bottom half of the union.

1. While keeping the tank volume meter monitor (Figure 1, Item 25) stationary, loosen union (Figure 1, Item 27) by turning the nut (Figure 1, Item 26) counterclockwise in the direction of the arrow.
2. Raise the tank volume meter monitor (Figure 1, Item 25) slightly to allow access to the wire harness (Figure 1, Item 28).

CAUTION

Do not pull on the green or blue wires while disconnecting the wire harness from the magnetic pickup. Failure to comply will result in damaging the wire harness.

3. Disconnect wire harness (Figure 1, Item 28) from magnetic pickup (Figure 1, Item 20) by pulling up on the white nylon connector (Figure 1, Item 24).
4. Remove tank volume meter monitor (Figure 1, Item 25).

END OF TASK**MAGNETIC PICKUP REMOVAL**

1. Rotate magnetic pickup (Figure 1, Item 20) in a counterclockwise direction.
2. Remove magnetic pickup (Figure 1, Item 20) from flowmeter (Figure 1, Item 7).

END OF TASK**MALE AND FEMALE COUPLINGS REMOVAL**

1. Remove eight nuts (Figure 1, Item 23), lockwashers (Figure 1, Item 22), washers (Figure 1, Item 21), screws (Figure 1, Item 30) and washers (Figure 1, Item 29) from male coupling (Figure 1, Item 5) and flowmeter (Figure 1, Item 7).
2. Remove male coupling (Figure 1, Item 5) and gasket (Figure 1, Item 6) from flowmeter (Figure 1, Item 7).
3. Discard gasket (Figure 1, Item 6) and lockwashers (Figure 1, Item 22).

MALE AND FEMALE COUPLINGS REMOVAL - CONTINUED

4. Remove eight nuts (Figure 1, Item 17), lockwashers (Figure 1, Item 18), washers (Figure 1, Item 19), screws (Figure 1, Item 15) and washers (Figure 1, Item 16) from female coupling (Figure 1, Item 9) and flowmeter (Figure 1, Item 7).
5. Remove female coupling (Figure 1, Item 9) and gasket (Figure 1, Item 8) from flowmeter (Figure 1, Item 7).
6. Discard gasket (Figure 1, Item 8) and lockwashers (Figure 1, Item 18).

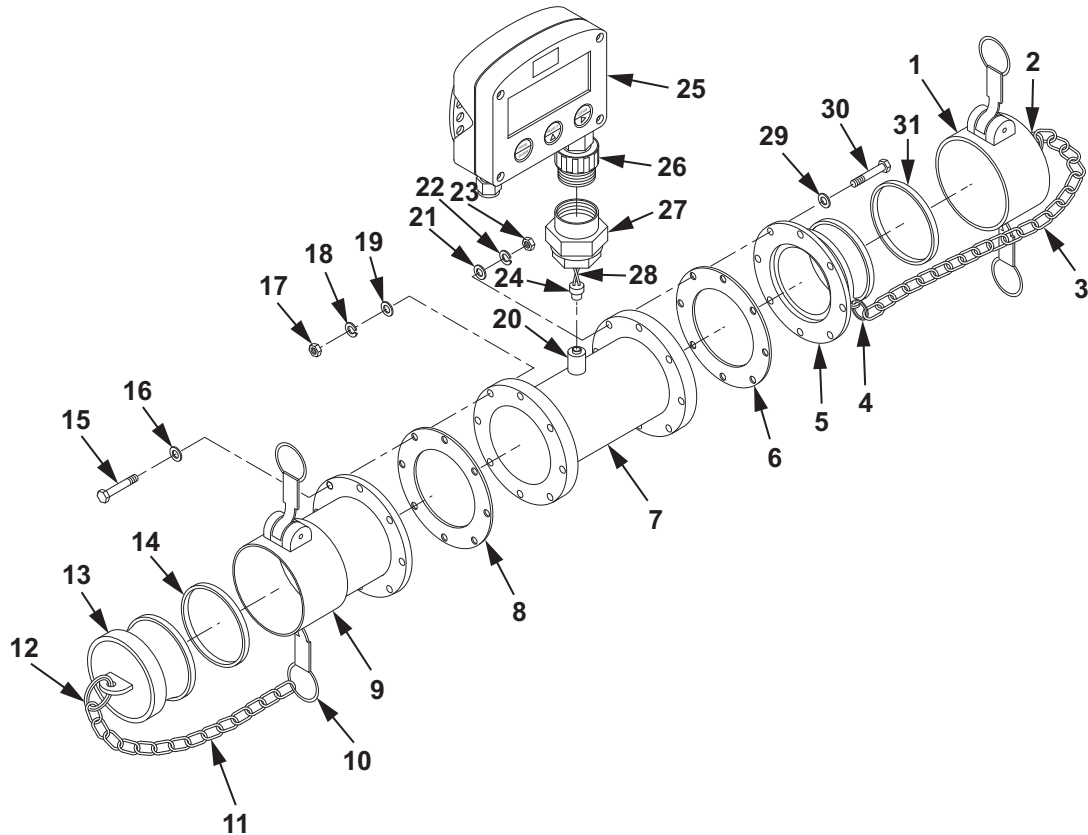


Figure 1. Tank Output Volume Meter Disassembly.

END OF TASK

ROTOR AND ROTOR SUPPORT REMOVAL

1. Remove retaining rings (Figure 2, Item 1) from flowmeter (Figure 2, Item 5).
2. Remove forward rotor support (Figure 2, Item 2) from flowmeter (Figure 2, Item 5).
3. Remove rear rotor support (Figure 2, Item 4) from flowmeter (Figure 2, Item 5).
4. Remove retaining rings (Figure 2, Item 3) from flowmeter (Figure 2, Item 5).
5. Remove rotor (Figure 2, Item 4) from flowmeter (Figure 2, Item 5).

END OF TASK**CLEANING****WARNING**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

1. Remove all buildup of dirt, oil and debris from all mating surfaces and clamping areas using a putty knife.
2. Clean all parts with a cleaning cloth dampened with solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect flowmeter rotors and rotor support for corrosion, evidence of wear, foreign object damage or entanglement, nicks, dents, scratches, misalignment of blades and freedom of movement. If rotors are corroded, nicked, scratched, excessively worn, binding or the blades are out of alignment, the flowmeter may produce incorrect readings. Replace flowmeter.

END OF TASK

**ASSEMBLY
ROTOR AND ROTOR SUPPORT INSTALLATION****NOTE**

When installing rear rotor support, ensure rotor support blades are engaged in the grooves in the flowmeter housing and do not spin after installation is complete.

Ensure the rotor spins freely in the flowmeter housing after installation of the rotor and rotor support assembly is complete.

1. Install rotor (Figure 2, Item 4) in flowmeter (Figure 2, Item 5).

NOTE

Ensure retaining ring is fully seated in grooves after installation.

2. Install retaining ring (Figure 2, Item 3) in flowmeter (Figure 2, Item 5).
3. Install rear rotor support (Figure 2, Item 6) in flowmeter (Figure 2, Item 5).
4. Install forward rotor support (Figure 2, Item 2) on rotor (Figure 2, Item 5).

NOTE

Ensure retaining ring is fully seated in grooves after installation.

5. Install retaining ring (Figure 2, Item 1) in flowmeter (Figure 2, Item 2).

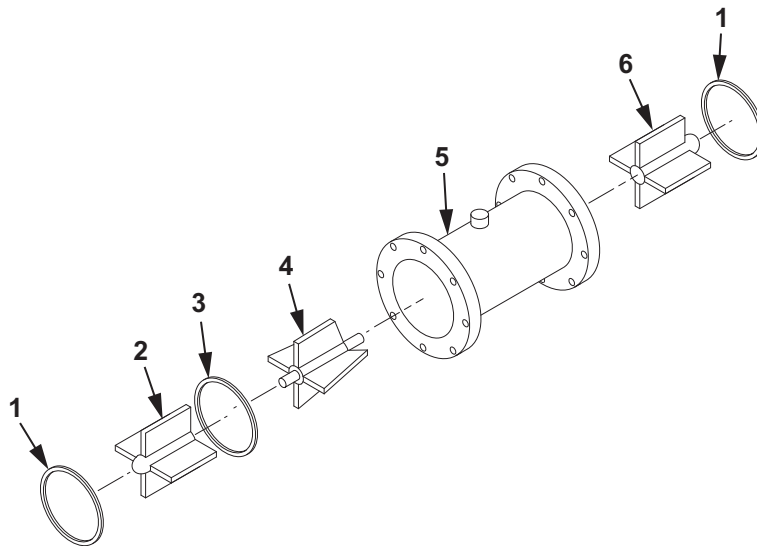


Figure 2. Tank Output Volume Meter Disassembly.

END OF TASK

MALE AND FEMALE COUPLINGS INSTALLATION

1. Install new gasket (Figure 3, Item 8) and female coupling (Figure 3, Item 9) on flowmeter (Figure 3, Item 7).
2. Install eight washers (Figure 3, Item 16), screws (Figure 3, Item 15), washers (Figure 3, Item 19), new lockwashers (Figure 3, Item 18) and nuts (Figure 3, Item 17) in female coupling (Figure 3, Item 9) and flowmeter (Figure 3, Item 7). Hand tighten eight nuts (Figure 3, Item 17).
3. Using torque wrench and adapter, torque eight nuts (Figure 3, Item 17) to 90–110 ft lb (122–149 N•m).
4. Install new gasket (Figure 3, Item 6) and male coupling (Figure 3, Item 5) on flowmeter (Figure 3, Item 7).
5. Install eight washers (Figure 3, Item 29), screws (Figure 3, Item 30), washers (Figure 3, Item 21), new lockwashers (Figure 3, Item 22) and nuts (Figure 3, Item 23) in male coupling (Figure 3, Item 5) and flowmeter (Figure 3, Item 7). Hand tighten eight nuts (Figure 3, Item 23).
6. Using torque wrench and adapter, torque eight nuts (Figure 3, Item 23) to 90–110 ft lb (122–149 N•m).

END OF TASK**MAGNETIC PICKUP INSTALLATION**

1. Position magnetic pickup (Figure 3, Item 20) into flowmeter (Figure 3, Item 7).
2. Hand tighten magnetic pickup (Figure 3, Item 20) by turning in a clockwise direction.

END OF TASK**TANK VOLUME METER MONITOR INSTALLATION**

1. Align the tank volume meter monitor (Figure 3, Item 25) over magnetic pickup (Figure 3, Item 20).
2. Connect wire harness (Figure 3, Item 28) to magnetic pickup (Figure 3, Item 20) by pushing down on the white nylon connector (Figure 3, Item 24).
3. Position the tank volume meter monitor (Figure 3, Item 25) on the magnetic pickup (Figure 3, Item 20).
4. While keeping the tank volume meter monitor (Figure 3, Item 25) stationary, tighten union (Figure 3, Item 27) by turning the nut (Figure 3, Item 26) clockwise in the opposite direction of the arrow.

END OF TASK**QUICK DISCONNECT DUST CAP AND CHAIN ASSEMBLY INSTALLATION**

1. Install new gasket (Figure 3, Item 14) and quick disconnect dust plug (Figure 3, Item 13) on female coupling (Figure 1, Item 9).
2. Install split ring (Figure 3, Item 12) on quick disconnect dust plug (Figure 3, Item 13).
3. Install split ring (Figure 3, Item 12) on chain (Figure 3, Item 11).
4. Install split ring (Figure 3, Item 10) on chain (Figure 3, Item 11).
5. Install split ring (Figure 3, Item 10) on female coupling (Figure 3, Item 9).
6. Install new gasket (Figure 3, Item 31) and quick disconnect dust cap (Figure 3, Item 1) on male coupling (Figure 3, Item 5).
7. Install split ring (Figure 3, Item 2) on chain (Figure 3, Item 3).
8. Install split ring (Figure 3, Item 4) on chain (Figure 3, Item 3).
9. Install split ring (Figure 3, Item 4) on male coupling (Figure 3, Item 5).
10. Install split ring (Figure 3, Item 2) on quick disconnect dust cap (Figure 3, Item 1).

QUICK DISCONNECT DUST CAP AND CHAIN ASSEMBLY INSTALLATION - CONTINUED

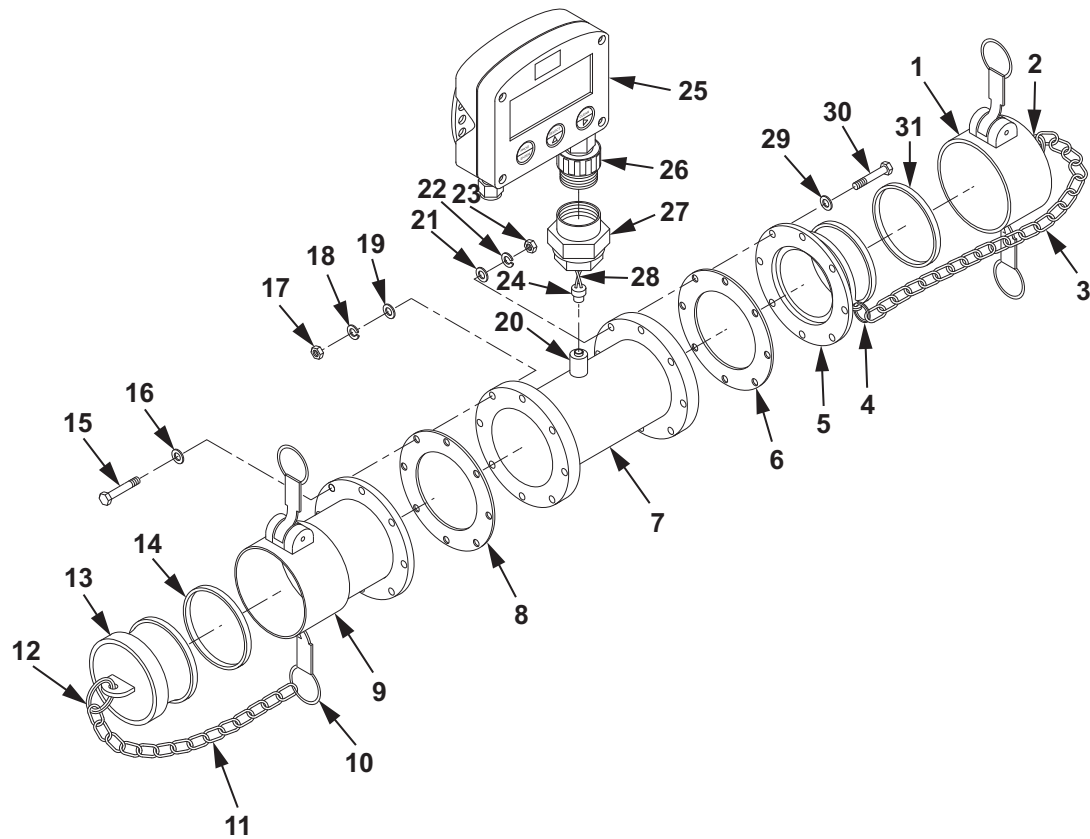


Figure 3. Tank Output Volume Meter Disassembly.

11. Install tank output volume meter assembly (WP 0157).

END OF TASK

END OF WORK PACKAGE

CHAPTER 7

DIRECT SUPPORT MAINTENANCE TROUBLESHOOTING PROCEDURES FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
DIRECT SUPPORT MASTER MALFUNCTION/SYMPTOM INDEX**

PUMPING ASSEMBLY

Pumping Assembly, Part Number 78100-100,
Leaks or Does Not Operate Properly WP 0162

COMPONENTS

2 In. Tee Assembly, Part Number 64022D,
Leaks or Will Not Connect With Other Components WP 0163

2 In. Female Quick Disconnect X 2 In. Valved Dry-Break Adapter
Assembly, Part Number 64020GQ,
Leaks or Will Not Connect With Other Components WP 0164

2 In. Male Quick Disconnect X 2 In. Valved Dry-Break Adapter
Assembly, Part Number 64020FQ,
Leaks or Will Not Connect With Other Components WP 0165

Closed Circuit Refueling (CCR) Nozzle Assembly, Part Number 64017B,
Leaks or Does Not Operate Properly WP 0166

D1 Nozzle Assembly, Part Number 64201CF4GHX,
Leaks or Will Not Connect With Other Components WP 0167

D1 Nozzle Assembly, Part Number 64201CGH2MQ,
Leaks or Will Not Connect With Other Components WP 0168

D1 Nozzle Assembly, Part Number 64201CGH2KQ,
Leaks or Will Not Connect With Other Components WP 0169

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1,
Will Not Turn WP 0170

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1,
Turns, but Will Not Pick Up Additive WP 0171

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1,
Injectors are Primed and System is Running, but Injection
is Either Low or Erratic WP 0172

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1,
Injector is Running Slowly Even With High Fuel Flow Rates WP 0173

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1,
Injector Will Not Flow and Appears to be Locked Up WP 0174

Fuel Additive Injection Assembly, Part Number TPI-4T-4A-1,
Injector Has Been Disassembled and Reassembled, but Now
Will Not Turn Regardless of Fuel Flow Rate WP 0175

4 In. Inline Flowmeter Assembly, Part Number 78017-100,
Does Not Indicate Amount of Fuel Pumped WP 0176

4 In. Inline Flowmeter Assembly, Part Number 78017-100,
Does Not Indicate Correct Amount of Fuel Pumped WP 0177

4 In. Inline Flowmeter Assembly, Part Number 78017-100,
Does Not Indicate Fuel Flow WP 0178

4 In. Inline Flowmeter Assembly, Part Number 78017-100,
Leaks During Operation WP 0179

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
PUMPING ASSEMBLY, PART NUMBER 78100-100,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 10-4320-372-14

PUMPING ASSEMBLY, PART NUMBER 78100-100, LEAKS OR DOES NOT OPERATE PROPERLY**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4320-372-14 for troubleshooting the pumping assembly.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
2 IN. TEE ASSEMBLY, PART NUMBER 64022D,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0181
WP 0182

Personnel Required

Quartermaster and Chemical Repairman 63J

2 IN. TEE ASSEMBLY, PART NUMBER 64022D, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Tee assembly leaks.

MALFUNCTION

Tee assembly leaks fuel.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0182).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Tee assembly will not connect with other components.

MALFUNCTION

Tee assembly damaged.

CORRECTIVE ACTION

1. Repair tee assembly (WP 0181).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES**

**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0182

Personnel Required

Quartermaster and Chemical Repairman 63J

**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks fuel.

MALFUNCTION

Adapter assembly couplings leaks fuel.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0182).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Adapter assembly will not connect with other components.

MALFUNCTION

Adapter assembly damaged or defective.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0182).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

**2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**

MALFUNCTION

Adapter assembly quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0182).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES**
**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0183

Personnel Required

Quartermaster and Chemical Repairman 63J

**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Adapter assembly leaks.

MALFUNCTION

Adapter assembly leaks fuel.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0183).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Adapter assembly will not connect with other components.

MALFUNCTION

Adapter assembly damaged or defective.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0183).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

**2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**

MALFUNCTION

Adapter assembly quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

1. Repair adapter assembly (WP 0183).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
CLOSED CIRCUIT REFUELING (CCR) NOZZLE ASSEMBLY, PART NUMBER 64017B,
LEAKS OR DOES NOT OPERATE PROPERLY**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

TM 10-4930-248-13&P

CCR NOZZLE ASSEMBLY, PART NUMBER 64017B**SYMPTOM****MALFUNCTION****CORRECTIVE ACTION**

Refer to TM 10-4930-248-13&P for direct support troubleshooting procedures.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CF4GHX,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0186
WP 0187

Personnel Required

Quartermaster and Chemical Repairman 63J

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH5, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

D1 nozzle assembly leaks at closed circuit refueling receptacle when refueling.

MALFUNCTION

D1 nozzle assembly defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0186).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Quick disconnect coupling half leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair coupling assembly (WP 0187).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH5, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Nose seal leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0186).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Operating lever leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0186).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Swivel joint leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0186).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not join with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

1. Repair coupling assembly (WP 0187).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0188

Personnel Required

Quartermaster and Chemical Repairman 63J

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

D1 nozzle assembly leaking during operation.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Nose seal leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Operating lever leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Swivel joint leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

D1 nozzle assembly leaks at refueling receptacle when refueling.

MALFUNCTION

If serviceable D1 nozzle assembly does not leak when refueling the same aircraft or vehicle, the original D1 nozzle assembly is defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not join with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

D1 nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

D1 nozzle assembly defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0188).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ,
LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0189

Personnel Required

Quartermaster and Chemical Repairman 63J

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

D1 nozzle assembly leaking during operation.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Nose seal leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

Operating lever leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

Swivel joint leaking.

MALFUNCTION

Component parts are defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

D1 nozzle assembly leaks at refueling receptacle when refueling.

MALFUNCTION

If serviceable D1 nozzle does not leak when refueling the same aircraft or vehicle, the original D1 nozzle is defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**SYMPTOM**

D1 nozzle assembly will not join with other components.

MALFUNCTION

Quick disconnect coupling half is defective or damaged.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK

D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, LEAKS OR WILL NOT CONNECT WITH OTHER COMPONENTS - CONTINUED**SYMPTOM**

D1 nozzle assembly will not allow fuel to enter the tank of the aircraft or vehicle.

MALFUNCTION

D1 nozzle assembly defective.

CORRECTIVE ACTION

1. Repair D1 nozzle assembly (WP 0189).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
WILL NOT TURN**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0190
WP 0191
WP 0196

Personnel Required

Quartermaster and Chemical Repairman 63J

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, WILL NOT TURN**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly will not turn.

MALFUNCTION

A line check valve is installed incorrectly or not functioning properly.

CORRECTIVE ACTION

1. Remove FSII pump suction check valve (WP 0190) and FSII pump discharge check valve (WP 0191).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fluid motor rotor and shaft assembly has loose or broken vanes.

CORRECTIVE ACTION

1. Repair fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
TURNS, BUT WILL NOT PICK UP ADDITIVE**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

References

WP 0015
WP 0192
WP 0193
WP 0194
WP 0195
WP 0196

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injection assembly turns, but will not pick up additive.

MALFUNCTION

FSII pump diaphragm is leaking.

CORRECTIVE ACTION

1. Replace FSII injection pump diaphragm (WP 0192).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

FSII injection pump damaged.

CORRECTIVE ACTION

1. Replace FSII injection pump (WP 0194).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, TURNS, BUT WILL NOT PICK UP ADDITIVE - CONTINUED**MALFUNCTION**

CI and SDA pump lip seal is leaking.

CORRECTIVE ACTION

1. Replace CI and SDA injection pump lip seal (WP 0193).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Damaged CI and SDA injection pump.

CORRECTIVE ACTION

1. Replace CI and SDA injection pump (WP 0195).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly turns, but still will not pick up additive, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Fuel additive injection assembly turns, but still will not pick up additive.

CORRECTIVE ACTION

1. Repair fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical 63J

References

WP 0015
WP 0190
WP 0192
WP 0193
WP 0194
WP 0195
WP 0196

INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

System is primed and running, but injection is either low or erratic.

MALFUNCTION

Suction check valve not functioning properly.

CORRECTIVE ACTION

1. Remove and install FSII pump suction check valve (WP 0190).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

FSII pump diaphragm is defective.

CORRECTIVE ACTION

1. Replace FSII injection pump diaphragm (WP 0192).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK

INJECTORS ARE PRIMED AND SYSTEM IS RUNNING, BUT INJECTION IS EITHER LOW OR ERRATIC - CONTINUED**MALFUNCTION**

FSII pump power frame damaged.

CORRECTIVE ACTION

1. Replace FSII injection pump (WP 0194).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

CI and SDA injection pump lip seal is defective.

CORRECTIVE ACTION

1. Replace CI and SDA injection pump lip seal (WP 0193).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

CI and SDA pump power frame damaged.

CORRECTIVE ACTION

1. Replace CI and SDA injection pump (WP 0195).
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If fuel additive injection assembly still has low or erratic injection while the system is running, proceed to next malfunction.

END OF TASK**MALFUNCTION**

Performance ratio of the fluid motor is out of tolerance.

CORRECTIVE ACTION

1. Repair fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR IS RUNNING SLOWLY EVEN WITH HIGH FUEL FLOW RATES**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

WP 0015

WP 0196

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTOR IS RUNNING SLOWLY EVEN WITH HIGH FUEL FLOW RATES

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Injector is running slowly even with high flow rates.

MALFUNCTION

Performance ratio of the fluid motor is out of tolerance.

CORRECTIVE ACTION

1. Repair fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**MALFUNCTION**

Fluid motor vanes excessively worn.

CORRECTIVE ACTION

1. Repair fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR WILL NOT FLOW AND APPEARS TO BE LOCKED UP**

INITIAL SETUP:**Personnel Required**

Quartermaster and Chemical Repairman 63J

References

WP 0015

WP 0196

INJECTOR WILL NOT FLOW AND APPEARS TO BE LOCKED UP**WARNING**

CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Fuel additive injector is locked up.

MALFUNCTION

Fluid motor has thrown one or more vanes.

CORRECTIVE ACTION

1. Repair fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1,
INJECTOR HAS BEEN DISASSEMBLED AND REASSEMBLED, BUT NOW WILL NOT TURN REGARDLESS OF FUEL FLOW
RATE**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0196

Personnel Required

Quartermaster and Chemical Repairman 63J

FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, INJECTOR HAS BEEN DISASSEMBLED AND REASSEMBLED, BUT NOW WILL NOT TURN REGARDLESS OF FUEL FLOW RATE

WARNING**CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Injector will not turn.

MALFUNCTION

Fuel supply hoses connected in reverse.

CORRECTIVE ACTION

1. Reverse the fuel supply hose connections.
2. Perform operational checkout of the FSSP (WP 0015) after installation.
3. If the fuel additive injection assembly still will not turn, proceed to next malfunction.

END OF TASK**MALFUNCTION**

The rotor and shaft assembly has been installed backwards.

CORRECTIVE ACTION

1. Repair the fuel additive injection pump motor (WP 0196).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100
DOES NOT INDICATE AMOUNT OF FUEL PUMPED**

INITIAL SETUP:

Personnel Required

Quartermaster and Chemical Repairman 63J

DOES NOT INDICATE AMOUNT OF FUEL PUMPED

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly does not indicate amount of fuel pumped.

MALFUNCTION

Flowmeter assembly is malfunctioning.

CORRECTIVE ACTION

Contact General Support Maintenance.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED**

INITIAL SETUP:

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Inline flowmeter assembly does not indicate the correct amount of fuel pumped.

MALFUNCTION

Register readout does not indicate the correct amount of fuel flowing through the flowmeter assembly.

CORRECTIVE ACTION

Contact General Support Maintenance.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE FUEL FLOW**

INITIAL SETUP:

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE FUEL FLOW

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Inline flowmeter assembly does not indicate fuel flow.

MALFUNCTION

Register readout has no indication of fuel flowing through the flowmeter assembly.

CORRECTIVE ACTION

Contact General Support Maintenance.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
LEAKS DURING OPERATION**

INITIAL SETUP:

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, LEAKS DURING OPERATION

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

4 in. inline flowmeter assembly leaks.

MALFUNCTION

4 in. inline flowmeter assembly leaks.

CORRECTIVE ACTION

Contact General Support Maintenance.

END OF TASK

END OF WORK PACKAGE

CHAPTER 8

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS FOR FUEL SYSTEM SUPPLY POINT (FSSP)

DIRECT SUPPORT MAINTENANCE
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, 2 IN. QUICK DISCONNECT COUPLING HALF (NON-VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 47534, MAINTENANCE DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY, TESTING

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from 1 in. nozzle assembly regulator (WP 0133).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (Item 50, WP 0215)
O-ring (Item 57, WP 0215)
Petrolatum technical (Item 9, WP 0214)
Seal, plain (2) (Item 23, WP 0215)

WARNING

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

DISASSEMBLY

1. Remove snap ring and screen (Figure 1, Item 15).

NOTE

Ball retaining screw is self-locking and is designed to be reused up to 15 times before replacement is necessary. If a torque wrench is not used to check running torque when removing the screw, the screw must be replaced.

Coupling should be held in an upright position while removing the ball retaining screw to prevent loss of continuity ball.

2. Remove ball retaining screw (Figure 1, Item 6) using a torque wrench and screwdriver bit to check the running torque. Replace ball retaining screw (Figure 1, Item 6) if the running torque is less than 3.5 in. lb (0.45 N-m).
3. Remove O-ring (Figure 1, Item 5) and discard.
4. Hold coupling (Figure 1, Item 20) over a cleaning cloth with screw hole orientated toward cleaning cloth. Rotate coupling (Figure 1, Item 20) back and forth until all 41 balls (Figure 1, Item 4) have collected in the cleaning cloth.
5. Remove coupling (Figure 1, Item 20) and O-ring (Figure 1, Item 2) from inlet adapter (Figure 1, Item 1) and discard O-ring (Figure 1, Item 2).
6. Remove spring (Figure 1, Item 3) and seal (Figure 1, Item 14) from coupling (Figure 1, Item 20). Discard seal (Figure 1, Item 14).

NOTE

If the interlock pin mechanism is working correctly, there is no need to remove the ring, pin or spring. If the interlock pin mechanism must be replaced, perform steps 7 and 8.

7. Remove ring (Figure 1, Item 21) from pin (Figure 1, Item 17).
8. Remove pin (Figure 1, Item 17) and spring (Figure 1, Item 18) from coupling (Figure 1, Item 20).
9. If the dust cap (Figure 1, Item 12) or cable (Figure 1, Item 13) is to be replaced, cut cable (Figure 1, Item 13) to remove.
10. Remove cable (Figure 1, Item 13) from ring (Figure 1, Item 21).
11. Remove seal (Figure 1, Item 11) from the dust cap (Figure 1, Item 12). Discard seal (Figure 1, Item 11).

NOTE

Do not remove continuity ball (Figure 1, Item 8) from coupling. If continuity ball requires replacement, the entire coupling assembly must be replaced.

Remove the bumper only if the bumper or the lugs must be replaced.

12. Remove bumper (Figure 1, Item 10).

NOTE

Remove the lugs only if the lugs must be replaced.

13. Remove screws (Figure 1, Item 7, 19) to remove lugs (Figure 1, Item 16, 9).

DISASSEMBLY - CONTINUED

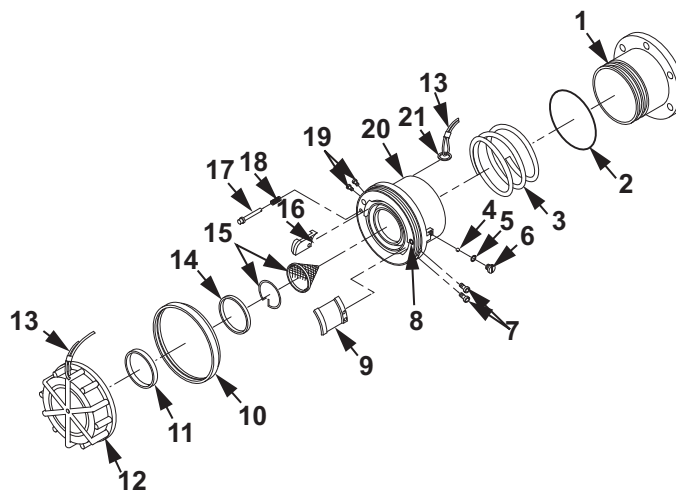


Figure 1. Non-Valved Dry-Break Coupling Disassembly.

END OF TASK

NON-VALVED DRY-BREAK COUPLING ASSEMBLY COMPONENTS CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Remove debris and foreign objects from the filter screen.
3. Allow parts to thoroughly dry.

END OF TASK

INSPECTION

1. Check all non-valved dry-break coupling assembly components for cracks. If cracks are found, replace with a serviceable like item.
2. Check non-valved dry-break coupling assembly for internal corrosion. If internal corrosion is found, replace coupling assembly with a serviceable like item.
3. Check bumper for evidence of cracking or wear. If worn or cracked, replace bumper.
4. Check lugs for looseness and evidence of cracking or wear. If lugs are loose, check the torque of the screws. Using a torque wrench and screwdriver bit torque the screws to 6 in. lb (0.68 N-m). If lugs are cracked, worn or still loose after torquing screws, replace lugs.
5. Check the hole in the face of the coupling adjacent to the pin to be sure it is clear and free of contamination. If contamination is found, remove contaminants.
6. Check the dust cap for cracks or broken areas. If found, replace dust cap.
7. Check the small spring-loaded continuity ball located in the face of the coupling. Push the ball in and check to be sure that the ball pops back into place. If the ball will not pop back into place after being depressed, replace the non-valved dry-break coupling assembly.

END OF TASK**ASSEMBLY**

1. Install new seal (Figure 2, Item 11) into the dust cap (Figure 2, Item 12). Use a finger to seat the seal (Figure 2, Item 11) in the groove of the dust cap (Figure 2, Item 12).

NOTE

If cable (Figure 2, Item 13) was cut to remove it from the dust cap (Figure 2, Item 12), a new cable (Figure 2, Item 13) must be installed.

2. Attach a length of cable (Figure 2, Item 13), approximately 18 in. long, to dust cap (Figure 2, Item 12) by looping about 6 in. of cable (Figure 2, Item 13) through the hole in dust cap (Figure 2, Item 12), forming a loop back on the cable (Figure 2, Item 13).
3. Retain the loose end of the cable (Figure 2, Item 13) with a sleeve (Figure 2, Item 22).
4. Using a pair of pliers, crush the sleeve (Figure 2, Item 22) to retain the cable (Figure 2, Item 13).
5. Attach the cable (Figure 2, Item 13) to ring (Figure 2, Item 21) by looping cable (Figure 2, Item 13) through the ring (Figure 2, Item 21), forming a loop back on the cable (Figure 2, Item 13).
6. Retain the loose end of the cable (Figure 2, Item 13) with a sleeve (Figure 2, Item 12).
7. Using a pair of pliers, crush the sleeve (Figure 2, Item 12) to retain the cable (Figure 2, Item 13).

NOTE

If pin and spring were removed, install the pin and spring.

8. Install spring (Figure 2, Item 18) into hole in face of coupling (Figure 2, Item 20).
9. Install pin (Figure 2, Item 17) through spring (Figure 2, Item 18) and retain pin (Figure 2, Item 17) by threading ring (Figure 2, Item 21) through the hole in the pin (Figure 2, Item 17).

NOTE

If lugs and bumper were removed, install the lugs and bumper.

10. Install lug (Figure 2, Item 9) by matching the holes in the lug with the holes in the coupling (Figure 2, Item 20).
11. Install two screws (Figure 2, Item 7) through coupling (Figure 2, Item 20) and into lug (Figure 2, Item 9).
12. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 7) to 6 in. lb (0.68 N-m).
13. Install lug (Figure 2, Item 16) by matching the holes in the lug with the holes in the coupling (Figure 2, Item 20).
14. Install two screws (Figure 2, Item 19) through coupling (Figure 2, Item 20) and into lug (Figure 2, Item 16).
15. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 19) to 6 in. lb (0.68 N-m).
16. Install bumper (Figure 2, Item 10) with the thin lip seal end facing away from the coupling body (Figure 2, Item 20).

ASSEMBLY - CONTINUED

NOTE

After installation, the outer face of the seal (Figure 2, Item 14) must be smooth and free of wrinkles.

17. Install a new seal (Figure 2, Item 14) into the groove in the face of the coupling (Figure 2, Item 20).
18. Install spring (Figure 2, Item 3) into the groove within the larger opening of the coupling (Figure 2, Item 20).

NOTE

The inlet adapter (Figure 2, Item 1) contains two grooves. The groove (rounded bottom) nearest the end is for the ball race connection. The second groove (square bottom) is where O-ring (Figure 2, Item 2) will be installed.

19. Lubricate new O-ring (Figure 2, Item 2) with a light coat of petrolatum.
20. Install new O-ring (Figure 2, Item 2) in second groove of inlet adapter (Figure 2, Item 1).
21. Press inlet adapter (Figure 2, Item 1) into coupling (Figure 2, Item 20) to align the groove in the coupling (Figure 2, Item 20) with the groove in the inlet adapter (Figure 2, Item 1).

NOTE

Do not use any form of grease on balls (Figure 2, Item 4).

When inserting balls (Figure 2, Item 4) in coupling (Figure 2, Item 20), use caution to avoid dropping loose balls. Work over a cleaning cloth.

22. Hold coupling (Figure 2, Item 20) over a cleaning cloth with screw hole facing up and install balls (Figure 2, Item 4), one at a time, rotating coupling (Figure 2, Item 20) back and forth until all 41 balls (Figure 2, Item 4) have been inserted.
23. Install new O-ring (Figure 2, Item 5) and ball retaining screw (Figure 2, Item 6) in coupling (Figure 2, Item 20).
24. Using torque wrench and screwdriver bit, torque ball retaining screw (Figure 2, Item 6) to 25 in. lb (2.8 N·m).
25. Install snap ring and screen (Figure 2, Item 15).

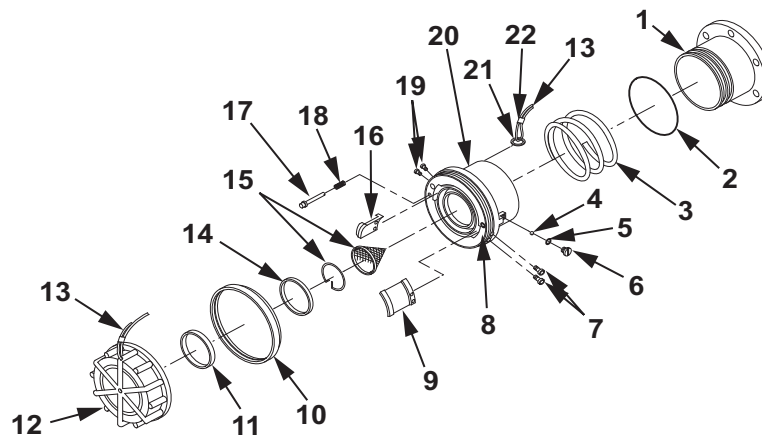


Figure 2. Non-Valved Dry-Break Coupling Assembly.

END OF TASK

TESTING

1. Using the repaired non-valved dry-break coupling assembly and a similar non-valved dry-break coupling assembly, make a connection with the two non-valved dry-break coupling assemblies to ensure that couplings will connect properly. If couplings will not connect properly, repair non-valved dry-break coupling assembly.
2. Disconnect non-valved dry-break coupling assemblies by pulling ring (Figure 3, Item 2) while rotating non-valved dry-break coupling assemblies counterclockwise.
3. Connect the repaired non-valved dry-break coupling assembly to a fluid pressure source capable of 100 PSI (689.47 kPa) by means of another dry-break coupling assembly.
4. Install the dust cap (Figure 3, Item 1) on the repaired non-valved dry-break coupling assembly.

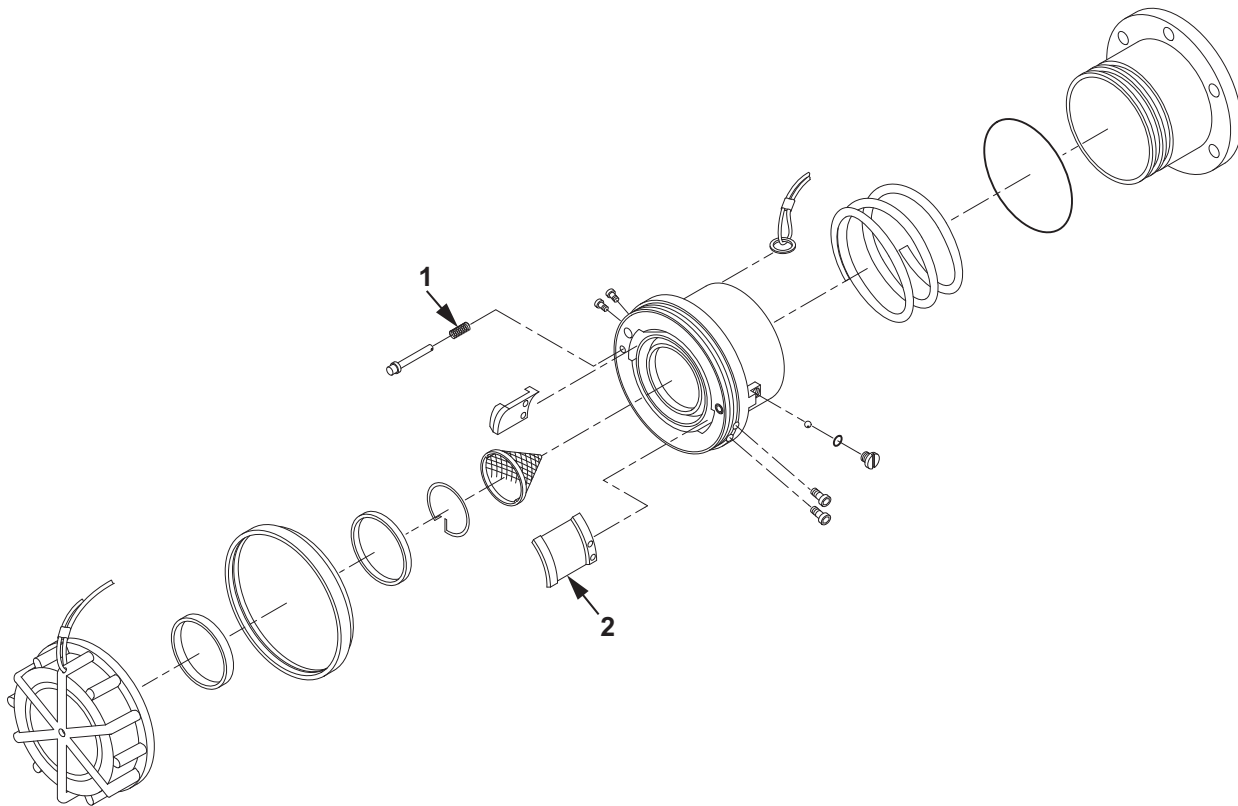


Figure 3. Non-Valved Dry-Break Coupling Testing.

5. Apply pressure of 5 PSI (34.47 kPa) to the repaired non-valved dry-break coupling assembly.
6. Increase pressure to 100 PSI (689.47 kPa) to the repaired non-valved dry-break coupling assembly.
7. Inspect repaired non-valved dry-break coupling assembly for leakage over a period of at least 1 minute. If non-valved dry-break coupling assembly leaks, repair non-valved dry-break coupling assembly.
8. Reduce pressure from the test system and remove repaired non-valved dry-break coupling assembly.
9. Install nozzle assembly in 1 in. nozzle assembly regulator (WP 0133).

END OF TASK**END OF WORK PACKAGE**

DIRECT SUPPORT MAINTENANCE
2 IN. TEE ASSEMBLY (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64022D, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY, TESTING

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Tee assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (Item 50, WP 0214)
Seal, plain (2) (Item 23, WP 0215)
Seal, plain (Item 24, WP 0215)
O-ring (Item 54, WP 0215)
O-ring (Item 58, WP 0215)
O-ring (2) (Item 51, WP 0215)
O-ring (Item 52, WP 0215)
Seal, downstream (Item 27, WP 0215)

2 IN. TEE DISASSEMBLY**NOTE**

Screw (Figure 1, Item 9) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 9), then screw (Figure 1, Item 9) should be replaced.

1. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 9). If running torque is less than 3.5 in. lb (0.45 N•m), discard screw (Figure 1, Item 9).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 9) to prevent loss of ball bearings (Figure 1, Item 7).

2. Remove screw (Figure 1, Item 9) from coupling (Figure 1, Item 1).
3. Remove O-ring (Figure 1, Item 8) from screw (Figure 1, Item 9).
4. Discard O-ring (Figure 1, Item 8).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 7) are accounted for during disassembly.

5. Hold coupling (Figure 1, Item 1) with screw hole toward cleaning cloth and rotate coupling (Figure 1, Item 1) to allow ball bearings (Figure 1, Item 7) to fall onto the cleaning cloth.
6. Remove coupling (Figure 1, Item 1) from tee assembly (Figure 1, Item 2).
7. Remove seal (Figure 1, Item 6) from tee assembly (Figure 1, Item 2). Discard seal (Figure 1, Item 5).
8. Remove eight springs (Figure 1, Item 5) from tee assembly (Figure 1, Item 2).
9. Remove O-ring (Figure 1, Item 4) from inside groove of tee assembly (Figure 1, Item 2).
10. Discard O-ring (Figure 1, Item 4).
11. Remove O-ring (Figure 1, Item 3) from outer groove of tee assembly (Figure 1, Item 2).
12. Discard O-ring (Figure 1, Item 3).

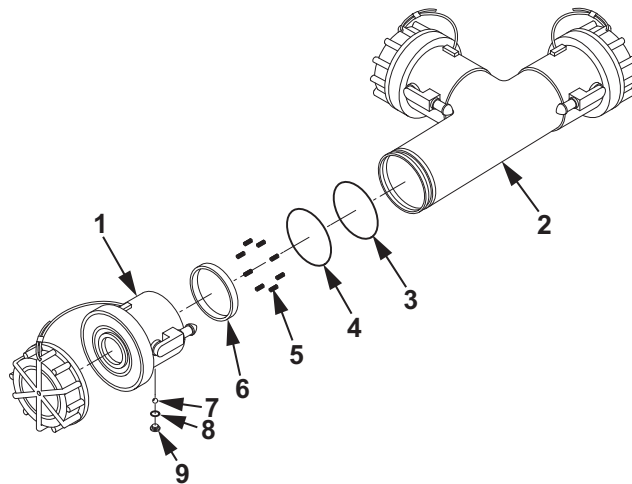


Figure 1. 2 In. Tee Disassembly.

END OF TASK

2 IN. TEE CLEANING

WARNING

**CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK

2 IN. TEE COMPONENTS INSPECTION

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect dry-break valved coupling assemblies for signs of leakage or damage. If signs of leakage or damage exists, repair dry-break valved coupling assemblies.

END OF TASK

VALVED DRY-BREAK COUPLING DISASSEMBLY

1. Rotate ball valve (Figure 2, Item 4) to the closed position and remove from inside coupling (Figure 2, Item 28).
2. Remove spring washer (Figure 2, Item 3), stop pin (Figure 2, Item 2) and O-ring (Figure 2, Item 1) from inside coupling (Figure 2, Item 28).
3. Discard O-ring (Figure 2, Item 1).
4. Remove seal (Figure 2, Item 30) from coupling (Figure 2, Item 28).
5. Discard seal (Figure 2, Item 30).
6. Remove O-ring (Figure 2, Item 7) from coupling (Figure 2, Item 28).
7. Discard O-ring (Figure 2, Item 7).
8. Remove two screws (Figure 2, Item 10) from control arm (Figure 2, Item 9).
9. Remove control arm (Figure 2, Item 9) from coupling (Figure 2, Item 28).

NOTE

If it is necessary to disassemble control arm (Figure 2, Item 9), perform the following steps.

- a. Remove screw (Figure 2, Item 12) from control arm (Figure 2, Item 9).
- b. Remove spring (Figure 2, Item 11) from control arm (Figure 2, Item 9).
- c. Remove knob (Figure 2, Item 8) from control arm (Figure 2, Item 9).
10. Remove control arm shaft (Figure 2, Item 5) and O-ring (Figure 2, Item 6) from inside coupling (Figure 2, Item 28).
11. Discard O-ring (Figure 2, Item 6).
12. Remove dust cap (Figure 2, Item 23) from coupling (Figure 2, Item 28).
13. Remove seal (Figure 2, Item 22) from dust cap (Figure 2, Item 23).
14. Discard seal (Figure 2, Item 22).

NOTE

If it is necessary to replace dust cap (Figure 2, Item 23), perform the following removal steps.

15. Cut cable (Figure 2, Item 16) or remove split ring (Figure 2, Item 14) from coupling (Figure 2, Item 28) and cable (Figure 2, Item 16).
16. Cut cable (Figure 2, Item 16) from dust cap (Figure 2, Item 23).
17. Remove cable (Figure 2, Item 16) and sleeve (Figure 2, Item 15).
18. Remove seal (Figure 2, Item 24) from coupling (Figure 2, Item 28) interface.
19. Discard seal (Figure 2, Item 24).

NOTE

If it is necessary to replace bumper (Figure 2, Item 21) or lugs (Figure 2, Item 20, 25), perform the following steps.

20. Remove bumper (Figure 2, Item 21) from coupling (Figure 2, Item 28).
21. Remove two screws (Figure 2, Item 13) from coupling (Figure 2, Item 28).
22. Remove lug (Figure 2, Item 20) or lug (Figure 2, Item 25) from coupling (Figure 2, Item 28).

NOTE

Do not remove spring washer (Figure 2, Item 19), ball bearing (Figure 2, Item 18) or spring (Figure 2, Item 17). If replacement of ball bearing (Figure 2, Item 18) is required, then coupling (Figure 2, Item 28) must be replaced.

If it is necessary to replace lockout pin (Figure 2, Item 26), perform the following removal steps.

23. Remove screw (Figure 2, Item 29) from coupling (Figure 2, Item 28).
24. Remove lockout pin (Figure 2, Item 26) from coupling (Figure 2, Item 28).

VALVED DRY-BREAK COUPLING DISASSEMBLY - CONTINUED

25. Remove spring (Figure 2, Item 27) from coupling (Figure 2, Item 28).

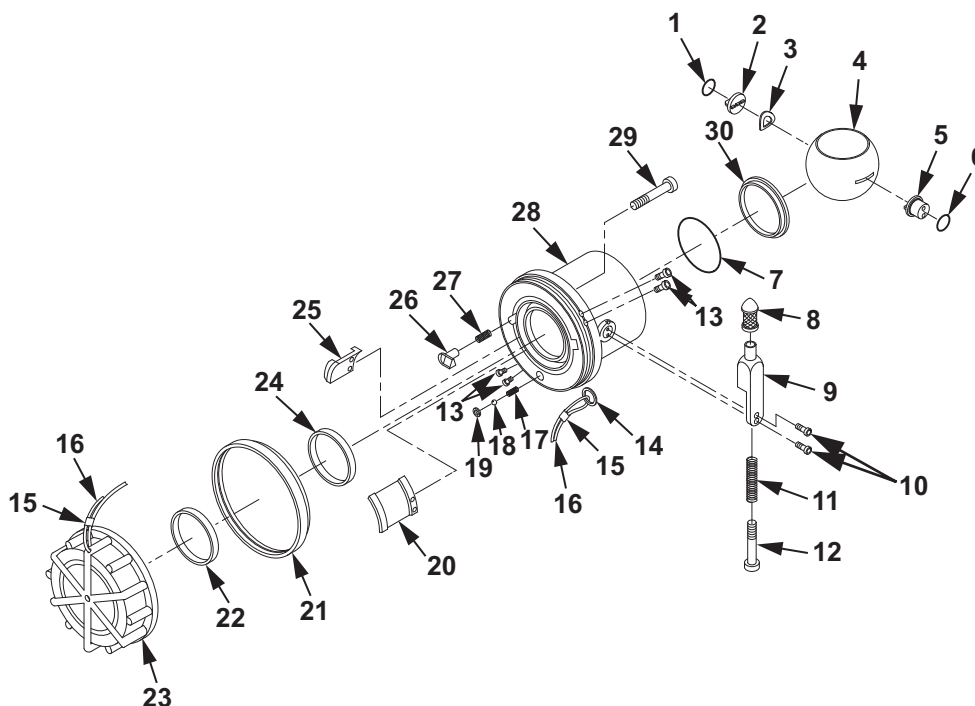


Figure 2. Valved Dry-Break Coupling Disassembly.

END OF TASK

VALVED DRY-BREAK COUPLING COMPONENTS CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.

VALVED DRY-BREAK COUPLING COMPONENTS CLEANING - CONTINUED

2. Allow parts to thoroughly dry.

END OF TASK**VALVED DRY-BREAK COUPLING COMPONENTS INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 3, Item 21) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.
3. Inspect dust cap (Figure 3, Item 23) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 3, Item 18) is to provide electrical continuity between mating surfaces.

4. Inspect ball bearing (Figure 3, Item 18) located in face of coupling for damage. Push the ball bearing (Figure 3, Item 18) in and ensure it pops back into place. If damage is found or ball bearing (Figure 3, Item 18) does not pop back into place, replace coupling (Figure 3, Item 28).
5. Inspect control arm (Figure 3, Item 9) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK**VALVED DRY-BREAK COUPLING ASSEMBLY****NOTE**

If it was necessary to replace lockout pin (Figure 3, Item 26), perform the following installation steps.

1. Install screw (Figure 3, Item 29) into coupling (Figure 3, Item 28).
2. Install spring (Figure 3, Item 27) into coupling (Figure 3, Item 28) and over screw (Figure 3, Item 29).
3. Install lockout pin (Figure 3, Item 26) into coupling (Figure 3, Item 28).
4. Tighten screw (Figure 3, Item 29) until ramp edge of lockout pin (Figure 3, Item 26) is even with or slightly below the adjacent ledge of coupling (Figure 3, Item 28).

NOTE

If it was necessary to replace bumper (Figure 3, Item 21) or lugs (Figure 3, Item 20, 25), perform the following installation steps.

5. Position lug (Figure 3, Item 20) or lug (Figure 3, Item 25) in coupling (Figure 3, Item 28).
6. Install two screws (Figure 3, Item 13) into coupling (Figure 3, Item 28).
7. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 13) to 6 in. lb (0.70 N•m).
8. Position bumper (Figure 3, Item 21) with thin lip seal end facing away from coupling (Figure 3, Item 28).
9. Install bumper (Figure 3, Item 21) on coupling (Figure 3, Item 28).

NOTE

If it was necessary to replace dust cap (Figure 5, Item 23), perform the following installation steps.

10. Lightly lubricate new seal (Figure 3, Item 24) with petrolatum and install new seal (Figure 3, Item 24) into coupling (Figure 3, Item 28).
11. Loop one end of 18 in. cable (Figure 3, Item 16) through sleeve (Figure 3, Item 15), dust cap (Figure 3, Item 23) and back through sleeve (Figure 3, Item 15).
12. Using pliers, crimp sleeve (Figure 3, Item 15).
13. Loop other end of 18 in. cable (Figure 3, Item 16) through sleeve (Figure 3, Item 15), split ring (Figure 3, Item 14) and back through sleeve (Figure 3, Item 15).

VALVED DRY-BREAK COUPLING ASSEMBLY - CONTINUED

14. Using pliers, crimp sleeve (Figure 3, Item 15).
15. Lightly lubricate new seal (Figure 3, Item 22) and install new seal (Figure 3, Item 22) into dust cap (Figure 3, Item 23).
16. Install dust cap (Figure 3, Item 23) on coupling (Figure 3, Item 28).
17. Lightly lubricate new O-ring (Figure 3, Item 6) with petrolatum and install new O-ring (Figure 3, Item 6) on control arm shaft (Figure 1, Item 5).

NOTE

If it was necessary to disassemble control arm (Figure 2, Item 9), perform the following assembly steps.

18. Place spring (Figure 3, Item 11) on screw (Figure 3, Item 12).
19. Install screw (Figure 3, Item 12) into control arm (Figure 3, Item 9).
20. Install knob (Figure 3, Item 8) on control arm (Figure 3, Item 9).

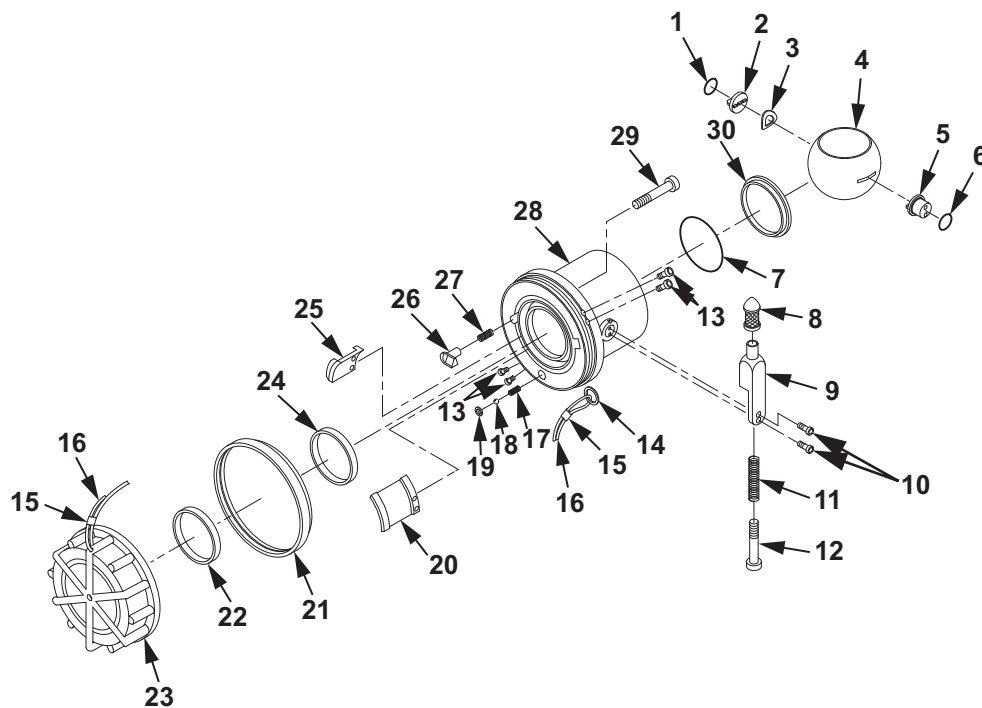


Figure 3. Valved Dry-Break Coupling Assembly.

VALVED DRY-BREAK COUPLING ASSEMBLY - CONTINUED

21. Tighten screw (Figure 4, Item 12) hand tight.
22. Install control arm shaft (Figure 4, Item 5) inside coupling (Figure 4, Item 28).
23. Position control arm (Figure 4, Item 9) with holes on control arm shaft (Figure 4, Item 5).
24. Install two screws (Figure 4, Item 10) through control arm (Figure 4, Item 9) and into control arm shaft (Figure 4, Item 5).
25. Using torque wrench and screwdriver bit, torque screws (Figure 4, Item 10) to 8 in. lb (0.90 N•m).
26. Lightly lubricate new O-ring (Figure 4, Item 7) with petrolatum and install new O-ring (Figure 4, Item 7) in coupling (Figure 4, Item 28).
27. Install new seal (Figure 4, Item 30) into coupling (Figure 4, Item 28).
28. Lightly lubricate new O-ring (Figure 4, Item 1) with petrolatum and install new O-ring (Figure 4, Item 1) in groove of stop pin (Figure 4, Item 2).
29. Install spring washer (Figure 4, Item 3) in groove of stop pin (Figure 4, Item 2).
30. Install stop pin (Figure 4, Item 2) inside coupling (Figure 4, Item 28).
31. Align slots in ball valve (Figure 4, Item 4) with tangs on control arm shaft (Figure 4, Item 5) and stop pin (Figure 4, Item 2).
32. Install ball valve (Figure 4, Item 4) in coupling (Figure 4, Item 28).
33. Rotate control arm (Figure 4, Item 9) to the open position to retain ball valve (Figure 4, Item 4) in place.
34. Test function of lockout pin (Figure 4, Item 26), if not removed from coupling (Figure 4, Item 28).
 - a. With ball valve (Figure 4, Item 4) in the open position, depress lockout pin (Figure 4, Item 26). If lockout pin (Figure 4, Item 26) cannot be depressed, then stop pin (Figure 4, Item 2) has been installed correctly.
 - b. With ball valve (Figure 4, Item 4) in the open position, depress lockout pin (Figure 4, Item 26). If lockout pin (Figure 4, Item 26) can be depressed, then stop pin (Figure 4, Item 2) has been installed incorrectly.
 - c. If stop pin (Figure 4, Item 2) was installed incorrectly, remove ball valve (Figure 4, Item 4) and reposition stop pin (Figure 4, Item 2).
35. Test function of lockout pin (Figure 4, Item 26) if removed from coupling (Figure 4, Item 28).
 - a. With ball valve (Figure 4, Item 4) in the open position, from the interface end, look through hole in lockout pin (Figure 4, Item 26) and observe stop pin (Figure 4, Item 2). If stop pin (Figure 4, Item 2) half shaft can be seen, then stop pin (Figure 4, Item 2) has been installed correctly.
 - b. With ball valve (Figure 4, Item 4) in the open position, from the interface end, look through hole in lockout pin (Figure 4, Item 26) and observe stop pin (Figure 4, Item 2). If stop pin (Figure 4, Item 2) half shaft cannot be seen, then stop pin (Figure 4, Item 2) has been installed incorrectly.
 - c. If stop pin (Figure 4, Item 2) was installed incorrectly, remove ball valve (Figure 4, Item 4) and reposition stop pin (Figure 4, Item 2).

NOTE

During adjustment of lockout pin (Figure 4, Item 26), ensure that ball valve (Figure 4, Item 4) is securely seated at all times.

36. Adjust lockout pin (Figure 4, Item 26).
 - a. Pull knob (Figure 4, Item 8) on control arm (Figure 4, Item 9) back and slowly rotate towards the closed position. If control arm (Figure 4, Item 9) cannot be rotated or is too tight, then lockout pin (Figure 4, Item 26) requires adjustment.
 - b. Adjust lockout pin (Figure 4, Item 26) by loosening screw (Figure 4, Item 29) 1/4 turn at a time until control arm (Figure 4, Item 9) can be rotated freely.

VALVED DRY-BREAK COUPLING ASSEMBLY - CONTINUED

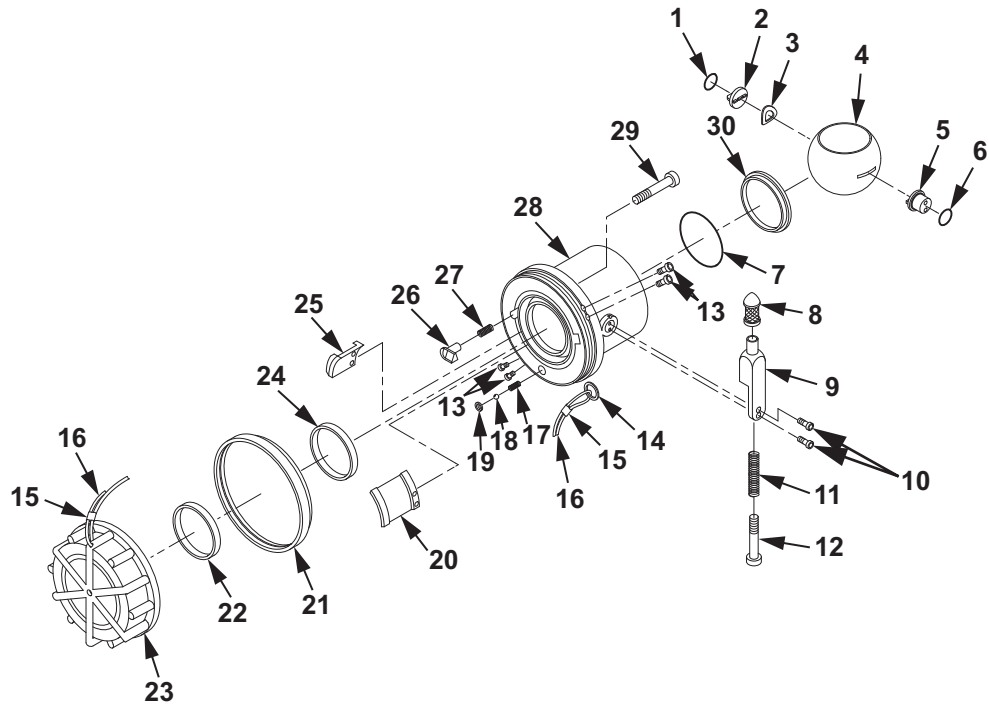


Figure 4. Valved Dry-Break Coupling Assembly.

END OF TASK

2 IN. TEE ASSEMBLY

1. Lightly lubricate new O-ring (Figure 5, Item 3) with petrolatum and install new O-ring (Figure 5, Item 3) in second groove on outside of tee assembly (Figure 5, Item 2).
2. Lightly lubricate new O-ring (Figure 5, Item 4) with petrolatum and install new O-ring (Figure 5, Item 4) in inside groove of tee assembly (Figure 5, Item 2).
3. Position eight springs (Figure 5, Item 5) in the eight holes on the inside of the tee assembly (Figure 5, Item 2).
4. Install new seal (Figure 5, Item 6) in inside groove of tee assembly (Figure 5, Item 2).
5. Position coupling (Figure 5, Item 1) into tee assembly (Figure 5, Item 2) and press in to line up groove of tee assembly (Figure 5, Item 2) with groove of coupling (Figure 5, Item 1).

NOTE

Ensure all 41 ball bearings (Figure 5, Item 7) are accounted for before assembly.

6. Hold coupling (Figure 5, Item 1) over cleaning cloth with screw hole up and insert ball bearings (Figure 5, Item 7) into hole.
7. Lightly lubricate new O-ring (Figure 5, Item 8) with petrolatum and install new O-ring (Figure 5, Item 8) on screw (Figure 5, Item 9).
8. Install screw (Figure 5, Item 9) into coupling (Figure 5, Item 1).
9. Using torque wrench and screwdriver bit, torque screw (Figure 5, Item 9) to 25 in. lb (2.8 N•m).

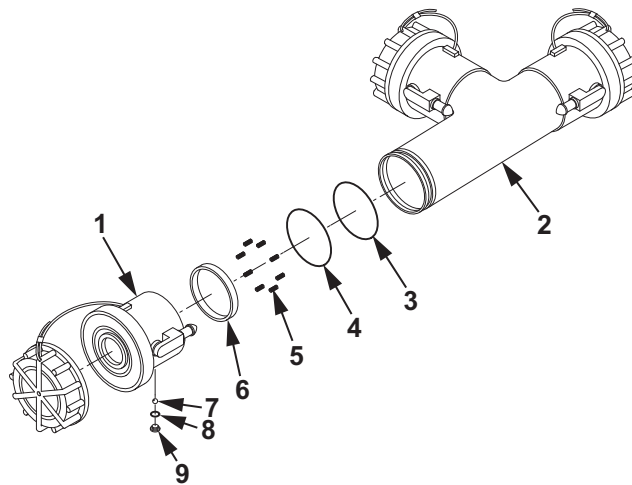


Figure 5. 2 In. Tee Assembly.

END OF TASK

REPAIRED VALVED DRY-BREAK COUPLING ASSEMBLY TESTING

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 6, Item 1) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, repair of the dry-break valved coupling assembly is required.
3. Close the control arm (Figure 6, Item 1) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.

6. With the control arm (Figure 6, Item 1) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 6, Item 1) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 6, Item 1) in the closed position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 6, Item 2).

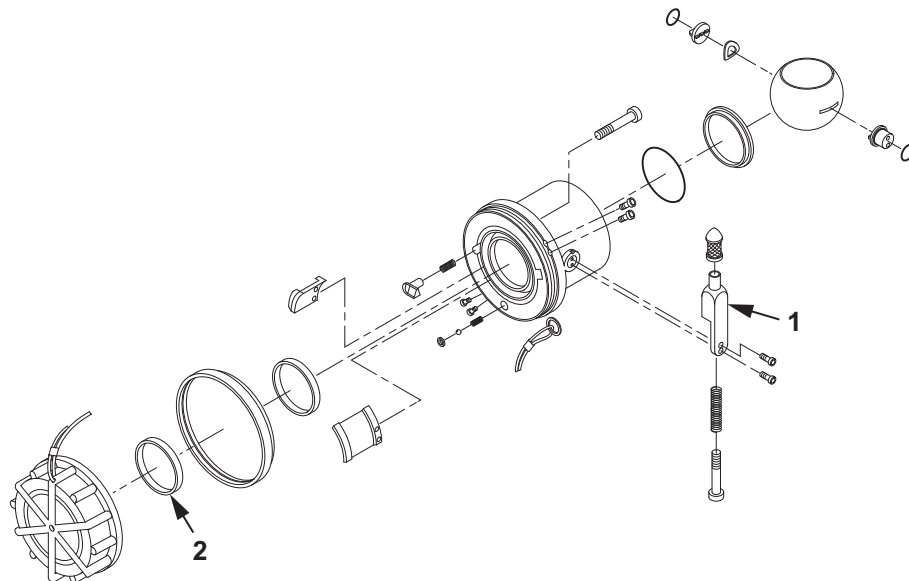


Figure 6. Valved Dry-Break Coupling Testing.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
2 IN. FEMALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020GQ,
MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY, TESTING

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Adapter assembly removed from FSSP
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
O-ring (Item 50, WP 0215)
Seal, plain (2) (Item 23, WP 0215)
Seal, plain (Item 24, WP 0215)
O-ring (Item 54, WP 0215)
O-ring (Item 58, WP 0215)
O-ring (2) (Item 51, WP 0215)
O-ring (Item 55, WP 0215)
Seal, plain (Item 25, WP 0215)
Gasket (Item 45, WP 0215)

DISASSEMBLY**NOTE**

Screw (Figure 5, Item 16) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 5, Item 16), then screw (Figure 5, Item 16) should be replaced.

1. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 5, Item 16). If running torque is less than 3.5 in. lb (0.45 N•m), discard screw (Figure 5, Item 16).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 16) to prevent loss of ball bearings (Figure 1, Item 14) inside coupling (Figure 1, Item 31).

2. Remove screw (Figure 1, Item 16) from coupling (Figure 1, Item 31).
3. Remove O-ring (Figure 1, Item 15) from screw (Figure 1, Item 16).
4. Discard O-ring (Figure 1, Item 15).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 14) are accounted for during disassembly.

5. Hold coupling with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 14) to fall onto the cleaning cloth.
6. Remove quick disconnect coupling half adapter (Figure 1, Item 39) from coupling (Figure 1, Item 31).
7. Remove seal (Figure 1, Item 4) from quick disconnect coupling half adapter (Figure 1, Item 39). Discard seal (Figure 1, Item 4).
8. Remove eight springs (Figure 1, Item 38) from quick disconnect coupling half adapter (Figure 1, Item 39).
9. Remove O-ring (Figure 1, Item 3) from inside groove of quick disconnect coupling half adapter (Figure 1, Item 39). Discard O-ring (Figure 1, Item 3).
10. Remove O-ring (Figure 1, Item 2) from outer groove of quick disconnect coupling half adapter (Figure 1, Item 39). Discard O-ring (Figure 1, Item 2).
11. Rotate ball valve (Figure 1, Item 37) to the closed position and remove from inside coupling (Figure 1, Item 31).
12. Remove spring washer (Figure 1, Item 36), stop pin (Figure 1, Item 35) and O-ring (Figure 1, Item 34) from inside coupling (Figure 1, Item 31).
13. Discard O-ring (Figure 1, Item 34).
14. Remove seal (Figure 1, Item 33) from coupling (Figure 1, Item 31).
15. Discard seal (Figure 1, Item 33).
16. Remove O-ring (Figure 1, Item 7) from coupling (Figure 1, Item 31).
17. Discard O-ring (Figure 1, Item 7).
18. Remove two screws (Figure 1, Item 11) from control arm (Figure 1, Item 10).
19. Remove control arm (Figure 1, Item 10) from coupling (Figure 1, Item 31).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 10), perform the following steps.

- a. Remove screw (Figure 1, Item 13) from control arm (Figure 1, Item 10).
 - b. Remove spring (Figure 1, Item 12) from control arm (Figure 1, Item 10).
 - c. Remove knob (Figure 1, Item 8) from control arm (Figure 1, Item 10).
20. Remove control arm shaft (Figure 1, Item 6) and O-ring (Figure 1, Item 5) from inside coupling (Figure 1, Item 31).
 21. Discard O-ring (Figure 1, Item 5).
 22. Remove seal (Figure 1, Item 27) from coupling (Figure 1, Item 31) interface.

DISASSEMBLY - CONTINUED

23. Discard seal (Figure 1, Item 27).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 26), perform the following removal steps.

24. Cut cable (Figure 1, Item 19) or remove split ring (Figure 1, Item 17) from coupling (Figure 1, Item 31) and cable (Figure 1, Item 19).
25. Cut cable (Figure 1, Item 19) from dust cap (Figure 1, Item 26).
26. Remove cable (Figure 1, Item 19) and sleeve (Figure 1, Item 18).
27. Remove dust cap (Figure 1, Item 26) from coupling (Figure 1, Item 31).
28. Remove seal (Figure 1, Item 27) from dust cap (Figure 1, Item 26).
29. Discard seal (Figure 1, Item 27).

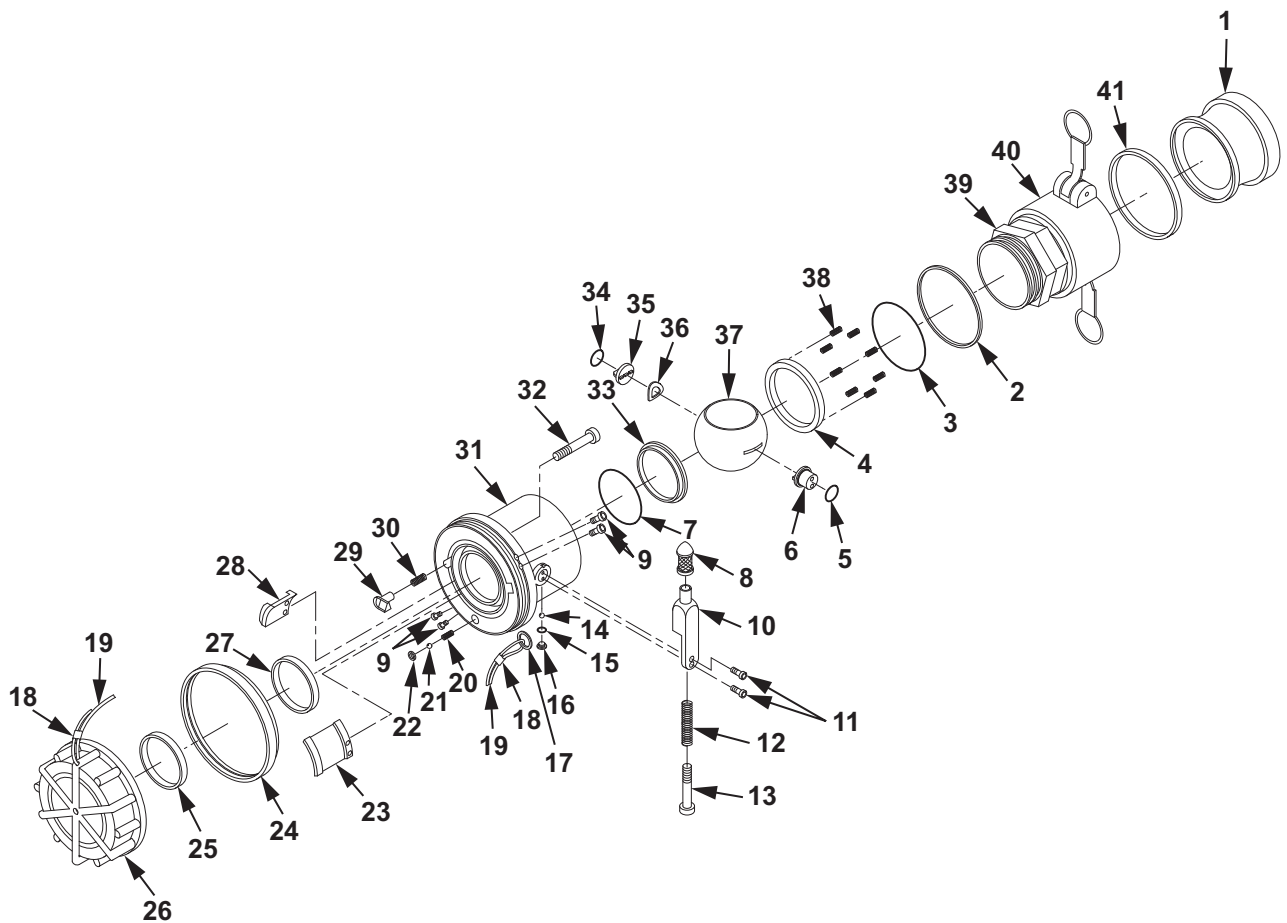


Figure 1. Valved Dry-Break Coupling Disassembly.

DISASSEMBLY - CONTINUED

NOTE

If it is necessary to replace bumper (Figure 2, Item 24) or lugs (Figure 2, Item 23, 28), perform the following steps.

30. Remove bumper (Figure 2, Item 24) from coupling (Figure 2, Item 31).
31. Remove screws (Figure 2, Item 9) from coupling (Figure 2, Item 31).
32. Remove lug (Figure 2, Item 23) or lug (Figure 2, Item 28) from coupling (Figure 2, Item 31).

NOTE

Do not remove spring washer (Figure 2, Item 22), ball bearing (Figure 2, Item 21) or spring (Figure 2, Item 20). If replacement of ball bearing (Figure 2, Item 21) is required, then coupling (Figure 2, Item 31) must be replaced.

If it is necessary to replace lockout pin (Figure 2, Item 29), perform the following removal steps.

33. Remove screw (Figure 2, Item 32) from coupling (Figure 2, Item 31).
34. Remove lockout pin (Figure 2, Item 29) from coupling (Figure 2, Item 31).
35. Remove spring (Figure 2, Item 30) from coupling (Figure 2, Item 31).
36. Remove dust plug (Figure 2, Item 1) from quick disconnect coupling half (Figure 2, Item 40).
37. Remove gasket (Figure 2, Item 41) from quick disconnect coupling half (Figure 2, Item 40).
38. Discard gasket (Figure 2, Item 41).

END OF TASK**QUICK DISCONNECT COUPLING HALF REMOVAL**

1. While holding the quick disconnect coupling half adapter (Figure 2, Item 39), turn the quick disconnect coupling half (Figure 2, Item 40) counterclockwise to remove the quick disconnect coupling half (Figure 2, Item 40) from the quick disconnect coupling half adapter (Figure 2, Item 39).
2. Remove quick disconnect coupling half (Figure 2, Item 40).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

CLEANING - CONTINUED

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 2, Item 24) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.
3. Inspect dust cap (Figure 2, Item 26) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 2, Item 21) is to provide electrical continuity between mating surfaces.

4. Inspect ball bearing (Figure 2, Item 21) located in face of coupling for damage. Push the ball bearing (Figure 2, Item 21) in and ensure it pops back into place. If damage is found or ball does not pop back into place, replace coupling (Figure 2, Item 31).
5. Inspect control arm (Figure 2, Item 10) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

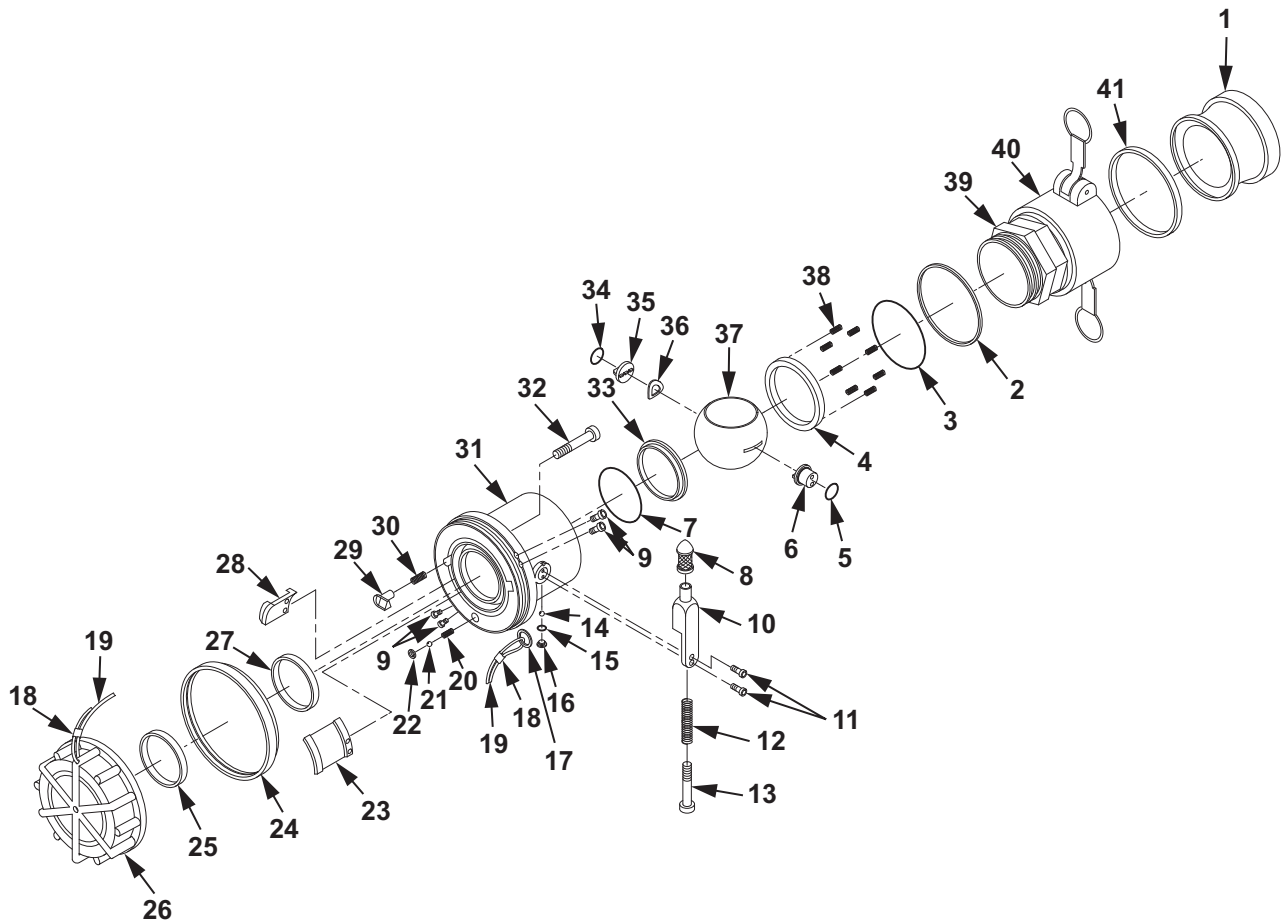


Figure 2. Valved Dry-Break Coupling Disassembly.

END OF TASK

ASSEMBLY**NOTE**

If it was necessary to replace lockout pin (Figure 3, Item 29), perform the following installation steps.

1. Install screw (Figure 3, Item 32) into coupling (Figure 3, Item 31).
2. Install spring (Figure 3, Item 30) into coupling (Figure 3, Item 31) and over screw (Figure 3, Item 32).
3. Install lockout pin (Figure 3, Item 29) into coupling (Figure 3, Item 31).
4. Tighten screw (Figure 3, Item 32) until ramp edge of lockout pin (Figure 3, Item 29) is even with or slightly below the adjacent ledge of coupling (Figure 3, Item 31).

NOTE

If it was necessary to replace bumper (Figure 3, Item 24) or lugs (Figure 3, Item 23, 28), perform the following installation steps.

5. Position lug (Figure 3, Item 23) or lug (Figure 3, Item 28) in coupling (Figure 3, Item 31).
6. Install screws (Figure 3, Item 9) into coupling (Figure 3, Item 31).
7. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 9) to 6 in. lb (0.70 N•m).
8. Position bumper (Figure 3, Item 24) with thin lip seal end facing away from coupling (Figure 3, Item 31).
9. Install bumper (Figure 3, Item 24) on coupling (Figure 3, Item 31).

NOTE

If it was necessary to replace dust cap (Figure 3, Item 26), perform the following installation steps.

10. Lightly lubricate new seal (Figure 3, Item 27) with petrolatum and install into coupling (Figure 3, Item 31).
11. Loop one end of cable (Figure 3, Item 19) through sleeve (Figure 3, Item 18), dust cap (Figure 3, Item 26) and back through sleeve (Figure 3, Item 18).
12. Using pliers, crimp sleeve (Figure 3, Item 18).
13. Loop other end of cable (Figure 3, Item 19) through sleeve (Figure 3, Item 18), split ring (Figure 3, Item 17) and back through sleeve (Figure 3, Item 18).
14. Using pliers, crimp sleeve (Figure 3, Item 18).
15. Lightly lubricate new seal (Figure 3, Item 27) with petrolatum and install into coupling (Figure 3, Item 31) interface.
16. Install dust cap (Figure 3, Item 26) on coupling (Figure 3, Item 31).
17. Lightly lubricate new O-ring (Figure 3, Item 5) with petrolatum and install new O-ring (Figure 3, Item 5) on control arm shaft (Figure 3, Item 10).

NOTE

If it was necessary to disassemble control arm (Figure 3, Item 10), perform the following assembly steps.

18. Place spring (Figure 3, Item 19) on screw (Figure 3, Item 13).
19. Install screw (Figure 3, Item 13) into control arm (Figure 3, Item 10).
20. Install knob (Figure 3, Item 8) on control arm (Figure 3, Item 10).
21. Tighten screw (Figure 3, Item 13) hand tight.
22. Install control arm shaft (Figure 3, Item 6) inside coupling (Figure 3, Item 31).
23. Position control arm (Figure 3, Item 10) with holes on control arm shaft (Figure 3, Item 6).
24. Install screws (Figure 3, Item 11) through control arm (Figure 3, Item 10) and into control arm shaft (Figure 3, Item 6).
25. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 11) to 8 in. lb (0.90 N•m).
26. Lightly lubricate new O-ring (Figure 3, Item 7) with petrolatum and install new O-ring (Figure 3, Item 7) in coupling (Figure 3, Item 31).
27. Install new seal (Figure 3, Item 33) into coupling (Figure 3, Item 31).

ASSEMBLY - CONTINUED

28. Lightly lubricate new O-ring (Figure 3, Item 34) with petrolatum and install new O-ring (Figure 3, Item 34) in groove of stop pin (Figure 3, Item 35).
29. Install spring washer (Figure 3, Item 36) in groove of stop pin (Figure 3, Item 35).
30. Install stop pin (Figure 3, Item 35) inside coupling (Figure 3, Item 31).
31. Align slots in ball valve (Figure 3, Item 37) with tangs on control arm shaft (Figure 3, Item 6) and stop pin (Figure 3, Item 35).
32. Install ball valve (Figure 3, Item 37) in coupling (Figure 3, Item 31).
33. Rotate control arm (Figure 3, Item 10) to the open position to retain ball valve (Figure 3, Item 37) in place.
34. Test function of lockout pin (Figure 3, Item 29), if not removed from coupling (Figure 3, Item 31).
 - a. With ball valve (Figure 3, Item 37) in the open position, depress lockout pin (Figure 3, Item 29). If lockout pin (Figure 3, Item 29) cannot be depressed, then stop pin (Figure 3, Item 35) has been installed correctly.
 - b. With ball valve (Figure 3, Item 37) in the open position, depress lockout pin (Figure 3, Item 29). If lockout pin (Figure 3, Item 29) can be depressed, then stop pin (Figure 3, Item 35) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 35) was installed incorrectly, remove ball valve (Figure 3, Item 37) and reposition stop pin (Figure 3, Item 35).

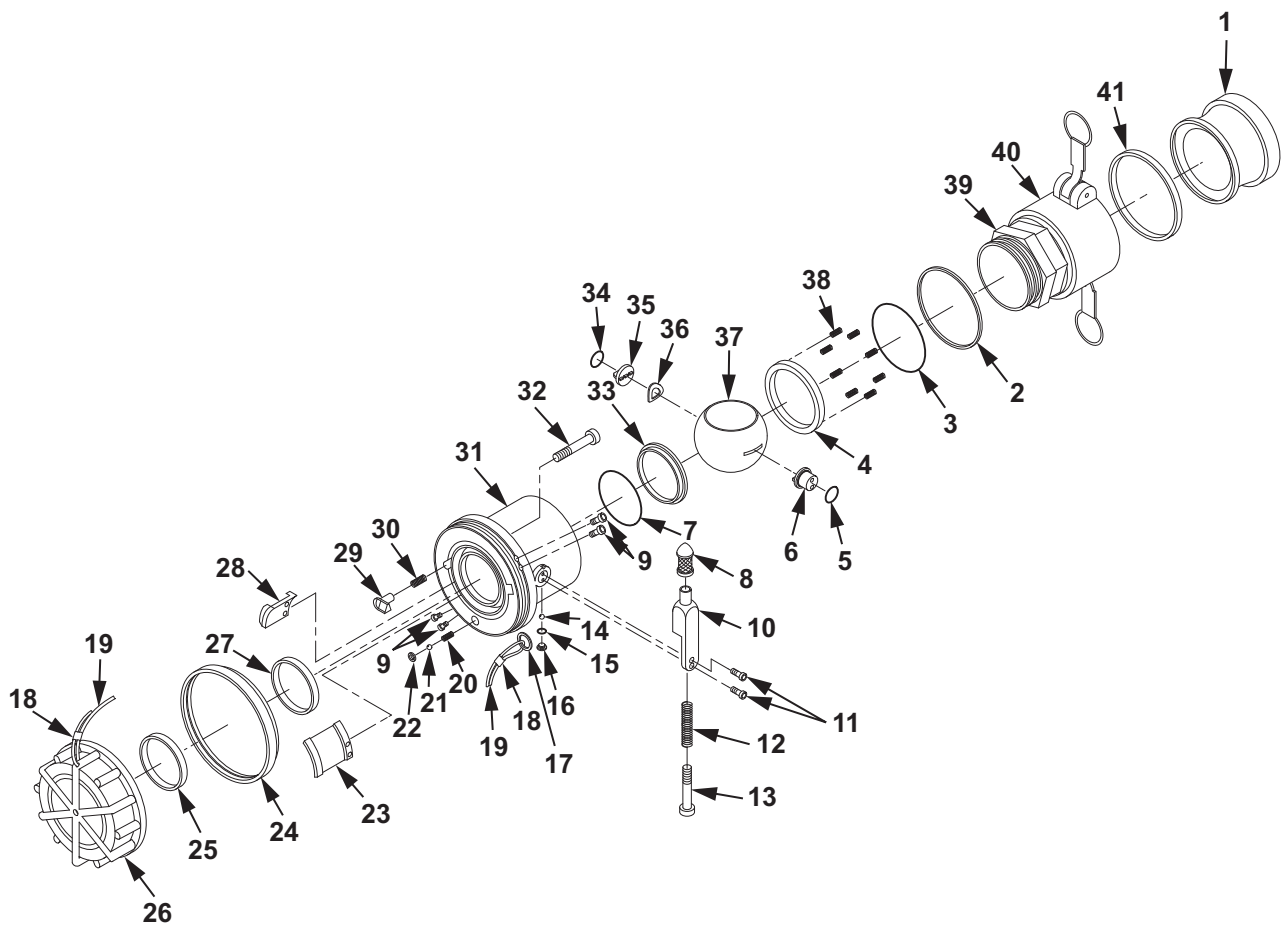


Figure 3. Valved Dry-Break Coupling Disassembly.

ASSEMBLY - CONTINUED

35. Test function of lockout pin (Figure 4, Item 29) if removed from coupling (Figure 4, Item 31).
- With ball valve (Figure 4, Item 37) in the open position, from the interface end, look through hole in lockout pin (Figure 4, Item 29) and observe stop pin (Figure 4, Item 35). If stop pin (Figure 4, Item 35) half shaft can be seen, then stop pin (Figure 4, Item 35) has been installed correctly.
 - With ball valve (Figure 4, Item 37) in the open position, from the interface end, look through hole in lockout pin (Figure 4, Item 29) and observe stop pin (Figure 4, Item 35). If stop pin (Figure 4, Item 35) half shaft cannot be seen, then stop pin (Figure 4, Item 35) has been installed incorrectly.
 - If stop pin (Figure 4, Item 35) was installed incorrectly, remove ball valve (Figure 4, Item 37) and reposition stop pin (Figure 4, Item 35).

NOTE

During adjustment of lockout pin (Figure 4, Item 29), ensure that ball valve (Figure 4, Item 37) is securely seated at all times.

36. Adjust lockout pin (Figure 4, Item 29).
- Pull knob (Figure 4, Item 8) on control arm (Figure 4, Item 10) back and slowly rotate towards the closed position. If control arm (Figure 4, Item 10) cannot be rotated or is too tight, then lockout pin (Figure 4, Item 29) requires adjustment.
 - Adjust lockout pin (Figure 4, Item 29) by loosening screw (Figure 4, Item 32) one-quarter turn at a time until control arm (Figure 4, Item 10) can be rotated freely.
37. Lightly lubricate new O-ring (Figure 4, Item 2) with petrolatum and install new O-ring (Figure 4, Item 2) in second groove on outside of quick disconnect coupling half adapter (Figure 4, Item 39).
38. Lightly lubricate new O-ring (Figure 4, Item 3) with petrolatum and install new O-ring (Figure 4, Item 3) in inside groove of quick disconnect coupling half adapter (Figure 4, Item 39).
39. Position eight springs (Figure 4, Item 38) in the eight holes on the inside of the quick disconnect coupling half adapter (Figure 4, Item 39).
40. Install new seal (Figure 4, Item 4) in inside groove of quick disconnect coupling half adapter (Figure 4, Item 39).
41. Position quick disconnect coupling half adapter (Figure 4, Item 39) into coupling (Figure 4, Item 31) and press in to line up groove of quick disconnect coupling half adapter (Figure 4, Item 39) with groove of coupling (Figure 4, Item 31).

NOTE

Ensure all 41 ball bearings (Figure 4, Item 14) are accounted for before assembly.

42. Hold coupling (Figure 4, Item 31) over cleaning cloth with screw hole up and insert ball bearings (Figure 4, Item 14) into hole.
43. Lightly lubricate new O-ring (Figure 4, Item 15) with petrolatum and install new O-ring on screw (Figure 4, Item 15).
44. Install screw (Figure 4, Item 15) into coupling (Figure 4, Item 31).
45. Using torque wrench and screwdriver bit, torque screw (Figure 4, Item 15) to 25 in. lb (2.8 N•m).

ASSEMBLY - CONTINUED

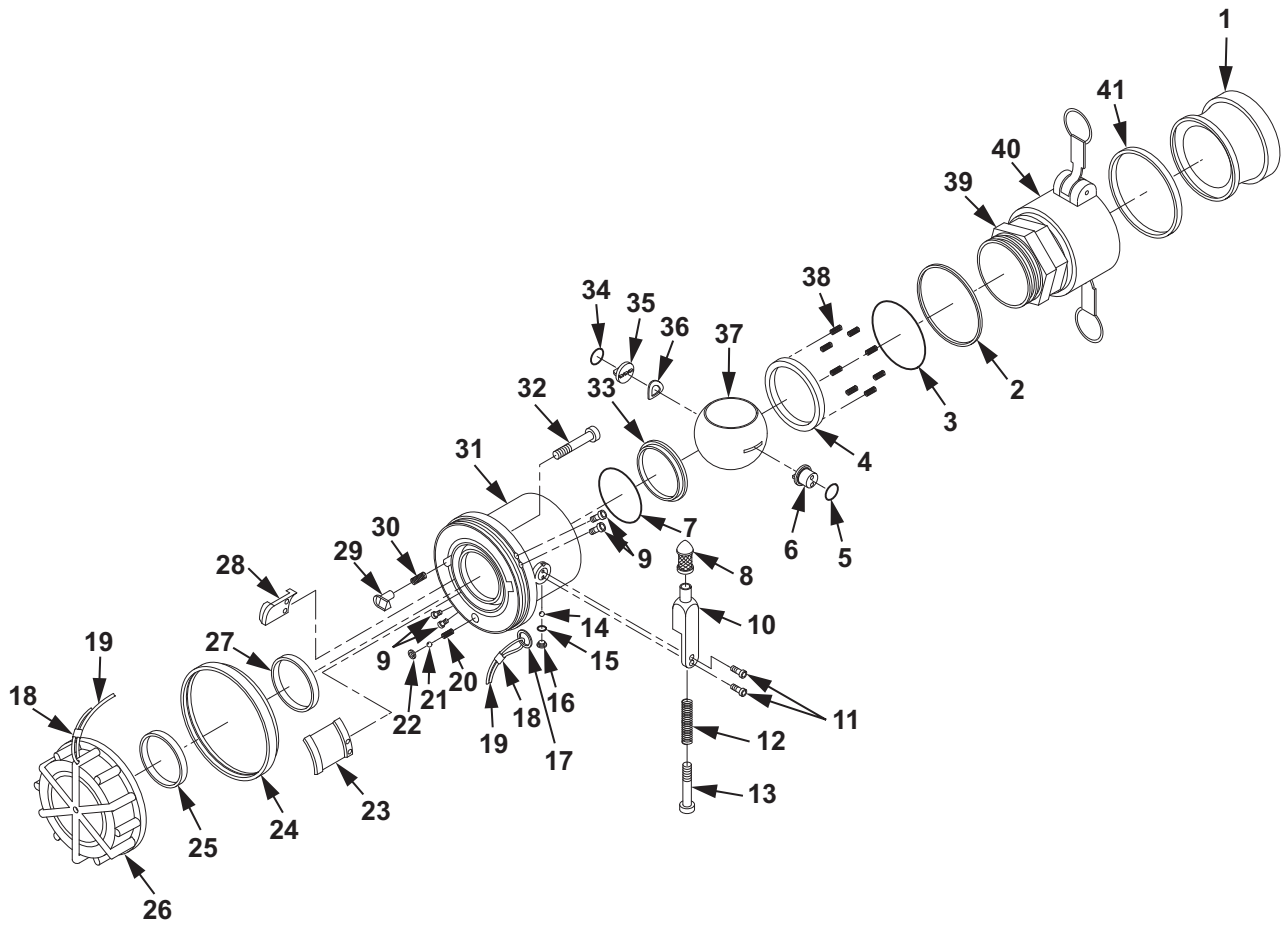


Figure 4. Valved Dry-Break Coupling Assembly.

END OF TASK

QUICK DISCONNECT COUPLING HALF INSTALLATION

1. Wrap threads of quick disconnect coupling half adapter (Figure 5, Item 39) with teflon tape.
2. While holding the quick disconnect coupling half adapter (Figure 5, Item 39), turn the quick disconnect coupling half (Figure 5, Item 40) clockwise to install quick disconnect coupling half (Figure 5, Item 40) on quick disconnect coupling half adapter (Figure 5, Item 39).
3. Tighten quick disconnect coupling half (Figure 5, Item 40).
4. Install new gasket (Figure 5, Item 41) into quick disconnect coupling half (Figure 5, Item 40).
5. Install dust plug (Figure 5, Item 1) into quick disconnect coupling half (Figure 5, Item 40).

END OF TASK**TESTING**

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 5, Item 1) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.
3. Close the control arm (Figure 5, Item 1) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 5, Item 1) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 5, Item 1) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 5, Item 1) in the closed position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 5, Item 2).

TESTING - CONTINUED

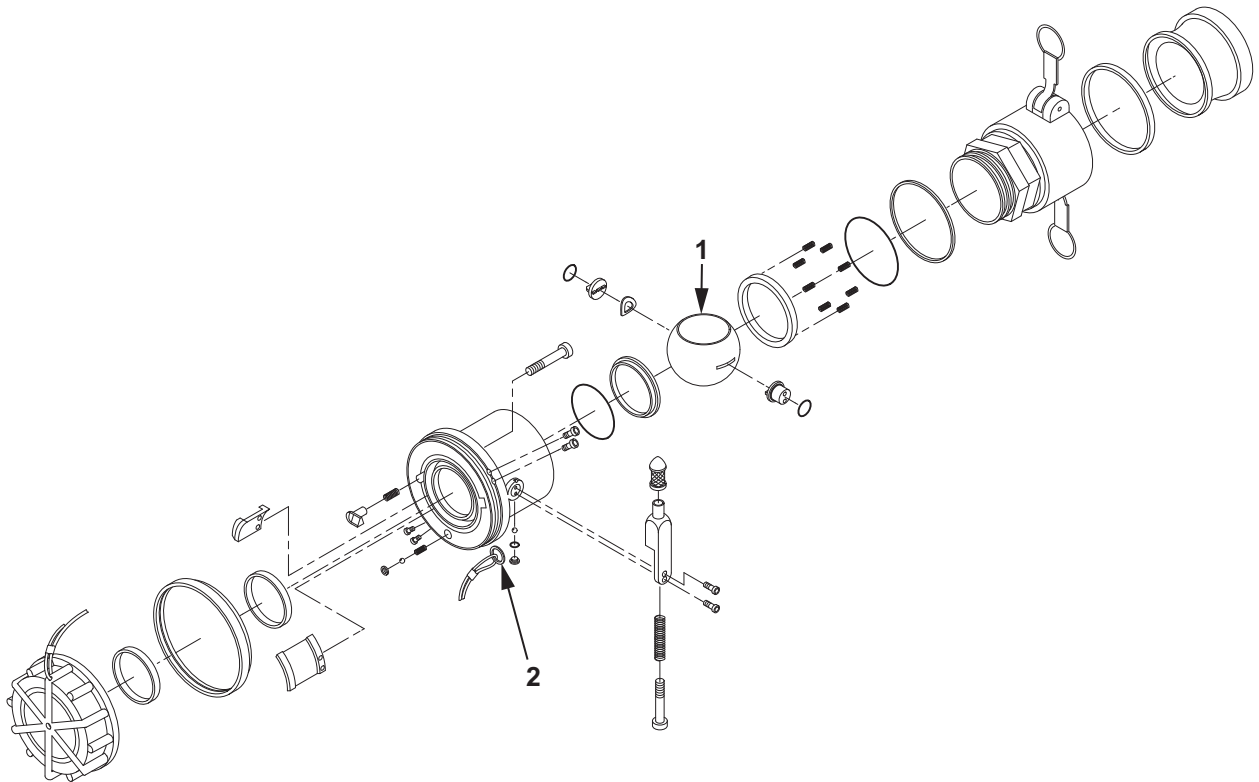


Figure 5. Valved Dry-Break Coupling Testing.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
2 IN. MALE QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK ADAPTER ASSEMBLY, PART NUMBER 64020FQ,
MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY, TESTING

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Adapter assembly removed from FSSP
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (Item 50, WP 0215)
Seal, plain (2) (Item 23, WP 0215)
Seal, plain (Item 24, WP 0215)
O-ring (Item 54, WP 0215)
O-ring (Item 58, WP 0215)
O-ring (2) (Item 51, WP 0215)
O-ring (Item 55, WP 0215)
Seal, plain (Item 25, WP 0215)
Gasket (Item 45, WP 0215)

DISASSEMBLY

1. Using a torque wrench and screwdriver bit, check running torque of screw (Figure 1, Item 16). If running torque is less than 3.5 in. lb (0.45 N•m), discard screw (Figure 1, Item 16).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 16) to prevent loss of ball bearings (Figure 1, Item 14) inside coupling (Figure 1, Item 31).

2. Remove screw (Figure 1, Item 16) from coupling (Figure 1, Item 31).
3. Remove O-ring (Figure 1, Item 15) from screw (Figure 1, Item 16).
4. Discard O-ring (Figure 1, Item 15).
5. Hold coupling with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 14) to fall onto the cleaning cloth.
6. Remove inlet adapter (Figure 1, Item 39) from coupling (Figure 1, Item 31).
7. Remove seal (Figure 1, Item 4) from inlet adapter (Figure 1, Item 39). Discard seal (Figure 1, Item 4).
8. Remove eight springs (Figure 1, Item 38) from inlet adapter (Figure 1, Item 39).
9. Remove O-ring (Figure 1, Item 3) from inside groove of inlet adapter (Figure 1, Item 39).
10. Discard O-ring (Figure 1, Item 3).
11. Remove O-ring (Figure 1, Item 2) from outer groove of inlet adapter (Figure 1, Item 39).
12. Discard O-ring (Figure 1, Item 2).
13. Rotate ball valve (Figure 1, Item 37) to the closed position and remove from inside coupling (Figure 1, Item 31).
14. Remove spring washer (Figure 1, Item 36), stop pin (Figure 1, Item 35) and O-ring (Figure 1, Item 34) from inside coupling (Figure 1, Item 31).
15. Discard O-ring (Figure 1, Item 34).
16. Remove seal (Figure 1, Item 33) from coupling (Figure 1, Item 31).
17. Discard seal (Figure 1, Item 33).
18. Remove O-ring (Figure 1, Item 7) from coupling (Figure 1, Item 31).
19. Discard O-ring (Figure 1, Item 7).
20. Remove screws (Figure 1, Item 11) from control arm (Figure 1, Item 10).
21. Remove control arm (Figure 1, Item 10) from coupling (Figure 1, Item 31).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 10), perform the following steps.

- a. Remove screw (Figure 1, Item 13) from control arm (Figure 1, Item 10).
- b. Remove spring (Figure 1, Item 12) from control arm (Figure 1, Item 10).
- c. Remove knob (Figure 1, Item 8) from control arm (Figure 1, Item 10).
22. Remove control arm shaft (Figure 1, Item 6) and O-ring (Figure 1, Item 5) from inside coupling (Figure 1, Item 31).
23. Discard O-ring (Figure 1, Item 5).
24. Remove seal (Figure 1, Item 27) from coupling (Figure 1, Item 31) interface.
25. Discard seal (Figure 1, Item 27).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 26), perform the following removal steps.

26. Cut cable (Figure 1, Item 19) or remove split ring (Figure 1, Item 17) from coupling (Figure 1, Item 31) and cable (Figure 1, Item 25).
27. Cut cable (Figure 1, Item 19) from dust cap (Figure 1, Item 26).
28. Remove cable (Figure 1, Item 19) and sleeve (Figure 1, Item 18).
29. Remove dust cap (Figure 1, Item 26) from coupling (Figure 1, Item 31).

DISASSEMBLY - CONTINUED

30. Remove seal (Figure 1, Item 25) from dust cap (Figure 1, Item 26).
31. Discard seal (Figure 1, Item 25).

NOTE

If it is necessary to replace bumper (Figure 1, Item 24) or lugs (Figure 1, Item 23, 28), perform the following steps.

32. Remove bumper (Figure 1, Item 24) from coupling (Figure 1, Item 31).
33. Remove screws (Figure 1, Item 9) from coupling (Figure 1, Item 31).
34. Remove lug (Figure 1, Item 23) or lug (Figure 1, Item 28) from coupling (Figure 1, Item 31).

NOTE

Do not remove spring washer (Figure 1, Item 22), ball bearing (Figure 1, Item 21) or spring (Figure 1, Item 20). If replacement of ball bearing (Figure 1, Item 21) is required, then coupling (Figure 1, Item 31) must be replaced.

If it is necessary to replace lockout pin (Figure 1, Item 29), perform the following removal steps.

35. Remove screw (Figure 1, Item 32) from coupling (Figure 1, Item 31).
36. Remove lockout pin (Figure 1, Item 29) from coupling (Figure 1, Item 31).
37. Remove spring (Figure 1, Item 30) from coupling (Figure 1, Item 31).
38. Remove dust cap (Figure 1, Item 1) from inlet adapter (Figure 1, Item 39).
39. Remove gasket (Figure 1, Item 40) from dust cap (Figure 1, Item 1). Discard gasket (Figure 1, Item 40).

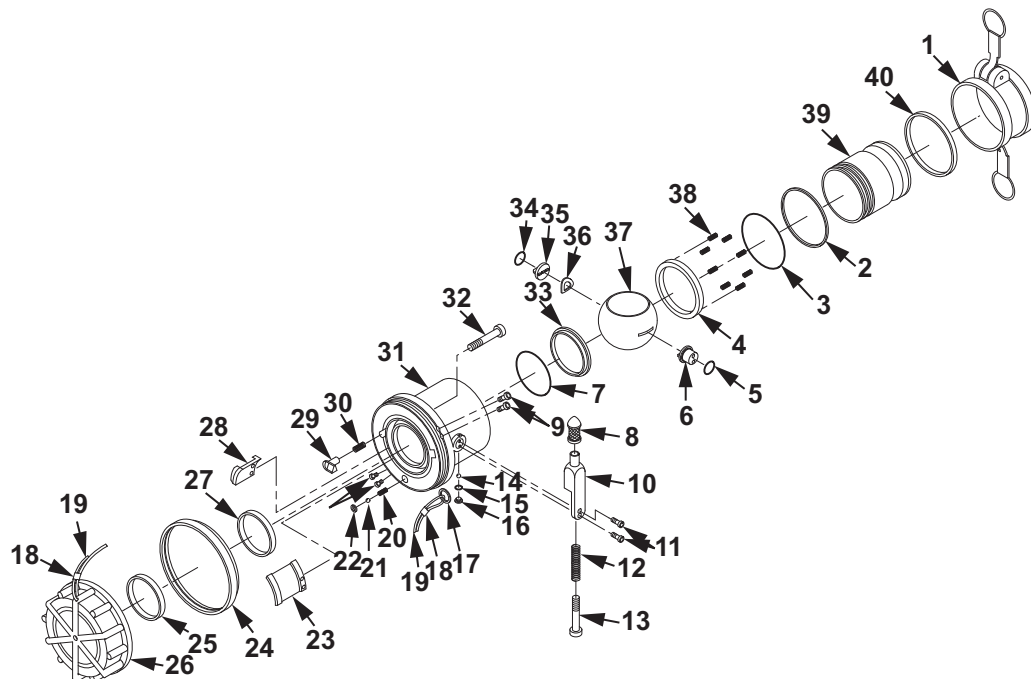


Figure 1. Valved Dry-Break Coupling Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 2, Item 18) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.
3. Inspect dust cap (Figure 2, Item 20) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 2, Item 16) is to provide electrical continuity between mating surfaces.

4. Inspect ball bearing (Figure 2, Item 16) located in face of coupling for damage. Push the ball bearing (Figure 2, Item 16) in and ensure it pops back into place. If damage is found or ball does not pop back into place, replace coupling (Figure 2, Item 7).
5. Inspect control arm (Figure 2, Item 12) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK**ASSEMBLY**

1. Install screw (Figure 2, Item 8) into coupling (Figure 2, Item 7).
2. Install spring (Figure 2, Item 6) into coupling (Figure 2, Item 7) and over screw (Figure 2, Item 8).
3. Install lockout pin (Figure 2, Item 5) into coupling (Figure 2, Item 7).
4. Tighten screw (Figure 2, Item 8) until ramp edge of lockout pin (Figure 2, Item 5) is even with or slightly below the adjacent ledge of coupling (Figure 2, Item 7).

ASSEMBLY - CONTINUED

NOTE

If it was necessary to replace bumper (Figure 2, Item 18) or lugs (Figure 2, Item 17, 4), perform the following installation steps.

5. Position lug (Figure 2, Item 17) or lug (Figure 2, Item 4) in coupling (Figure 2, Item 7).
6. Install screws (Figure 2, Item 11) into coupling (Figure 2, Item 7).
7. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 11) to 6 in. lb (0.70 N•m).
8. Position bumper (Figure 2, Item 18) with thin lip seal end facing away from coupling (Figure 2, Item 7).
9. Install bumper (Figure 2, Item 18) on coupling (Figure 2, Item 7).

NOTE

If it was necessary to replace dust cap (Figure 2, Item 20), perform the following installation steps.

10. Lightly lubricate new seal (Figure 2, Item 19) with petrolatum and install on dust cap (Figure 2, Item 20).
11. Loop one end of 18 in. cable (Figure 2, Item 2) through sleeve (Figure 2, Item 1), dust cap (Figure 2, Item 20) and back through sleeve (Figure 2, Item 1).
12. Using pliers, crimp sleeve (Figure 2, Item 1).
13. Loop other end of 18 in. cable (Figure 2, Item 2) through sleeve (Figure 2, Item 1), split ring (Figure 2, Item 15) and back through sleeve (Figure 2, Item 1).
14. Using pliers, crimp sleeve (Figure 2, Item 1).
15. Lightly lubricate new seal (Figure 2, Item 3) with petrolatum and install into coupling (Figure 2, Item 7) interface.
16. Install dust cap (Figure 2, Item 20) on coupling (Figure 2, Item 7).
17. Lightly lubricate new O-ring (Figure 2, Item 9) with petrolatum and install O-ring (Figure 2, Item 9) on control arm shaft (Figure 1, Item 10).

NOTE

If it was necessary to disassemble control arm (Figure 1, Item 12), perform the following assembly steps.

18. Place spring (Figure 2, Item 13) on screw (Figure 2, Item 14).
19. Install screw (Figure 2, Item 14) into control arm (Figure 2, Item 12).

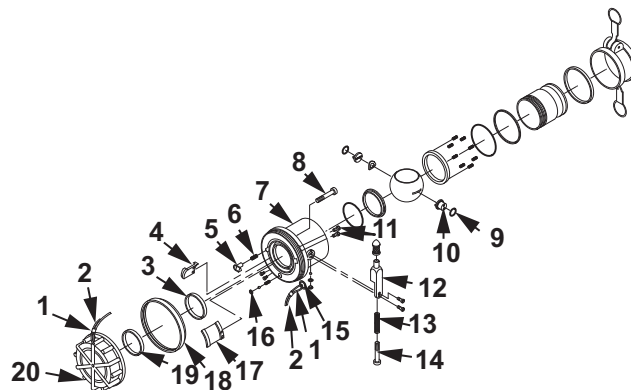


Figure 2. Valved Dry-Break Coupling Assembly.

ASSEMBLY - CONTINUED

20. Install knob (Figure 3, Item 16) on control arm (Figure 3, Item 17).
21. Tighten screw (Figure 3, Item 19) hand tight.
22. Install control arm shaft (Figure 3, Item 14) inside coupling (Figure 3, Item 2).
23. Position control arm (Figure 3, Item 17) with holes on control arm shaft (Figure 3, Item 14).
24. Install two screws (Figure 3, Item 18) through control arm (Figure 3, Item 17) and into control arm shaft (Figure 3, Item 14).
25. Using torque wrench and screwdriver bit, torque two screws (Figure 3, Item 18) to 8 in. lb (0.90 N•m).
26. Lightly lubricate new O-ring (Figure 3, Item 15) with petrolatum and install O-ring (Figure 3, Item 15) in coupling (Figure 3, Item 2).
27. Install new seal (Figure 3, Item 4) into coupling (Figure 3, Item 2).
28. Lightly lubricate new O-ring (Figure 3, Item 5) with petrolatum and install O-ring (Figure 3, Item 5) in groove of stop pin (Figure 3, Item 6).
29. Install spring washer (Figure 3, Item 7) in groove of stop pin (Figure 3, Item 6).
30. Install stop pin (Figure 3, Item 6) inside coupling (Figure 3, Item 2).
31. Align slots in ball valve (Figure 3, Item 8) with tangs on control arm shaft (Figure 3, Item 14) and stop pin (Figure 1, Item 6).
32. Install ball valve (Figure 3, Item 8) in coupling (Figure 3, Item 2).
33. Rotate control arm (Figure 3, Item 17) to the open position to retain ball valve (Figure 3, Item 8) in place.
34. Test function of lockout pin (Figure 3, Item 1), if not removed from coupling (Figure 3, Item 2).
 - a. With ball valve (Figure 3, Item 8) in the open position, depress lockout pin (Figure 3, Item 1). If lockout pin (Figure 3, Item 1) cannot be depressed, then stop pin (Figure 3, Item 6) has been installed correctly.
 - b. With ball valve (Figure 3, Item 8) in the open position, depress lockout pin (Figure 3, Item 1). If lockout pin (Figure 3, Item 1) can be depressed, then stop pin (Figure 3, Item 6) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 6) was installed incorrectly, remove ball valve (Figure 3, Item 8) and reposition stop pin (Figure 3, Item 6).
35. Test function of lockout pin (Figure 3, Item 1) if removed from coupling (Figure 3, Item 2).
 - a. With ball valve (Figure 3, Item 8) in the open position, from the interface end, look through hole in lockout pin (Figure 3, Item 1) and observe stop pin (Figure 3, Item 6). If stop pin (Figure 3, Item 6) half shaft can be seen, then stop pin (Figure 3, Item 6) has been installed correctly.
 - b. With ball valve (Figure 3, Item 8) in the open position, from the interface end, look through hole in lockout pin (Figure 3, Item 1) and observe stop pin (Figure 3, Item 6). If stop pin (Figure 3, Item 6) half shaft cannot be seen, then stop pin (Figure 3, Item 6) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 6) was installed incorrectly, remove ball valve (Figure 3, Item 8) and reposition stop pin (Figure 3, Item 6).

NOTE

During adjustment of lockout pin (Figure 3, Item 1), ensure that ball valve (Figure 3, Item 8) is securely seated at all times.

36. Adjust lockout pin (Figure 3, Item 1).
 - a. Pull knob (Figure 3, Item 16) on control arm (Figure 3, Item 17) back and slowly rotate towards the closed position. If control arm (Figure 3, Item 17) cannot be rotated or is too tight, then lockout pin (Figure 3, Item 1) requires adjustment.
 - b. Adjust lockout pin (Figure 3, Item 1) by loosening screw (Figure 3, Item 3) one-quarter turn at a time until control arm (Figure 3, Item 17) can be rotated freely.

ASSEMBLY - CONTINUED

37. Lightly lubricate new O-ring (Figure 3, Item 11) with petrolatum and install O-ring (Figure 3, Item 11) in second groove on outside of inlet adapter (Figure 3, Item 10).
38. Lightly lubricate new O-ring (Figure 3, Item 12) with petrolatum and install O-ring (Figure 3, Item 12) in inside groove of inlet adapter (Figure 3, Item 10).
39. Position eight springs (Figure 3, Item 9) in the eight holes on the inside of the inlet adapter (Figure 3, Item 10).
40. Install new seal (Figure 3, Item 13) in inside groove of inlet adapter (Figure 3, Item 10).
41. Position inlet adapter (Figure 3, Item 10) into coupling (Figure 3, Item 2) and press in to line up groove of inlet adapter (Figure 3, Item 10) with groove of coupling (Figure 3, Item 2).

NOTE

Ensure all 41 ball bearings (Figure 3, Item 20) are accounted for before assembly.

42. Hold coupling (Figure 3, Item 2) over cleaning cloth with screw hole up and insert ball bearings (Figure 3, Item 20) into hole.
43. Lightly lubricate new O-ring (Figure 3, Item 21) with petrolatum and install O-ring on screw (Figure 3, Item 22).
44. Install screw (Figure 3, Item 22) into coupling (Figure 3, Item 2).
45. Using torque wrench and screwdriver bit, torque screw (Figure 3, Item 22) to 25 in. lb (2.8 N•m).

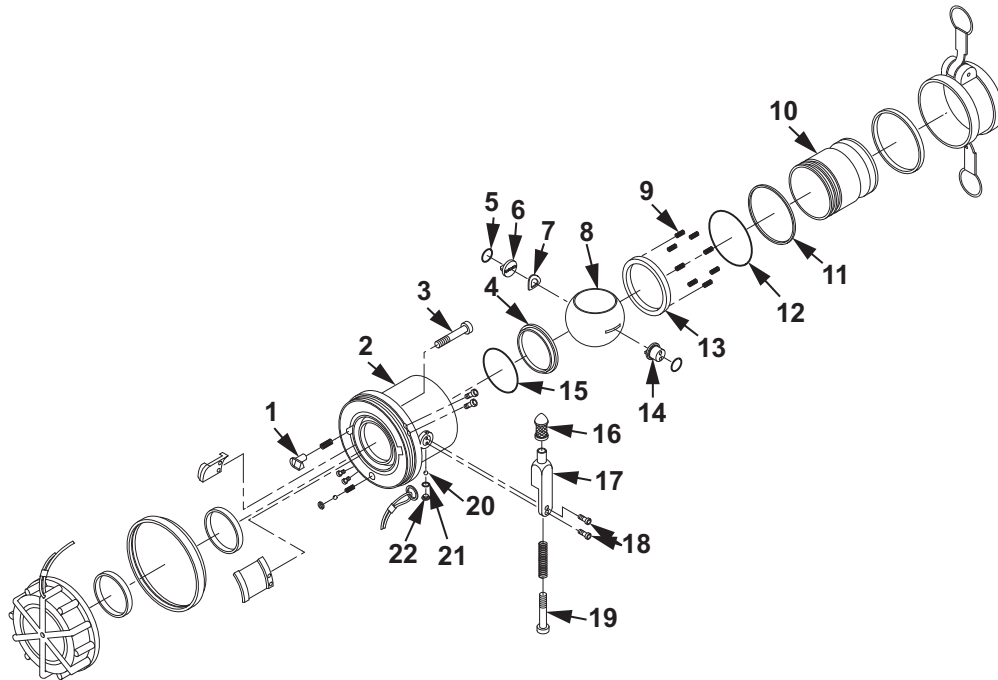


Figure 3. Valved Dry-Break Coupling Assembly.

END OF TASK

TESTING

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 4, Item 4) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.
3. Close the control arm (Figure 4, Item 4) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 4, Item 4) in the open position, apply pressure of 5 PSI (34.5 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 4, Item 4) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 4, Item 4) in the closed position, apply pressure of 5 PSI (34.5 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 4, Item 5).
16. Install new gasket (Figure 4, Item 2) into dust cap (Figure 4, Item 3).
17. Install dust cap (Figure 4, Item 3) on inlet adapter (Figure 4, Item 1).

TESTING - CONTINUED

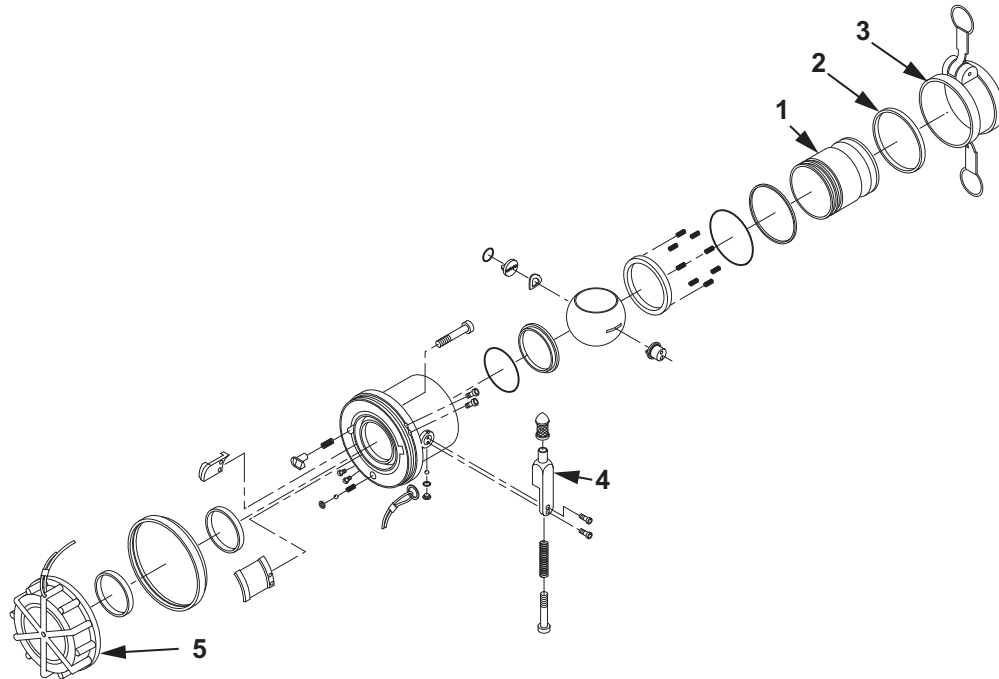


Figure 4. Valved Dry-Break Coupling Testing.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
2 IN. QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64020,
MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Coupling assembly removed from FSSP
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (Item 50, WP 0215)
Seal, plain (2) (Item 23, WP 0215)
Seal, plain (Item 24, WP 0215)
O-ring (Item 54, WP 0215)
O-ring (Item 58, WP 0215)
O-ring (2) (Item 51, WP 0215)
Seal, downstream (Item 27, WP 0215)
O-ring (Item 52, WP 0215)

DISASSEMBLY**NOTE**

Screw (Figure 1, Item 16) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 16), then screw (Figure 1, Item 16) should be replaced.

1. Using a torque wrench and screwdriver bit, check running torque of screw (Figure 1, Item 16). If running torque is less than 3.5 in. lb (0.45 N•m), discard screw (Figure 1, Item 16).
2. Hold coupling with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 14) to fall onto the cleaning cloth.

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 16) to prevent loss of ball bearings (Figure 1, Item 14) inside coupling (Figure 1, Item 31).

3. Remove screw (Figure 1, Item 16) from coupling (Figure 1, Item 31).
4. Remove O-ring (Figure 1, Item 15) from screw (Figure 1, Item 16). Discard O-ring (Figure 1, Item 15).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 14) are accounted for during disassembly.

5. Remove inlet adapter (Figure 1, Item 1) from coupling (Figure 1, Item 31).
6. Remove seal (Figure 1, Item 4) from inlet adapter (Figure 1, Item 1). Discard seal (Figure 1, Item 4).
7. Remove eight springs (Figure 1, Item 38) from inlet adapter (Figure 1, Item 1).
8. Remove O-ring (Figure 1, Item 3) from inside groove of inlet adapter (Figure 1, Item 1). Discard O-ring (Figure 1, Item 3).
9. Remove O-ring (Figure 1, Item 2) from outer groove of inlet adapter (Figure 1, Item 1). Discard O-ring (Figure 1, Item 2).
10. Rotate ball valve (Figure 1, Item 37) to the closed position and remove from inside coupling (Figure 1, Item 31).
11. Remove spring washer (Figure 1, Item 36), stop pin (Figure 1, Item 35) and O-ring (Figure 1, Item 34) from inside coupling (Figure 1, Item 31). Discard O-ring (Figure 1, Item 34).
12. Remove seal (Figure 1, Item 33) from coupling (Figure 1, Item 31). Discard seal (Figure 1, Item 33).
13. Remove O-ring (Figure 1, Item 7) from coupling (Figure 1, Item 31). Discard O-ring (Figure 1, Item 7).
14. Remove two screws (Figure 1, Item 11) from control arm (Figure 1, Item 10).
15. Remove control arm (Figure 1, Item 10) from coupling (Figure 1, Item 31).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 10), perform the following steps.

- a. Remove screw (Figure 1, Item 13) from control arm (Figure 1, Item 10).
 - b. Remove spring (Figure 1, Item 12) from control arm (Figure 1, Item 10).
 - c. Remove knob (Figure 1, Item 8) from control arm (Figure 1, Item 10).
16. Remove control arm shaft (Figure 1, Item 6) and O-ring (Figure 1, Item 5) from inside coupling (Figure 1, Item 31). Discard O-ring (Figure 1, Item 5).
 17. Remove seal (Figure 1, Item 27) from coupling (Figure 1, Item 31) interface. Discard seal (Figure 1, Item 27).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 26), perform the following removal steps.

18. Remove dust cap (Figure 1, Item 26) from coupling (Figure 1, Item 31).

DISASSEMBLY - CONTINUED

19. Cut cable (Figure 1, Item 19) or remove split ring (Figure 1, Item 17) from coupling (Figure 1, Item 31) and cable (Figure 1, Item 19).
20. Cut cable (Figure 1, Item 19) from dust cap (Figure 1, Item 26).
21. Remove cable (Figure 1, Item 19) and sleeve (Figure 1, Item 18).
22. Remove seal (Figure 1, Item 25) from dust cap (Figure 1, Item 26). Discard seal (Figure 1, Item 25).

NOTE

If it is necessary to replace bumper (Figure 1, Item 24) or lugs (Figure 1, Item 23, 28), perform the following steps.

23. Remove bumper (Figure 1, Item 24) from coupling (Figure 1, Item 31).
24. Remove screws (Figure 1, Item 9) from coupling (Figure 1, Item 31).
25. Remove lugs (Figure 1, Item 23, 28) from coupling (Figure 1, Item 31).

NOTE

Do not remove spring washer (Figure 1, Item 22), ball bearing (Figure 1, Item 21) or spring (Figure 1, Item 20). If replacement of ball bearing (Figure 1, Item 21) is required, then coupling (Figure 1, Item 31) must be replaced.

If it is necessary to replace lockout pin (Figure 1, Item 29), perform the following removal steps.

26. Remove screw (Figure 1, Item 32) from coupling (Figure 1, Item 31).
27. Remove lockout pin (Figure 1, Item 29) from coupling (Figure 1, Item 31).
28. Remove spring (Figure 1, Item 30) from coupling (Figure 1, Item 31).

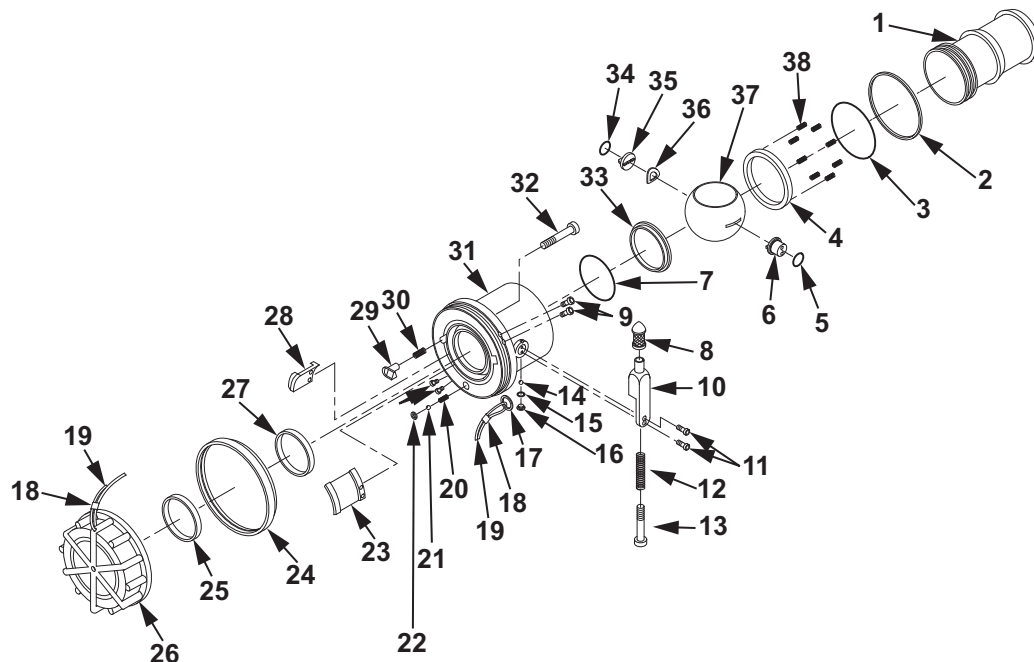


Figure 1. Valved Dry-Break Coupling Disassembly.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 2, Item 20) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.
3. Inspect dust cap (Figure 2, Item 22) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.
4. Inspect ball bearing (Figure 2, Item 18) located in face of coupling for damage. Push the ball bearing (Figure 2, Item 18) in and ensure it pops back into place. If damage is found or ball does not pop back into place, replace coupling (Figure 2, Item 7).
5. Inspect control arm (Figure 2, Item 13) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK**ASSEMBLY****NOTE**

If it was necessary to replace lockout pin (Figure 2, Item 5), perform the following installation steps.

1. Install screw (Figure 2, Item 8) into coupling (Figure 2, Item 7).
2. Install spring (Figure 2, Item 6) into coupling (Figure 2, Item 7) and over screw (Figure 2, Item 8).
3. Install lockout pin (Figure 2, Item 5) into coupling (Figure 2, Item 7).
4. Tighten screw (Figure 2, Item 8) until ramp edge of lockout pin (Figure 2, Item 5) is even with or slightly below the adjacent ledge of coupling (Figure 2, Item 7).

NOTE

If it was necessary to replace bumper (Figure 2, Item 20) or lugs (Figure 2, Item 19, 4), perform the following installation steps.

ASSEMBLY - CONTINUED

5. Position lugs (Figure 2, Item 19, 4) in coupling (Figure 2, Item 7).
6. Install screws (Figure 2, Item 12) into coupling (Figure 2, Item 7).
7. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 12) to 6 in. lb (0.70 N•m).
8. Position bumper (Figure 2, Item 20) with thin lip seal end facing away from coupling (Figure 2, Item 7).
9. Install bumper (Figure 2, Item 20) on coupling (Figure 2, Item 7).
10. Install new seal (Figure 2, Item 21) on dust cap (Figure 2, Item 22).

NOTE

If it was necessary to replace dust cap (Figure 2, Item 22), perform the following installation steps.

11. Loop one end of 18 in. cable (Figure 2, Item 2) through sleeve (Figure 2, Item 1), dust cap (Figure 2, Item 22) and back through sleeve (Figure 2, Item 1).
12. Using pliers, crimp sleeve (Figure 2, Item 1).
13. Loop other end of 18 in. cable (Figure 2, Item 2) through sleeve (Figure 2, Item 1), split ring (Figure 2, Item 17) and back through sleeve (Figure 2, Item 1).
14. Using pliers, crimp sleeve (Figure 2, Item 1).
15. Install new seal (Figure 2, Item 3) into coupling (Figure 2, Item 7) interface.
16. Install dust cap (Figure 2, Item 22) on coupling (Figure 2, Item 7).

NOTE

If it was necessary to disassemble control arm (Figure 2, Item 13), perform the following assembly steps.

17. Lightly lubricate new O-ring (Figure 2, Item 9) with petrolatum and install O-ring (Figure 2, Item 9) on control arm shaft (Figure 2, Item 10).
18. Place spring (Figure 2, Item 15) on screw (Figure 2, Item 16).
19. Install screw (Figure 2, Item 16) into control arm (Figure 2, Item 13).
20. Install knob (Figure 2, Item 11) on control arm (Figure 2, Item 13).
21. Tighten screw (Figure 2, Item 16) hand tight.
22. Install control arm shaft (Figure 2, Item 10) inside coupling (Figure 2, Item 7).
23. Position control arm (Figure 2, Item 13) with holes on control arm shaft (Figure 2, Item 10).
24. Install screws (Figure 2, Item 14) through control arm (Figure 2, Item 13) and into control arm shaft (Figure 2, Item 10).

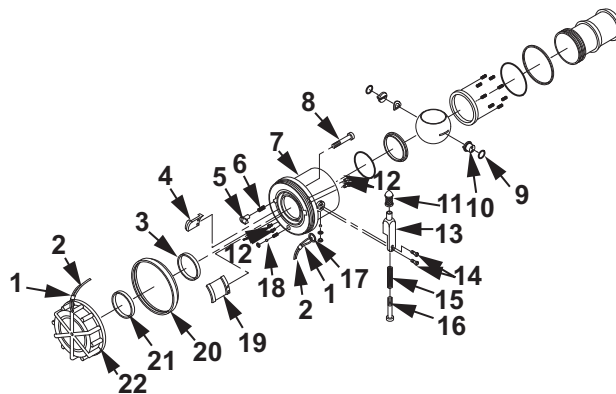


Figure 2. Valved Dry-Break Coupling Disassembly.

ASSEMBLY - CONTINUED

25. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 17) to 8 in. lb (0.90 N•m).
26. Lightly lubricate new O-ring (Figure 3, Item 14) with petrolatum and install O-ring (Figure 3, Item 14) in coupling (Figure 3, Item 2).
27. Install new seal (Figure 3, Item 3) into coupling (Figure 3, Item 2).
28. Lightly lubricate new O-ring (Figure 3, Item 4) with petrolatum and install O-ring (Figure 3, Item 4) in groove of stop pin (Figure 3, Item 5).
29. Install spring washer (Figure 3, Item 6) in groove of stop pin (Figure 3, Item 5).
30. Install stop pin (Figure 3, Item 5) inside coupling (Figure 3, Item 2).
31. Align slots in ball valve (Figure 3, Item 7) with tangs on control arm shaft (Figure 3, Item 13) and stop pin (Figure 1, Item 35).
32. Install ball valve (Figure 3, Item 7) in coupling (Figure 3, Item 2).
33. Rotate control arm (Figure 3, Item 16) to the open position to retain ball valve (Figure 3, Item 7) in place.
34. Test function of lockout pin (Figure 3, Item 1) if not removed from coupling (Figure 3, Item 2).
 - a. With ball valve (Figure 3, Item 7) in the open position, depress lockout pin (Figure 3, Item 1). If lockout pin (Figure 3, Item 1) cannot be depressed, then stop pin (Figure 3, Item 5) has been installed correctly.
 - b. With ball valve (Figure 3, Item 7) in the open position, depress lockout pin (Figure 3, Item 1). If lockout pin (Figure 3, Item 1) can be depressed, then stop pin (Figure 3, Item 5) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 5) was installed incorrectly, remove ball valve (Figure 3, Item 7) and reposition stop pin (Figure 3, Item 5).
35. Test function of lockout pin (Figure 3, Item 1) if removed from coupling (Figure 3, Item 2).
 - a. With ball valve (Figure 3, Item 7) in the open position, from the interface end, look through hole in lockout pin (Figure 3, Item 1) and observe stop pin (Figure 3, Item 5). If stop pin (Figure 3, Item 5) half shaft can be seen, then stop pin (Figure 3, Item 5) has been installed correctly.
 - b. With ball valve (Figure 3, Item 7) in the open position, from the interface end, look through hole in lockout pin (Figure 3, Item 1) and observe stop pin (Figure 3, Item 5). If stop pin (Figure 3, Item 5) half shaft cannot be seen, then stop pin (Figure 3, Item 5) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 5) was installed incorrectly, remove ball valve (Figure 3, Item 7) and reposition stop pin (Figure 3, Item 5).

NOTE

During adjustment of lockout pin (Figure 3, Item 1) ensure that ball valve (Figure 3, Item 7) is securely seated at all times.

36. Adjust lockout pin (Figure 3, Item 1).
 - a. Pull knob (Figure 3, Item 15) on control arm (Figure 3, Item 16) back and slowly rotate towards the closed position. If control arm (Figure 3, Item 16) cannot be rotated or is too tight, then lockout pin (Figure 3, Item 1) requires adjustment.
 - b. Adjust lockout pin (Figure 3, Item 1) by loosening screw (Figure 2, Item 8) one-quarter turn at a time until control arm (Figure 3, Item 16) can be rotated freely.
37. Lightly lubricate new O-ring (Figure 3, Item 10) with petrolatum and install O-ring (Figure 3, Item 10) in outer groove on outside of inlet adapter (Figure 3, Item 9).
38. Lightly lubricate new O-ring (Figure 3, Item 11) with petrolatum and install O-ring (Figure 3, Item 11) in inside groove of inlet adapter (Figure 3, Item 9).
39. Position eight springs (Figure 3, Item 8) in the eight holes on the inside of the inlet adapter (Figure 3, Item 9).
40. Install new seal (Figure 3, Item 12) on inlet adapter (Figure 3, Item 9).

ASSEMBLY - CONTINUED

41. Position inlet adapter (Figure 3, Item 9) into coupling (Figure 3, Item 2) and press in to line up groove of inlet adapter (Figure 3, Item 9) with groove of coupling (Figure 3, Item 2).

NOTE

Ensure all 41 ball bearings (Figure 3, Item 18) are accounted for before assembly.

42. Hold coupling (Figure 3, Item 2) over cleaning cloth with screw hole up and insert ball bearings (Figure 3, Item 18) into hole.
43. Lightly lubricate new O-ring (Figure 3, Item 19) with petrolatum and install O-ring on screw (Figure 3, Item 20).
44. Install screw (Figure 3, Item 20) into coupling (Figure 3, Item 2).
45. Using torque wrench and screwdriver bit, torque screw (Figure 3, Item 20) to 25 in. lb (2.8 N•m).

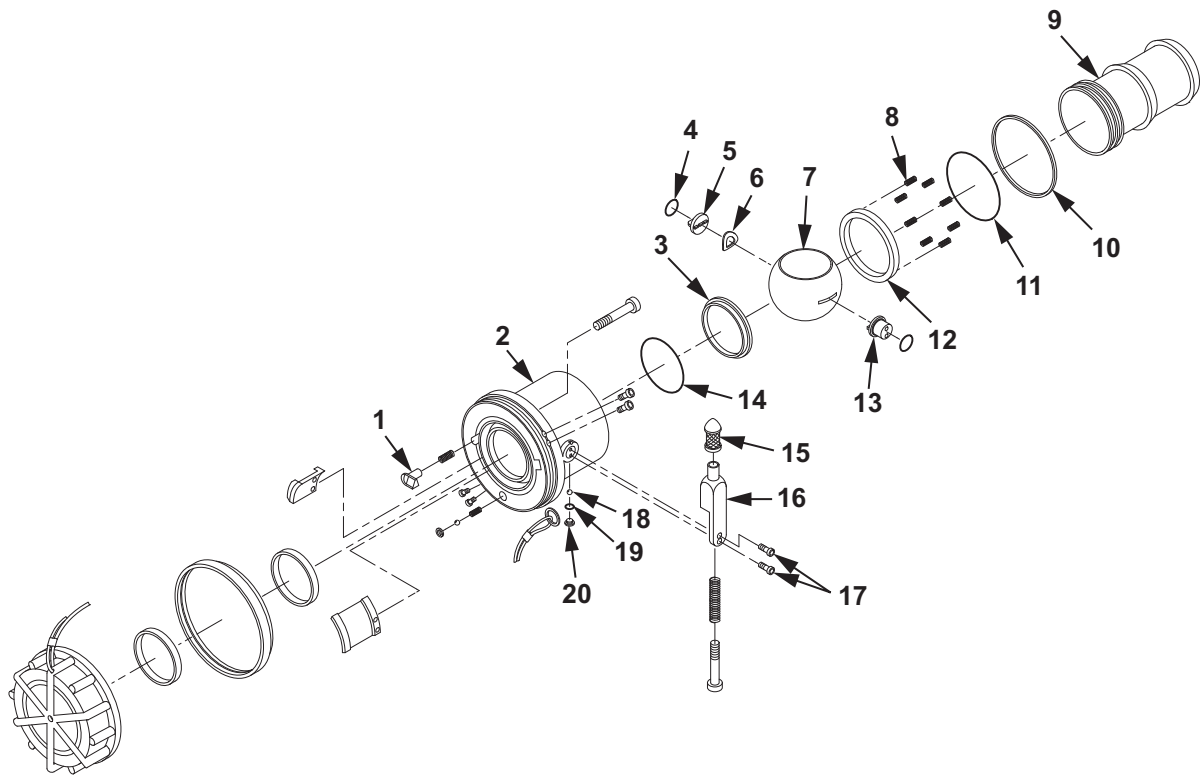


Figure 3. Valved Dry-Break Coupling Disassembly.

END OF TASK

TESTING

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 4, Item 1) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.
3. Close the control arm (Figure 4, Item 1) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 4, Item 1) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 4, Item 1) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 4, Item 1) in the closed position, apply pressure of 5 PSI to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 4, Item 2).

TESTING - CONTINUED

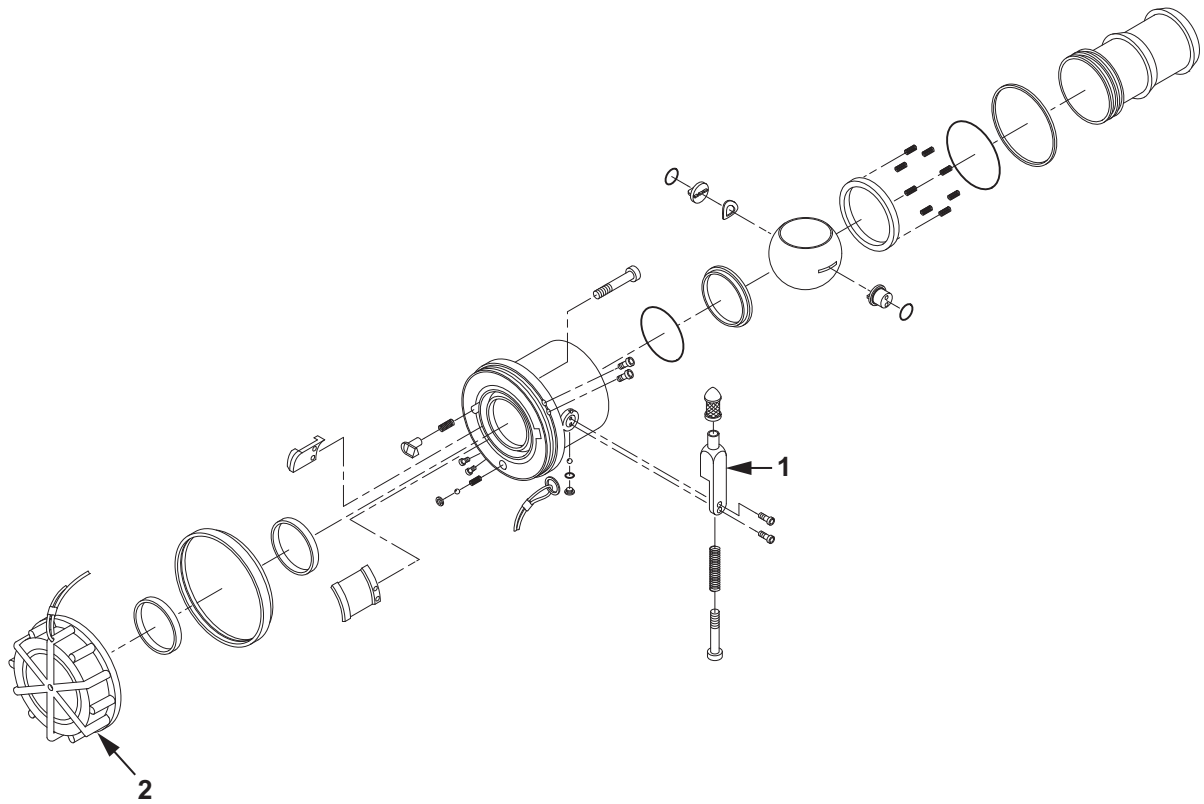


Figure 4. Valved Dry-Break Coupling Testing.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
2 IN. QUICK DISCONNECT COUPLING HALF (NON-VALVED DRY-BREAK COUPLING ASSEMBLY),
PART NUMBER 64019, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY, TESTING

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Coupling assembly removed from component (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
O-ring (Item 50, WP 0215)
O-ring (Item 57, WP 0215)
Seal, plain (2) (Item 23, WP 0215)

DISASSEMBLY

1. Remove snap ring and screen (Figure 1, Item 16).

NOTE

Ball retaining screw (Figure 1, Item 6) is self-locking and is designed to be reused up to 15 times before replacement is necessary. If a torque wrench is not used to check running torque when removing the screw (Figure 1, Item 6), the screw must be replaced.

2. Using a torque wrench and screwdriver bit to check the running torque of ball retaining screw (Figure 1, Item 6). Replace ball retaining screw (Figure 1, Item 6) if the running torque is less than 3.5 in. lb (0.40 N•m).
3. Remove O-ring (Figure 1, Item 5) and discard.
4. Hold coupling (Figure 1, Item 21) over a cleaning cloth with screw hole orientated toward cleaning cloth. Rotate coupling (Figure 1, Item 21) back and forth until all 41 balls (Figure 1, Item 4) have collected in the cleaning cloth.
5. Remove coupling (Figure 1, Item 21) and O-ring (Figure 1, Item 2) from inlet adapter (Figure 1, Item 1). Discard O-ring (Figure 1, Item 2).
6. Remove spring (Figure 1, Item 3) and seal (Figure 1, Item 15) from coupling (Figure 1, Item 21). Discard seal (Figure 1, Item 15).

NOTE

If the interlock pin mechanism is working correctly, there is no need to remove the ring, pin or spring. If the interlock pin mechanism must be replaced, perform steps 7 and 8.

7. Remove ring (Figure 1, Item 22) from pin (Figure 1, Item 18).
8. Remove pin (Figure 1, Item 18) and spring (Figure 1, Item 19) from coupling (Figure 1, Item 21).
9. If the dust cap (Figure 1, Item 12) or cable (Figure 1, Item 13) is to be replaced, cut cable (Figure 1, Item 13) to remove.
10. Remove cable (Figure 1, Item 13) from ring (Figure 1, Item 22).
11. Remove seal (Figure 1, Item 11) from the dust cap (Figure 1, Item 12) and discard.

NOTE

Do not remove continuity ball (Figure 1, Item 8) from coupling. If continuity ball (Figure 1, Item 8) requires replacement, the entire non-valved dry-break coupling assembly must be replaced.

Remove the bumper (Figure 1, Item 10) only if the bumper or the lugs (Figure 1, Item 9, 17) must be replaced.

12. Remove bumper (Figure 1, Item 10).

NOTE

Remove the lugs (Figure 1, Item 9, 17) only if the lugs (Figure 1, Item 9, 17) must be replaced.

13. Remove screws (Figure 1, Item 7, 20) to remove lugs (Figure 1, Item 9, 17).

DISASSEMBLY - CONTINUED

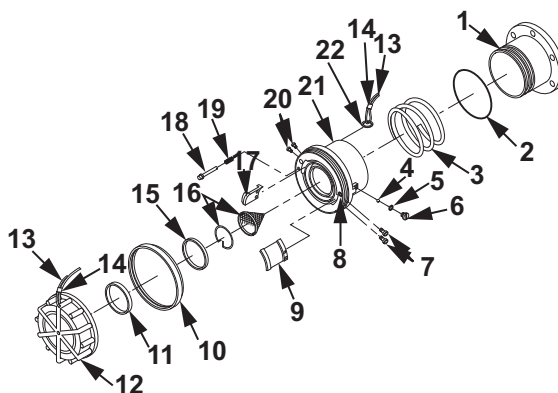


Figure 1. 2 In. Quick Disconnect Coupling Half Disassembly.

END OF TASK

CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Remove debris and foreign objects from the filter screen.
3. Allow parts to thoroughly dry.

END OF TASK

INSPECTION

1. Check all non-valved dry-break coupling assembly components for cracks. If cracks are found, replace with a serviceable like Item.
2. Check non-valved dry-break coupling assembly for internal corrosion. If internal corrosion is found, replace coupling assembly with a serviceable like Item.
3. Check bumper for evidence of cracking or wear. If worn or cracked, replace bumper.
4. Check lugs for looseness and evidence of cracking or wear. If lugs are loose, check the torque of the screws using a torque wrench and screwdriver bit. Screws should be torqued to 6 in. lb (0.68 N-m). If lugs are cracked, worn or still loose after torquing screws, replace lugs.
5. Check lugs for evidence of cracking or wear. If worn or cracked, replace lugs.
6. Check the hole in the face of the coupling adjacent to the pin to be sure it is clear and free of contamination. If contamination is found, remove contaminants.
7. Check the dust cap for cracks or broken areas. If found, replace dust cap.
8. Check the small spring-loaded continuity ball located in the face of the coupling. Push the ball in and check to be sure that the ball pops back into place. If the ball will not pop back into place after being depressed, replace the dry-break coupling assembly.

END OF TASK**ASSEMBLY**

1. Install new seal (Figure 2, Item 16) into the dust cap (Figure 2, Item 17). Use a finger to seat the seal (Figure 2, Item 16) in the groove of the dust cap (Figure 2, Item 17).

NOTE

If cable (Figure 2, Item 9) was cut to remove it from the dust cap (Figure 2, Item 17), a new cable must be installed.

2. Attach a length of cable (Figure 2, Item 9), approximately 18 in. long to dust cap (Figure 2, Item 17) by looping about 6 in. of cable (Figure 2, Item 9) through the hole in dust cap (Figure 2, Item 17), then forming a loop back on the cable (Figure 2, Item 9).
3. Retain the loose end of the cable (Figure 2, Item 9) with a sleeve (Figure 2, Item 8).
4. Using a pair of pliers, crush the sleeve (Figure 2, Item 8) to retain the cable (Figure 2, Item 9).
5. Attach the cable (Figure 2, Item 9) to ring (Figure 2, Item 7) by looping cable (Figure 2, Item 9) through the ring (Figure 2, Item 7), forming a loop back on the cable (Figure 2, Item 9).
6. Retain the loose end of the cable (Figure 2, Item 9) with a sleeve (Figure 2, Item 8).
7. Using a pair of pliers, crush the sleeve (Figure 2, Item 8) to retain the cable (Figure 2, Item 9).

NOTE

If pin (Figure 2, Item 2) and spring (Figure 2, Item 3) were removed, install the pin (Figure 2, Item 2) and spring (Figure 2, Item 3).

8. Install spring (Figure 2, Item 3) into hole in face of coupling (Figure 2, Item 6).
9. Install pin (Figure 2, Item 2) through spring (Figure 2, Item 3) and retain pin (Figure 2, Item 2) by threading ring (Figure 2, Item 7) through the hole in the pin (Figure 2, Item 2).

NOTE

If lugs (Figure 2, Item 14, 4) and bumper (Figure 2, Item 15) were removed, install the lugs (Figure 2, Item 14, 4) and bumper (Figure 2, Item 15).

10. Install lug (Figure 2, Item 4) by matching the holes in the lug (Figure 2, Item 4) with the holes in the coupling (Figure 2, Item 6).
11. Install two screws (Figure 2, Item 5) through coupling (Figure 2, Item 6) and into lug (Figure 2, Item 4).
12. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 5) to 6 in. lb (0.68 N•m).
13. Install lug (Figure 2, Item 14) by matching the holes in the lug (Figure 2, Item 14) with the holes in the coupling (Figure 2, Item 21).

ASSEMBLY - CONTINUED

14. Install two screws (Figure 2, Item 13) through coupling (Figure 2, Item 6) and into lug (Figure 2, Item 14).
15. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 13) to 6 in. lb (0.68 N•m).
16. Install bumper (Figure 2, Item 15) with the thin lip seal end facing away from the coupling body (Figure 2, Item 6).

NOTE

After installation, the outer face of the seal must be smooth and free of wrinkles.

17. Install the seal (Figure 2, Item 1) into the groove in the face of the coupling (Figure 2, Item 6).

NOTE

The inlet adapter contains two grooves. The groove (rounded bottom) nearest the end is for the ball race connection. The second groove (square bottom) is where O-ring (Figure 2, Item 11) will be installed.

18. Install spring (Figure 2, Item 12) into the groove within the larger opening of the coupling (Figure 2, Item 6).
19. Lubricate new O-ring (Figure 2, Item 4) with a light coat of petrolatum.
20. Install new O-ring (Figure 2, Item 11) in second groove of inlet adapter (Figure 2, Item 10).
21. Press inlet adapter (Figure 2, Item 10) into coupling (Figure 2, Item 6) to align the groove in the coupling (Figure 2, Item 6) with the groove in the inlet adapter (Figure 2, Item 10).

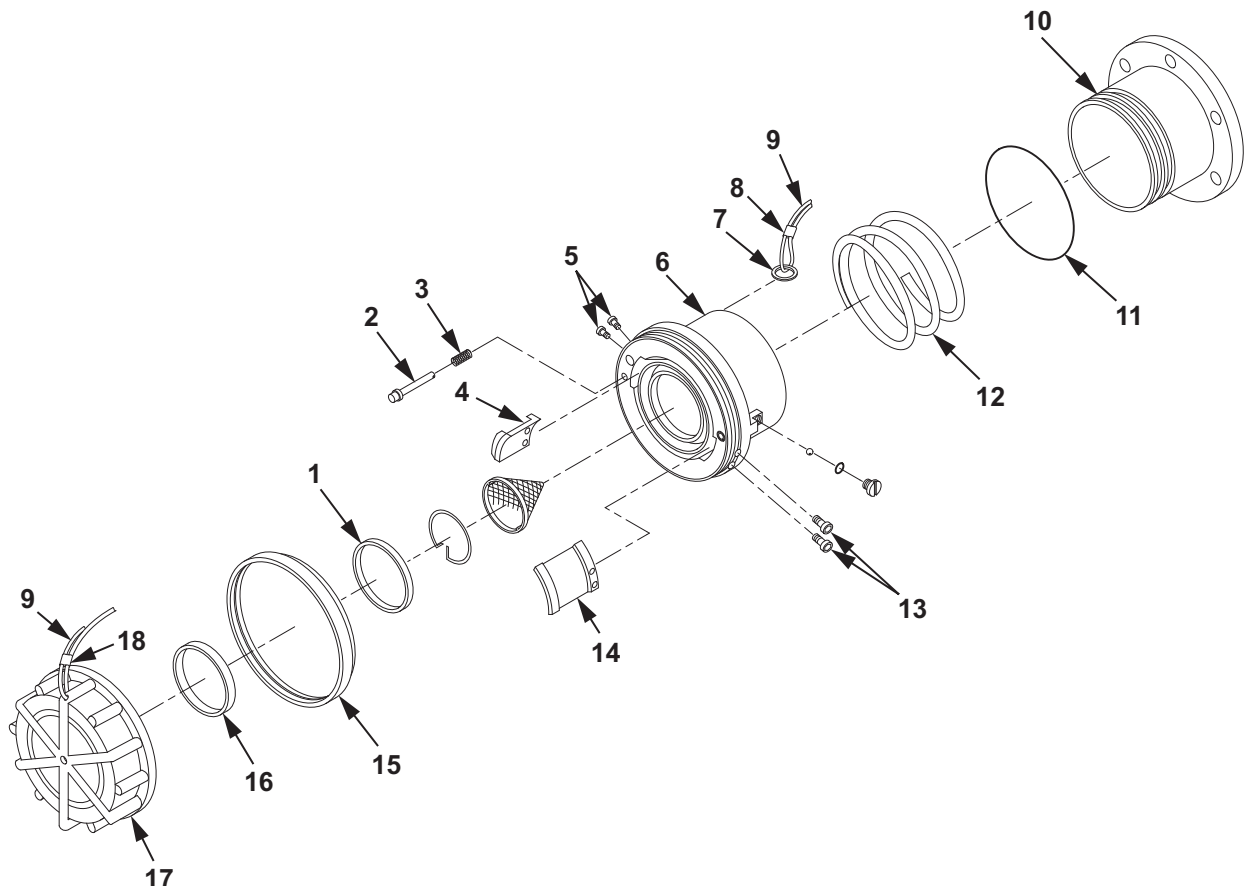


Figure 2. 2 In. Quik Disconnect Coupling Half Assembly.

ASSEMBLY - CONTINUED**NOTE**

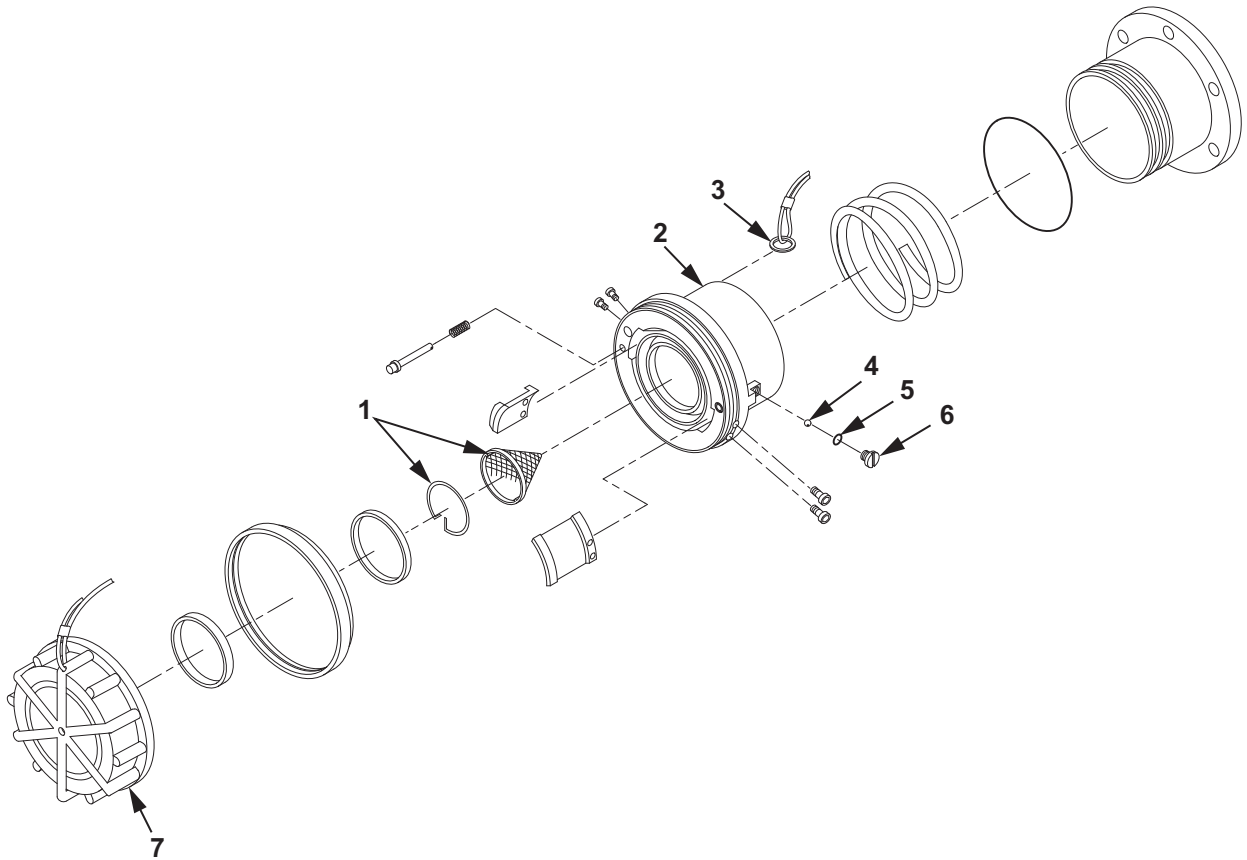
Do not use any form of grease on balls (Figure 3, Item 2).

When inserting balls in coupling, use caution to avoid dropping loose balls. Work over a cleaning cloth.

22. Hold coupling (Figure 3, Item 2) over a cleaning cloth with screw hole facing up and install balls (Figure 3, Item 4), one at a time, rotating coupling (Figure 3, Item 2) back and forth until all 41 balls (Figure 3, Item 4) have been inserted.
23. Install new O-ring (Figure 3, Item 5) and ball retaining screw (Figure 3, Item 6) in coupling (Figure 3, Item 2).
24. Using torque wrench and screwdriver bit, torque ball retaining screw (Figure 3, Item 6) to 25 in. lb (2.8 N•m).
25. Install snap ring and screen (Figure 3, Item 1).

END OF TASK**TESTING**

1. Using the repaired non-valved dry-break coupling assembly and a similar non-valved dry-break coupling assembly, make a connection with the two non-valved dry-break coupling assemblies to ensure that couplings will connect properly. If couplings will not connect properly, repair non-valved dry-break coupling assembly.
2. Disconnect non-valved dry-break coupling assemblies by pulling ring (Figure 3, Item 3) while rotating non-valved dry-break coupling assemblies counterclockwise.
3. Connect the repaired non-valved dry-break coupling assembly to a fluid pressure source capable of 100 PSI (689.47 kPa) by means of another dry-break coupling assembly.
4. Install the dust cap (Figure 3, Item 7) on the repaired non-valved dry-break coupling assembly.
5. Apply pressure of 5 PSI (34.47 kPa) to the repaired non-valved dry-break coupling assembly.
6. Increase pressure to 100 PSI (689.47 kPa) to the repaired non-valved dry-break coupling assembly.
7. Inspect repaired non-valved dry-break coupling assembly for leakage over a period of at least 1 minute. If non-valved dry-break coupling assembly leaks, repeat procedure to repair non-valved dry-break coupling assembly.
8. Reduce pressure from the test system and remove repaired non-valved dry-break coupling assembly.



0185-7/8 blank

**DIRECT SUPPORT MAINTENANCE
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH5, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY**

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (Item 20, WP 0215)
O-ring (Item 43, WP 0215)
O-ring (Item 44, WP 0215)
Seal (Item 19, WP 0215)
Gasket (Item 47, WP 0215)
Locknut (6) (Item 62, WP 0215)

WARNING

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

DISASSEMBLY

1. Remove locknuts (Figure 1, Item 10), washers (Figure 1, Item 11), screws (Figure 1, Item 13) and washers (Figure 1, Item 12) securing quick disconnect coupling half (Figure 1, Item 14) to inlet elbow (Figure 1, Item 16).
2. Remove quick disconnect coupling half (Figure 1, Item 14) from inlet elbow (Figure 1, Item 16).
3. Remove seal (Figure 1, Item 15) from inlet elbow (Figure 1, Item 16) and discard.

NOTE

Screw (Figure 1, Item 3) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 3), then screw (Figure 1, Item 3) should be replaced.

4. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 3). If running torque is less than 9.5 in. lb (1.07 N•m), discard screw (Figure 1, Item 3).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 3) to prevent loss of ball bearings (Figure 1, Item 4).

5. Remove screw (Figure 1, Item 3) from fuel nozzle body (Figure 1, Item 1).
6. Remove O-ring (Figure 1, Item 2) from screw (Figure 1, Item 3) and discard.

NOTE

Ensure all 39 ball bearings (Figure 1, Item 4) are accounted for during disassembly.

7. Hold fuel nozzle body (Figure 1, Item 1) with screw hole toward cleaning cloth and rotate fuel nozzle body (Figure 1, Item 1) to allow ball bearings (Figure 1, Item 4) to fall onto the cleaning cloth.
8. Remove inlet elbow (Figure 1, Item 16) from fuel nozzle body (Figure 1, Item 1).
9. Remove O-ring (Figure 1, Item 19) from internal groove of the fuel nozzle body (Figure 1, Item 1).
10. Discard O-ring (Figure 1, Item 19).
11. Remove seal (Figure 1, Item 18) and wear ring (Figure 1, Item 17) from inlet elbow (Figure 1, Item 16).
12. Discard seal (Figure 1, Item 18).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 5), perform the following removal steps.

13. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 9). If running torque is less than 6.5 in. lb (0.73 N-m), discard screw (Figure 1, Item 9).
14. Remove screw (Figure 1, Item 9) and washer (Figure 1, Item 8) from grip handle (Figure 1, Item 7).
15. Remove grip handle (Figure 1, Item 7) from fuel nozzle handle (Figure 1, Item 6).
16. Remove dust cap (Figure 1, Item 5) from fuel nozzle handle (Figure 1, Item 6).

END OF TASK

CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks and corrosion. If cracks or corrosion is found, replace with a serviceable like item.
2. Inspect quick disconnect coupling half (Figure 1, Item 14) for leakage or damage. If leakage or damage is found, repair quick disconnect coupling half (Figure 1, Item 14) (WP 0187).
3. Check fuel nozzle body (Figure 1, Item 1) for leakage or damage. If leakage or damage is found, replace with a serviceable nozzle.

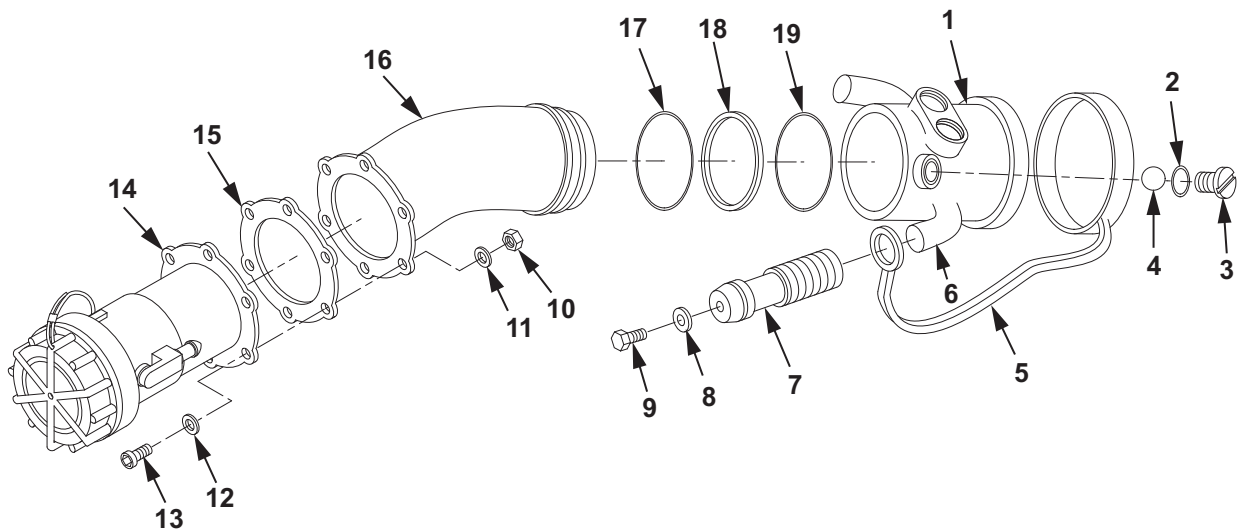


Figure 1. D1 Nozzle Disassembly.

END OF TASK

ASSEMBLY

NOTE

If it was necessary to replace dust cap (Figure 2, Item 5), perform steps 1–4.

1. Install dust cap (Figure 2, Item 5) on fuel nozzle handle (Figure 2, Item 6).
2. Position grip handle (Figure 2, Item 7) on fuel nozzle handle (Figure 2, Item 6).
3. Position washer (Figure 2, Item 8) and screw (Figure 2, Item 9) on grip handle (Figure 2, Item 7).
4. Using a torque wrench, torque screw (Figure 2, Item 9) to 6.5 in. lb (0.73 N•m).
5. Lightly lubricate new O-ring (Figure 2, Item 19) with petrolatum and install in internal groove of the fuel nozzle body (Figure 2, Item 1).
6. Install wear ring (Figure 2, Item 17) in inside groove of inlet elbow (Figure 2, Item 16).
7. Install new seal (Figure 2, Item 18) on inlet elbow (Figure 2, Item 16).
8. Install inlet elbow (Figure 2, Item 16) into fuel nozzle body (Figure 2, Item 1).

NOTE

Ensure all 39 ball bearings (Figure 2, Item 4) are accounted for before assembly.

9. Hold fuel nozzle body (Figure 2, Item 1) over cleaning cloth with screw hole up and insert ball bearings (Figure 2, Item 4) into hole.
10. Lightly lubricate new O-ring (Figure 2, Item 2) with petrolatum and install on screw (Figure 2, Item 3).
11. Install screw (Figure 2, Item 3) into fuel nozzle body (Figure 2, Item 1).
12. Using torque wrench, torque screw (Figure 2, Item 3) to 9.5 in. lb (1.07 N•m).
13. Install new gasket (Figure 2, Item 15) on inlet elbow (Figure 2, Item 16).
14. Install quick disconnect coupling half (Figure 2, Item 14) on inlet elbow (Figure 2, Item 16).
15. Install new locknuts (Figure 2, Item 10), washers (Figure 2, Item 11), screws (Figure 2, Item 13) and washers (Figure 2, Item 12) to attach quick disconnect coupling half (Figure 2, Item 14) to inlet elbow (Figure 2, Item 16).

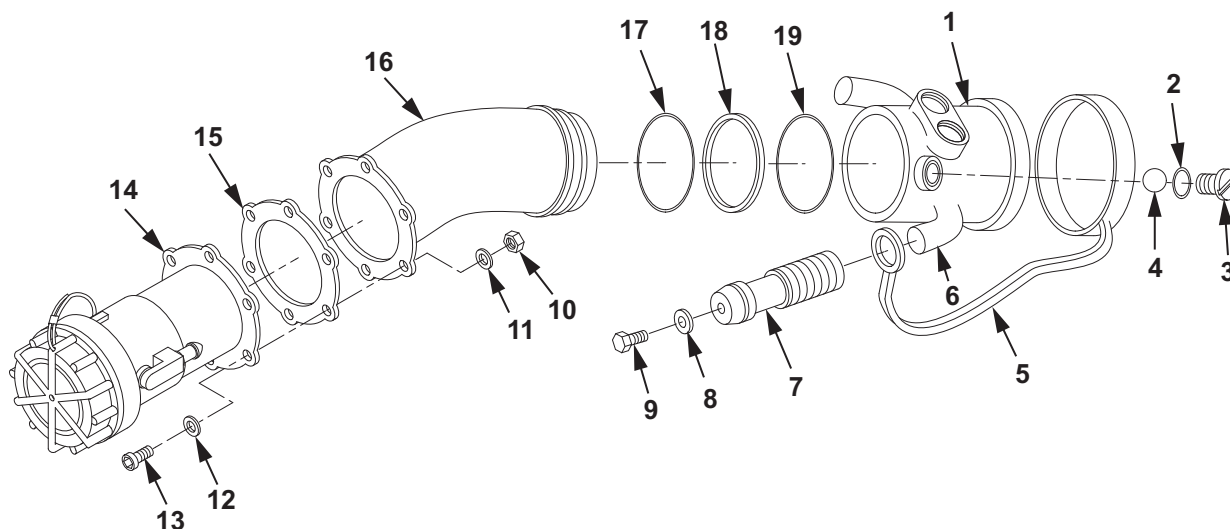


Figure 2. D1 Nozzle Assembly.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
2 IN. QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK COUPLING ASSEMBLY), MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Coupling assembly removed from FSSP
(WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
O-ring (Item 50, WP 0215)
Seal, plain (2) (Item 23, WP 0215)
Seal, plain (Item 24, WP 0215)
O-ring (Item 54, WP 0215)
O-ring (Item 58, WP 0215)
O-ring (2) (Item 51, WP 0215)
O-ring (Item 52, WP 0215)
Seal, downstream (Item 27, WP 0215)

DISASSEMBLY**NOTE**

Screw (Figure 1, Item 25) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 25), then screw (Figure 1, Item 25) should be replaced.

1. Using a torque wrench and screwdriver bit, check running torque while removing screw (Figure 1, Item 25). If running torque is less than 3.5 in. lb (0.45 N•m), discard screw (Figure 1, Item 25).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 25) to prevent loss of ball bearings (Figure 1, Item 23) inside coupling (Figure 1, Item 4).

2. Remove screw (Figure 1, Item 25) from coupling (Figure 1, Item 4).
3. Remove O-ring (Figure 1, Item 24) from screw (Figure 1, Item 25).
4. Discard O-ring (Figure 1, Item 24).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 23) are accounted for during disassembly.

5. Hold coupling (Figure 1, Item 4) with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 23) to fall onto the cleaning cloth.
6. Remove inlet adapter (Figure 1, Item 11) from coupling (Figure 1, Item 4).
7. Remove seal (Figure 1, Item 14) from inlet adapter (Figure 1, Item 11). Discard seal (Figure 1, Item 14).
8. Remove eight springs (Figure 1, Item 10) from inlet adapter (Figure 1, Item 11).
9. Remove O-ring (Figure 1, Item 13) from inside groove of inlet adapter (Figure 1, Item 11). Discard O-ring (Figure 1, Item 13).
10. Remove O-ring (Figure 1, Item 12) from outer groove of inlet adapter (Figure 1, Item 11). Discard O-ring (Figure 1, Item 12).
11. Rotate ball valve (Figure 1, Item 9) to the closed position and remove from inside coupling (Figure 1, Item 4).
12. Remove spring washer (Figure 1, Item 8), stop pin (Figure 1, Item 7) and O-ring (Figure 1, Item 6) from inside coupling (Figure 1, Item 4).
13. Discard O-ring (Figure 1, Item 6).
14. Remove seal (Figure 1, Item 5) from coupling (Figure 1, Item 4).
15. Discard seal (Figure 1, Item 5).
16. Remove O-ring (Figure 1, Item 17) from coupling (Figure 1, Item 4).
17. Discard O-ring (Figure 1, Item 17).
18. Remove two screws (Figure 1, Item 20) from control arm (Figure 1, Item 19).
19. Remove control arm (Figure 1, Item 19) from coupling (Figure 1, Item 4).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 19), perform the following steps.

- a. Remove screw (Figure 1, Item 22) from control arm (Figure 1, Item 19).
 - b. Remove spring (Figure 1, Item 21) from control arm (Figure 1, Item 19).
 - c. Remove knob (Figure 1, Item 18) from control arm (Figure 1, Item 19).
20. Remove control arm shaft (Figure 1, Item 16) and O-ring (Figure 1, Item 15) from inside coupling (Figure 1, Item 4).
 21. Discard O-ring (Figure 1, Item 15).
 22. Remove seal (Figure 1, Item 3) from coupling (Figure 1, Item 4) interface.

DISASSEMBLY - CONTINUED

23. Discard seal (Figure 1, Item 3).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 28), perform the following removal steps.

24. Remove dust cap (Figure 1, Item 28) from coupling (Figure 1, Item 4).
25. Cut cable (Figure 1, Item 2) or remove split ring (Figure 1, Item 26) from coupling (Figure 1, Item 4) and cable (Figure 1, Item 2).
26. Cut cable (Figure 1, Item 2) from dust cap (Figure 1, Item 28).
27. Remove cable (Figure 1, Item 2) and sleeve (Figure 1, Item 1).
28. Remove seal (Figure 1, Item 27) from dust cap (Figure 1, Item 28).
29. Discard seal (Figure 1, Item 27).

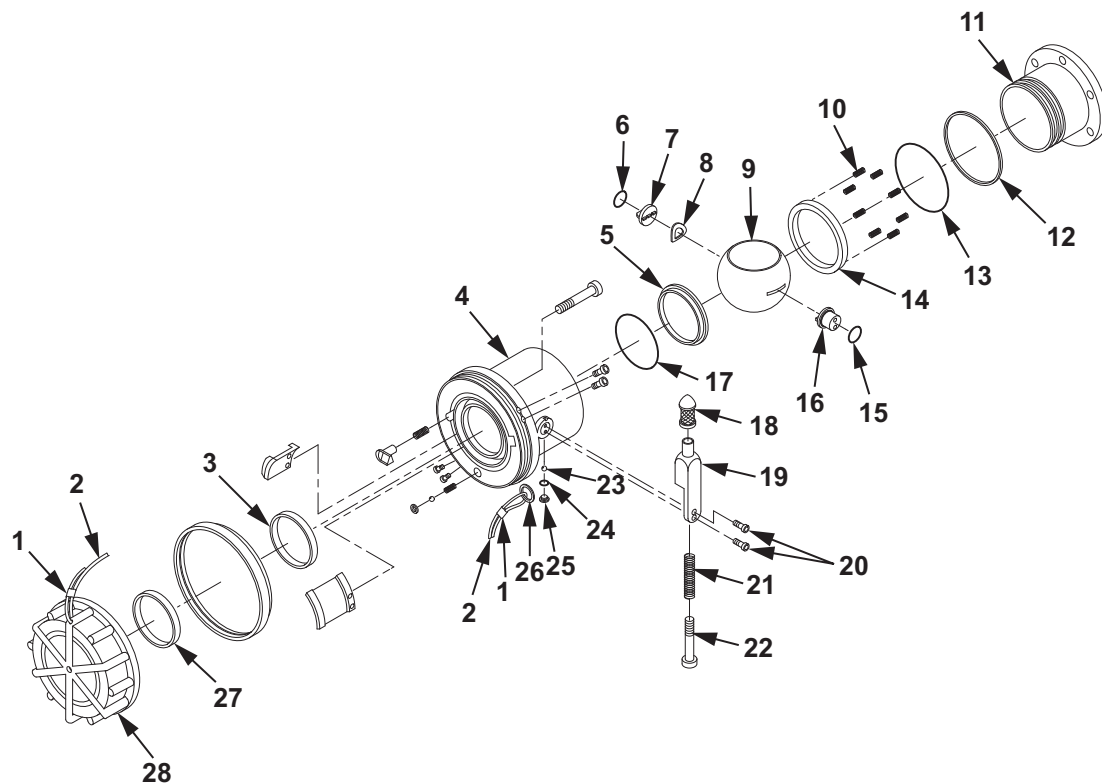


Figure 1. Valved Dry-Break Coupling Disassembly.

DISASSEMBLY - CONTINUED**NOTE**

If it is necessary to replace bumper or lugs, perform the following steps.

30. Remove bumper (Figure 2, Item 11) from coupling (Figure 2, Item 3).
31. Remove screws (Figure 2, Item 9) from coupling (Figure 2, Item 3).
32. Remove lug (Figure 2, Item 10) or lug (Figure 2, Item 13) from coupling (Figure 2, Item 3).

NOTE

Do not remove spring washer (Figure 2, Item 8), ball bearing (Figure 2, Item 7) or spring (Figure 2, Item 6). If replacement of ball bearing (Figure 2, Item 7) is required, then coupling (Figure 2, Item 3) must be replaced.

If it is necessary to replace lockout pin (Figure 2, Item 29), perform the following removal steps.

33. Remove screw (Figure 2, Item 4) from coupling (Figure 2, Item 3).
34. Remove lockout pin (Figure 2, Item 1) from coupling (Figure 2, Item 3).
35. Remove spring (Figure 2, Item 2) from coupling (Figure 2, Item 3).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 2, Item 11) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.

3. Inspect dust cap (Figure 2, Item 12) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 1, Item 7) is to provide electrical continuity between mating surfaces.

4. Inspect ball bearing (Figure 2, Item 7) located in face of coupling (Figure 2, Item 3) for damage. Push the ball bearing (Figure 2, Item 7) in and ensure it pops back into place. If damage is found or ball bearing does not pop back into place, replace coupling (Figure 2, Item 3).
5. Inspect control arm (Figure 2, Item 5) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

NOTE

If it was necessary to replace lockout pin (Figure 2, Item 1), perform the following installation steps.

1. Install screw (Figure 2, Item 4) into coupling (Figure 2, Item 3).
2. Install spring (Figure 2, Item 2) into coupling (Figure 2, Item 3) and over screw (Figure 2, Item 4).
3. Install lockout pin (Figure 2, Item 1) into coupling (Figure 2, Item 3).
4. Tighten screw (Figure 2, Item 4) until ramp edge of lockout pin (Figure 2, Item 1) is even with or slightly below the adjacent ledge of coupling (Figure 2, Item 3).

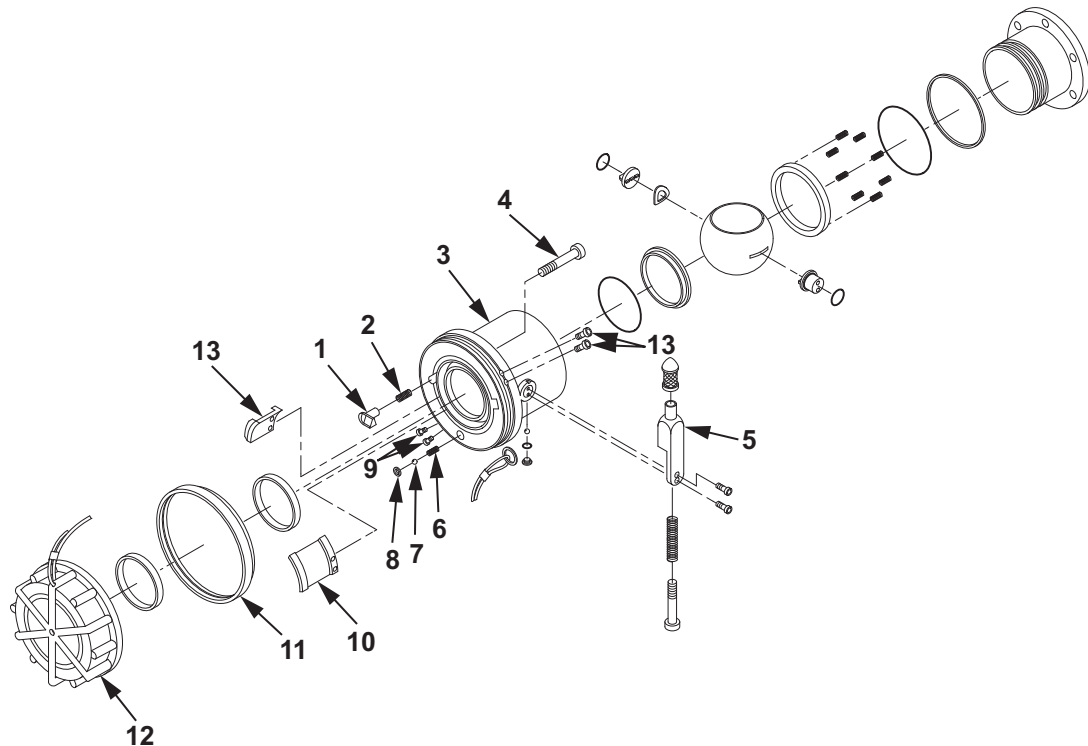


Figure 2. Valved Dry-Break Coupling Assembly.

ASSEMBLY - CONTINUED

NOTE

If it was necessary to replace bumper (Figure 3, Item 24) or lugs (Figure 3, Item 23, 4), perform the following installation steps.

5. Position lugs (Figure 3, Item 23, 4) in coupling (Figure 3, Item 6).
6. Install screws (Figure 3, Item 22) into coupling (Figure 3, Item 6).
7. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 16) to 6 in. lb (0.70 N•m).
8. Position bumper (Figure 3, Item 24) with thin lip seal end facing away from coupling (Figure 3, Item 6).
9. Install bumper (Figure 3, Item 24) on coupling (Figure 3, Item 6).

NOTE

If it was necessary to replace dust cap (Figure 3, Item 24), perform the following installation steps.

10. Install new seal (Figure 3, Item 25) on dust cap (Figure 3, Item 26).
11. Loop one end of 18 in. cable (Figure 3, Item 2) through sleeve (Figure 3, Item 1), dust cap (Figure 3, Item 26) and back through sleeve (Figure 3, Item 1).
12. Using pliers, crimp sleeve (Figure 3, Item 1).
13. Loop other end of 18 in. cable (Figure 3, Item 2) through sleeve (Figure 3, Item 1), split ring (Figure 3, Item 21) and back through sleeve (Figure 3, Item 1).
14. Using pliers, crimp sleeve (Figure 3, Item 1).
15. Install new seal (Figure 3, Item 3) into coupling (Figure 3, Item 6) interface.
16. Lightly lubricate new O-ring (Figure 3, Item 12) with petrolatum and install O-ring (Figure 3, Item 12) on control arm shaft (Figure 3, Item 13).

NOTE

If it was necessary to disassemble control arm (Figure 3, Item 17), perform the following assembly steps.

17. Place spring (Figure 3, Item 19) on screw (Figure 3, Item 20).
18. Install screw (Figure 3, Item 20) into control arm (Figure 3, Item 17).
19. Install knob (Figure 3, Item 15) on control arm (Figure 3, Item 17).
20. Tighten screw (Figure 3, Item 20) hand tight.
21. Install control arm shaft (Figure 3, Item 13) inside coupling (Figure 3, Item 6).
22. Position control arm (Figure 3, Item 17) with holes on control arm shaft (Figure 3, Item 13).
23. Install two screws (Figure 3, Item 18) through control arm (Figure 3, Item 17) and into control arm shaft (Figure 3, Item 13).
24. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 18) to 8 in. lb (0.90 N•m).
25. Lightly lubricate new O-ring (Figure 3, Item 14) with petrolatum and install O-ring (Figure 3, Item 14) in coupling (Figure 3, Item 6).
26. Install new seal (Figure 3, Item 7) into coupling (Figure 3, Item 6).
27. Lightly lubricate new O-ring (Figure 3, Item 8) with petrolatum and install O-ring (Figure 3, Item 8) in groove of stop pin (Figure 3, Item 9).
28. Install stop pin (Figure 3, Item 9) inside coupling (Figure 3, Item 6).
29. Install spring washer (Figure 3, Item 10) in groove of stop pin (Figure 3, Item 9).
30. Align slots in ball valve (Figure 3, Item 11) with tangs on control arm shaft (Figure 3, Item 13) and stop pin (Figure 3, Item 9).
31. Install ball valve (Figure 3, Item 11) in coupling (Figure 3, Item 6).
32. Rotate control arm (Figure 3, Item 17) to the open position to retain ball valve (Figure 3, Item 11) in place.
33. Test function of lockout pin (Figure 3, Item 5) if not removed from coupling (Figure 3, Item 6).

ASSEMBLY - CONTINUED

- a. With ball valve (Figure 3, Item 11) in the open position, depress lockout pin (Figure 3, Item 5). If lockout pin (Figure 3, Item 5) cannot be depressed, then stop pin (Figure 3, Item 9) has been installed correctly.
 - b. With ball valve (Figure 3, Item 11) in the open position, depress lockout pin (Figure 3, Item 5). If lockout pin (Figure 3, Item 5) can be depressed, then stop pin (Figure 3, Item 9) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 9) was installed incorrectly, remove ball valve (Figure 3, Item 11) and reposition stop pin (Figure 3, Item 9).
34. Test function of lockout pin (Figure 3, Item 5) if removed from coupling (Figure 3, Item 6).
- a. With ball valve (Figure 3, Item 11) in the open position, from the interface end, look through hole in lockout pin (Figure 3, Item 5) and observe stop pin (Figure 3, Item 9). If stop pin (Figure 3, Item 9) half shaft can be seen, then stop pin (Figure 3, Item 9) has been installed correctly.
 - b. With ball valve (Figure 3, Item 11) in the open position, from the interface end, look through hole in lockout pin (Figure 3, Item 5) and observe stop pin (Figure 3, Item 9). If stop pin (Figure 3, Item 9) half shaft cannot be seen, then stop pin (Figure 3, Item 9) has been installed incorrectly.
 - c. If stop pin (Figure 3, Item 9) was installed incorrectly, remove ball valve (Figure 3, Item 11) and reposition stop pin (Figure 3, Item 9).

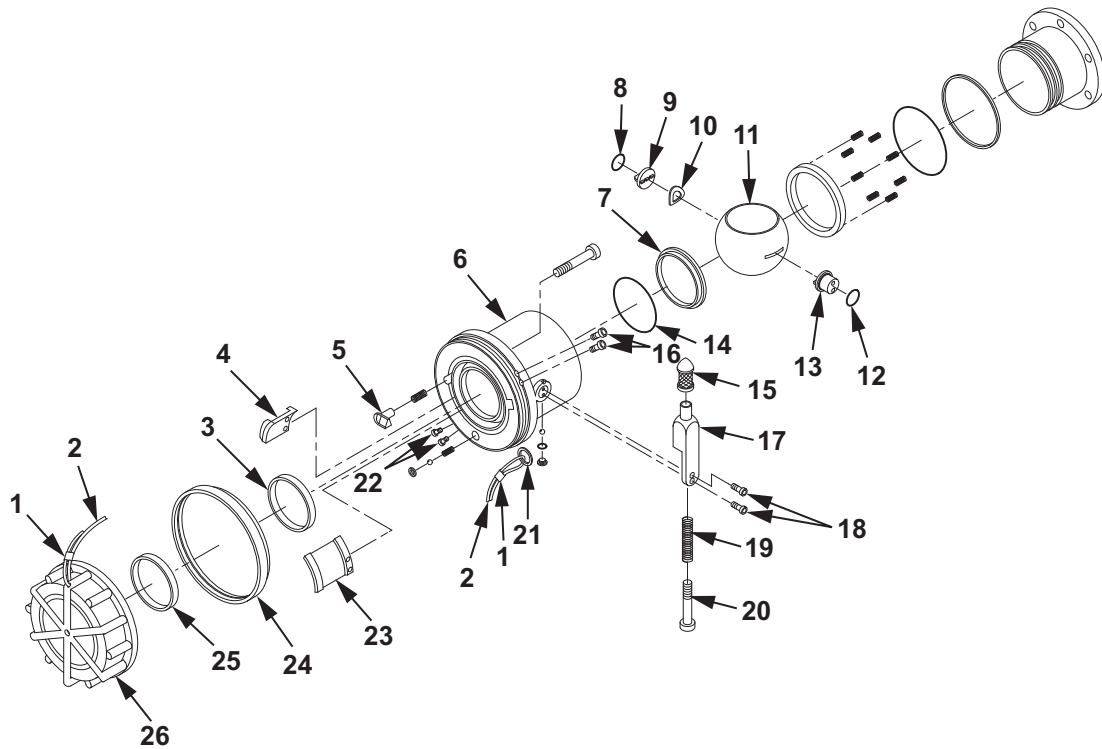


Figure 3. Valved Dry-Break Coupling Assembly.

ASSEMBLY - CONTINUED**NOTE**

During adjustment of lockout pin (Figure 4, Item 1), ensure that ball valve (Figure 4, Item 3) is securely seated at all times.

35. Adjust lockout pin (Figure 4, Item 1).
 - a. Pull knob (Figure 4, Item 9) on control arm (Figure 4, Item 10) back and slowly rotate towards the closed position. If control arm (Figure 4, Item 10) cannot be rotated or is too tight, then lockout pin (Figure 4, Item 1) requires adjustment.
 - b. Adjust lockout pin (Figure 4, Item 1) by loosening screw (Figure 4, Item 3) one-quarter turn at a time until control arm (Figure 4, Item 10) can be rotated freely.
36. Lightly lubricate new O-ring (Figure 4, Item 6) with petrolatum and install O-ring (Figure 4, Item 6) in second groove on outside of inlet adapter (Figure 4, Item 5).
37. Lightly lubricate new O-ring (Figure 4, Item 7) with petrolatum and install O-ring (Figure 4, Item 7) in inside groove of inlet adapter (Figure 4, Item 5).
38. Position eight springs (Figure 4, Item 4) in the eight holes on the inside of the inlet adapter (Figure 4, Item 5).
39. Install new seal (Figure 4, Item 8) in inside groove of inlet adapter (Figure 4, Item 5).
40. Position inlet adapter (Figure 4, Item 5) into coupling (Figure 4, Item 2) and press in to line up groove of inlet adapter (Figure 4, Item 5) with groove of coupling (Figure 4, Item 2).

NOTE

Ensure all 41 ball bearings (Figure 4, Item 11) are accounted for before assembly.

41. Hold coupling (Figure 4, Item 2) over cleaning cloth with screw hole up and insert ball bearings (Figure 4, Item 11) into hole.
42. Lightly lubricate new O-ring (Figure 4, Item 12) with petrolatum and install O-ring on screw (Figure 4, Item 13).
43. Install screw (Figure 4, Item 13) into coupling (Figure 4, Item 2).
44. Using torque wrench and screwdriver bit, torque screw (Figure 4, Item 13) to 25 in. lb (2.8 N•m).

END OF TASK**TESTING**

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 4, Item 10) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.
3. Close the control arm (Figure 4, Item 10) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 4, Item 10) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.

10. Close the control arm (Figure 4, Item 10) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.47 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 4, Item 10) in the closed position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.47 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 4, Item 14).

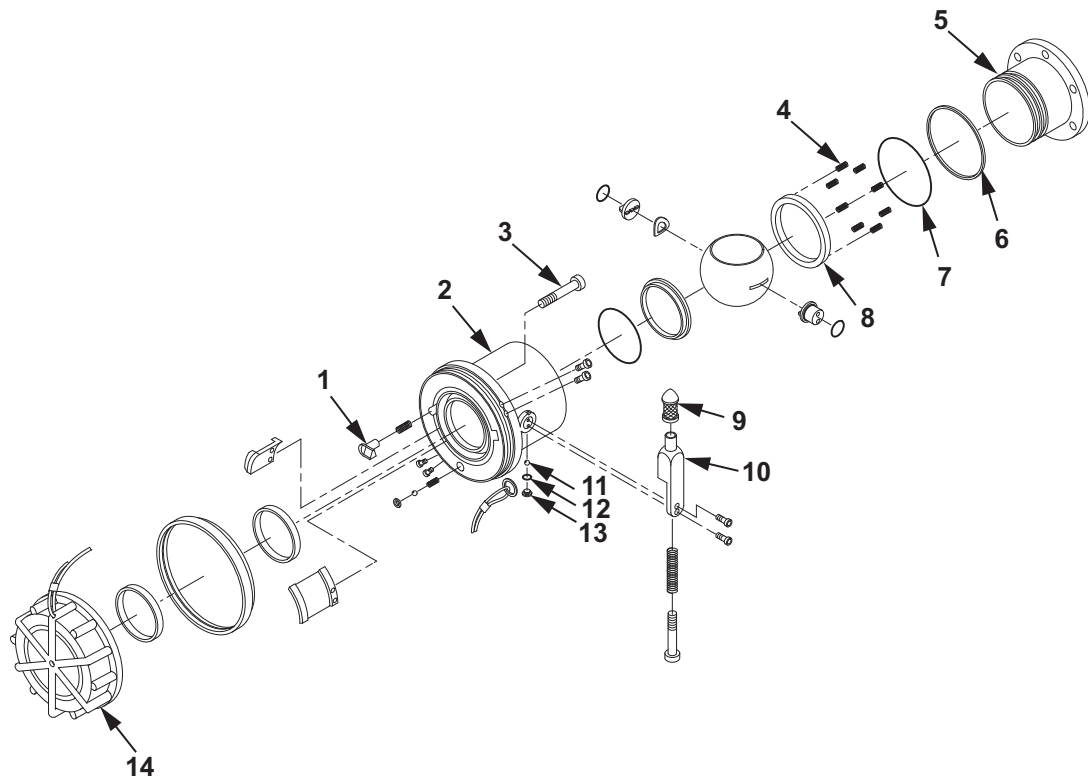


Figure 4. Valved Dry-Break Coupling Assembly.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2MQ, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Wrench, pipe (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
O-ring (Item 43, WP 0215)
O-ring (Item 44, WP 0215)
Seal (Item 19, WP 0215)
Gasket (Item 47, WP 0215)
Locknuts (6) (Item 62, WP 0215)

WARNING

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

DISASSEMBLY

1. Remove six locknuts (Figure 1, Item 1), washers (Figure 1, Item 2), screws (Figure 1, Item 3) and washers (Figure 1, Item 4) attaching quick disconnect coupling half adapter (Figure 1, Item 5) to inlet elbow (Figure 1, Item 6). Discard locknuts (Figure 1, Item 1).
2. Remove quick disconnect coupling half adapter (Figure 1, Item 5) from inlet elbow (Figure 1, Item 6).
3. Remove gasket (Figure 1, Item 16) from inlet elbow (Figure 1, Item 17) and discard.

NOTE

Screw (Figure 1, Item 3) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 3), then screw (Figure 1, Item 3) should be replaced.

4. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 3). If running torque is less than 9.5 in. lb (1.07 N•m), discard screw (Figure 1, Item 3).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 3) to prevent loss of ball bearings (Figure 1, Item 4).

5. Remove screw (Figure 1, Item 3) from fuel nozzle body (Figure 1, Item 1).
6. Remove O-ring (Figure 1, Item 2) from screw (Figure 1, Item 3) and discard.
7. Hold fuel nozzle body (Figure 1, Item 1) with screw hole toward cleaning cloth and rotate fuel nozzle body (Figure 1, Item 1) to allow ball bearings (Figure 1, Item 4) to fall onto the cleaning cloth.
8. Remove inlet elbow (Figure 1, Item 17) from fuel nozzle body (Figure 1, Item 1).
9. Remove O-ring (Figure 1, Item 20) from internal groove of the fuel nozzle body (Figure 1, Item 1).
10. Discard O-ring (Figure 1, Item 20).
11. Remove seal (Figure 1, Item 19) and wear ring (Figure 1, Item 14) from inlet elbow (Figure 1, Item 17).
12. Discard seal (Figure 1, Item 19).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 5), perform the following removal steps.

13. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 9). If running torque is less than 6.5 in. lb (0.73 N•m), discard screw (Figure 1, Item 9).
14. Remove screw (Figure 1, Item 9) and washer (Figure 1, Item 8) from grip handle (Figure 1, Item 7).
15. Remove grip handle (Figure 1, Item 7) from fuel nozzle handle (Figure 1, Item 6).

NOTE

A vise may be needed to remove quick disconnect coupling half from adapter.

16. Remove dust cap (Figure 1, Item 5) from fuel nozzle handle (Figure 1, Item 6).
17. Using pipe wrench, remove quick disconnect coupling half adapter (Figure 1, Item 15) by turning the quick disconnect coupling half (Figure 1, Item 14) counterclockwise.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks and corrosion. If cracks or corrosion is found, replace with a serviceable like item.
2. Inspect quick disconnect coupling half adapter (Figure 1, Item 15) and quick disconnect coupling half (Figure 1, Item 14) for leakage or damage. If leakage or damage is found, replace quick disconnect coupling half adapter (Figure 1, Item 15) or quick disconnect coupling half (Figure 1, Item 14).
3. Check fuel nozzle body (Figure 1, Item 1) for leakage or damage. If leakage or damage is found, replace with a serviceable nozzle.

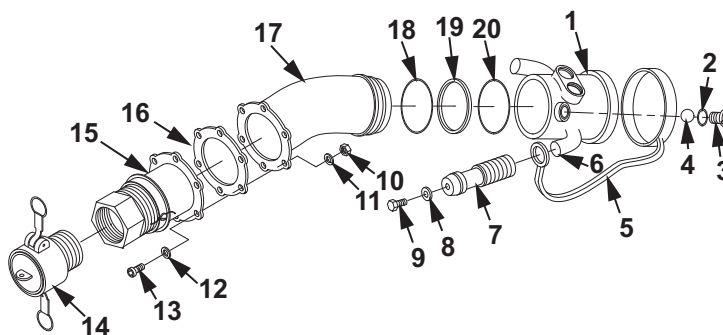


Figure 1. D1 Nozzle Disassembly.

END OF TASK

ASSEMBLY

NOTE

If it was necessary to replace dust cap (Figure 2, Item 5), perform steps 1–4.

1. Install dust cap (Figure 2, Item 5) on fuel nozzle handle (Figure 2, Item 6).
2. Position grip handle (Figure 2, Item 7) on fuel nozzle handle (Figure 2, Item 6).
3. Position washer (Figure 2, Item 8) and screw (Figure 2, Item 9) on grip handle (Figure 2, Item 6).
4. Using a torque wrench, torque screw (Figure 2, Item 9) to 6.5 in. lb (0.73 N•m).
5. Lightly lubricate new O-ring (Figure 2, Item 20) with petrolatum and install in internal groove of the fuel nozzle body (Figure 2, Item 1).
6. Install wear ring (Figure 2, Item 18) in inside groove of inlet elbow (Figure 2, Item 17).
7. Install new seal (Figure 2, Item 19) on inlet elbow (Figure 2, Item 17).
8. Install inlet elbow (Figure 2, Item 17) into fuel nozzle body (Figure 2, Item 1).

NOTE

Ensure all 39 ball bearings (Figure 2, Item 4) are accounted for before assembly.

9. Hold fuel nozzle body (Figure 2, Item 1) over cleaning cloth with screw hole up and insert ball bearings (Figure 2, Item 4) into hole.
10. Lightly lubricate new O-ring (Figure 2, Item 2) with petrolatum and install on screw (Figure 2, Item 3).
11. Install screw (Figure 2, Item 3) into fuel nozzle body (Figure 2, Item 1).
12. Using torque wrench, torque screw (Figure 2, Item 3) to 9.5 in. lb (1.07 N•m).
13. Install new gasket (Figure 2, Item 16) on inlet elbow (Figure 2, Item 17).
14. Install quick disconnect coupling half adapter (Figure 2, Item 15) on inlet elbow (Figure 2, Item 17).
15. Install six new locknuts (Figure 2, Item 10), washers (Figure 2, Item 11), screws (Figure 2, Item 13) and washers (Figure 2, Item 12) to attach quick disconnect coupling half adapter (Figure 2, Item 15) to inlet elbow (Figure 2, Item 17).

NOTE

A vise may be needed to install quick disconnect coupling half on adapter.

16. Wrap threads of quick disconnect coupling half adapter (Figure 2, Item 15) with teflon tape.
17. Using pipe wrench, install quick disconnect coupling half adapter (Figure 2, Item 15) by turning the quick disconnect coupling half (Figure 2, Item 14) clockwise. Tighten quick disconnect coupling half (Figure 2, Item 14).

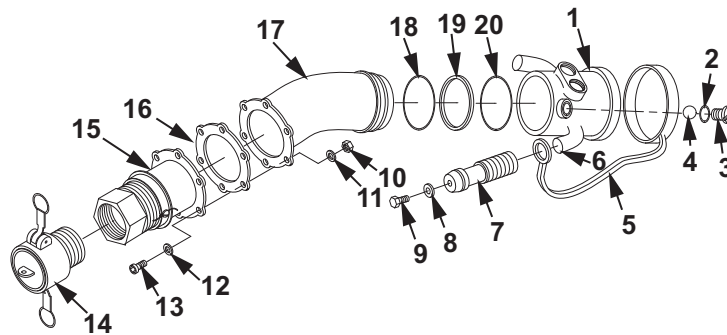


Figure 2. D1 Nozzle Assembly.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
D1 NOZZLE ASSEMBLY, PART NUMBER 64201CGH2KQ, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY**

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Wrench, pipe (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Tape, teflon (Item 14, WP 0214)
O-ring (Item 43, WP 0215)
O-ring (Item 44, WP 0215)
Seal (Item 19, WP 0215)
Gasket (Item 47, WP 0215)
Locknuts (6) (Item 62, WP 0215)

WARNING

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

DISASSEMBLY

1. Remove six locknuts (Figure 1, Item 10), washers (Figure 1, Item 11), screws (Figure 1, Item 13) and washers (Figure 1, Item 12) attaching quick disconnect coupling half adapter (Figure 1, Item 15) to inlet elbow (Figure 1, Item 17). Discard locknuts (Figure 1, Item 10).
2. Remove quick disconnect coupling half adapter (Figure 1, Item 15) from inlet elbow (Figure 1, Item 17).
3. Remove gasket (Figure 1, Item 16) from inlet elbow (Figure 1, Item 17) and discard.

NOTE

Screw (Figure 1, Item 3) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 3), then screw (Figure 1, Item 3) should be replaced.

4. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 3). If running torque is less than 9.5 in. lb (1.07 N•m), discard screw (Figure 1, Item 3).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 3) to prevent loss of ball bearings (Figure 1, Item 4).

5. Remove screw (Figure 1, Item 3) from fuel nozzle body (Figure 1, Item 1).
6. Remove O-ring (Figure 1, Item 2) from screw (Figure 1, Item 3) and discard.

NOTE

Ensure all 39 ball bearings (Figure 1, Item 4) are accounted for during disassembly.

7. Hold fuel nozzle body (Figure 1, Item 1) with screw hole toward cleaning cloth and rotate fuel nozzle body (Figure 1, Item 1) to allow ball bearings (Figure 1, Item 4) to fall onto the cleaning cloth.
8. Remove inlet elbow (Figure 1, Item 17) from fuel nozzle body (Figure 1, Item 1).
9. Remove O-ring (Figure 1, Item 20) from internal groove of the fuel nozzle body (Figure 1, Item 1).
10. Discard O-ring (Figure 1, Item 20).
11. Remove seal (Figure 1, Item 19) and wear ring (Figure 1, Item 18) from inlet elbow (Figure 1, Item 17).
12. Discard seal (Figure 1, Item 19).
13. Using a torque wrench and screwdriver bit, check running torque on screw (Figure 1, Item 9). If running torque is less than 6.5 in. lb (0.73 N•m), discard screw (Figure 1, Item 9).
14. Remove screw (Figure 1, Item 9) and washer (Figure 1, Item 8) from grip handle (Figure 1, Item 7).
15. Remove grip handle (Figure 1, Item 7) from fuel nozzle handle (Figure 1, Item 9).

NOTE

A vise may be needed when removing quick disconnect coupling half from adapter.

16. Remove dust cap (Figure 1, Item 5) from fuel nozzle handle (Figure 1, Item 9).
17. Using pipe wrench, remove quick disconnect coupling half adapter (Figure 1, Item 15) by turning the quick disconnect coupling half (Figure 1, Item 14) counterclockwise.

END OF TASK

CLEANING

WARNING

CHEMICAL



EYE PROTECTION



POISON

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks and corrosion. If cracks or corrosion is found, replace with a serviceable like item.
2. Inspect quick disconnect coupling half adapter (Figure 1, Item 15) for leakage or damage. If leakage or damage is found, replace quick disconnect coupling half adapter (Figure 1, Item 15) or disconnect coupling half (Figure 1, Item 14).
3. Check fuel nozzle body for leakage or damage. If leakage or damage is found, replace with a serviceable nozzle.

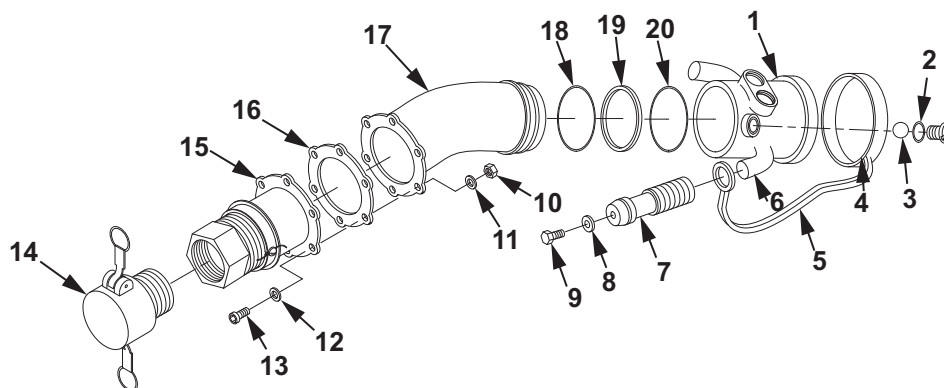


Figure 1. D1 Nozzle Disassembly.

END OF TASK

ASSEMBLY

1. Install dust cap (Figure 2, Item 5) on fuel nozzle handle (Figure 2, Item 6).
2. Install grip handle (Figure 2, Item 7) on fuel nozzle handle (Figure 2, Item 6).
3. Position washer (Figure 2, Item 8) and screw (Figure 2, Item 16) on grip handle (Figure 2, Item 17).
4. Using a torque wrench, torque screw (Figure 2, Item 9) to 6.5 in. lb (0.73 N•m).
5. Lightly lubricate new O-ring (Figure 2, Item 20) with petrolatum and install in internal groove of the fuel nozzle body (Figure 2, Item 1).
6. Install new wear ring (Figure 2, Item 18) in inside groove of inlet elbow (Figure 2, Item 17).
7. Install new seal (Figure 2, Item 19) on inlet elbow (Figure 2, Item 17).
8. Install inlet elbow (Figure 2, Item 17) into fuel nozzle body (Figure 2, Item 1).

NOTE

Ensure all 39 ball bearings (Figure 2, Item 4) are accounted for before assembly.

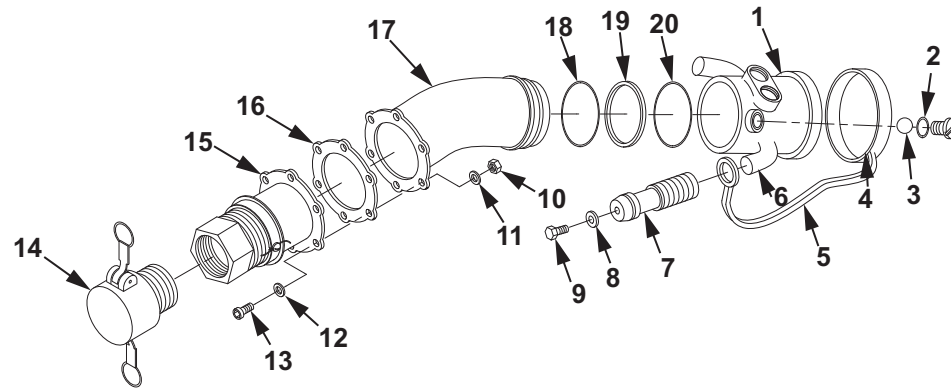
9. Hold fuel nozzle body (Figure 2, Item 1) over cleaning cloth with screw hole up and insert ball bearings (Figure 2, Item 4) into hole.
10. Lightly lubricate new O-ring (Figure 2, Item 2) with petrolatum and install on screw (Figure 2, Item 3).
11. Install screw (Figure 2, Item 3) into fuel nozzle body (Figure 2, Item 1).
12. Using torque wrench, torque screw (Figure 2, Item 3) to 9.5 in. lb (1.07 N•m).
13. Install new gasket (Figure 2, Item 16) on inlet elbow (Figure 2, Item 17).
14. Install quick disconnect coupling half adapter (Figure 2, Item 15) on inlet elbow (Figure 2, Item 17).
15. Install six locknuts (Figure 2, Item 10), washers (Figure 2, Item 11), screws (Figure 2, Item 13) and washers (Figure 2, Item 12) to attach quick disconnect coupling half adapter (Figure 2, Item 15) to inlet elbow (Figure 2, Item 17).

NOTE

A vise may be needed when installing quick disconnect coupling half on adapter.

16. Wrap threads of quick disconnect coupling half adapter (Figure 2, Item 15) with teflon tape.
17. Using pipe wrench, install quick disconnect coupling half adapter (Figure 2, Item 15) by turning the quick disconnect coupling half (Figure 2, Item 14) clockwise.
18. Tighten quick disconnect coupling half (Figure 2, Item 14).

ASSEMBLY - CONTINUED

*Figure 2. D1 Nozzle Assembly.*

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, FSII PUMP SUCTION CHECK VALVES,
REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Tool kit, general mechanic's (Item 1, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Fuel additive injection assembly removed from
FSSP (WP 0066).

Materials/Parts

Tape, teflon (Item 14, WP 0214)
Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (Item 8, WP 0214)
Antiseize compound (Item 1, WP 0214)
Washer, lock (8) (Item 16, WP 0215)

REMOVAL

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to remove fittings to prevent damage. Failure to comply will result in damage to fittings.

1. Place drain pan below FSII pump (Figure 1, Item 1).
2. If required, disconnect tube assembly (Figure 1, Item 7) from tube adapter (Figure 1, Item 8).
3. Disconnect discharge tube (Figure 1, Item 2) from tube adapter (Figure 1, Item 3).
4. Disconnect suction tube (Figure 1, Item 10) from tube adapter (Figure 1, Item 9).
5. Remove eight screws (Figure 1, Item 6) and lockwashers (Figure 1, Item 5) from fluid end cap assembly (Figure 1, Item 4).
6. Discard lockwashers (Figure 1, Item 5).
7. Remove fluid end cap assembly (Figure 1, Item 4) from FSII pump (Figure 1, Item 1).

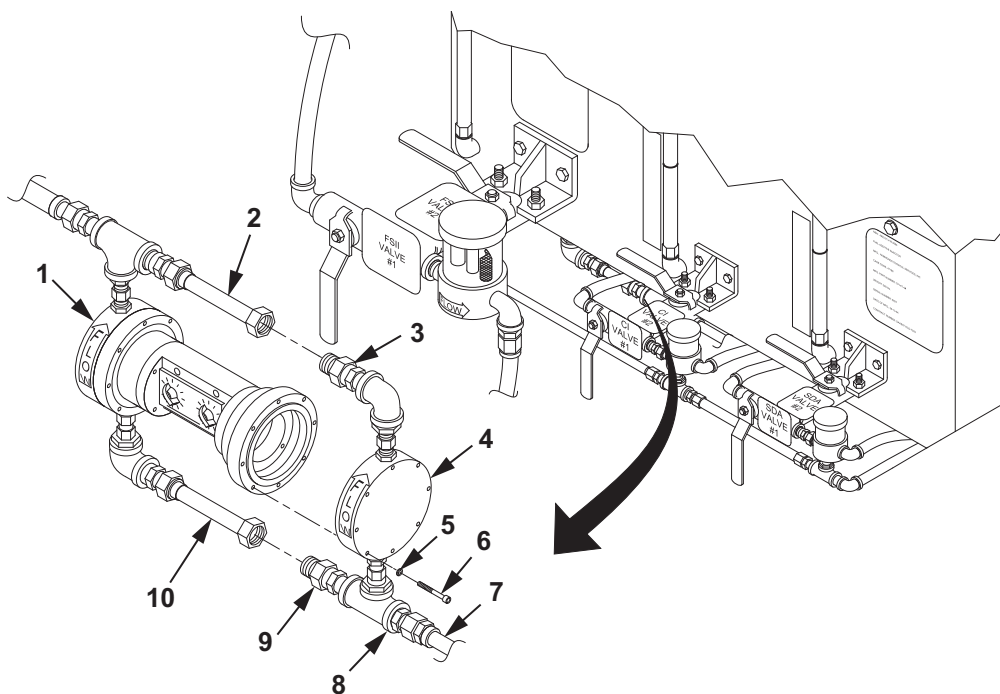


Figure 1. FSII Pump Fluid End Cap Removal.

REMOVAL - CONTINUED

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

8. Remove drain pan and dispose of contents per local procedures.
9. Remove tee assembly (Figure 2, Item 5), tube adapter (Figure 2, Item 4), reducer bushing (Figure 2, Item 3) and suction check valve (Figure 2, Item 2) as an assembly from FSII pump (Figure 2, Item 1).
10. Remove suction check valve (Figure 2, Item 2) from reducer bushing (Figure 2, Item 3). Discard suction check valve (Figure 2, Item 2).
11. Disconnect suction tube (Figure 2, Item 6) from tube adapter (Figure 2, Item 7).
12. Remove 90° elbow (Figure 2, Item 8), tube adapter (Figure 2, Item 7), reducer bushing (Figure 2, Item 9) and suction check valve (Figure 2, Item 10) as an assembly from FSII pump (Figure 2, Item 1).
13. Remove suction check valve (Figure 2, Item 10) from reducer bushing (Figure 2, Item 9). Discard suction check valve (Figure 2, Item 10).

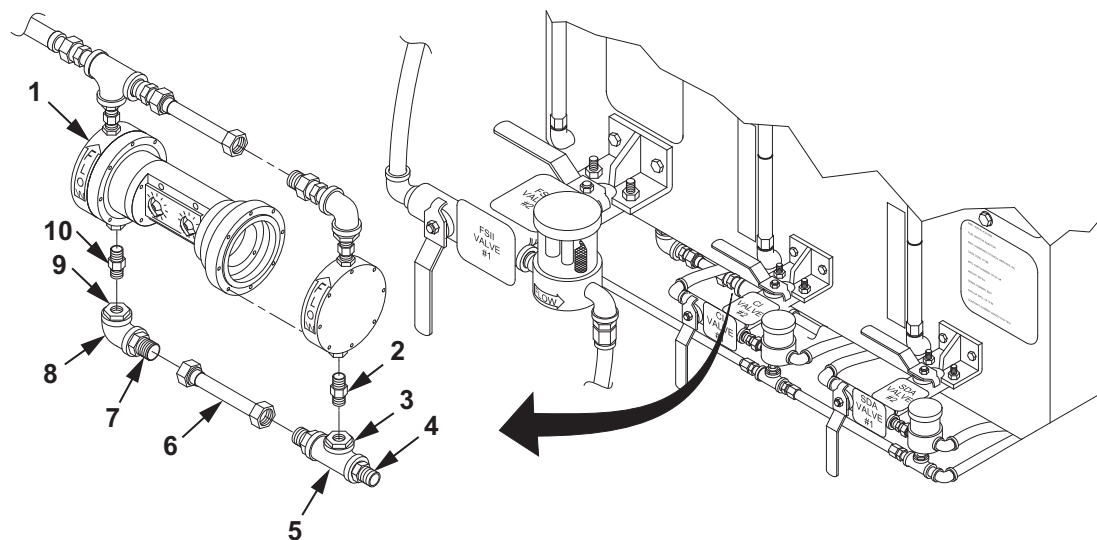


Figure 2. FSII Pump Suction Check Valves Removal.

END OF TASK

INSTALLATION

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Apply teflon tape to the threads of new suction check valve (Figure 3, Item 10).

CAUTION

Ensure suction check valve is installed with stamped arrow in direction of fluid flow. Failure to do so may cause damage to pump.

2. Install suction check valve (Figure 3, Item 10) on reducer bushing (Figure 3, Item 9). Tighten suction check valve (Figure 3, Item 10).

CAUTION

Use caution when installing suction check valve to ensure filter is not damaged or broken during installation.

3. Install suction check valve (Figure 3, Item 10), reducer bushing (Figure 3, Item 9), 90° elbow (Figure 3, Item 8) and tube adapter (Figure 3, Item 7) as an assembly on FSII pump (Figure 3, Item 1). Tighten suction check valve (Figure 3, Item 10).
4. Connect suction tube (Figure 3, Item 6) on tube adapter (Figure 3, Item 7). Tighten suction tube (Figure 3, Item 6).
5. Apply teflon tape to the threads of new suction check valve (Figure 3, Item 2).

CAUTION

Ensure suction check valve is installed with stamped arrow in direction of fluid flow. Failure to do so may cause damage to pump.

6. Install suction check valve (Figure 3, Item 2) on reducer bushing (Figure 3, Item 3). Tighten suction check valve (Figure 3, Item 2).

INSTALLATION - CONTINUED

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to connect fittings to prevent damage. Failure to comply will result in damage to fittings.

7. Install suction check valve (Figure 3, Item 2), reducer bushing (Figure 3, Item 3), tee assembly (Figure 3, Item 5) and tube adapter (Figure 3, Item 4) as an assembly on FSII pump (Figure 3, Item 1). Tighten suction check valve (Figure 3, Item 2).

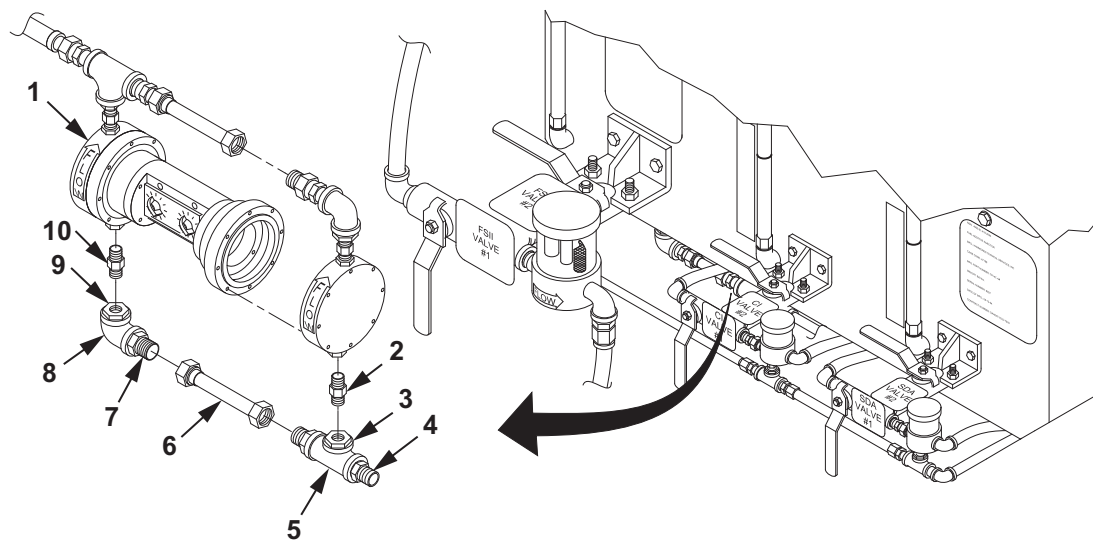


Figure 3. FSII Pump Suction Check Valves Removal.

INSTALLATION - CONTINUED

8. Position fluid end cap assembly (Figure 5, Item 4) on FSII pump (Figure 5, Item 1) ensuring proper alignment with tubes (Figure 5, Item 2, 10).

WARNING**CHEMICAL****EYE PROTECTION**

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

9. Apply antiseize compound to eight screws (Figure 5, Item 6).
10. Install eight new lockwashers (Figure 5, Item 5) and screws (Figure 5, Item 6) through fluid end cap assembly (Figure 5, Item 4).
11. Hand tighten eight screws (Figure 5, Item 6).

CAUTION

Failure to torque screws to 40 in. lb (4.52 N•m) will reduce pump head performance, resulting in insufficient injection ratio.

Repeat torque only one time. Failure to comply can cause diaphragms to fail.

12. Using torque wrench, screwdriver bit and torque sequence diagram (Figure 4), torque eight screws (Figure 5, Item 6) to 40 in. lb (4.52 N•m).

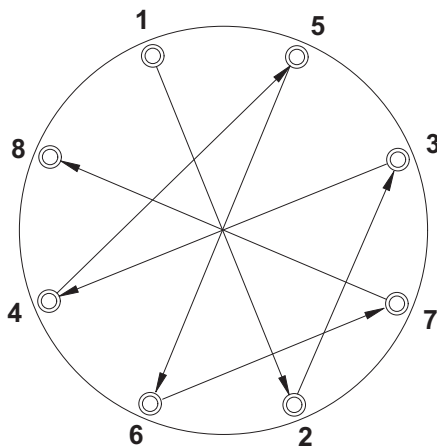


Figure 4. Torque Sequence Diagram.

13. Connect suction tube (Figure 5, Item 10) on tube adapter (Figure 5, Item 9). Tighten suction tube (Figure 5, Item 10).
14. Connect discharge tube (Figure 5, Item 2) on tube adapter (Figure 5, Item 3). Tighten discharge tube (Figure 5, Item 2).
15. If required, connect tube assembly (Figure 5, Item 7) on tube adapter (Figure 5, Item 8).
16. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

INSTALLATION - CONTINUED

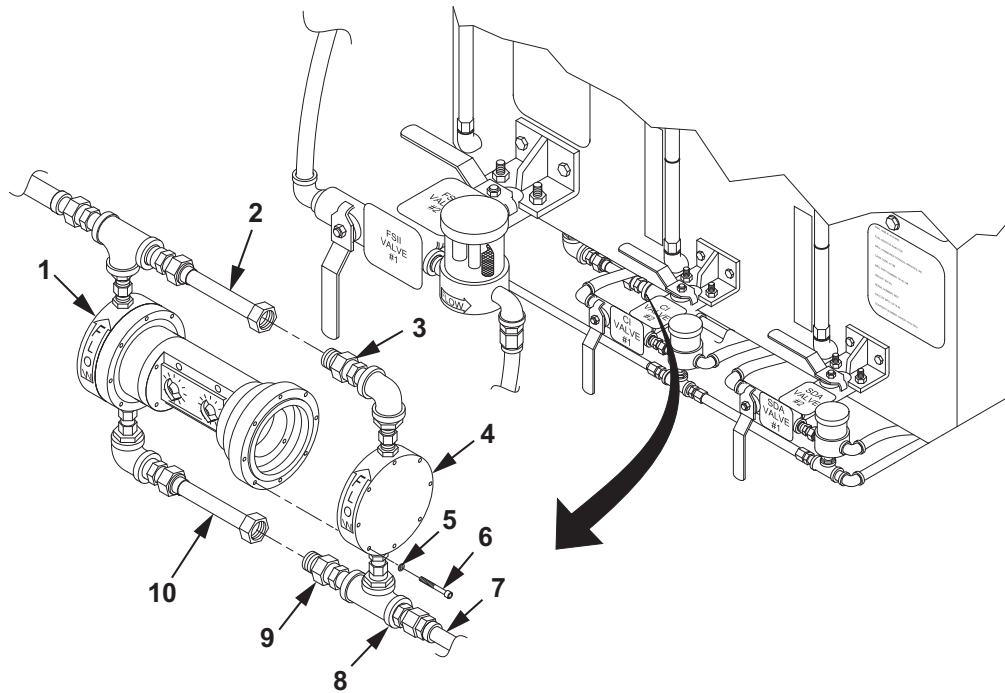


Figure 5. FSII Pump Suction Check Valves Removal.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, FSII PUMP DISCHARGE CHECK VALVES
REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSII pump fluid end cap assembly removed
(WP 0190).

Materials/Parts

Kit, fuel spill control (Item 8, WP 0214)
Tape, teflon (Item 14, WP 0214)
Pan, drain (Item 8, WP 0214)

REMOVAL

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pan below tube assembly (Figure 1, Item 1).

CAUTION

Use two wrenches to remove fittings to prevent damage. Failure to comply will result in damage to fittings.

2. Disconnect tube assembly (Figure 1, Item 1) from tube adapter (Figure 1, Item 2).

CAUTION

Use two wrenches to remove fittings to prevent damage. Failure to comply will result in damage to fittings.

3. Disconnect tube assembly (Figure 1, Item 5) from tube adapter (Figure 1, Item 4).
4. Remove tee assembly (Figure 1, Item 3), tube adapters (Figure 1, Item 2, 4), reducer bushing (Figure 1, Item 13) and discharge check valve (Figure 1, Item 12) as an assembly from FSII pump (Figure 1, Item 11).
5. Remove discharge check valve (Figure 1, Item 12) from reducer bushing (Figure 1, Item 13).
6. Remove 90° elbow (Figure 1, Item 9), tube adapter (Figure 1, Item 10), reducer bushing (Figure 1, Item 6) and discharge check valve (Figure 1, Item 7) as an assembly from end cap assembly (Figure 1, Item 8).
7. Remove discharge check valve (Figure 1, Item 7) from reducer bushing (Figure 1, Item 6).
8. Remove drain pan and dispose of contents per local procedures.

REMOVAL - CONTINUED

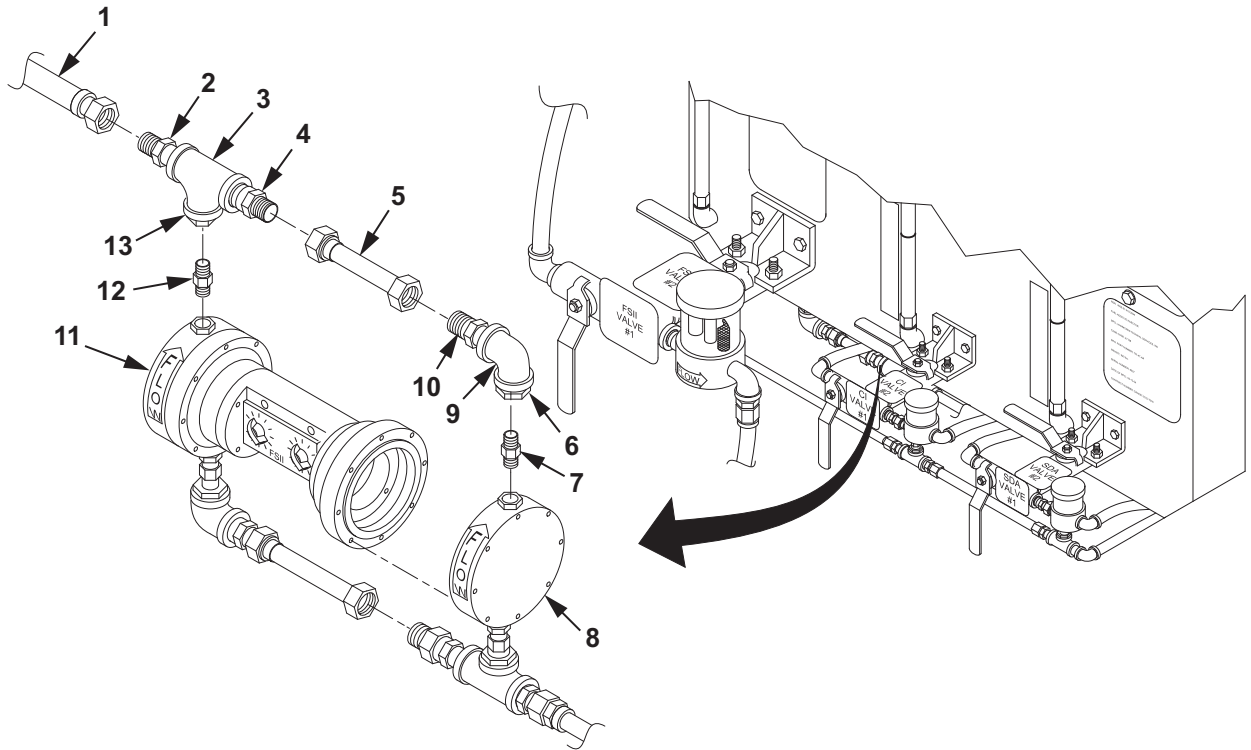


Figure 1. FSII Pump Discharge Check Valves Removal.

END OF TASK

INSTALLATION

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Apply teflon tape to the threads of discharge check valve (Figure 2, Item 7).

CAUTION

Ensure discharge check valve is installed with stamped arrow in direction of fluid flow. Failure to do so may cause damage to pump.

2. Install discharge check valve (Figure 2, Item 7) on reducer bushing (Figure 2, Item 6). Tighten discharge check valve (Figure 2, Item 7).
3. Install discharge check valve (Figure 2, Item 7) on reducer bushing (Figure 2, Item 6), 90° elbow (Figure 2, Item 9) and tube adapter (Figure 2, Item 10) as an assembly on end cap assembly (Figure 2, Item 8). Tighten discharge check valve (Figure 2, Item 7).
4. Apply teflon tape to the threads of discharge check valve (Figure 2, Item 7).

CAUTION

Ensure discharge check valve is installed with stamped arrow in direction of fluid flow. Failure to do so may cause damage to pump.

5. Install discharge check valve (Figure 2, Item 12) on reducer bushing (Figure 2, Item 13). Tighten discharge check valve (Figure 2, Item 12).
6. Install discharge check valve (Figure 2, Item 12), reducer bushing (Figure 2, Item 13), tee assembly (Figure 2, Item 3) and tube adapters (Figure 2, Item 2, 4) as an assembly on FSII pump (Figure 2, Item 11). Tighten discharge check valve (Figure 2, Item 12).

CAUTION

Use two wrenches to install fittings to prevent damage. Failure to comply will result in damage to fittings.

7. Connect tee assembly (Figure 2, Item 3) on tube adapter (Figure 2, Item 4). Tighten tube assembly (Figure 2, Item 3).

CAUTION

Use two wrenches to install fittings to prevent damage. Failure to comply will result in damage to fittings.

8. Connect tube assembly (Figure 2, Item 1) on tube adapter (Figure 2, Item 2). Tighten tube assembly (Figure 2, Item 1).

INSTALLATION - CONTINUED

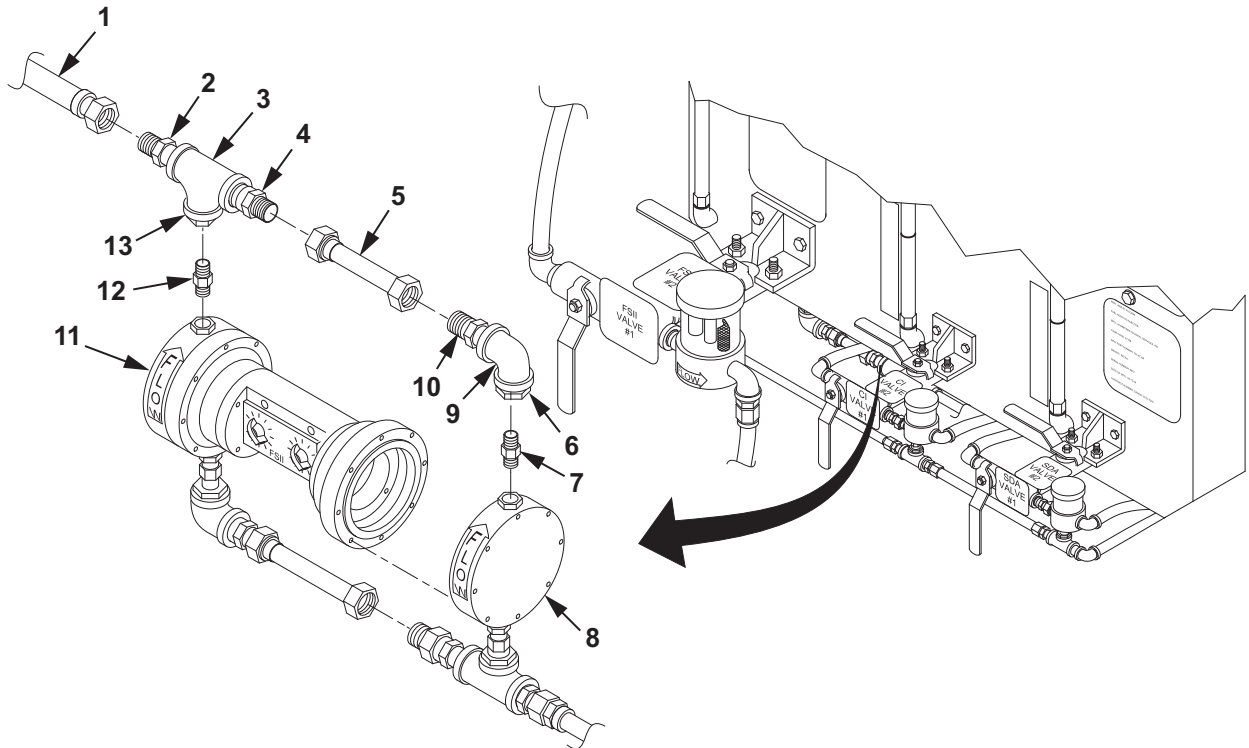


Figure 2. FSII Pump Discharge Check Valves Installation.

9. Install FSII pump fluid end cap assembly (WP 0190).
10. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

**DIRECT SUPPORT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, FSII INJECTION PUMP DIAPHRAGM,
REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Fuel additive injection assembly removed from
FSSP (WP 0066).

Materials/Parts

Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (Item 8, WP 0214)
Antiseize compound (Item 1, WP 0214)
Washer, lock (16) (Item 16, WP 0215)

REMOVAL

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to remove fittings to prevent damage. Failure to comply will result in damage to fittings.

1. Place drain pan below FSII injection pump (Figure 1, Item 1).
2. Loosen discharge tube (Figure 1, Item 2) from fluid end cap assembly (Figure 1, Item 3).
3. Loosen suction tube (Figure 1, Item 8) from fluid end cap assembly (Figure 1, Item 3).
4. Remove eight screws (Figure 1, Item 5) and lockwashers (Figure 1, Item 4) from fluid end cap assembly (Figure 1, Item 3). Discard lockwashers (Figure 1, Item 4).
5. Remove fluid end cap assembly (Figure 1, Item 3) from FSII injection pump (Figure 1, Item 1).
6. Loosen setscrew (Figure 1, Item 9) from beneath FSII injection pump (Figure 1, Item 1).
7. Mark position of stroke adjustment knob (Figure 1, Item 10) on power frame cover (Figure 1, Item 11).
8. Rotate stroke adjustment knob (Figure 1, Item 10) counterclockwise to the zero position until FSII pump diaphragm (Figure 1, Item 7) has cleared adapter ring (Figure 1, Item 6).
9. Remove FSII pump diaphragm (Figure 1, Item 7) by rotating counterclockwise. Discard FSII pump diaphragm (Figure 1, Item 7).
10. Remove drain pan and dispose of contents per local procedures.

REMOVAL - CONTINUED

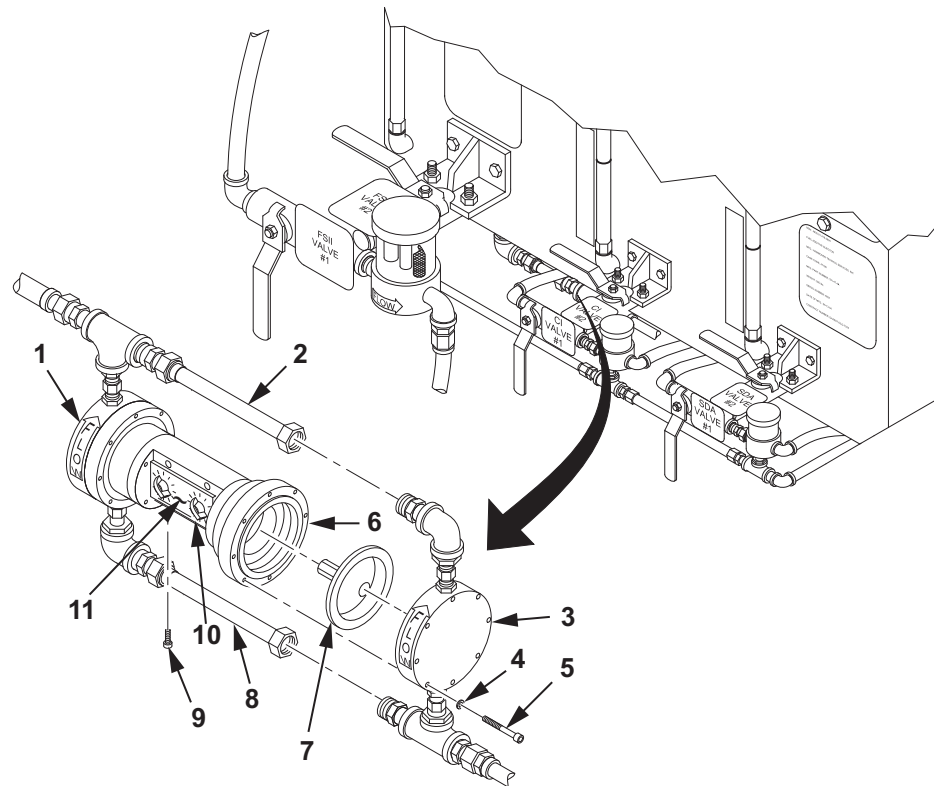


Figure 1. FSII Injection Pump Diaphragm Removal.

END OF TASK

INSTALLATION

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use two wrenches to connect fittings to prevent damage. Failure to comply will result in damage to fittings.

1. Install new FSII pump diaphragm (Figure 2, Item 7) into FSII injection pump (Figure 2, Item 1) by rotating clockwise.
2. Rotate stroke adjustment knob (Figure 2, Item 10) clockwise to position marked on power frame cover (Figure 2, Item 11).
3. Tighten setscrew (Figure 2, Item 9).
4. Position fluid end cap assembly (Figure 2, Item 3) on adapter ring (Figure 2, Item 6) ensuring proper alignment with suction and discharge tubes (Figure 2, Item 2, 8).

WARNING

CHEMICAL



EYE PROTECTION

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

5. Apply antiseize compound to eight screws (Figure 2, Item 5).
6. Install eight new lockwashers (Figure 2, Item 4) and screws (Figure 2, Item 5) through fluid end cap assembly (Figure 2, Item 3) into adapter ring (Figure 2, Item 6).
7. Hand tighten eight screws (Figure 2, Item 5) finger tight.

CAUTION

Failure to torque screws to 40 in. lb (4.52 N•m) will reduce pump head performance, resulting in insufficient injection ratio.

Repeat torque only one time. Failure to comply can cause diaphragms to fail.

8. Using torque wrench, screwdriver bit and torque sequence diagram (Figure 3), torque eight screws (Figure 2, Item 12) to 40 in. lb (4.52 N•m).
9. Connect suction tube (Figure 2, Item 8) to fluid end cap assembly (Figure 2, Item 3). Tighten suction tube (Figure 2, Item 8).
10. Connect discharge tube (Figure 2, Item 2) to fluid end cap assembly (Figure 2, Item 3). Tighten discharge tube (Figure 2, Item 2).

INSTALLATION - CONTINUED

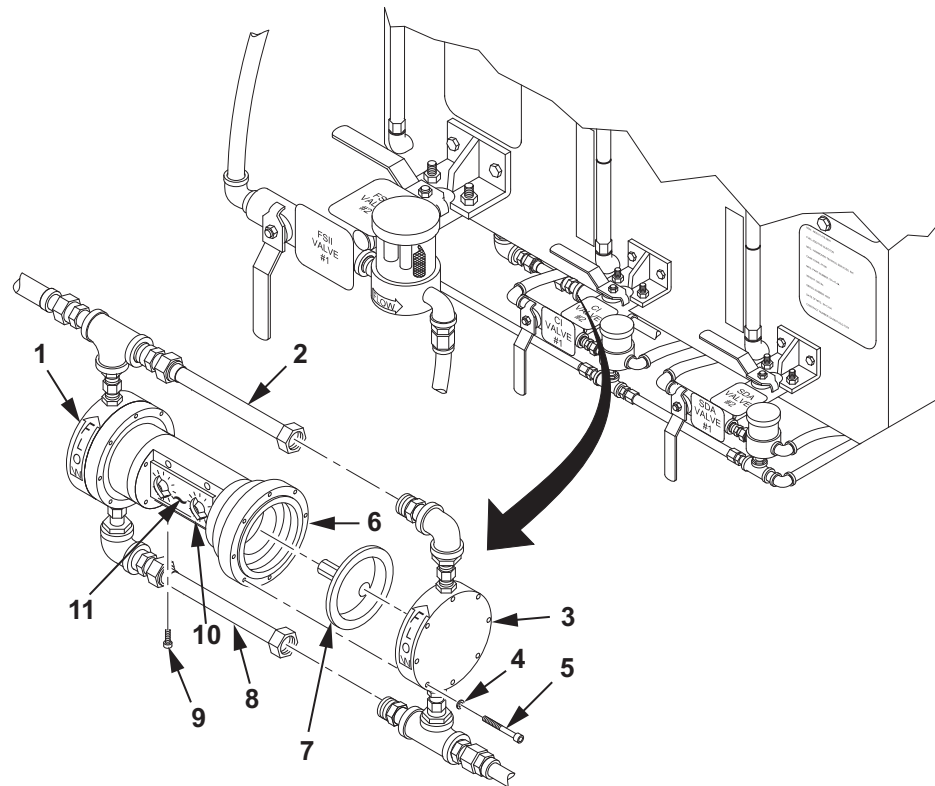


Figure 2. FSII Injection Pump Diaphragm Installation.

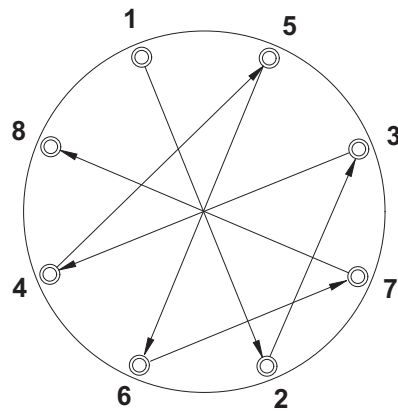


Figure 3. Torque Sequence Diagram.

11. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, CI AND SDA INJECTION PUMP LIP SEAL,
REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Fuel additive injection assembly removed from
FSSP (WP 0066).

Materials/Parts

Kit, fuel spill control (Item 8, WP 0214)
Pan, drain (2) (Item 8, WP 0214)
Washer, lock (4) (Item 16, WP 0215)
Antiseize compound (Item 1, WP 0214)
Seal, lip (Item 3, WP 0215)
O-ring (Item 13, WP 0215)

REMOVAL

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Place drain pans below CI and SDA injection pump (Figure 1, Item 1).
2. Remove four screws (Figure 1, Item 5) and lockwashers (Figure 1, Item 4) from fluid end cap assembly (Figure 1, Item 3).
3. Discard lockwashers (Figure 1, Item 4).
4. Remove fluid end cap assembly (Figure 1, Item 3).
5. Remove O-ring (Figure 1, Item 6) from adapter seal (Figure 1, Item 7).
6. Remove adapter seal (Figure 1, Item 7) from CI and SDA injection pump (Figure 1, Item 1).
7. Remove lip seal (Figure 1, Item 2) from adapter seal (Figure 1, Item 7).
8. Discard lip seal (Figure 1, Item 2) and O-ring (Figure 1, Item 6).

REMOVAL - CONTINUED

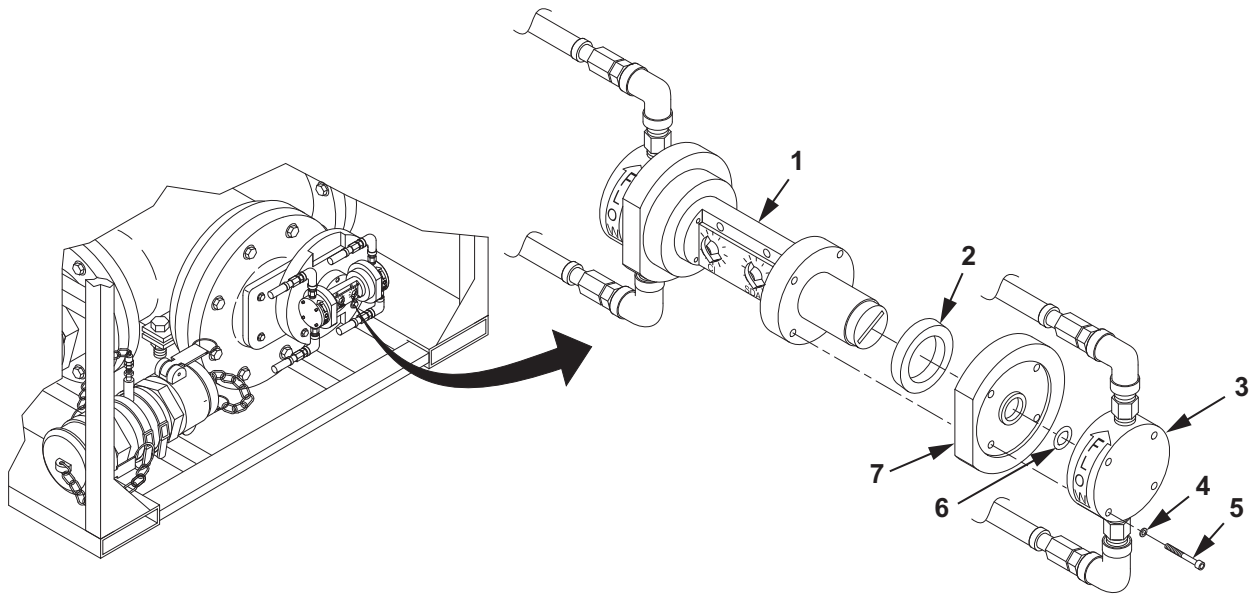


Figure 1. CI and SDA Injection Pump Lip Seal Removal.

9. Remove drain pans and dispose of contents per local procedures.

END OF TASK

INSTALLATION

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Install new lip seal (Figure 3, Item 2) in adapter seal (Figure 3, Item 7).
2. Install adapter seal (Figure 3, Item 7) on CI and SDA injection pump (Figure 3, Item 1).
3. Install new O-ring (Figure 3, Item 6) in fluid end cap assembly (Figure 3, Item 3).
4. Position fluid end cap assembly (Figure 3, Item 3) on adapter seal (Figure 3, Item 7).

WARNING

CHEMICAL



EYE PROTECTION

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

5. Apply antiseize compound to four screws (Figure 3, Item 5).
6. Install four new lockwashers (Figure 3, Item 4) and four screws (Figure 3, Item 5) through fluid end cap assembly (Figure 3, Item 3) into adapter seal (Figure 3, Item 7).
7. Tighten four screws (Figure 3, Item 5) finger tight.

CAUTION

Failure to torque screws to 40 in. lb (4.52 N•m) will reduce pump head performance, resulting in insufficient injection ratio.

Repeat torque only one time. Failure to comply can cause adapter seal to fail.

8. Using a torque wrench, screwdriver bit, and torque pattern diagram (Figure 2), torque screws (Figure 3, Item 2) to 40 in. lb (4.52 N•m).

INSTALLATION - CONTINUED

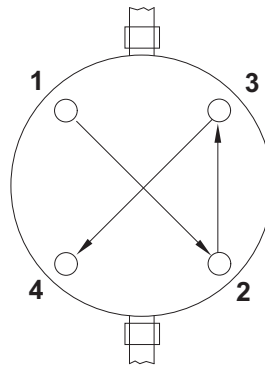


Figure 2. Torque Pattern Diagram.

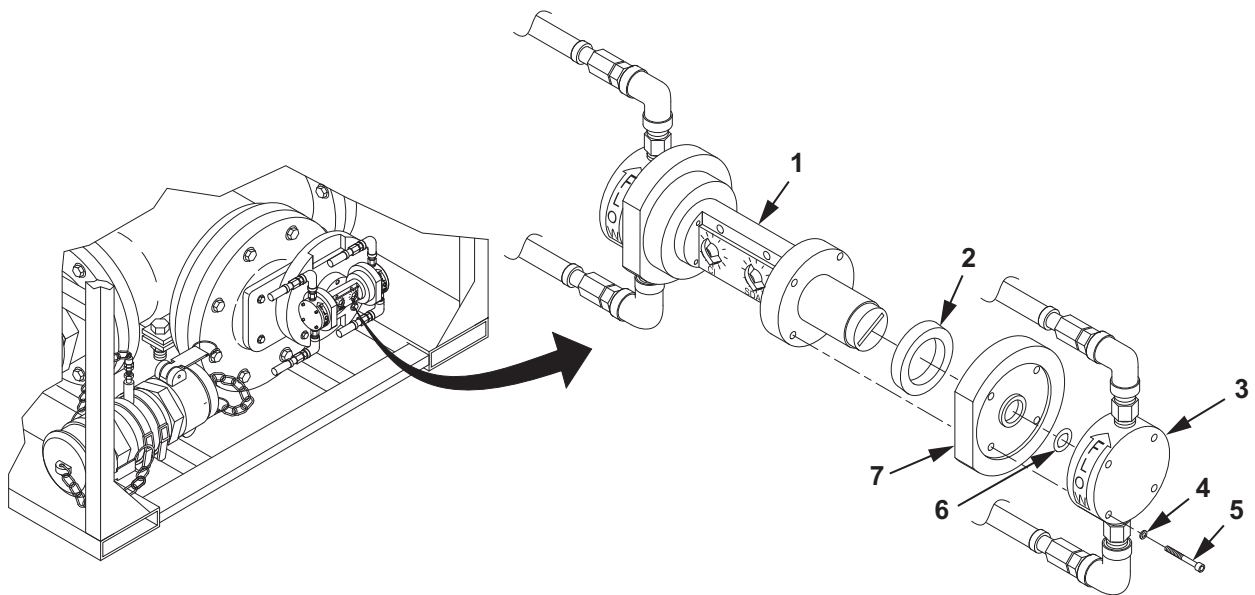


Figure 3. CI and SDA Injection Pump Lip Seal Installation.

9. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, FSII INJECTION PUMP, REPLACEMENT
REMOVAL, INSTALLATION

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Pliers, retaining ring (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Materials/Parts

Washer, lock (4) (Item 16, WP 0215)
Washer, lock (4) (Item 2, WP 0215)
Washer, lock (2) (Item 15, WP 0215)
O-ring (2) (Item 5, WP 0215)
Pan, drain (2) (Item 8, WP 0214)
Antiseize compound (Item 1, WP 0214)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

FSII pump discharge check valves removed
(WP 0191).
FSII injection pump diaphragm removed
(WP 0192).

REMOVAL

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Position drain pans below FSII injection pump assembly (Figure 1, Item 2).
2. Loosen stroke adjustment setscrews (Figure 1, Item 9) on bottom of FSII injection pump assembly (Figure 1, Item 2).
3. Loosen two setscrews (Figure 1, Item 13) from stroke adjustment knobs (Figure 1, Item 14).
4. Remove stroke adjustment knobs (Figure 1, Item 14) from the stroke adjustment cams (Figure 1, Item 8).
5. Remove stroke indicator (Figure 1, Item 11) from the stroke adjustment cams (Figure 1, Item 8).
6. Remove four screws (Figure 1, Item 15) and lockwashers (Figure 1, Item 16) securing cam guide cover (Figure 1, Item 17) and FSII indicator tag (Figure 1, Item 12) to stroke adjustment cams (Figure 1, Item 8). Discard four lockwashers (Figure 1, Item 16).
7. Remove FSII indicator tag (Figure 1, Item 12) from cam guide cover (Figure 1, Item 17).
8. Remove cam guide cover (Figure 1, Item 17) and stroke adjustment cams (Figure 1, Item 9) from FSII injection pump assembly (Figure 1, Item 2).
9. Remove two O-rings (Figure 1, Item 10) from cam guide cover (Figure 1, Item 17). Discard O-rings (Figure 1, Item 10).
10. Remove stroke adjustment cams (Figure 1, Item 8) from cam guide cover (Figure 1, Item 17).
11. Remove two adapter screws (Figure 1, Item 5) from FSII injection pump assembly (Figure 1, Item 2).
12. Remove two crossheads (Figure 1, Item 18) and four springs (Figure 1, Item 7) from FSII injection pump assembly (Figure 1, Item 2).
13. Remove four screws (Figure 1, Item 23) and four lockwashers (Figure 1, Item 1) securing FSII injection pump assembly (Figure 1, Item 2) to bearing cap (Figure 1, Item 4). Discard lockwashers (Figure 1, Item 1).
14. Using retaining ring pliers, remove retaining ring (Figure 1, Item 19) from eccentric drive bearing (Figure 1, item 20).
15. Remove eccentric drive bearing (Figure 1, Item 20) and spacer (Figure 1, Item 6) from FSII injection pump assembly (Figure 1, Item 2).
16. Remove two screws (Figure 1, Item 21) and two lockwashers (Figure 1, Item 22) securing FSII injection pump assembly (Figure 1, Item 2) to bearing cap (Figure 1, Item 4). Discard lockwashers (Figure 1, Item 22).
17. Remove FSII injection pump assembly (Figure 1, Item 2) and bearing cap (Figure 1, Item 4) from end plate (Figure 1, Item 3).

REMOVAL - CONTINUED

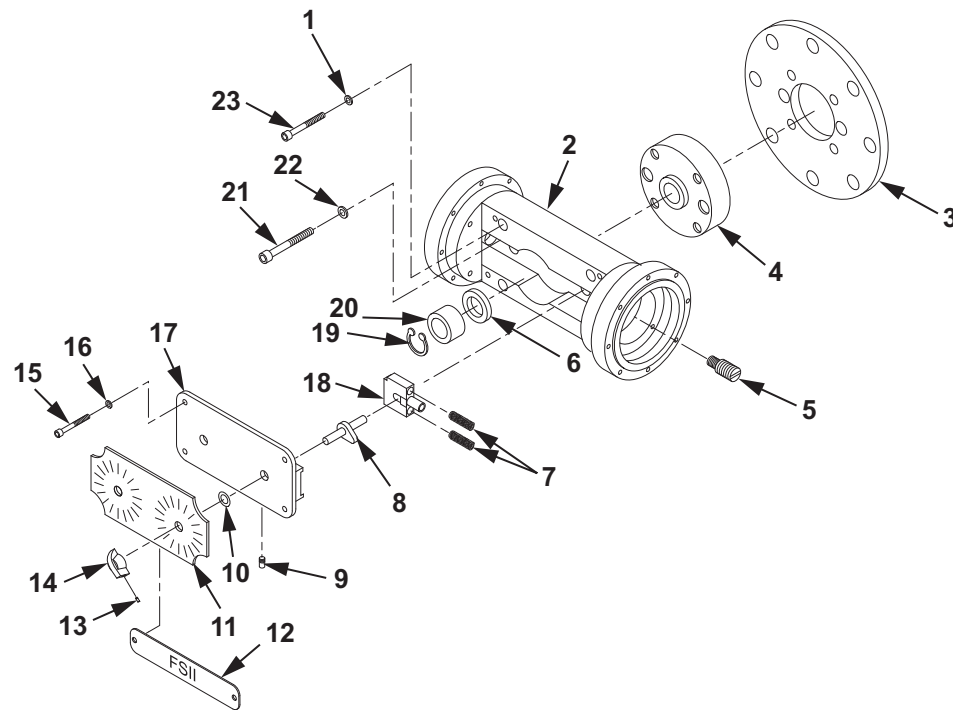


Figure 1. FSII Injection Pump Removal.

18. Remove drain pans and dispose of contents per local procedures.

END OF TASK

INSTALLATION**NOTE**

The eccentric drive bearing is mounted off-center on the shaft. It may be necessary to move the pump power frame in a circle to locate the center of the hole in the rear of the frame.

1. Position bearing cap (Figure 2, Item 4) and FSII injection pump assembly (Figure 2, Item 2) on end plate (Figure 2, Item 3).

WARNING**CHEMICAL****EYE PROTECTION**

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

2. Apply antiseize compound to two screws (Figure 2, Item 21).
3. Install two new lockwashers (Figure 2, Item 22) and screws (Figure 2, Item 21) through FSII injection pump assembly (Figure 2, Item 2) and bearing cap (Figure 2, Item 4) into end plate (Figure 2, Item 3). Tighten two screws (Figure 2, Item 21).
4. Position spacer (Figure 2, Item 6) and eccentric drive bearing (Figure 2, Item 20) in FSII injection pump assembly (Figure 2, Item 2).
5. Using retaining ring pliers, install retaining ring (Figure 2, Item 19) on eccentric drive bearing (Figure 2, Item 20).

WARNING**CHEMICAL****EYE PROTECTION**

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

6. Apply antiseize compound to four screws (Figure 2, Item 23).
7. Install four new lockwashers (Figure 2, Item 1) and four screws (Figure 2, Item 23) through FSII injection pump assembly (Figure 2, Item 2) and bearing cap (Figure 2, Item 4) into end plate (Figure 2, Item 3). Tighten four screws (Figure 2, Item 23).
8. Install four springs (Figure 2, Item 7) and two crossheads (Figure 2, Item 18) in FSII injection pump assembly (Figure 2, Item 2).
9. Install two adapter screws (Figure 2, Item 5) on FSII injection pump assembly (Figure 2, Item 2).
10. Install stroke adjustment cams (Figure 2, Item 8) in cam guide cover (Figure 2, Item 17).
11. Install two new O-rings (Figure 2, Item 10) on cam guide cover (Figure 2, Item 17).
12. Install cam guide cover (Figure 2, Item 17) and stroke adjustment cams (Figure 2, Item 8) on FSII injection pump assembly (Figure 2, Item 2).
13. Position FSII indicator tag (Figure 2, Item 12) on cam guide cover (Figure 2, Item 17).

INSTALLATION - CONTINUED

WARNING

CHEMICAL



EYE PROTECTION

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

14. Apply antiseize compound to four screws (Figure 2, Item 15).
15. Install four new lockwashers (Figure 2, Item 16) and four screws (Figure 2, Item 15) to secure cam guide cover (Figure 2, Item 17) and FSII indicator tag (Figure 2, Item 12) on FSII injection pump assembly (Figure 2, Item 2).
16. Install stroke indicator (Figure 2, Item 11) on stroke adjustment cams (Figure 2, Item 8).
17. Position stroke adjustment knobs (Figure 2, Item 14) onto stroke adjustment cams (Figure 2, Item 8).
18. Tighten two setscrews (Figure 2, Item 13) on stroke adjustment knobs (Figure 2, Item 14).
19. Tighten stroke adjustment setscrews (Figure 2, Item 9) on bottom of FSII injection pump assembly (Figure 1, Item 2).

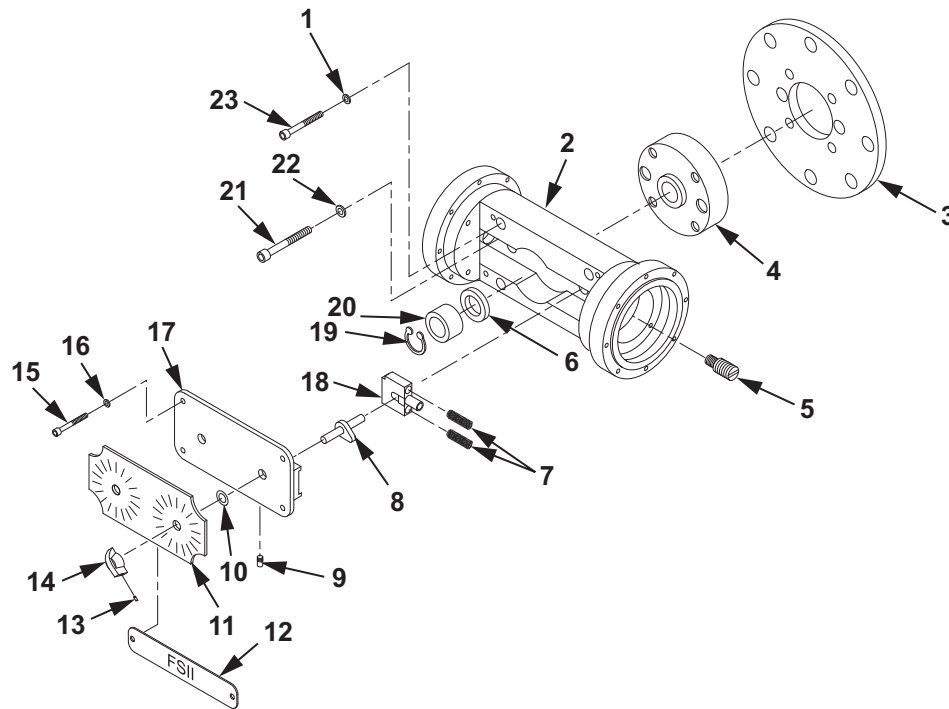


Figure 2. FSII Injection Pump Installation.

20. Install FSII injection pump diaphragm (WP 0192).
21. Install FSII pump discharge check valves (WP 0191).

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
**FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, CI AND SDA INJECTION PUMP, REPLACEMENT
REMOVAL, INSTALLATION**

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Materials/Parts

Washer, lock (4) (Item 16, WP 0215)
Washer, lock (4) (Item 2, WP 0215)
Washer, lock (2) (Item 15, WP 0215)
O-ring (2) (Item 5, WP 0215)
Pan, drain (2) (Item 8, WP 0214)
Antiseize compound (Item 1, WP 0214)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

CI and SDA pump suction check valves removed
(WP 0149).
CI and SDA pump discharge check valves
removed (WP 0150).
CI and SDA injection pump lip seals removed
(WP 0193).

REMOVAL

WARNING

CHEMICAL



EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

1. Position drain pans below CI and SDA injection pump assembly (Figure 1, Item 1).
2. Loosen stroke adjustment setscrews (Figure 1, Item 8) on bottom of CI and SDA injection pump assembly (Figure 1, Item 1).
3. Loosen two setscrews (Figure 1, Item 12) on stroke adjustment knobs (Figure 1, Item 13).
4. Remove stroke adjustment knobs (Figure 1, Item 13) from the stroke adjustment cams (Figure 1, Item 6).
5. Remove stroke indicator (Figure 1, Item 10) from the stroke adjustment cams (Figure 1, Item 6).
6. Remove four screws (Figure 1, Item 14) and lockwashers (Figure 1, Item 15) securing cam guide cover (Figure 1, Item 7) and CI and SDA indicator tag (Figure 1, Item 11) to stroke adjustment cams (Figure 1, Item 6). Discard four lockwashers (Figure 1, Item 15).
7. Remove CI and SDA indicator tag (Figure 1, Item 11) from cam guide cover (Figure 1, Item 7).
8. Remove cam guide cover (Figure 1, Item 7) and stroke adjustment cams (Figure 1, Item 13) from CI and SDA injection pump assembly (Figure 1, Item 1).
9. Remove two O-rings (Figure 1, Item 9) from cam guide cover (Figure 1, Item 7). Discard O-rings (Figure 1, Item 9).
10. Remove stroke adjustment cams (Figure 1, Item 6) from cam guide cover (Figure 1, Item 7).
11. Remove two plungers (Figure 1, Item 3) from CI and SDA injection pump assembly (Figure 1, Item 1).

NOTE

The eccentric drive bearing is mounted off-center on the shaft. It may be necessary to move the pump power frame in a circle to remove both crossheads.

12. Remove two crossheads (Figure 1, Item 5) and four springs (Figure 1, Item 4) from CI and SDA injection pump assembly (Figure 1, Item 1).
13. Remove four screws (Figure 1, Item 18) and lockwashers (Figure 1, Item 19) securing CI and SDA injection pump assembly (Figure 1, Item 1) to gear housing (Figure 1, Item 2). Discard four lockwashers (Figure 1, Item 16).
14. Remove two screws (Figure 1, Item 16) and lockwashers (Figure 1, Item 17) securing CI and SDA injection pump assembly (Figure 1, Item 1) to gear housing (Figure 1, Item 2). Discard lockwashers (Figure 1, Item 17).
15. Remove CI and SDA injection pump assembly (Figure 1, Item 1) from gear housing (Figure 1, Item 2).

REMOVAL - CONTINUED

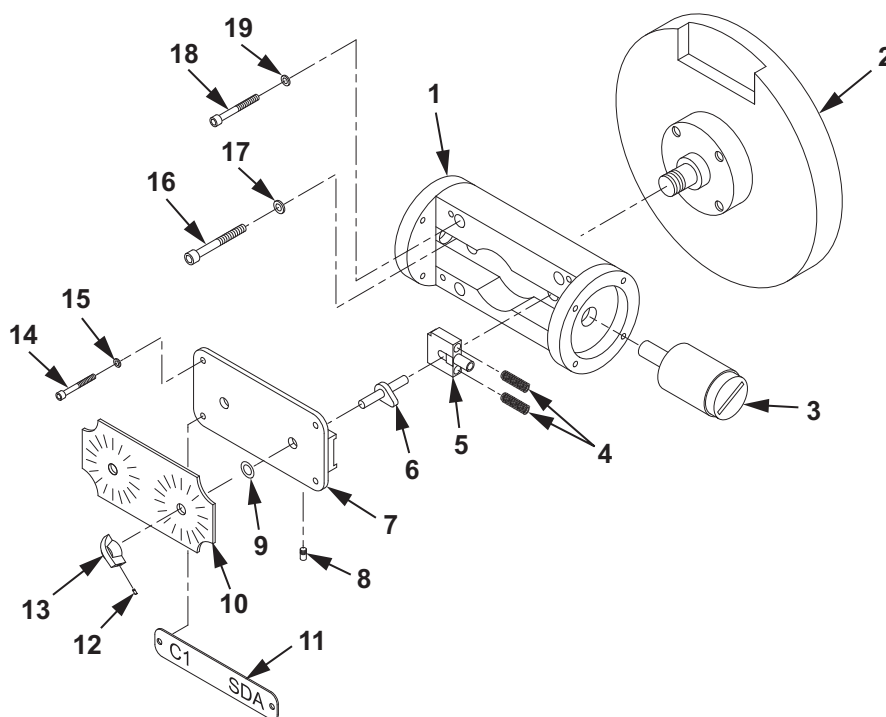


Figure 1. CI and SDA Injection Pump Removal.

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

16. Remove drain pans and dispose of contents per local procedures.

END OF TASK

INSTALLATION**NOTE**

The eccentric drive bearing is mounted off-center on the shaft. It may be necessary to move the pump power frame in a circle to locate the center of the hole in the rear of the frame.

1. Install CI and SDA injection pump assembly (Figure 1, Item 1) onto gear housing (Figure 1, Item 2).

WARNING**CHEMICAL****EYE PROTECTION**

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

2. Apply antiseize compound to two screws (Figure 1, Item 16).
3. Install two new lockwashers (Figure 1, Item 17) and screws (Figure 1, Item 16) through CI and SDA injection pump assembly (Figure 1, Item 1) into gear housing (Figure 1, Item 2). Tighten two screws (Figure 1, Item 16).

WARNING**CHEMICAL****EYE PROTECTION**

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

4. Apply antiseize compound to four screws (Figure 1, Item 18).
5. Install four new lockwashers (Figure 1, Item 19) and screws (Figure 1, Item 18) through CI and SDA injection pump assembly (Figure 1, Item 1) into gear housing (Figure 1, Item 3). Tighten four screws (Figure 1, Item 18).
6. Install four springs (Figure 2, Item 4) and two crossheads (Figure 2, Item 5) on CI and SDA injection pump assembly (Figure 2, Item 1).
7. Install two plungers (Figure 2, Item 3) on CI and SDA injection pump assembly (Figure 2, Item 1). Tighten plungers (Figure 2, Item 3).
8. Install stroke adjustment cams (Figure 2, Item 6) in cam guide cover (Figure 2, Item 7).
9. Install two new O-rings (Figure 2, Item 9) on cam guide cover (Figure 2, Item 7).
10. Install cam guide cover (Figure 2, Item 7) and stroke adjustment cams (Figure 2, Item 6) on CI and SDA injection pump assembly (Figure 2, Item 1).
11. Position CI and SDA indicator tag (Figure 2, Item 11) on cam guide cover (Figure 2, Item 7).

INSTALLATION - CONTINUED

WARNING

CHEMICAL



EYE PROTECTION

When working with antiseize compound, MIL-T-5544, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Use in a well ventilated area.

12. Apply antiseize compound to four screws (Figure 2, Item 14).
13. Install four new lockwashers (Figure 2, Item 15) and screws (Figure 2, Item 14) to secure CI and SDA indicator tag (Figure 2, Item 11) and cam guide cover (Figure 2, Item 7) to CI and SDA injection pump assembly (Figure 2, Item 1).
14. Install stroke indicator (Figure 2, Item 10) on stroke adjustment cams (Figure 2, Item 6).
15. Position stroke adjustment knobs (Figure 2, Item 13) onto stroke adjustment cams (Figure 2, Item 6).
16. Tighten two setscrews (Figure 2, Item 12) on stroke adjustment knobs (Figure 2, Item 13).
17. Tighten stroke adjustment setscrews (Figure 2, Item 8) on bottom of CI and SDA injection pump assembly (Figure 2, Item 1).
18. Install CI and SDA injection pump lip seals (WP 0193).
19. Install CI and SDA pump suction check valves (WP 0149).
20. Install CI and SDA pump discharge check valves (WP 0150).

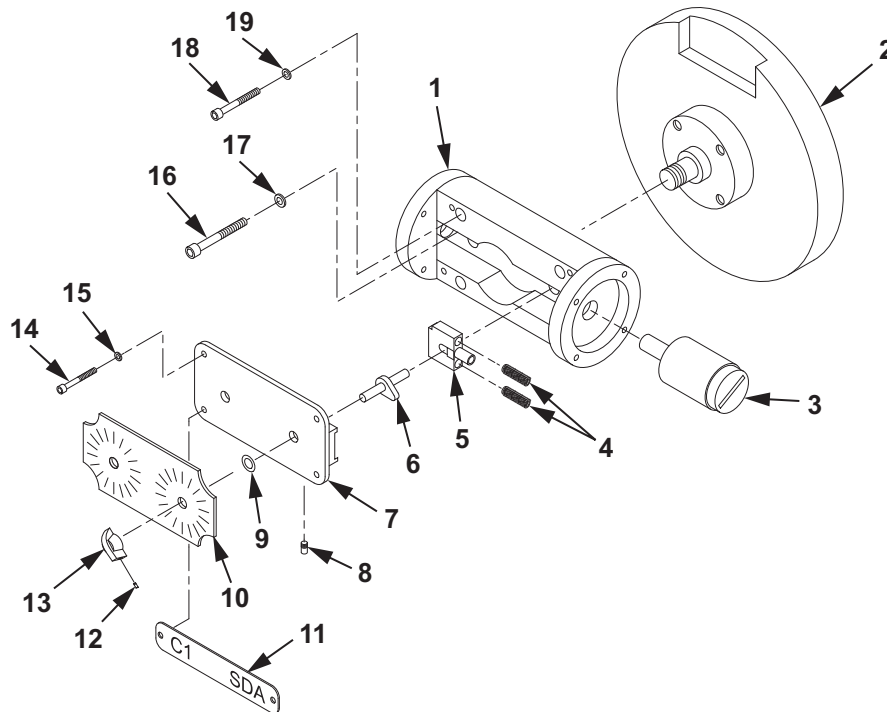


Figure 2. CI and SDA Injection Pump Installation.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
FUEL ADDITIVE INJECTION ASSEMBLY, PART NUMBER TPI-4T-4A-1, FUEL ADDITIVE INJECTION PUMP FLUID MOTOR,
MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Pliers, retaining ring (Item 2, WP 0211)
Press, arbor, hand operated (Item 14, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J (2)

Equipment Condition

FSII injection pump removed (WP 0194).

CI and SDA injection pump removed (WP 0195).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Pan, drain (Item 8, WP 0214)
Washer, lock (8) (Item 14, WP 0215)
Washer, lock (8) (Item 12, WP 0215)
O-ring (Item 7, WP 0215)

DISASSEMBLY

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use of the incorrect size retaining ring pliers will distort the snap ring during removal. A distorted snap ring must be replaced.

NOTE

The fuel additive injection pump fluid motor can be disassembled from either the FSII injection pump side or the CI and SDA injection pump side of the motor, which is preferred.

To aid in the assembly of the fuel additive injection pump fluid motor, lay the parts out in order as they are removed.

1. Position drain pan below fuel additive injection pump fluid motor housing (Figure 1, Item 1).
2. Using retaining ring pliers, remove snap ring (Figure 1, Item 20) from output shaft (Figure 1, Item 23).
3. Remove drive bearing (Figure 1, Item 21) and spacer (Figure 1, Item 22) from output shaft (Figure 1, Item 23).
4. Remove four screws (Figure 1, Item 12) and lockwashers (Figure 1, Item 13) from gear housing (Figure 1, Item 11).
5. Discard four lockwashers (Figure 1, Item 13).
6. Remove gear housing (Figure 1, Item 11) from adapter plate (Figure 1, Item 4).
7. Loosen setscrew (Figure 1, Item 6) and remove gear (Figure 1, Item 7) from gear housing (Figure 1, Item 11).
8. Remove key (Figure 1, Item 5) from output shaft (Figure 1, Item 23).
9. Using retaining ring pliers, remove snap ring (Figure 1, Item 8) from output shaft (Figure 1, Item 23).
10. Using arbor press, remove output shaft (Figure 1, Item 23) and two bearings (Figure 1, Item 9) from gear housing (Figure 1, Item 11).
11. Using retaining ring pliers, remove snap ring (Figure 1, Item 10) from output shaft (Figure 1, Item 23).
12. Remove seal (Figure 1, Item 24) from gear housing (Figure 1, Item 11).
13. Loosen setscrew (Figure 1, Item 16) and remove gear (Figure 1, Item 15) from shaft (Figure 1, Item 2).
14. Remove key (Figure 1, Item 14) and spacer (Figure 1, Item 17) from shaft (Figure 1, Item 2).
15. Remove four screws (Figure 1, Item 18) and lockwashers (Figure 1, Item 19) from adapter plate (Figure 1, Item 4).
16. Discard four lockwashers (Figure 1, Item 19).
17. Remove adapter plate (Figure 1, Item 4) from end plate (Figure 1, Item 25).
18. Remove bearing (Figure 1, Item 3) from adapter plate (Figure 1, Item 4).

DISASSEMBLY - CONTINUED

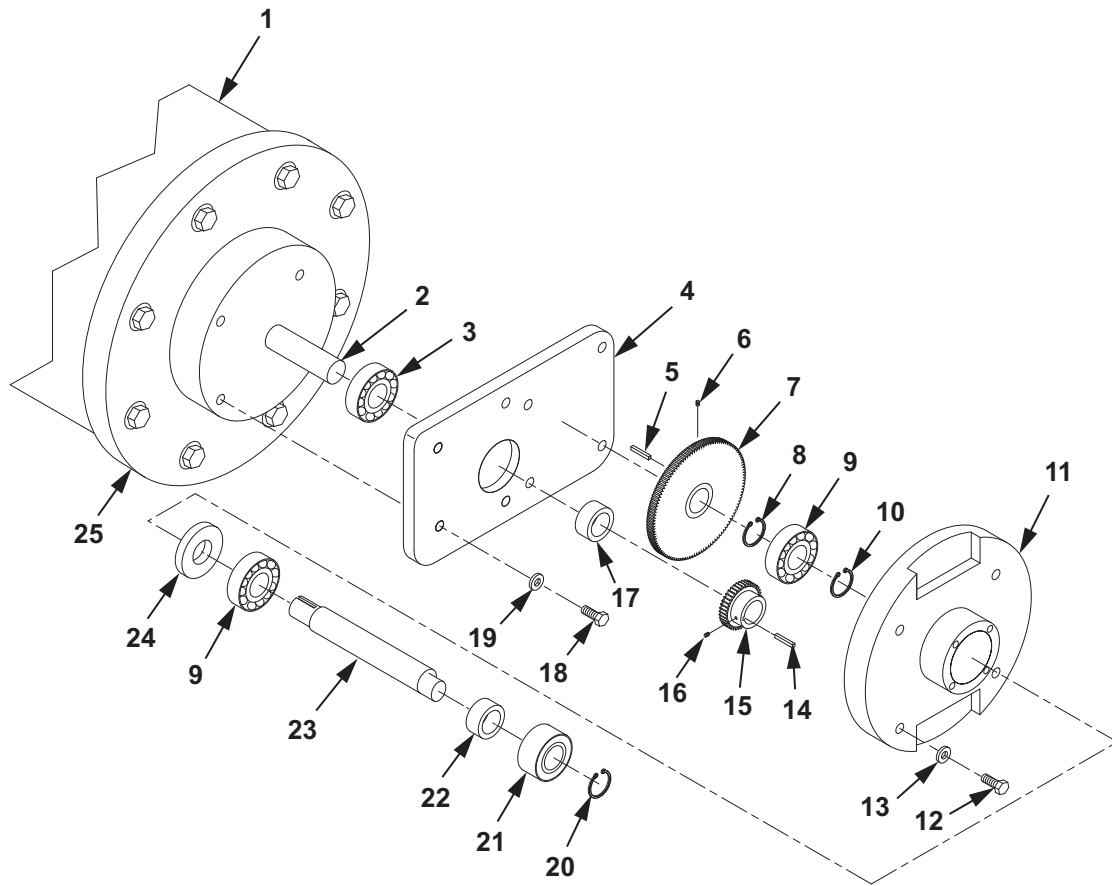


Figure 1. Fuel Additive Injection Pump Bearing Housing Disassembly.

DISASSEMBLY - CONTINUED

19. Using retaining ring pliers, remove snap ring (Figure 2, Item 9) from shaft (Figure 2, Item 5).
20. Remove thrust washer (Figure 2, Item 8) from shaft (Figure 2, Item 5).

CAUTION

To reduce uneven stress on end plate, end plate bolts must be removed in a crisscross pattern.

21. Remove eight screws (Figure 2, Item 10) and lockwashers (Figure 2, Item 11) from end plate (Figure 2, Item 12).
22. Discard eight lockwashers (Figure 2, Item 11).

CAUTION

During removal of end plate, do not drag end plate against shaft, as damage to shaft may occur.

NOTE

Observe the location of the alignment pin at the top of the fuel additive injection pump housing to aid in reinstallation of the end plate onto the fuel additive injection pump fluid motor housing.

23. While supporting end plate (Figure 2, Item 12) evenly with both hands, carefully remove end plate (Figure 2, Item 12) from the fuel additive injection pump fluid motor housing (Figure 2, Item 1).
24. Remove O-ring (Figure 2, Item 14) from end plate (Figure 2, Item 12).
25. Discard O-ring (Figure 2, Item 14).
26. Remove bearing (Figure 2, Item 7) and spring washer (Figure 2, Item 6) from end plate (Figure 2, Item 12).
27. Remove ceramic seal (Figure 2, Item 13) from end plate (Figure 2, Item 12).

NOTE

Observe the relationship of the teflon vanes and the discharge vent in the housing prior to removing the teflon vanes to aid in reinstallation of end plate onto fuel additive injection pump assembly fluid motor housing.

Teflon vanes are replaced as a matched set. If replaced individually, the performance of the fuel additive injection pump fluid motor will be rough.

28. Perform the following inspection steps prior to removal of six teflon vanes (Figure 2, Item 17):
 - a. Inspect the position of six teflon vanes (Figure 2, Item 17) and how they lay against fluid additive injection pump fluid motor housing (Figure 2, Item 1). If teflon vanes (Figure 2, Item 17) do not lay flat against fluid additive injection pump fluid motor housing (Figure 2, Item 1), replace six teflon vanes (Figure 2, Item 17).
 - b. Inspect each teflon vane (Figure 2, Item 17) for freedom of movement as they fall against the fuel additive injection pump fluid motor housing (Figure 2, Item 1). If teflon vanes (Figure 2, Item 17) are binding, replace six teflon vanes (Figure 2, Item 17).
 - c. Inspect each teflon vane (Figure 2, Item 17) for excessive wear in vane socket (Figure 2, Item 18). If teflon vane (Figure 2, Item 17) can be easily pulled out of vane socket (Figure 2, Item 18), replace six teflon vanes (Figure 2, Item 17).
29. Remove six teflon vanes (Figure 2, Item 17) from vane sockets (Figure 2, Item 18).

CAUTION

Do not touch the face of mechanical (carbon) seal during removal as damage to mechanical (carbon) seal may occur.

Do not drop mechanical (carbon) seal during removal as damage to mechanical (carbon) seal may occur.

30. Remove mechanical (carbon) seal (Figure 2, Item 15) from shaft (Figure 2, Item 5).

DISASSEMBLY - CONTINUED

31. Remove wear ring (Figure 2, Item 16) from shaft (Figure 2, Item 5).

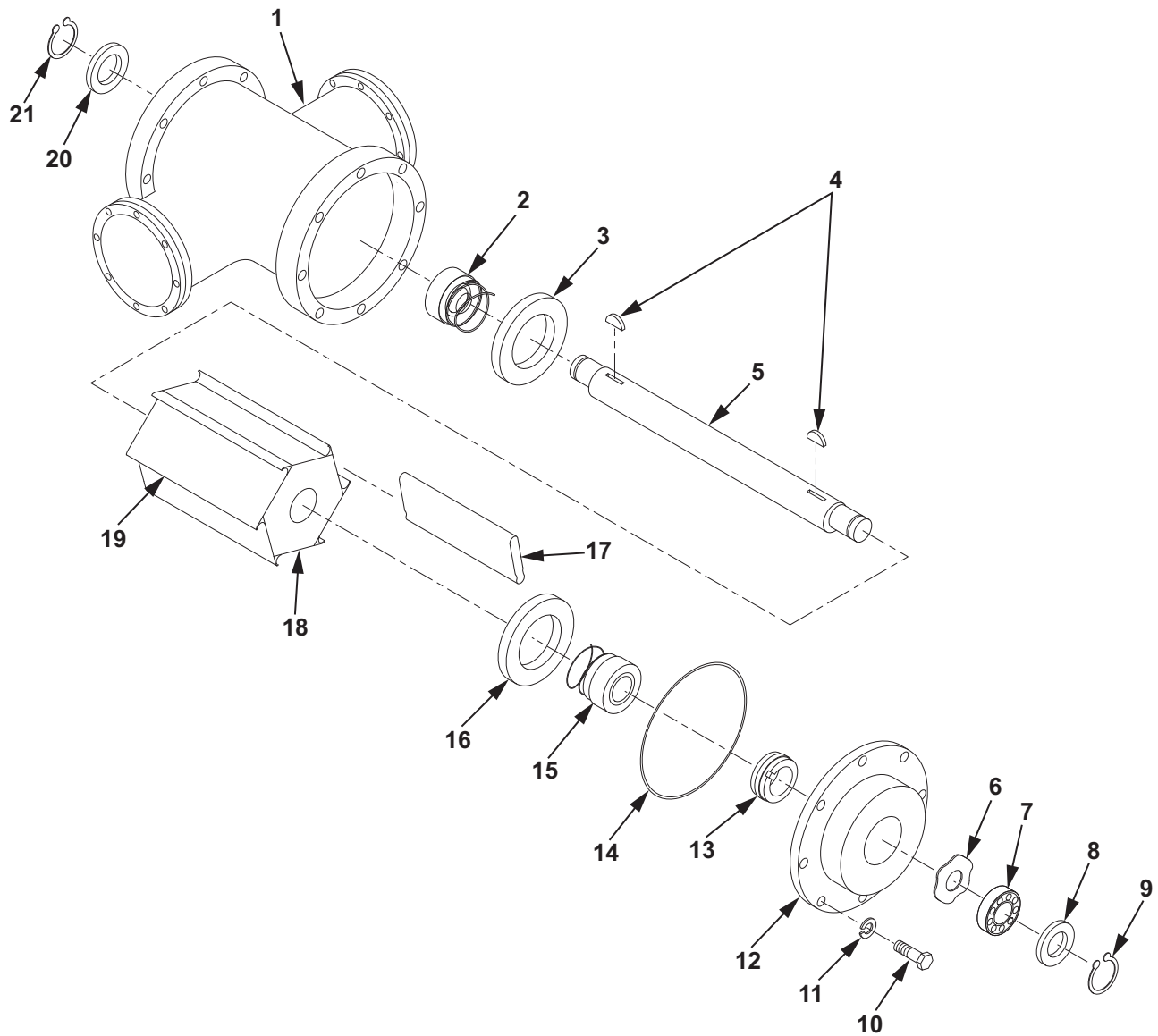


Figure 2. Fuel Additive Injection Pump Bearing Housing Disassembly.

DISASSEMBLY - CONTINUED

WARNING**HEAVY PARTS**

The rotor weighs 28 lb. Both hands must be used to remove rotor from housing or serious injury to personnel could occur.

CAUTION

The vane sockets on rotor are very thin and could bend or break easily. Be careful not to damage vane sockets when setting rotor down.

32. Remove rotor (Figure 3, Item 9) from fuel additive injection pump fluid motor housing (Figure 3, Item 1).
33. Remove two keys (Figure 3, Item 4) from shaft (Figure 3, Item 5).
34. Using retaining ring pliers, remove snap ring (Figure 3, Item 21) from shaft (Figure 3, Item 5).
35. Remove thrust washer (Figure 3, Item 20) from shaft (Figure 3, Item 5).

CAUTION

An assistant must help with the removal of the shaft from the motor housing. Failure to comply may result in damage to equipment.

NOTE

During removal of shaft from fuel additive injection pump fluid motor housing, the FSII pump side bearing may fall out of end plate. If bearing falls out, reinstall bearing.

36. Using an assistant, pull firmly on shaft (Figure 3, Item 5) to remove from fuel additive injection pump fluid motor housing (Figure 3, Item 1).

CAUTION

Do not touch the face of mechanical (carbon) seal during removal, as damage to mechanical (carbon) seal may occur.

Do not drop mechanical (carbon) seal during removal, as damage to mechanical (carbon) seal may occur.

37. Remove mechanical (carbon) seal (Figure 3, Item 2) from shaft (Figure 3, Item 5).
38. Remove wear ring (Figure 3, Item 3) from shaft (Figure 3, Item 5).

DISASSEMBLY - CONTINUED

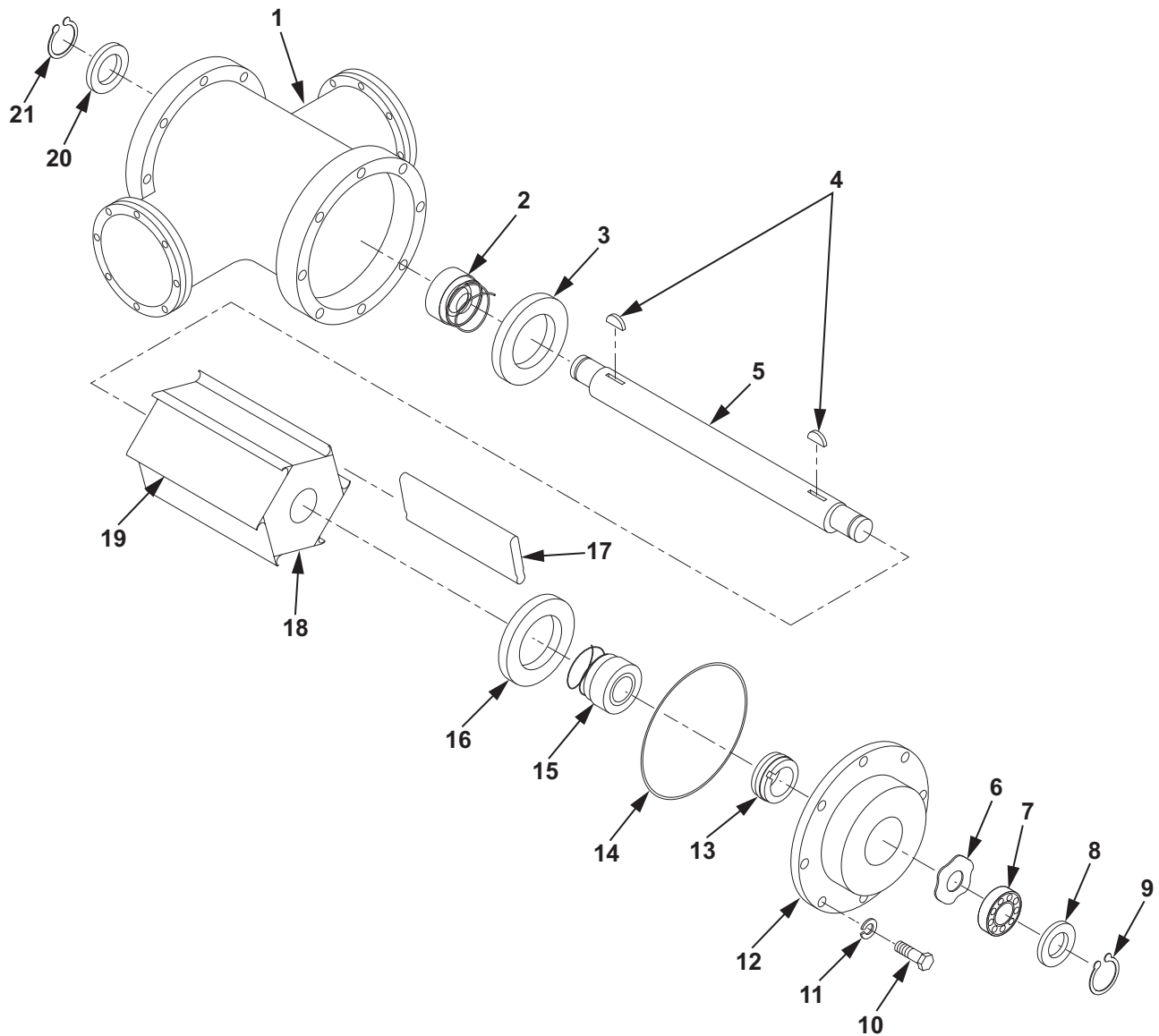


Figure 3. Fuel Additive Injection Pump Bearing Housing Disassembly.

39. Remove drain pan and dispose of contents per local procedures.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using a dry cleaning cloth, clean bearings, seals, snap rings, bolts, washers, teflon vanes, keys and rotor free of all fuel and debris.
2. Using a cleaning cloth lightly dampened with solvent cleaning compound, clean shaft, end plates and inside fuel additive injection pump fluid motor housing free of all fuel and debris.

END OF TASK**INSPECTION****NOTE**

Excessive wear and scratches in the housing and end plates may increase the wear rate of the teflon vanes and reduce efficiency in the lower flow ranges of the system.

1. Inspect fuel additive injection pump fluid motor housing for nicks, gouges, excessive scratches and wear. If nicks, gouges, excessive scratches or wear is found, replace with serviceable like item.
2. Inspect fuel additive injection pump fluid motor housing for evidence of leakage on either the FSII injection pump side or the CI and SDA injection pump side of the motor. If evidence of leakage is found, replace mechanical (carbon) seal on the side of the fuel additive injection pump fluid motor housing that is leaking.
3. Inspect end plate for nicks, gouges, excessive scratches and wear. If nicks, gouges, excessive scratches or wear is found, replace with serviceable like item.
4. Inspect shaft for nicks, gouges, excessive scratches and wear. If nicks, gouges, excessive scratches or wear is found, replace with serviceable like item.
5. Inspect rotor, especially on each end, for wear, breakage of the vane sockets and wear of the anodized coating. If wear, breakage of the vane sockets or wear of the anodized coating is found, replace with serviceable like item.
6. Inspect snap rings, seals and wear rings for wear and tear. If wear and tear is found, replace with serviceable like item.
7. Inspect bearings for evidence of overheating, pitting or roughness while turning. Bearings must spin freely. If bearings are burned, pitted or rough while turning, replace bearings.

END OF TASK

ASSEMBLY

WARNING

CHEMICAL EYE PROTECTION



POISON



VAPOR

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

CAUTION

Use of the incorrect size retaining ring pliers will distort the snap ring during removal. A distorted snap ring must be replaced.

NOTE

The fuel additive injection pump fluid motor can be assembled from either the FSII injection pump side or the CI and SDA injection pump side of the motor, which is preferred.

During installation, pay particular attention to the direction of flow and installation procedures for the rotor, ceramic seal and mechanical (carbon) seal.

ASSEMBLY - CONTINUED

CAUTION

Do not touch the face of mechanical (carbon) seal during installation, as damage to mechanical (carbon) seal may occur.

Do not drop mechanical (carbon) seal during installation, as damage to mechanical (carbon) seal may occur.

1. Lightly coat wear ring (Figure 4, Item 3) with petrolatum and install on shaft (Figure 4, Item 5).

NOTE

During installation of shaft in fuel additive injection pump fluid motor housing, ensure the FSII pump side bearing does not fall out of end plate.

2. Install mechanical (carbon) seal (Figure 4, Item 2) on shaft (Figure 4, Item 5).
3. Install shaft (Figure 4, Item 5) in fuel additive injection pump fluid motor housing (Figure 4, Item 1).
4. Install thrust washer (Figure 4, Item 20) on shaft (Figure 4, Item 5).
5. Using retaining ring pliers, install snap ring (Figure 4, Item 21) on shaft (Figure 4, Item 5).

WARNING**HEAVY PARTS**

The rotor weighs 28 lb. Both hands must be used to install rotor in housing. Failure to comply could result in serious injury to personnel or damage to equipment.

6. Install two keys (Figure 4, Item 4) on shaft (Figure 4, Item 5).
7. Install rotor (Figure 4, Item 9) in fuel additive injection pump fluid motor housing (Figure 4, Item 1).
8. Lightly coat wear ring (Figure 4, Item 16) with petrolatum and install on shaft (Figure 4, Item 5).

CAUTION

Do not touch the face of mechanical (carbon) seal during installation, as damage to mechanical (carbon) seal may occur.

Do not drop mechanical (carbon) seal during installation, as damage to mechanical (carbon) seal may occur.

9. Install mechanical (carbon) seal (Figure 4, Item 15) on shaft (Figure 4, Item 5).
10. Install six teflon vanes (Figure 4, Item 17) in vane sockets (Figure 4, Item 18).
11. Lightly coat inside O-ring of ceramic seal (Figure 4, Item 13) with petrolatum and install in end plate (Figure 4, Item 12).
12. Install spring washer (Figure 4, Item 6) and bearing (Figure 4, Item 7) in end plate (Figure 4, Item 12).
13. Install new O-ring (Figure 4, Item 14) in groove of fuel additive injection pump fluid motor housing (Figure 4, Item 1).

CAUTION

During installation of the end plate, do not drag the plate against the shaft as damage to the shaft may occur.

14. While supporting end plate (Figure 4, Item 12) evenly with both hands, carefully install end plate (Figure 4, Item 12) onto fuel additive injection pump fluid motor housing (Figure 4, Item 1).

ASSEMBLY - CONTINUED

CAUTION

To reduce uneven stress on end plate, end plate bolts must be installed and tightened in a criss-cross pattern.

NOTE

A leak free seal does not depend on tightness as the O-ring is compressed when the end plate and the housing are mated face-to-face. Just snug the bolts until the lockwashers are compressed flat.

15. Install eight new lockwashers (Figure 4, Item 11) and screws (Figure 4, Item 10) on end plate (Figure 4, Item 12). Tighten screws (Figure 4, Item 10).
16. Install thrust washer (Figure 4, Item 8) on shaft (Figure 4, Item 5).
17. Using retaining ring pliers, install snap ring (Figure 4, Item 9) on shaft (Figure 4, Item 5).

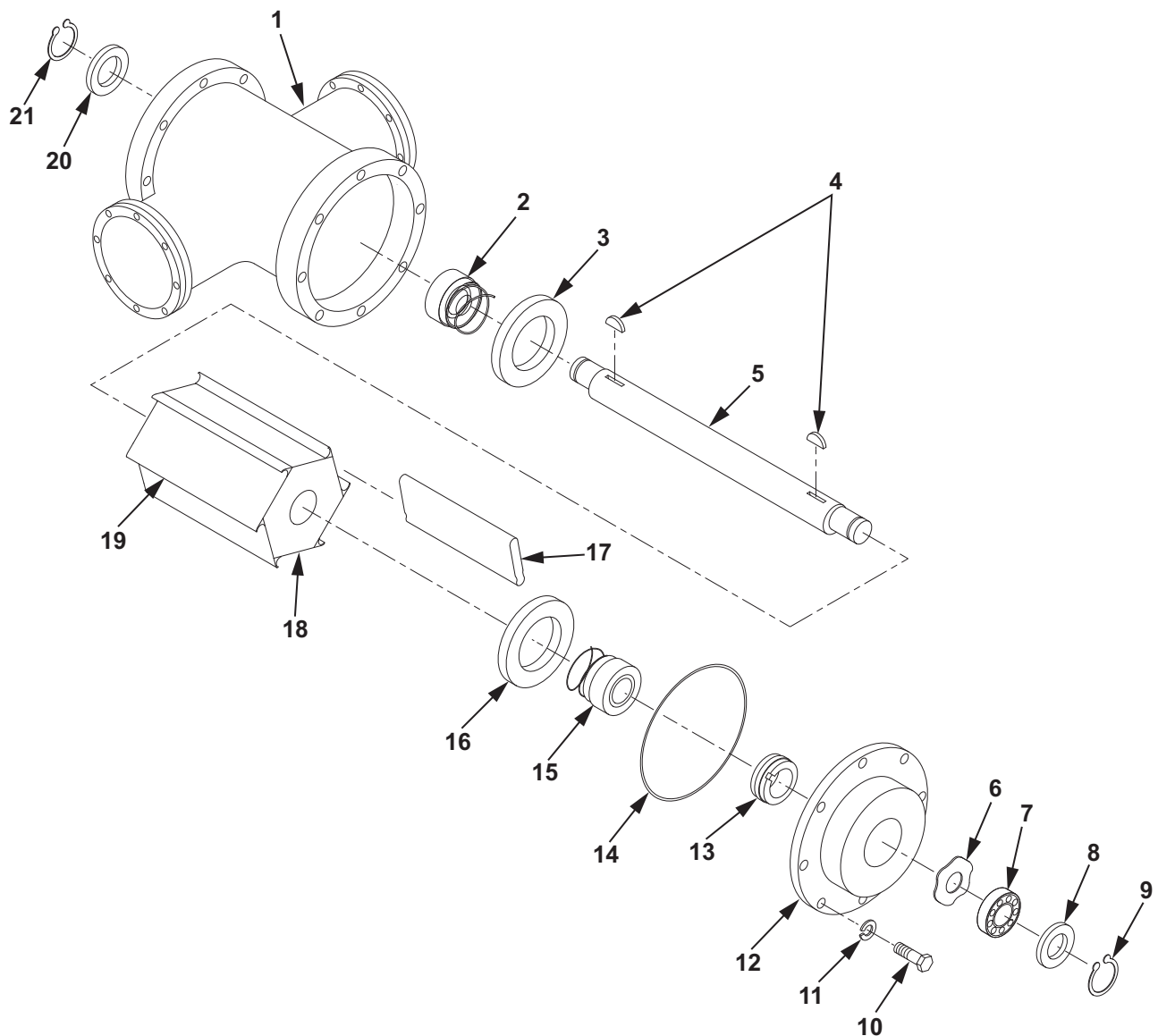


Figure 4. Fuel Additive Injection Pump Bearing Housing Assembly.

ASSEMBLY - CONTINUED

18. Install bearing (Figure 5, Item 3) on adapter plate (Figure 5, Item 4).
19. Install adapter plate (Figure 5, Item 4) on end plate (Figure 5, Item 25).
20. Install four new lockwashers (Figure 5, Item 19) and screws (Figure 5, Item 18) on adapter plate (Figure 5, Item 4). Tighten screws (Figure 5, Item 18).
21. Install spacer (Figure 5, Item 17) and key (Figure 5, Item 14) on shaft (Figure 5, Item 2).
22. Install gear (Figure 5, Item 15) on shaft (Figure 5, Item 2) and tighten setscrew (Figure 5, Item 16).
23. Install seal (Figure 5, Item 24) in gear housing (Figure 5, Item 11).
24. Using retaining ring pliers, install snap ring (Figure 5, Item 10) on output shaft (Figure 5, Item 23).
25. Using arbor press, install output shaft (Figure 5, Item 23) and two bearings (Figure 5, Item 9) in gear housing (Figure 5, Item 11).
26. Using retaining ring pliers, install snap ring (Figure 5, Item 8) in output shaft (Figure 5, Item 23).
27. Install key (Figure 5, Item 5) on output shaft (Figure 5, Item 23).
28. Install gear (Figure 5, Item 7) in gear housing (Figure 5, Item 11) and tighten setscrew (Figure 5, Item 6).
29. Install gear housing (Figure 5, Item 11) on adapter plate (Figure 5, Item 4).
30. Install four new lockwashers (Figure 5, Item 13) and screws (Figure 5, Item 12) on gear housing (Figure 5, Item 11). Tighten screws (Figure 5, Item 12).
31. Install spacer (Figure 5, Item 22) and drive bearing (Figure 5, Item 21) on output shaft (Figure 5, Item 23).
32. Using retaining ring pliers, install snap ring (Figure 5, Item 20) on output shaft (Figure 5, Item 23).

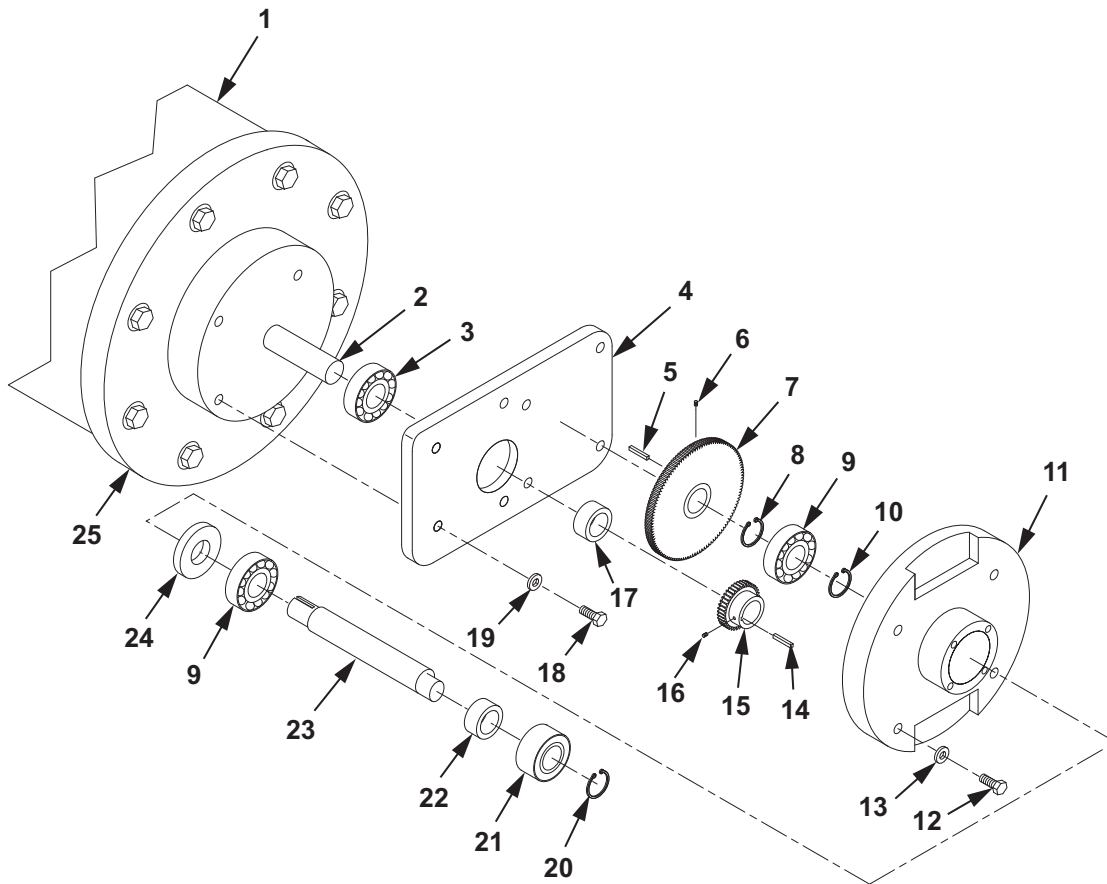


Figure 5. Fuel Additive Injection Pump Bearing Housing Assembly.

ASSEMBLY - CONTINUED

- 33. Install CI and SDA injection pump (WP 0195).
- 34. Install FSII injection pump (WP 0194).

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
WET WING DEFUELING ASSEMBLY, 3 IN. QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK COUPLING ASSEMBLY), PART NUMBER 64031D, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY, TESTING

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
O-ring (Item 48, WP 0215)
O-ring (2) (Item 49, WP 0215)
O-ring (2) (Item 52, WP 0215)
O-ring (Item 60, WP 0215)
Seal (Item 17, WP 0215)
Seal (2) (Item 18, WP 0215)
Bushing (2) (Item 10, WP 0215)
Bushing (Item 11, WP 0215)

DISASSEMBLY**NOTE**

Screw (Figure 1, Item 13) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 13), then screw (Figure 1, Item 13) should be replaced.

1. While removing screw (Figure 1, Item 13) from coupling (Figure 1, Item 26), use a torque wrench and screwdriver bit to check running torque. If running torque is less than 9.5 in. lb (1.07 N-m), discard screw (Figure 1, Item 13).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 13) to prevent loss of ball bearings (Figure 1, Item 15) inside coupling (Figure 1, Item 26).

2. Remove screw (Figure 1, Item 13) from coupling (Figure 1, Item 26).
3. Remove O-ring (Figure 1, Item 14) from screw (Figure 1, Item 13).
4. Discard O-ring (Figure 1, Item 14).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 15) are accounted for during disassembly.

5. Hold coupling (Figure 1, Item 26) with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 15) to fall onto the cleaning cloth.

NOTE

When removing inlet adapter (Figure 1, Item 17), retain ball bearing (Figure 1, Item 19) and spring (Figure 1, Item 18).

6. Remove inlet adapter (Figure 1, Item 17) from coupling (Figure 1, Item 26).
7. Remove O-ring (Figure 1, Item 20) from outer groove of inlet adapter (Figure 1, Item 17).
8. Discard O-ring (Figure 1, Item 20).
9. Remove screws (Figure 1, Item 29) from control arm (Figure 1, Item 28).
10. Remove control arm (Figure 1, Item 28) from coupling (Figure 1, Item 26).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 28), perform the following steps.

- a. Remove screw (Figure 1, Item 31) from control arm (Figure 1, Item 28).
 - b. Remove spring (Figure 1, Item 30) from control arm (Figure 1, Item 28).
 - c. Remove knob (Figure 1, Item 27) from control arm (Figure 1, Item 28).
11. Remove screw (Figure 1, Item 32) from upper shaft (Figure 1, Item 33).
 12. Remove screw (Figure 1, Item 8) from lower shaft (Figure 1, Item 9).
 13. Using one screw (Figure 1, Item 29), screw into end of upper shaft (Figure 1, Item 33) and remove upper shaft (Figure 1, Item 33) from coupling (Figure 1, Item 26).
 14. Remove O-rings (Figure 1, Item 35, 37) from upper shaft (Figure 1, Item 33). Discard O-rings (Figure 1, Item 35, 37).
 15. Remove bushings (Figure 1, Item 34, 36) from upper shaft (Figure 1, Item 33).
 16. Discard bushings (Figure 1, Item 34, 36).
 17. Rotate ball valve (Figure 1, Item 21) to open position and remove ball valve (Figure 1, Item 21) from inside coupling (Figure 1, Item 26).
 18. Push out lower shaft (Figure 1, Item 9) from inside coupling (Figure 1, Item 26).
 19. Remove O-rings (Figure 1, Item 11, 12) from lower shaft (Figure 1, Item 9). Discard O-rings (Figure 1, Item 11, 12).
 20. Remove bushings (Figure 1, Item 10) from lower shaft (Figure 1, Item 9).

DISASSEMBLY - CONTINUED

21. Discard bushings (Figure 1, Item 10).
22. Remove retaining ring (Figure 1, Item 22) from coupling (Figure 1, Item 26).
23. Remove seal retainer (Figure 1, Item 23) from coupling (Figure 1, Item 26).
24. Remove seal (Figure 1, Item 24) from coupling (Figure 1, Item 26).
25. Discard seal (Figure 1, Item 24).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 1), perform the following removal steps.

26. Cut cable (Figure 1, Item 3) or remove split ring (Figure 1, Item 16) from coupling (Figure 1, Item 26) and cable (Figure 1, Item 3).
27. Cut cable (Figure 1, Item 3) or remove split ring (Figure 1, Item 2) from dust cap (Figure 1, Item 1).
28. Remove cable (Figure 1, Item 3) and sleeve (Figure 1, Item 4).
29. Remove seal (Figure 1, Item 5) from dust cap (Figure 1, Item 1).
30. Discard seal (Figure 1, Item 5).

NOTE

If it is necessary to replace bumper (Figure 1, Item 38) or lugs (Figure 1, Item 7), perform the following steps.

31. Remove bumper (Figure 1, Item 38) from coupling (Figure 1, Item 26).
32. Remove screws (Figure 1, Item 25) from coupling (Figure 1, Item 26).
33. Remove lugs (Figure 1, Item 7) from coupling (Figure 1, Item 26).
34. Remove seal (Figure 1, Item 6) from coupling (Figure 1, Item 26).
35. Discard seal (Figure 1, Item 6).

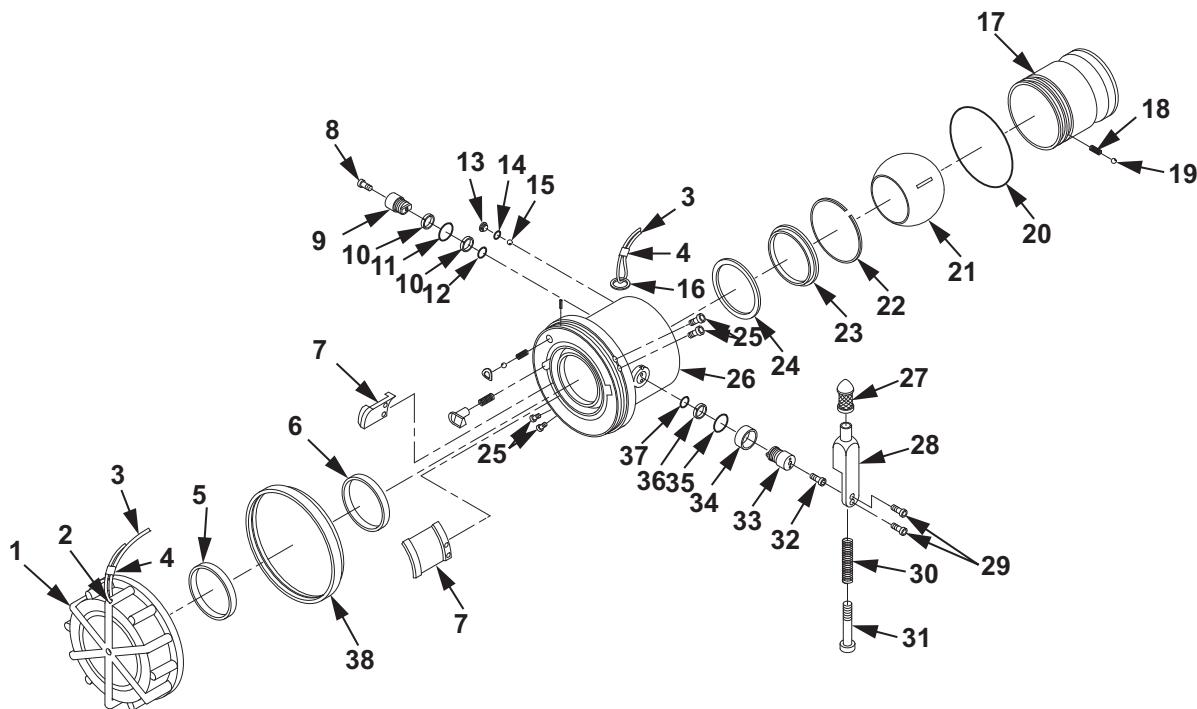


Figure 1. 3 In. Valved Dry-Break Coupling Disassembly.

DISASSEMBLY - CONTINUED**NOTE**

Do not remove spring washer (Figure 2, Item 8), ball bearing (Figure 2, Item 14) or spring (Figure 2, Item 15). If replacement of ball bearing (Figure 2, Item 14) is required, then coupling (Figure 2, Item 23) must be replaced.

If it is necessary to replace lockout pin (Figure 2, Item 6), perform the following removal steps.

36. Remove spring pin (Figure 2, Item 16) from coupling (Figure 2, Item 23).
37. Remove lockout pin (Figure 2, Item 6) from coupling (Figure 2, Item 23).
38. Remove spring (Figure 2, Item 7) from coupling (Figure 2, Item 23).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 2, Item 34) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.
3. Inspect dust cap (Figure 2, Item 1) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 2, Item 14) is to provide electrical continuity between mating surfaces.

4. Inspect spring loaded ball bearing (Figure 2, Item 14) located in face of coupling for damage. Push the

ball bearing (Figure 2, Item 14) in and ensure it pops back into place. If damage is found or ball bearing does not pop back into place, replace coupling (Figure 2, Item 23).

5. Inspect control arm (Figure 2, Item 24) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

NOTE

If it was necessary to replace lockout pin (Figure 2, Item 6), perform the following installation steps.

1. Install spring (Figure 2, Item 7) into coupling (Figure 2, Item 23).
2. Install lockout pin (Figure 2, Item 6) into coupling (Figure 2, Item 23).
3. Install spring pin (Figure 2, Item 16) into coupling (Figure 2, Item 23).

NOTE

If it was necessary to replace bumper (Figure 2, Item 34) or lugs (Figure 2, Item 33), perform the following installation steps.

4. Position lugs (Figure 2, Item 33) in coupling (Figure 2, Item 23).
5. Install screws (Figure 2, Item 22) into coupling (Figure 2, Item 23).
6. Install new seal (Figure 2, Item 5) into coupling (Figure 2, Item 23) interface.
7. Using torque wrench and screwdriver bit, torque screws (Figure 2, Item 22) to 6 in. lb (0.70 N-m).
8. Position bumper (Figure 2, Item 34) with thin lip seal end facing away from coupling (Figure 2, Item 23).
9. Install bumper (Figure 2, Item 34) on coupling (Figure 2, Item 23).

NOTE

If it was necessary to replace dust cap (Figure 2, Item 1), perform the following 5 installation steps.

10. Install new seal (Figure 2, Item 4) on dust cap (Figure 2, Item 1).
11. Loop one end of 18 in. cable (Figure 2, Item 2) through sleeve (Figure 2, Item 3), dust cap (Figure 2, Item 1) and back through sleeve (Figure 2, Item 3).
12. Using pliers, crimp sleeve (Figure 2, Item 3).
13. Loop other end of 18 in. cable (Figure 2, Item 2) through sleeve (Figure 2, Item 3), split ring (Figure 2, Item 17) and back through sleeve (Figure 2, Item 3).
14. Using pliers, crimp sleeve (Figure 2, Item 3).

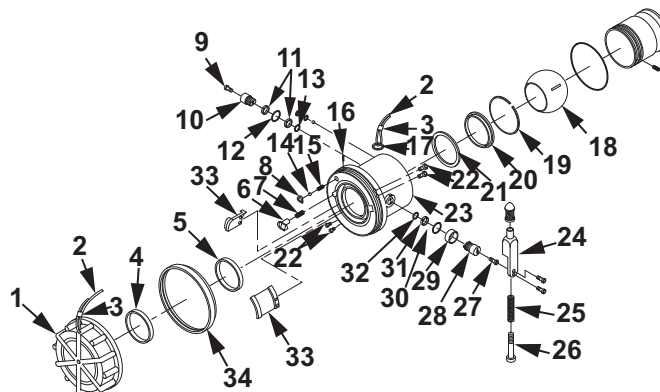


Figure 2. Valved Dry-Break Coupling Assembly.

ASSEMBLY - CONTINUED

15. Install new seal (Figure 3, Item 17) in coupling (Figure 3, Item 18).
16. Install seal retainer (Figure 3, Item 16) in coupling (Figure 3, Item 18).
17. Install retaining ring (Figure 3, Item 15) in coupling (Figure 3, Item 18).
18. Install new bushings (Figure 3, Item 4) on lower shaft (Figure 3, Item 3).
19. Lightly lubricate new O-rings (Figure 3, Item 5, 6) with petrolatum and install new O-rings (Figure 3, Item 5, 6) on lower shaft (Figure 3, Item 3).
20. Position ball valve (Figure 3, Item 14) in the open position and install inside coupling (Figure 3, Item 18).
21. Install lower shaft (Figure 3, Item 3) inside coupling (Figure 3, Item 18).
22. Install screw (Figure 3, Item 2) on lower shaft (Figure 3, Item 3).
23. Install new bushings (Figure 3, Item 26, 28) on upper shaft (Figure 3, Item 25).
24. Lightly lubricate new O-rings (Figure 3, Item 27, 29) with petrolatum and install new O-rings (Figure 3, Item 27, 29) on upper shaft (Figure 3, Item 25).
25. Install upper shaft (Figure 3, Item 25) in coupling (Figure 3, Item 18).
26. Install screw (Figure 3, Item 24) on upper shaft (Figure 3, Item 25).

NOTE

If it was necessary to disassemble control arm (Figure 3, Item 20), perform the following assembly steps.

27. Place spring (Figure 3, Item 22) on screw (Figure 3, Item 23).
28. Install screw (Figure 3, Item 23) into control arm (Figure 3, Item 20).
29. Install knob (Figure 3, Item 19) on control arm (Figure 3, Item 20).
30. Tighten screw (Figure 3, Item 23) hand tight.
31. Position control arm (Figure 3, Item 20) with holes lined up on upper shaft (Figure 3, Item 25).
32. Install screws (Figure 3, Item 21) through control arm (Figure 3, Item 20) and into upper shaft (Figure 3, Item 25).
33. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 21) to 8 in. lb (0.90 N•m).
34. Lightly lubricate O-ring (Figure 3, Item 13) with petrolatum and install new O-ring (Figure 3, Item 13) in outer groove of inlet adapter (Figure 3, Item 10).

NOTE

When installing inlet adapter (Figure 3, Item 10), ensure ball bearing (Figure 3, Item 12) and spring (Figure 3, Item 4) are in place.

35. Install inlet adapter (Figure 3, Item 10) into coupling (Figure 3, Item 18).
36. Hold coupling (Figure 3, Item 18) over cleaning cloth with screw hole up, insert all 41 ball bearings (Figure 3, Item 9) into hole.
37. Lightly lubricate new O-ring (Figure 3, Item 8) with petrolatum and install new O-ring on screw (Figure 3, Item 7).
38. Install screw (Figure 3, Item 7) into coupling (Figure 3, Item 18).
39. Using torque wrench and screwdriver bit, torque screw (Figure 3, Item 7) to 72–80 in. lb (8.13–9.04 N•m).

END OF TASK**TESTING**

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 3, Item 20) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.

3. Close the control arm (Figure 3, Item 20) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.5 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 3, Item 20) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.5 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 3, Item 20) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.5 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 3, Item 20) in the closed position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.5 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 3, Item 1).

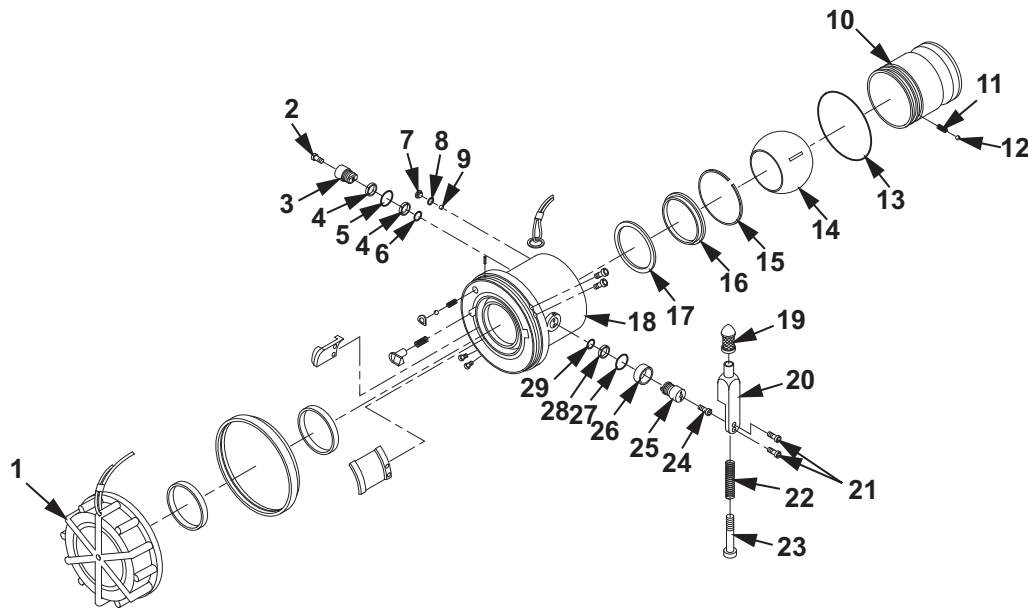


Figure 3. Valved Dry-Break Coupling Assembly.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
WET WING DEFUELING ASSEMBLY, 4 IN. MALE CAMLOCK X 3 IN. VALVED DRY-BREAK ADAPTER, PART NUMBER
64031PQ, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
O-ring (Item 48, WP 0215)
O-ring (2) (Item 49, WP 0215)
O-ring (2) (Item 52, WP 0215)
O-ring (Item 60, WP 0215)
Seal (Item 17, WP 0215)
Seal (2) (Item 18, WP 0215)
Gasket (Item 46, WP 0215)
Bushing (3) (Item 10, WP 0215)
Bushing (Item 11, WP 0215)

DISASSEMBLY**NOTE**

Screw (Figure 1, Item 11) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 11), then screw (Figure 1, Item 11) should be replaced.

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 11) to prevent loss of ball bearings (Figure 1, Item 13) inside coupling (Figure 1, Item 24).

1. While removing screw (Figure 1, Item 11) from coupling (Figure 1, Item 24), use a torque wrench and screwdriver bit to check running torque. If running torque is less than 9.5 in. lb (1.07 N•m), discard screw (Figure 1, Item 11).
2. Remove screw (Figure 1, Item 11) from coupling (Figure 1, Item 24).
3. Remove O-ring (Figure 1, Item 12) from screw (Figure 1, Item 11).
4. Discard O-ring (Figure 1, Item 12).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 13) are accounted for during disassembly.

5. Hold coupling (Figure 1, Item 24) with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 24) to fall onto the cleaning cloth.

NOTE

When removing inlet adapter (Figure 1, Item 16), retain ball bearing (Figure 1, Item 17) and spring (Figure 1, Item 18).

6. Remove inlet adapter (Figure 1, Item 16) from coupling (Figure 1, Item 24).
7. Remove O-ring (Figure 1, Item 15) from outer groove of inlet adapter (Figure 1, Item 16).
8. Discard O-ring (Figure 1, Item 15).
9. Remove screws (Figure 1, Item 27) from control arm (Figure 1, Item 26).
10. Remove control arm (Figure 1, Item 26) from coupling (Figure 1, Item 24).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 26), perform the following steps.

- a. Remove screw (Figure 1, Item 29) from control arm (Figure 1, Item 26).
- b. Remove spring (Figure 1, Item 28) from control arm (Figure 1, Item 26).
- c. Remove knob (Figure 1, Item 25) from control arm (Figure 1, Item 26).
11. Remove screw (Figure 1 item 30) from upper shaft (Figure 1, Item 31).
12. Remove screw (Figure 1 item 6) from lower shaft (Figure 1, Item 7).
13. Using one screw (Figure 1, Item 27), screw into end of upper shaft (Figure 1, Item 31) and remove upper shaft (Figure 1, Item 31) from coupling (Figure 1, Item 24).
14. Remove O-rings (Figure 1, Item 33, 35) from upper shaft (Figure 1, Item 31).
15. Discard O-rings (Figure 1, Item 33, 35).
16. Remove bushings (Figure 1, Item 32, 34) from upper shaft (Figure 1, Item 31).
17. Discard bushings (Figure 1, Item 32, 34).
18. Rotate ball valve (Figure 1, Item 19) to the open position and remove from inside coupling (Figure 1, Item 24).
19. Push out lower shaft (Figure 1, Item 7) from inside coupling (Figure 1, Item 24).
20. Remove O-rings (Figure 1, Item 9, 10) from lower shaft (Figure 1, Item 7).
21. Discard O-rings (Figure 1, Item 9, 10).

DISASSEMBLY - CONTINUED

22. Remove bushings (Figure 1, Item 8) from lower shaft (Figure 1, Item 7).
23. Discard bushings (Figure 1, Item 8).
24. Remove retaining ring (Figure 1, Item 20) from coupling (Figure 1, Item 24).
25. Remove seal retainer (Figure 1, Item 21) from coupling (Figure 1, Item 24).
26. Remove seal (Figure 1, Item 22) from coupling (Figure 1, Item 24).
27. Discard seal (Figure 1, Item 22).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 1), perform the following removal steps.

28. Cut cable (Figure 1, Item 3) or remove split ring (Figure 1, Item 14) from coupling (Figure 1, Item 24) and cable (Figure 1, Item 3).
29. Cut cable (Figure 1, Item 3) or remove split ring (Figure 1, Item 2) from dust cap (Figure 1, Item 1).
30. Remove cable (Figure 1, Item 3) and sleeve (Figure 1, Item 4).
31. Remove seal (Figure 1, Item 37) from dust cap (Figure 1, Item 1).
32. Discard seal (Figure 1, Item 37).

NOTE

If it is necessary to replace bumper (Figure 1, Item 36) or lugs (Figure 1, Item 5), perform the following steps.

33. Remove bumper (Figure 1, Item 36) from coupling (Figure 1, Item 24).
34. Remove screws (Figure 1, Item 23) from coupling (Figure 1, Item 24).

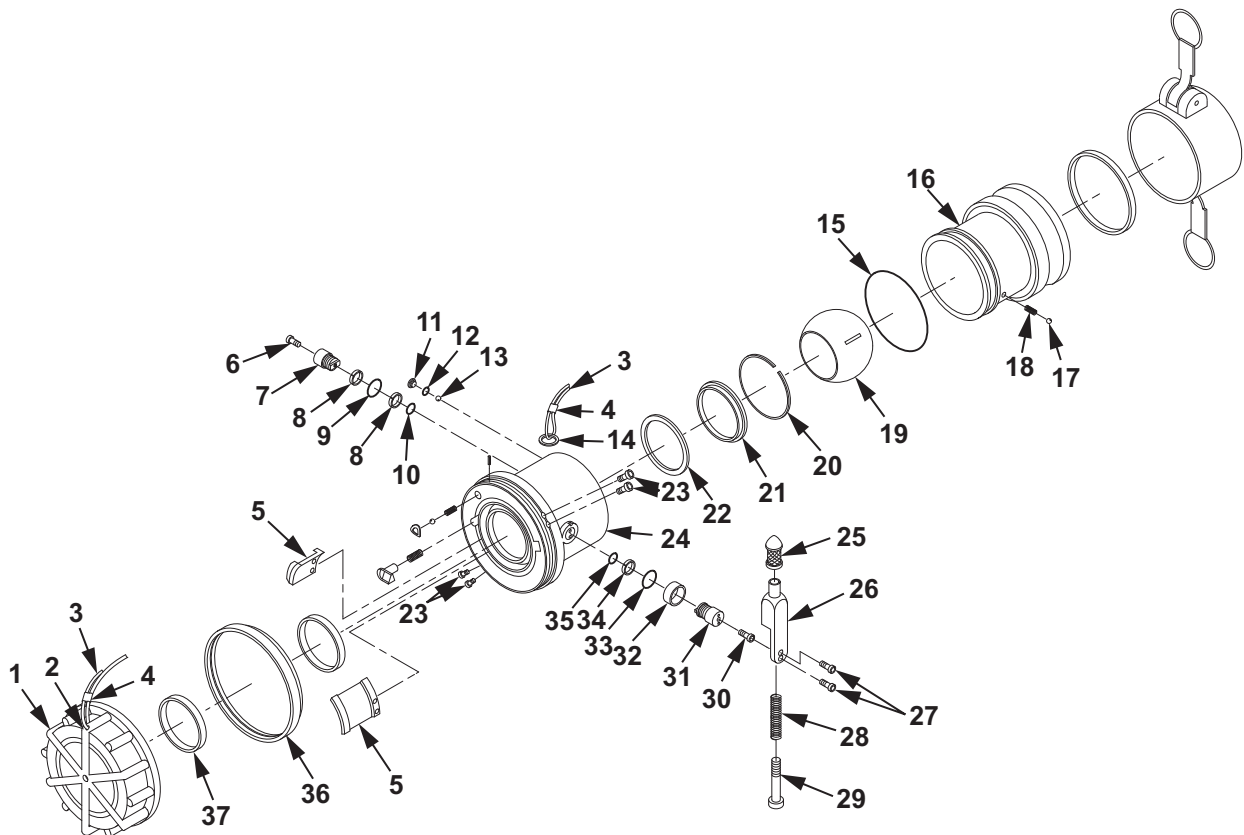


Figure 1. 4 In. Male Camlock X 3 In. Valved Dry-Break Adapter Disassembly.

DISASSEMBLY - CONTINUED

35. Remove lugs (Figure 2, Item 3) from coupling (Figure 2, Item 13).
36. Remove seal (Figure 2, Item 2) from coupling (Figure 2, Item 13).
37. Discard seal (Figure 2, Item 2).

NOTE

Do not remove spring washer (Figure 2, Item 6), ball bearing (Figure 2, Item 7) or spring (Figure 2, Item 8). If replacement of ball bearing (Figure 2, Item 7) is required, then coupling (Figure 2, Item 13) must be replaced.

If it is necessary to replace lockout pin (Figure 2, Item 4), perform the following removal steps.

38. Remove spring pin (Figure 2, Item 9) from coupling (Figure 2, Item 13).
39. Remove lockout pin (Figure 2, Item 4) from coupling (Figure 2, Item 13).
40. Remove spring (Figure 2, Item 5) from coupling (Figure 2, Item 13).
41. Remove dust cap (Figure 2, Item 12) from inlet adapter (Figure 2, Item 10).
42. Remove gasket (Figure 2, Item 11) from dust cap (Figure 2, Item 12).
43. Discard gasket (Figure 2, Item 11).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.
2. Inspect bumper (Figure 2, Item 15) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.

3. Inspect dust cap (Figure 2, Item 1) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.
4. Inspect dust cap (Figure 2, Item 12) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 1, Item 7) is to provide electrical continuity between mating surfaces.

5. Inspect spring loaded ball bearing (Figure 2, Item 7) located in face of coupling for damage. Push the ball bearing (Figure 2, Item 7) in and ensure it pops back into place. If damage is found or ball bearing (Figure 2, Item 7) does not pop back into place, replace coupling (Figure 2, Item 13).
6. Inspect control arm (Figure 2, Item 14) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install new gasket (Figure 2, Item 11) in dust cap (Figure 2, Item 12).
2. Install dust cap (Figure 2, Item 12) on inlet adapter (Figure 2, Item 10).

NOTE

If it was necessary to replace lockout pin (Figure 2, Item 4), perform the following installation steps.

3. Install spring (Figure 2, Item 5) into coupling (Figure 2, Item 13).
4. Install lockout pin (Figure 2, Item 4) into coupling (Figure 2, Item 13).
5. Install spring pin (Figure 2, Item 9) into coupling (Figure 2, Item 13).

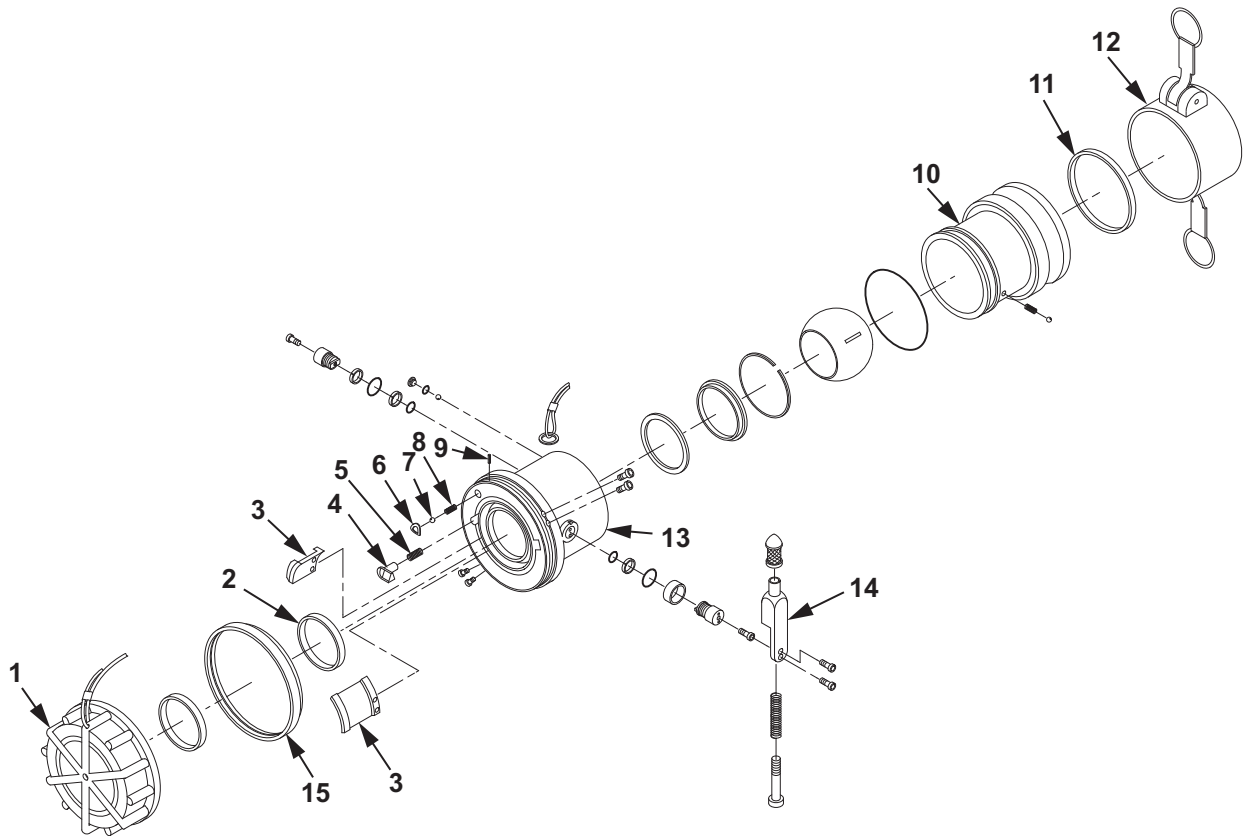


Figure 2. 4 In. Male Camlock X 3 In. Valved Dry-Break Adapter Assembly.

ASSEMBLY - CONTINUED

NOTE

If it was necessary to replace bumper (Figure 3, Item 27) or lugs (Figure 3, Item 5), perform the following installation steps.

6. Position lugs (Figure 3, Item 5) in coupling (Figure 3, Item 17).
7. Install screws (Figure 3, Item 16) into coupling (Figure 3, Item 17).
8. Install new seal (Figure 3, Item 4) into coupling (Figure 3, Item 17) interface.
9. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 16) to 6 in. lb (0.70 N•m).
10. Position bumper (Figure 3, Item 27) with thin lip seal end facing away from coupling (Figure 3, Item 17).
11. Install bumper (Figure 3, Item 27) on coupling (Figure 3, Item 17).

NOTE

If it was necessary to replace dust cap (Figure 3, Item 1), perform the following five installation steps.

12. Install new seal (Figure 3, Item 28) on dust cap (Figure 3, Item 1).
13. Loop one end of 18 in. cable (Figure 3, Item 2) through sleeve (Figure 3, Item 3), dust cap (Figure 3, Item 1) and back through sleeve (Figure 3, Item 3).
14. Using pliers, crimp sleeve (Figure 3, Item 3).
15. Loop other end of 18 in. cable (Figure 3, Item 2) through sleeve (Figure 3, Item 3), split ring (Figure 3, Item 11) and back through sleeve (Figure 3, Item 3).
16. Using pliers, crimp sleeve (Figure 3, Item 3).
17. Install new seal (Figure 3, Item 15) in coupling (Figure 3, Item 17).
18. Install seal retainer (Figure 3, Item 14) in coupling (Figure 3, Item 17).
19. Install retaining ring (Figure 3, Item 13) in coupling (Figure 3, Item 17).
20. Install new bushings (Figure 3, Item 8) on lower shaft (Figure 3, Item 7).
21. Lightly lubricate new O-rings (Figure 3, Item 9, 10) with petrolatum and install new O-rings (Figure 3, Item 9, 10) on lower shaft (Figure 3, Item 7).
22. Position ball valve (Figure 3, Item 12) in the open position and install inside coupling (Figure 3, Item 17).
23. Install lower shaft (Figure 3, Item 7) inside coupling (Figure 3, Item 17).
24. Install screw (Figure 3, Item 6) on lower shaft (Figure 3, Item 7).
25. Install new bushings (Figure 3, Item 23, 25) on upper shaft (Figure 3, Item 22).
26. Lightly lubricate new O-rings (Figure 3, Item 24, 26) with petrolatum and install new O-rings (Figure 3, Item 24, 26) on upper shaft (Figure 3, Item 22).
27. Install upper shaft (Figure 3, Item 22) in coupling (Figure 3, Item 17).
28. Install screw (Figure 3, Item 21) on upper shaft (Figure 3, Item 22).

ASSEMBLY - CONTINUED

NOTE

If it was necessary to disassemble control arm (Figure 3, Item 18), perform the following assembly steps.

29. Place spring (Figure 3, Item 19) on screw (Figure 3, Item 20).
30. Install screw (Figure 3, Item 20) into control arm (Figure 3, Item 18).

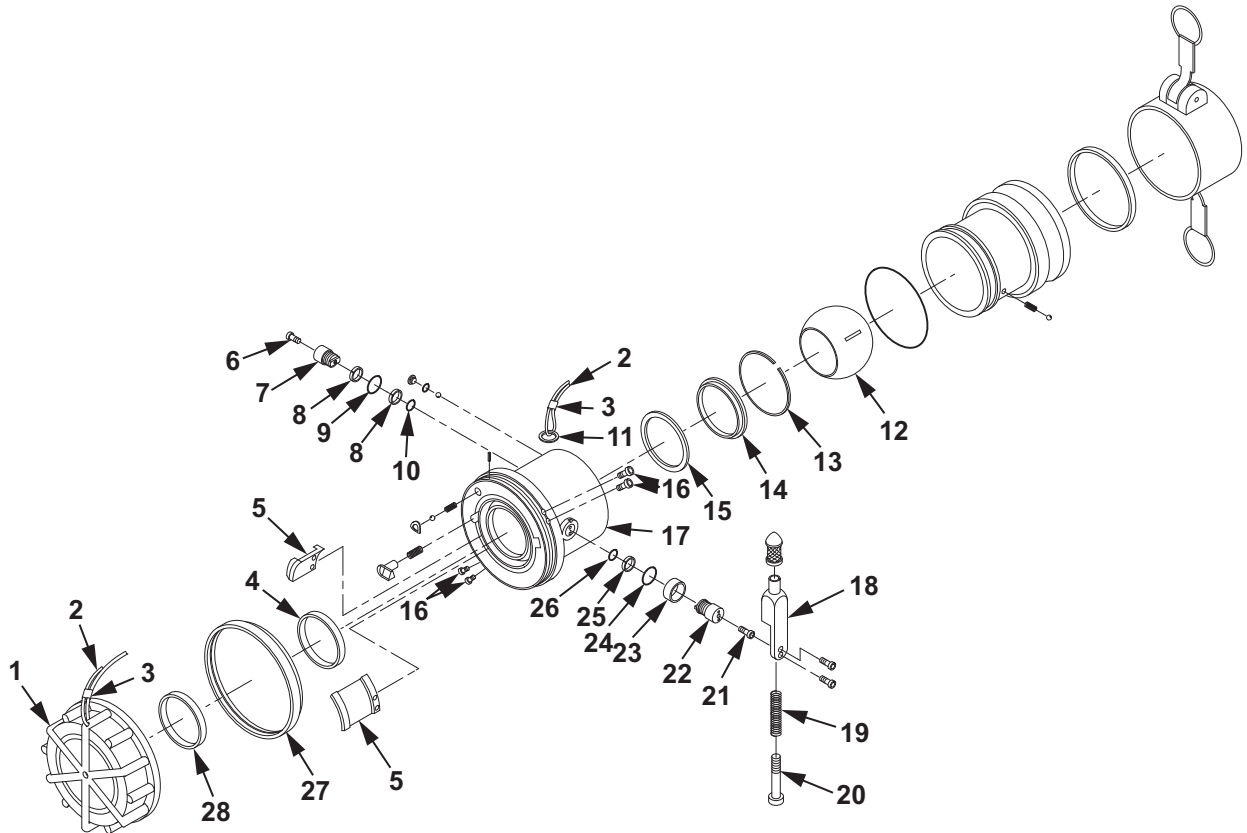


Figure 3. 4 In. Male Camlock X 3 In. Valved Dry-Break Adapter Assembly.

ASSEMBLY - CONTINUED

31. Install knob (Figure 4, Item 10) on control arm (Figure 4, Item 11).
32. Tighten screw (Figure 4, Item 13) hand tight.
33. Position control arm (Figure 4, Item 11) with holes lined up on upper shaft (Figure 4, Item 14).
34. Install screws (Figure 4, Item 12) through control arm (Figure 4, Item 11) and into upper shaft (Figure 4, Item 14).
35. Using torque wrench and screwdriver bit, torque screws (Figure 4, Item 12) to 8 in. lb (0.90 N•m).
36. Lightly lubricate new O-ring (Figure 4, Item 5) with petrolatum and install new O-ring (Figure 4, Item 5) in outer groove of inlet adapter (Figure 4, Item 6).

NOTE

When installing inlet adapter (Figure 4, Item 6), ensure ball bearing (Figure 4, Item 7) and spring (Figure 4, Item 8) are in place.

37. Install inlet adapter (Figure 4, Item 6) into coupling (Figure 4, Item 9).

NOTE

Ensure all 41 ball bearings (Figure 4, Item 4) are accounted for before assembly.

38. Hold coupling (Figure 4, Item 9) over cleaning cloth with screw hole up, insert all 41 ball bearings (Figure 4, Item 4) into hole.
39. Lightly lubricate new O-ring (Figure 4, Item 3) with petrolatum and install new O-ring (Figure 4, Item 3) on screw (Figure 4, Item 2).
40. Install screw (Figure 4, Item 2) into coupling (Figure 4, Item 9).
41. Using torque wrench and screwdriver bit, torque screw (Figure 4, Item 2) to 72–80 in. lb (8.13–9.04 N•m).

END OF TASK**TESTING**

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position. If couplings will not connect properly, repair valved dry-break coupling assembly.
2. While the couplings are connected, rotate control arm (Figure 4, Item 11) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.
3. Close the control arm (Figure 4, Item 11) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.5 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 4, Item 11) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.5 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 4, Item 11) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.5 kPa) to the inlet of the repaired valved dry-break coupling assembly.

12. With the control arm (Figure 4, Item 11) in the closed position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.5 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 4, Item 1).

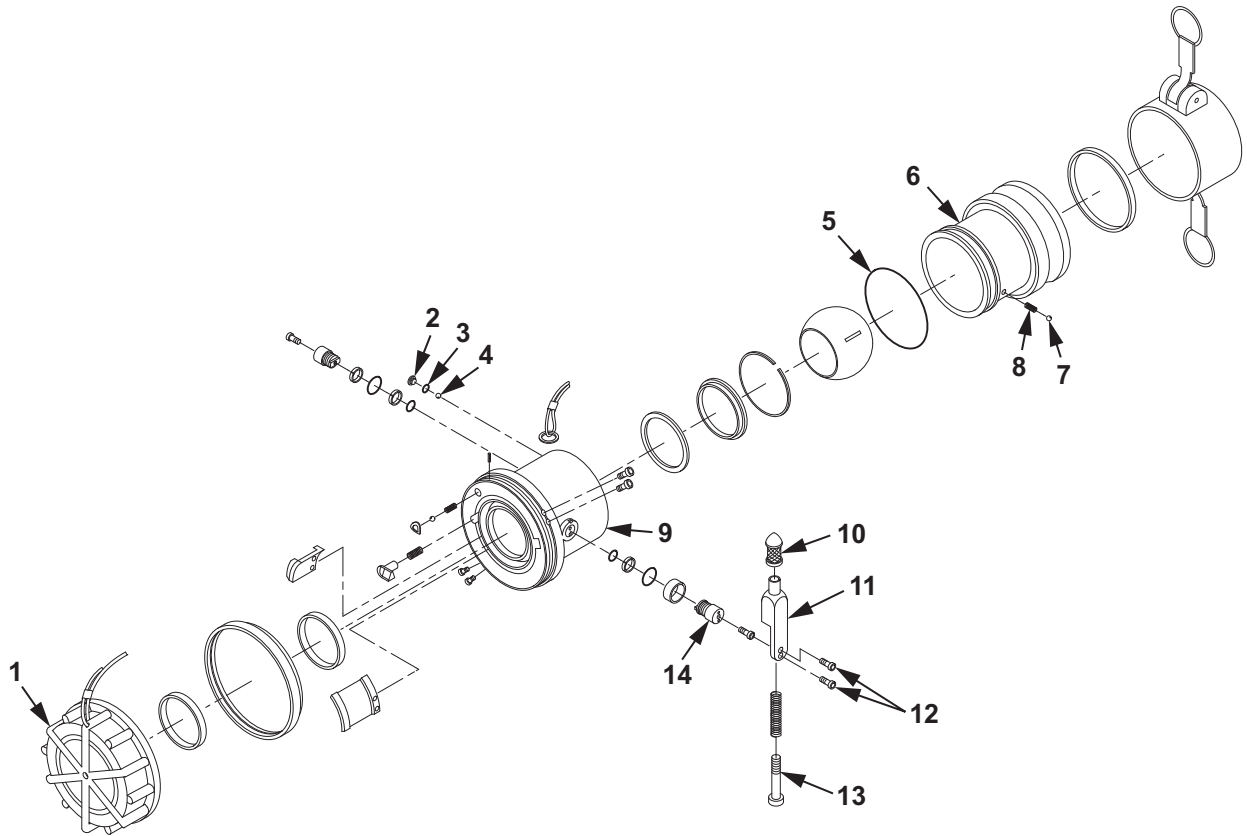


Figure 4. 4 In. Male Camlock X 3 In. Valved Dry-Break Adapter Assembly.

END OF TASK

END OF WORK PACKAGE

DIRECT SUPPORT MAINTENANCE
WET WING DEFUELING ASSEMBLY, 4 IN. FEMALE CAMLOCK X 3 IN. VALVED DRY-BREAK ADAPTER, PART NUMBER
64031MQ, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
Bit, screwdriver (Item 2, WP 0211)
Apron, utility (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Wrench, pipe (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Nozzle assembly removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)
Petrolatum technical (Item 9, WP 0214)
Tape, teflon (Item 14, WP 0214)
O-ring (Item 48, WP 0215)
O-ring (2) (Item 49, WP 0215)
O-ring (2) (Item 52, WP 0215)
O-ring (Item 60, WP 0215)
Seal (Item 17, WP 0215)
Seal (2) (Item 18, WP 0215)
Gasket (Item 46, WP 0215)
Bushing (3) (Item 10, WP 0215)
Bushing (Item 11, WP 0215)

DISASSEMBLY

NOTE

Screw (Figure 1, Item 13) is a self-locking screw and is designed to be reused up to 15 times before replacement. If a torque wrench is not used to remove screw (Figure 1, Item 13), then screw (Figure 1, Item 13) should be replaced.

1. While removing screw (Figure 1, Item 13) from coupling (Figure 1, Item 26), use a torque wrench and screwdriver bit to check running torque. If running torque is less than 9.5 in. lb (1.07 N•m), discard screw (Figure 1, Item 13).

NOTE

Keep inlet hole in the up position when removing screw (Figure 1, Item 13) to prevent loss of ball bearings (Figure 1, Item 15) inside coupling (Figure 1, Item 26).

2. Remove screw (Figure 1, Item 13) from coupling (Figure 1, Item 26).
3. Remove O-ring (Figure 1, Item 14) from screw (Figure 1, Item 13).
4. Discard O-ring (Figure 1, Item 14).

NOTE

Ensure all 41 ball bearings (Figure 1, Item 15) are accounted for during disassembly.

5. Hold coupling (Figure 1, Item 26) with screw hole toward cleaning cloth and rotate inlet fitting to allow ball bearings (Figure 1, Item 15) to fall onto the cleaning cloth.

NOTE

When removing inlet adapter (Figure 1, Item 18), retain ball bearing (Figure 1, Item 19) and spring (Figure 1, Item 20).

6. Remove inlet adapter (Figure 1, Item 18) from coupling (Figure 1, Item 26).
7. Remove O-ring (Figure 1, Item 17) from outer groove of inlet adapter (Figure 1, Item 18).
8. Discard O-ring (Figure 1, Item 17).
9. Remove screws (Figure 1, Item 29) from control arm (Figure 1, Item 28).
10. Remove control arm (Figure 1, Item 28) from coupling (Figure 1, Item 26).

NOTE

If it is necessary to disassemble control arm (Figure 1, Item 28), perform the following steps.

- a. Remove screw (Figure 1, Item 31) from control arm (Figure 1, Item 28).
 - b. Remove spring (Figure 1, Item 30) from control arm (Figure 1, Item 28).
 - c. Remove knob (Figure 1, Item 27) from control arm (Figure 1, Item 28).
11. Remove screw (Figure 1, Item 32) from upper shaft (Figure 1, Item 33).
 12. Remove screw (Figure 1, Item 8) from lower shaft (Figure 1, Item 9).
 13. Using one screw (Figure 1, Item 29), screw into end of upper shaft (Figure 1, Item 33) and remove upper shaft (Figure 1, Item 33) from coupling (Figure 1, Item 26).
 14. Remove O-rings (Figure 1, Item 35, 37) from upper shaft (Figure 1, Item 33).
 15. Discard O-rings (Figure 1, Item 35, 37).
 16. Remove bushings (Figure 1, Item 34, 36) from upper shaft (Figure 1, Item 33).
 17. Discard bushings (Figure 1, Item 34, 36).
 18. Rotate ball valve (Figure 1, Item 21) to the open position and remove from inside coupling (Figure 1, Item 26).
 19. Push out lower shaft (Figure 1, Item 9) from inside coupling (Figure 1, Item 26).
 20. Remove O-rings (Figure 1, Item 11, 12) from lower shaft (Figure 1, Item 9).
 21. Discard O-rings (Figure 1, Item 11, 12).
 22. Remove bushings (Figure 1, Item 10) from lower shaft (Figure 1, Item 9).

DISASSEMBLY - CONTINUED

23. Discard bushings (Figure 1, Item 10).
24. Remove retaining ring (Figure 1, Item 22) from coupling (Figure 1, Item 26).
25. Remove seal retainer (Figure 1, Item 23) from coupling (Figure 1, Item 26).
26. Remove seal (Figure 1, Item 24) from coupling (Figure 1, Item 26).
27. Discard seal (Figure 1, Item 24).

NOTE

If it is necessary to replace dust cap (Figure 1, Item 1), perform the following removal steps.

28. Cut cable (Figure 1, Item 3) or remove split ring (Figure 1, Item 16) from coupling (Figure 1, Item 26) and cable (Figure 1, Item 3).
29. Cut cable (Figure 1, Item 3) or remove split ring (Figure 1, Item 2) from dust cap (Figure 1, Item 1).
30. Remove cable (Figure 1, Item 3) and sleeve (Figure 1, Item 4).
31. Remove seal (Figure 1, Item 5) from dust cap (Figure 1, Item 1).
32. Discard seal (Figure 1, Item 5).

NOTE

If it is necessary to replace bumper (Figure 1, Item 38) or lugs (Figure 1, Item 7), perform the following steps.

33. Remove bumper (Figure 1, Item 38) from coupling (Figure 1, Item 26).
34. Remove screws (Figure 1, Item 25) from coupling (Figure 1, Item 26).
35. Remove lugs (Figure 1, Item 7) from coupling (Figure 1, Item 26).
36. Remove seal (Figure 1, Item 6) from coupling (Figure 1, Item 26).
37. Discard seal (Figure 1, Item 6).

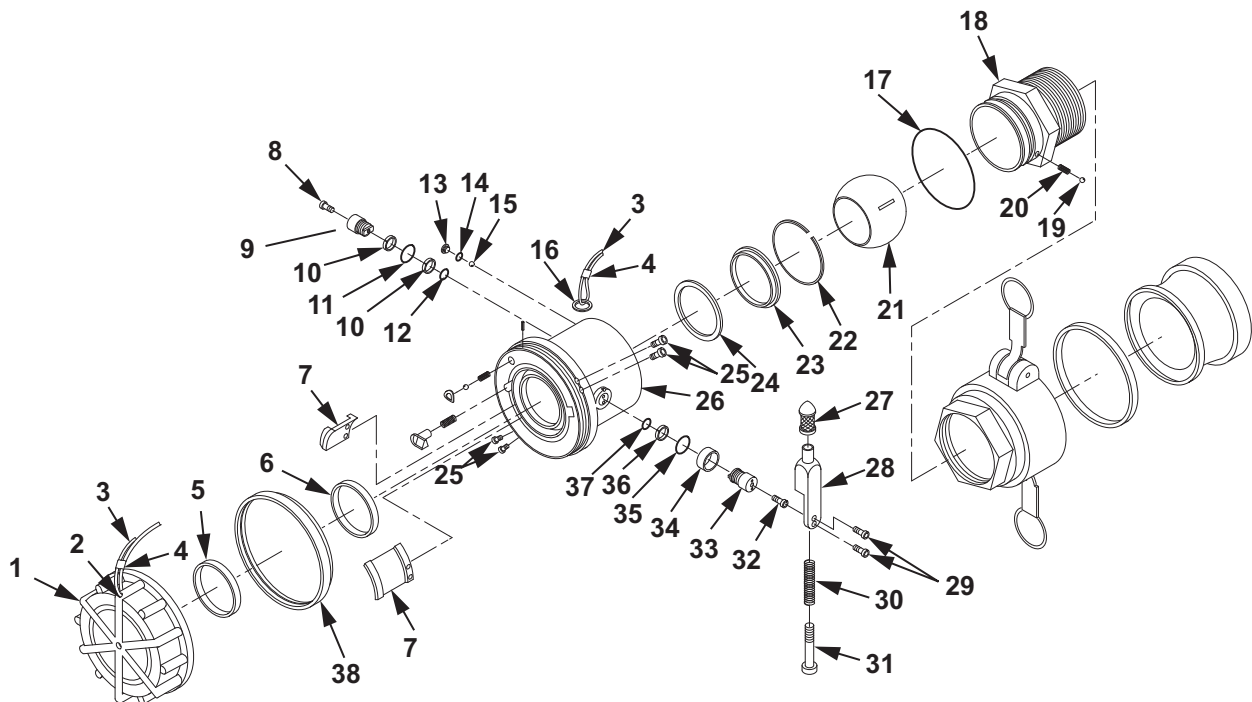


Figure 1. 4 In. Female Camlock X 3 In. Valved Dry-Break Adapter Disassembly.

DISASSEMBLY - CONTINUED**NOTE**

Do not remove spring washer (Figure 2, Item 4), ball bearing (Figure 2, Item 5) or spring (Figure 2, Item 6). If replacement of ball bearing (Figure 2, Item 5) is required, then coupling (Figure 2, Item 12) must be replaced.

If it is necessary to replace lockout pin (Figure 2, Item 2), perform the following removal steps.

38. Remove spring pin (Figure 2, Item 7) from coupling (Figure 2, Item 12).
39. Remove lockout pin (Figure 2, Item 2) from coupling (Figure 2, Item 12).
40. Remove spring (Figure 2, Item 3) from coupling (Figure 2, Item 12).
41. Remove dust plug (Figure 2, Item 9) from camlock connector (Figure 2, Item 11).
42. Remove gasket (Figure 2, Item 10) from camlock connector (Figure 2, Item 11).
43. Discard gasket (Figure 2, Item 10).

NOTE

A vise may be needed to remove inlet adapter (Figure 2, Item 8) from camlock connector (Figure 1, Item 11).

44. Using pipe wrench, remove the inlet adapter (Figure 2, Item 8), from the camlock connector (Figure 2, Item 11) by turning counterclockwise.

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a medium bristle brush and solvent cleaning compound.
2. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion or broken fittings. If cracks, corrosion or broken fittings are found, replace with a serviceable like item.

2. Inspect bumper (Figure 2, Item 14) for cracks, tears or cuts. If cracks, tears or cuts are found, replace with a serviceable like item.
3. Inspect dust cap (Figure 2, Item 1) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.
4. Inspect dust plug (Figure 2, Item 9) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

NOTE

The purpose of ball bearing (Figure 2, Item 5) is to provide electrical continuity between mating surfaces.

5. Inspect spring loaded ball bearing (Figure 2, Item 5) located in face of coupling for damage. Push the ball bearing (Figure 2, Item 5) in and ensure it pops back into place. If damage is found or ball bearing (Figure 2, Item 5) does not pop back into place, replace coupling (Figure 2, Item 12).
6. Inspect control arm (Figure 2, Item 12) for cracks or damage. If cracks or damage is found, replace with a serviceable like item.

END OF TASK

ASSEMBLY

1. Install new gasket (Figure 2, Item 10) in camlock connector (Figure 2, Item 11).
2. Install dust plug (Figure 2, Item 9) in camlock connector (Figure 2, Item 11).

NOTE

A vise may be needed to install inlet adapter to camlock connector.

3. Wrap threads of inlet adapter (Figure 2, Item 8) with teflon tape.
4. While holding the inlet adapter (Figure 2, Item 8), turn the camlock connector (Figure 2, Item 11) clockwise to install camlock connector (Figure 2, Item 11) on inlet adapter (Figure 2, Item 8).
5. Tighten camlock connector (Figure 2, Item 11).

NOTE

If it was necessary to replace lockout pin (Figure 2, Item 2), perform the following installation steps.

6. Install spring (Figure 2, Item 3) into coupling (Figure 2, Item 12).
7. Install lockout pin (Figure 2, Item 2) into coupling (Figure 2, Item 12).
8. Install spring pin (Figure 2, Item 7) into coupling (Figure 2, Item 12).

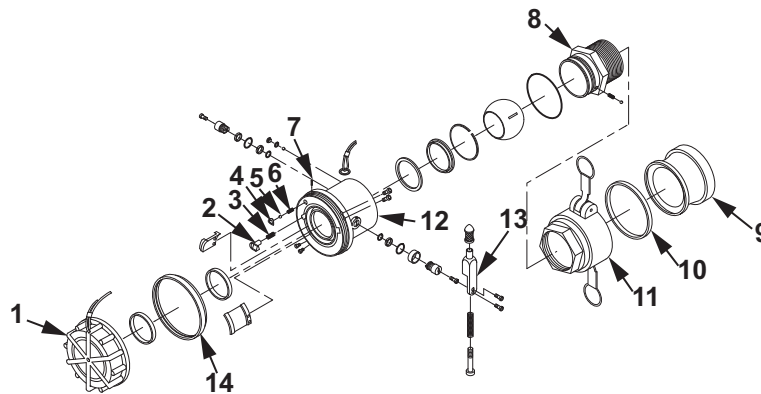


Figure 2. 4 In. Female Camlock X 3 In. Valved Dry-Break Adapter Assembly.

ASSEMBLY - CONTINUED

NOTE

If it was necessary to replace bumper (Figure 3, Item 37) or lugs (Figure 3, Item 6), perform the following six installation steps.

9. Position lugs (Figure 3, Item 6) in coupling (Figure 3, Item 25).
10. Install screws (Figure 3, Item 24) into coupling (Figure 3, Item 25).
11. Install new seal (Figure 3, Item 5) into coupling (Figure 3, Item 25) interface.
12. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 24) to 6 in. lb (0.70 N•m).
13. Position bumper (Figure 3, Item 37) with thin lip seal end facing away from coupling (Figure 3, Item 25).
14. Install bumper (Figure 3, Item 37) on coupling (Figure 3, Item 25).

NOTE

If it was necessary to replace dust cap (Figure 3, Item 1), perform the following five installation steps.

15. Install new seal (Figure 3, Item 4) on dust cap (Figure 3, Item 1).
16. Loop one end of 18 in. cable (Figure 3, Item 2) through sleeve (Figure 3, Item 3), dust cap (Figure 3, Item 1) and back through sleeve (Figure 3, Item 3).
17. Using pliers, crimp sleeve (Figure 3, Item 3).
18. Loop other end of 18 in. cable (Figure 3, Item 2) through sleeve (Figure 3, Item 3), split ring (Figure 3, Item 15) and back through sleeve (Figure 3, Item 3).
19. Using pliers, crimp sleeve (Figure 3, Item 3).
20. Install new seal (Figure 3, Item 23) in coupling (Figure 3, Item 25).
21. Install seal retainer (Figure 3, Item 22) in coupling (Figure 3, Item 25).
22. Install retaining ring (Figure 3, Item 21) in coupling (Figure 3, Item 25).
23. Install new bushings (Figure 3, Item 9) on lower shaft (Figure 3, Item 8).
24. Lightly lubricate new O-rings (Figure 3, Item 10, 11) with petrolatum and install new O-rings (Figure 3, Item 10, 11) on lower shaft (Figure 3, Item 8).
25. Position ball valve (Figure 3, Item 20) in the open position and install inside coupling (Figure 3, Item 25).
26. Install lower shaft (Figure 3, Item 8) inside coupling (Figure 3, Item 25).
27. Install screw (Figure 3, Item 7) on lower shaft (Figure 3, Item 8).
28. Install new bushings (Figure 3, Item 33, 35) on upper shaft (Figure 3, Item 32).
29. Lightly lubricate new O-rings (Figure 3, Item 34, 36) with petrolatum and install new O-rings (Figure 3, Item 34, 36) on upper shaft (Figure 3, Item 32).
30. Install upper shaft (Figure 3, Item 32) in coupling (Figure 3, Item 25).
31. Install screw (Figure 3, Item 31) on upper shaft (Figure 3, Item 32).

NOTE

If it was necessary to disassemble control arm (Figure 3, Item 27), perform the following assembly steps.

32. Place spring (Figure 3, Item 29) on screw (Figure 3, Item 30).
33. Install screw (Figure 3, Item 30) into control arm (Figure 3, Item 27).
34. Install knob (Figure 3, Item 26) on control arm (Figure 3, Item 27).
35. Tighten screw (Figure 3, Item 30) hand tight.
36. Position control arm (Figure 3, Item 27) with holes lined up on upper shaft (Figure 3, Item 32).
37. Install screws (Figure 3, Item 28) through control arm (Figure 3, Item 27) and into upper shaft (Figure 3, Item 32).
38. Using torque wrench and screwdriver bit, torque screws (Figure 3, Item 28) to 8 in. lb (0.90 N•m).
39. Lightly lubricate new O-ring (Figure 3, Item 16) with petrolatum and install new O-ring (Figure 3, Item 16) in outer groove of inlet adapter (Figure 3, Item 17).

ASSEMBLY - CONTINUED

NOTE

When installing inlet adapter (Figure 3, Item 17), ensure ball bearing (Figure 3, Item 18) and spring (Figure 3, Item 19) are in place.

40. Install inlet adapter (Figure 3, Item 17) into coupling (Figure 3, Item 25).

NOTE

Ensure all 41 ball bearings (Figure 3, Item 14) are accounted for before assembly.

41. Hold coupling (Figure 3, Item 25) over cleaning cloth with screw hole up, insert all 41 ball bearings (Figure 3, Item 14) into hole.
42. Lightly lubricate new O-ring (Figure 3, Item 13) with petrolatum and install new O-ring (Figure 3, Item 13) on screw (Figure 3, Item 12).
43. Install screw (Figure 3, Item 12) into coupling (Figure 3, Item 25).
44. Using torque wrench and screwdriver bit, torque screw (Figure 3, Item 12) to 72–80 in. lb (8.13–9.04 N•m).

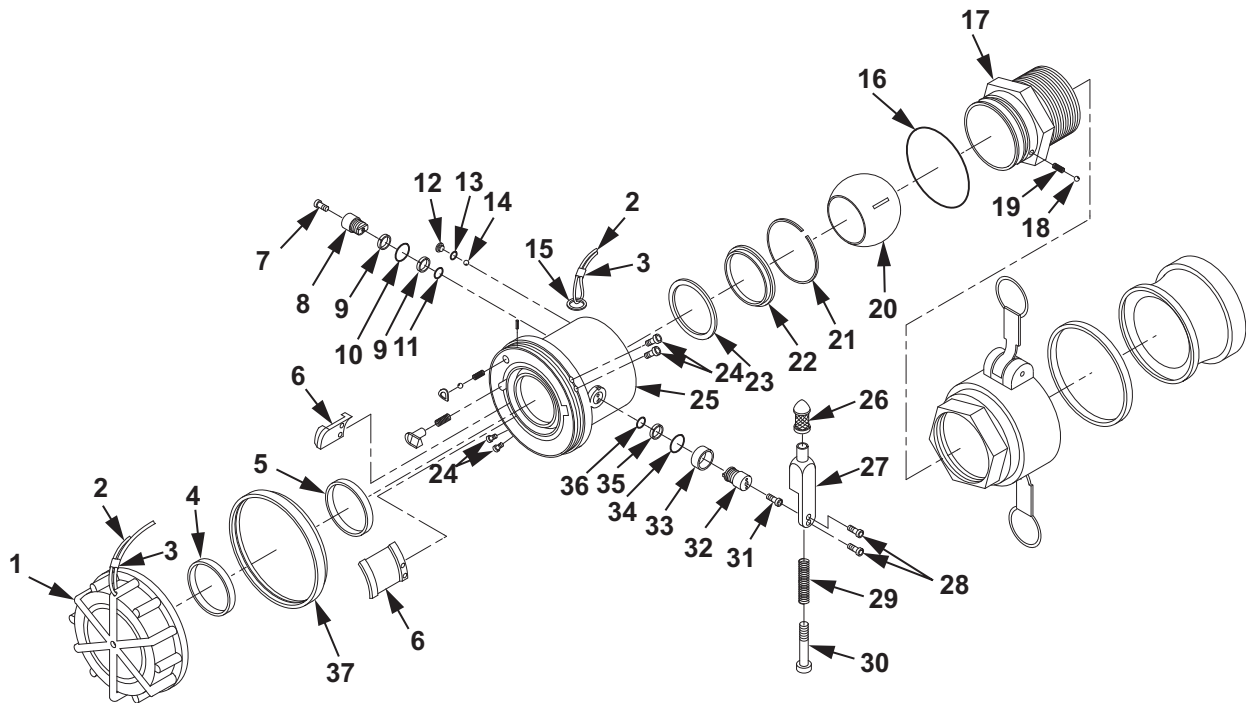


Figure 3. 4 In. Female Camlock X 3 In. Valved Dry-Break Adapter Testing.

END OF TASK

TESTING

1. Using the repaired valved dry-break coupling assembly and a similar valved dry-break coupling assembly, make a connection with the two valved dry-break coupling assemblies to ensure that the couplings will connect properly while in the closed position.
2. While the couplings are connected, rotate control arm (Figure 4, Item 2) to the open position and try to disconnect the couplings by rotating in a counterclockwise direction. If the couplings disconnect, then repair of the valved dry-break coupling assembly is required.
3. Close the control arm (Figure 4, Item 2) and disconnect the valved dry-break coupling assemblies by rotating the couplings in a counterclockwise direction.
4. Connect the repaired valved dry-break coupling assembly to a similar valved dry-break coupling assembly with the inlet capped.
5. Connect a fluid pressure source capable of 100 PSI (689.5 kPa) to the inlet of the repaired valved dry-break coupling assembly.
6. With the control arm (Figure 4, Item 2) in the open position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
7. Increase pressure to 100 PSI (689.5 kPa) to the repaired valved dry-break coupling assembly.
8. Reduce pressure from the test system.
9. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
10. Close the control arm (Figure 4, Item 2) and disconnect the repaired valved dry-break coupling assembly from the similar valved dry-break coupling assembly by rotating the couplings in a counterclockwise direction.
11. Connect a fluid pressure source capable of 100 PSI (689.5 kPa) to the inlet of the repaired valved dry-break coupling assembly.
12. With the control arm (Figure 4, Item 2) in the closed position, apply pressure of 5 PSI (34.47 kPa) to the repaired valved dry-break coupling assembly.
13. Increase pressure to 100 PSI (689.5 kPa) to the repaired valved dry-break coupling assembly.
14. Inspect repaired valved dry-break coupling assembly for leakage over a period of at least 1 minute. If valved dry-break coupling assembly leaks, repair valved dry-break coupling assembly.
15. Reduce pressure from the test system, remove repaired valved dry-break coupling assembly from the test system and install dust cap (Figure 4, Item 1).

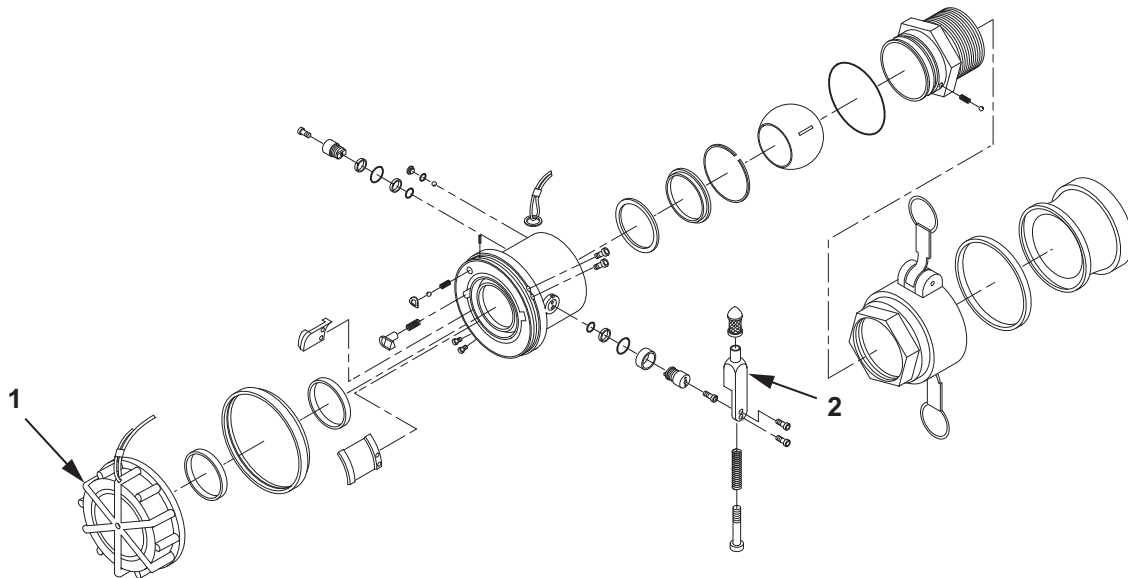


Figure 4. 4 In. Female Camlock X 3 In. Valved Dry-Break Adapter Assembly.

END OF TASK

END OF WORK PACKAGE

CHAPTER 9

GENERAL SUPPORT MAINTENANCE TROUBLESHOOTING PROCEDURES FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**GENERAL SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
GENERAL SUPPORT MASTER MALFUNCTION/SYMPTOM INDEX**

components

4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Amount of Fuel Pumped	WP 0201
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate the Correct Amount of Fuel Pumped	WP 0202
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Does Not Indicate Fuel Flow	WP 0203
4 In. Inline Flowmeter Assembly, Part Number 78017-100, Leaks During Operation	WP 0204

END OF WORK PACKAGE

**GENERAL SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE AMOUNT OF FUEL PUMPED**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0205

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE AMOUNT OF FUEL PUMPED**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Flowmeter assembly does not indicate amount of fuel pumped.

MALFUNCTION

Flowmeter assembly is malfunctioning.

CORRECTIVE ACTION

1. Repair 4 in. inline flowmeter assembly (WP 0205).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**GENERAL SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0205

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE CORRECT AMOUNT OF FUEL PUMPED

WARNING



CHEMICAL



EYE PROTECTION

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Inline flowmeter assembly does not indicate the correct amount of fuel pumped.

MALFUNCTION

Register readout does not indicate the correct amount of fuel flowing through the flowmeter assembly.

CORRECTIVE ACTION

1. Repair 4 in. inline flowmeter assembly (WP 0205).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**GENERAL SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
DOES NOT INDICATE FUEL FLOW**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0205

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, DOES NOT INDICATE FUEL FLOW**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

Inline flowmeter assembly does not indicate fuel flow.

MALFUNCTION

Register readout has no indication of fuel flowing through the flowmeter assembly.

CORRECTIVE ACTION

1. Repair 4 in. inline flowmeter assembly (WP 0205).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

**GENERAL SUPPORT MAINTENANCE
TROUBLESHOOTING PROCEDURES
4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100,
LEAKS DURING OPERATION**

INITIAL SETUP:**Tools and Special Tools**

Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

References

WP 0015
WP 0205

Personnel Required

Quartermaster and Chemical Repairman 63J

4 IN. INLINE FLOWMETER ASSEMBLY, PART NUMBER 78017-100, LEAKS DURING OPERATION**WARNING****CHEMICAL****EYE PROTECTION**

Wear chemical gloves and eye protection before starting this troubleshooting procedure. Failure to comply may result in injury to personnel.

SYMPTOM

4 in. inline flowmeter assembly leaks.

MALFUNCTION

4 in. inline flowmeter assembly leaks.

CORRECTIVE ACTION

1. Repair 4 in. inline flowmeter assembly (WP 0205).
2. Perform operational checkout of the FSSP (WP 0015) after installation.

END OF TASK**END OF WORK PACKAGE**

CHAPTER 10

GENERAL SUPPORT MAINTENANCE INSTRUCTIONS FOR FUEL SYSTEM SUPPLY POINT (FSSP)

GENERAL SUPPORT MAINTENANCE
4 IN. INLINE FLOWMETER ASSEMBLY MAINTENANCE, PART NUMBER 78017-100, MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
 Wrench, torque, 0–175 ft lb (Item 5, WP 0211)
 Wrench, torque, 0–150 in. lb (Item 6, WP 0211)
 Pliers, wire twister (Item 2, WP 0211)
 Apron, utility (Item 2, WP 0211)
 Gloves, rubber, industrial (Item 2, WP 0211)
 Goggles, industrial (Item 2, WP 0211)
 Adapter, socket wrench, 3/8 in. female square end, 1/2 in. male square end (Item 12, WP 0211)
 Wrench, pipe (Item 13, WP 0211)

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
 Pan, drain (2) (Item 8, WP 0214)

Materials/Parts - Continued

Kit, fuel spill control (Item 8, WP 0214)
 Cloth, cleaning (Item 5, WP 0214)
 Petrolatum, technical (Item 9, WP 0214)
 Seal, lead (Item 10, WP 0214)
 Wire (Item 15, WP 0214)
 Sealing compound (Item 11, WP 0214)
 Seal kit (Item 41, WP 0215)
 Bearing insert kit (Item 40, WP 0215)
 Washer, lock (12) (Item 39, WP 0215)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Flowmeter assembly removed from FSSP (WP 0066).

DISASSEMBLY**WARNING****CHEMICAL****EYE PROTECTION****VAPOR****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

DISASSEMBLY - CONTINUED

1. Position drain pans below flowmeter (Figure 2, Item 14).

NOTE

It is not necessary to remove the register readout during normal repairs.

2. Remove register readout from the flowmeter (Figure 1, Item 14) (WP 0154).

END OF TASK**TOP COVER DISASSEMBLY****NOTE**

It may be necessary to use jack bolt holes to remove top cover.

If lead seal is attached to two bolts, cut and remove lead seal.

1. Remove top cover (Figure 1, Item 1) from flowmeter (Figure 1, Item 14).
 - a. Remove safety wire (Figure 1, Item 4) from calibration plug cover (Figure 1, Item 6).
 - b. Remove eight screws (Figure 1, Item 2) and lockwashers (Figure 1, Item 3). Discard lockwashers (Figure 1, Item 3).
 - c. Remove top cover (Figure 1, Item 1).
2. Remove O-ring (Figure 1, Item 21) from top cover (Figure 1, Item 1). Discard O-ring (Figure 1, Item 21).
3. Disassemble top cover (Figure 1, Item 1).
 - a. Remove four screws (Figure 1, Item 16) from top cover (Figure 1, Item 1).
 - b. Remove throttle plate (Figure 1, Item 17) from top cover (Figure 1, Item 1).
 - c. Remove bearing insert (Figure 1, Item 18) from top cover (Figure 1, Item 1).
 - d. Remove flowmeter diaphragm (Figure 1, Item 19) from top cover (Figure 1, Item 1).
 - e. Remove O-ring (Figure 1, Item 20) from flowmeter diaphragm (Figure 1, Item 19). Discard O-ring (Figure 1, Item 20).

END OF TASK**ROTOR AND SHAFT ASSEMBLY REMOVAL****CAUTION**

During removal of rotor and shaft assembly, carefully pull the assembly out of the rear cover and the flowmeter taking care not to damage the bearings or the rotor cage. Damage to the rotor cage would be cause for replacement of the rotor and shaft assembly. The rotor and shaft assembly can only be replaced as a complete assembly.

1. Carefully pull outward on the rotor and shaft assembly (Figure 1, Item 15) to remove from flowmeter (Figure 1, Item 14).
2. Remove rotor and shaft assembly (Figure 1, Item 15) from flowmeter (Figure 1, Item 14).

END OF TASK**REAR COVER DISASSEMBLY**

1. Remove rear cover (Figure 1, Item 11) from flowmeter (Figure 1, Item 14).
 - a. Remove four screws (Figure 1, Item 13) and lockwashers (Figure 1, Item 12) from rear cover (Figure 1, Item 11). Discard lockwashers (Figure 1, Item 12).
 - b. Remove rear cover (Figure 1, Item 11).
2. Remove O-ring (Figure 1, Item 10) from rear cover (Figure 1, Item 11). Discard O-ring (Figure 1, Item 10).

REAR COVER DISASSEMBLY - CONTINUED

3. Disassemble rear cover (Figure 1, Item 11).
 - a. Remove four screws (Figure 1, Item 7) from rear cover (Figure 1, Item 11).
 - b. Remove throttle plate (Figure 1, Item 8) from rear cover (Figure 1, Item 11).
 - c. Remove bearing insert (Figure 1, Item 9) from rear cover (Figure 1, Item 11).

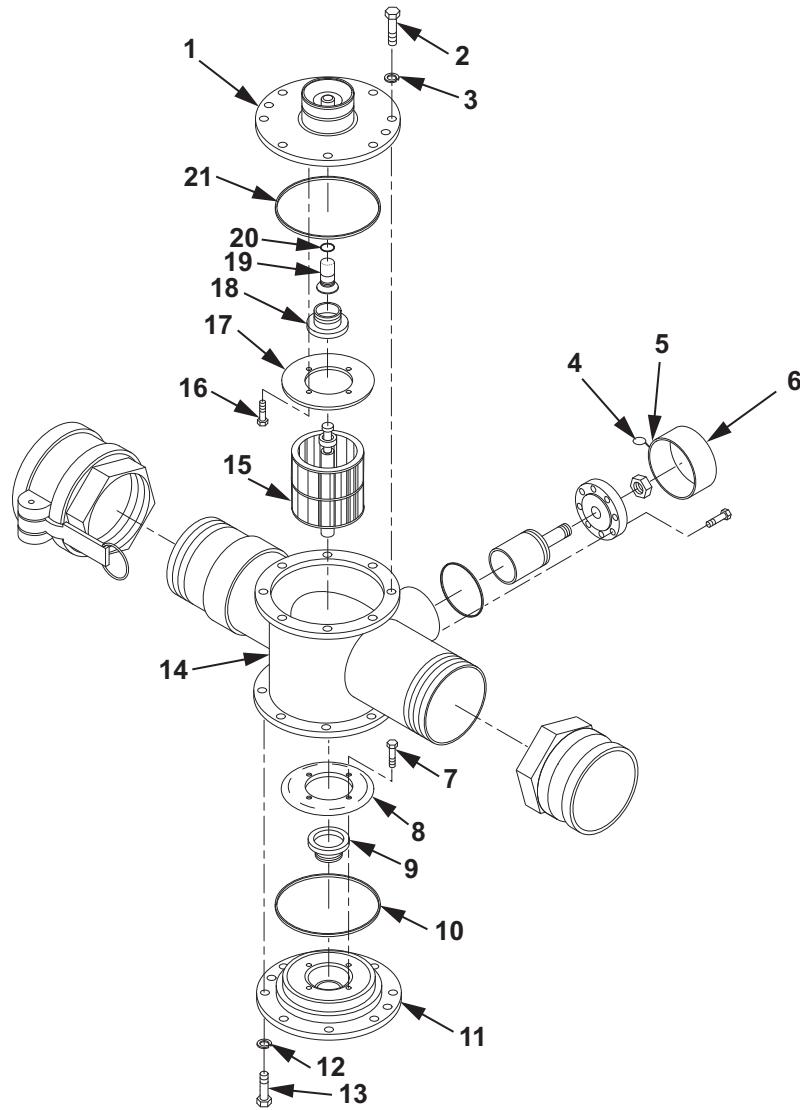


Figure 1. 4 In. Inline Flowmeter Disassembly.

END OF TASK

CALIBRATION PLUG REMOVAL

1. Remove calibration plug (Figure 2, Item 1) from flowmeter (Figure 2, Item 10).
 - a. Remove lead seal (Figure 2, Item 4) and wire (Figure 2, Item 5) from calibration plug cover (Figure 2, item 6). Discard lead seal (Figure 2, Item 4) and wire (Figure 2, Item 5).
 - b. Remove calibration plug cover (Figure 2, Item 6) from calibration plug (Figure 2, Item 1).
 - c. Remove eight screws (Figure 2, Item 7) from calibration plug (Figure 2, Item 1).
 - d. Remove calibration plug (Figure 2, Item 1).
2. Remove O-ring (Figure 2, Item 8) from calibration plug (Figure 2, Item 1). Discard O-ring (Figure 2, Item 8).

NOTE

Prior to removing the base plate, mark the location of the calibration plug stem to ensure the location of the plug does not change during disassembly.

3. Remove nut (Figure 2, Item 3) and base plate (Figure 2, Item 2) from calibration plug (Figure 2, Item 1).
4. Remove drain pans and dispose of contents per local procedures.

END OF TASK**4 IN. MALE AND FEMALE CAM AND GROOVE REMOVAL**

1. Using pipe wrench, remove male cam and groove coupling (Figure 2, Item 9) from flowmeter (Figure 2, Item 10).
2. Using pipe wrench, remove female cam and groove coupling (Figure 2, Item 11) from flowmeter (Figure 2, Item 10).

END OF TASK**CLEANING****WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Using cleaning cloth lightly dampened with solvent cleaning compound, wipe the register readout mounting area, flowmeter, top cover, rear cover, calibration plug and calibration plug cover free of fuel and dirt.
2. Using a dry cleaning cloth, wipe the rotor and shaft free of fuel and dirt.

CLEANING - CONTINUED

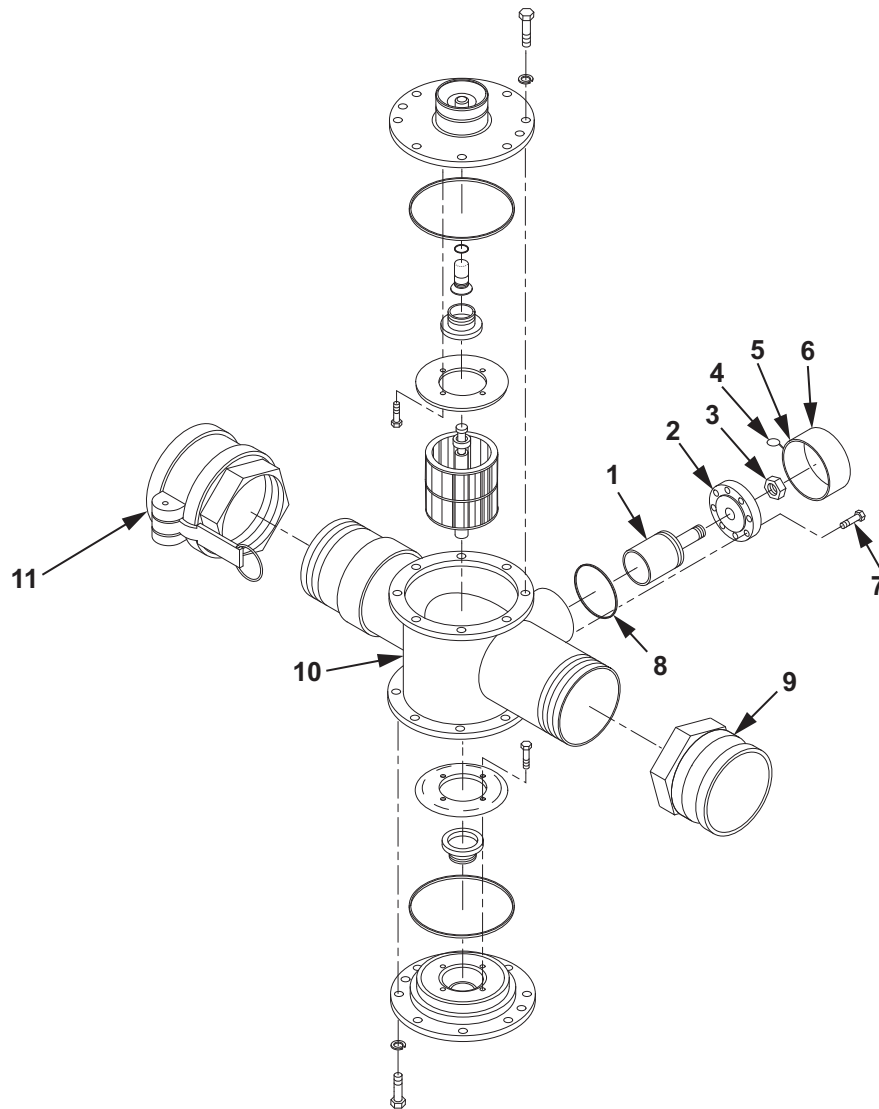


Figure 2. 4 In. Inline Flowmeter Disassembly.

END OF TASK

INSPECTION

1. Inspect the flowmeter housing for cracks, corrosion, nicks, burrs and scratches. If cracks, corrosion, nicks, burrs or scratches are found, replace with a serviceable like item.
2. Inspect the top and rear covers for cracks, corrosion, nicks, burrs and scratches. If cracks, corrosion, nicks, burrs or scratches are found, replace with a serviceable like item.

3. Inspect the inserts in the top and rear covers for cracks, corrosion, nicks, burrs, scratches, roughness and excessively worn conditions. If cracks, nicks, burrs, scratches, roughness or excessively worn conditions are found, replace with a serviceable like item.
4. Inspect the flowmeter diaphragm for cracks, nicks, burrs and scratches. If cracks, corrosion, nicks, burrs or scratches are found, replace with a serviceable like item.
5. Inspect throttle plate and throttle plate spacers for cracks, corrosion, nicks, burrs, scratches, roughness and excessively worn conditions. If cracks, corrosion, nicks, burrs, scratches, roughness or excessively worn conditions are found, replace with a serviceable like item.
6. Inspect the calibration plug for cracks, corrosion, nicks, burrs and scratches. If cracks, corrosion, nicks, burrs or scratches are found, replace with a serviceable like item.
7. Inspect the calibration plug cover for excessive wear and tear. If excessive wear and tear is found, replace with a serviceable like item.
8. Inspect the rotor and shaft assembly for worn or rough bearings. If worn or rough bearings are found, replace with a serviceable like item.
9. Inspect the rotor cage for cracks, corrosion, nicks, burrs, scratches, roughness and excessively worn conditions. If cracks, corrosion, nicks, burrs, scratches, roughness and excessively worn conditions are found, replace with a serviceable like item.
10. Inspect the male and female coupling ends for damaged threads, worn or damaged clips, nicks, crack, corrosion, burrs and scratches. If damaged threads, worn or damaged clips, nicks, crack, corrosion, burrs and scratches are found, replace with a serviceable like item.

END OF TASK

4 IN. MALE AND FEMALE CAM AND GROOVE INSTALLATION

WARNING

**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with sealing compound, 567, avoid contact with eyes or skin. Wear protective rubber gloves and chemical splash goggles. Avoid breathing vapors. Use with adequate ventilation.

1. Apply sealing compound to threads of female cam and groove coupling (Figure 3, Item 1) and flowmeter (Figure 3, Item 11).
2. Using pipe wrench, install female cam and groove coupling (Figure 3, Item 1) on flowmeter (Figure 3, Item 11). Tighten female cam and groove coupling (Figure 3, Item 1).
3. Apply sealing compound to threads of male cam and groove coupling (Figure 3, Item 10) and flowmeter (Figure 3, Item 11).
4. Using pipe wrench, install male cam and groove coupling (Figure 3, Item 10) on flowmeter (Figure 3, Item 11). Tighten male cam and groove coupling (Figure 3, Item 10).

END OF TASK

CALIBRATION PLUG INSTALLATION

NOTE

Allow all parts to dry thoroughly before assembling them.

1. Install base plate (Figure 3, Item 3) and nut (Figure 3, Item 4) on calibration plug (Figure 3, Item 2). Tighten nut (Figure 3, Item 4).
2. Install calibration plug (Figure 3, Item 2) into flowmeter (Figure 3, Item 11).
 - a. Apply a thin coat of petrolatum on new O-ring (Figure 3, Item 9) and install on calibration plug (Figure 3, item 2).
 - b. Position calibration plug (Figure 3, Item 2) on flowmeter (Figure 3, Item 11).
 - c. Install eight screws (Figure 3, Item 8) to secure calibration plug (Figure 3, Item 2) to flowmeter (Figure 3, item 11).

CALIBRATION PLUG INSTALLATION - CONTINUED

- d. Using torque wrench and adapter, torque eight screws (Figure 3, Item 8) using standard torque table (WP 0208).
- e. Position calibration plug cover (Figure 3, Item 7) on calibration plug (Figure 3, Item 2).
- f. Using wire twister pliers, install new wire (Figure 3, Item 10) and new lead seal (Figure 3, Item 5) to secure calibration plug cover (Figure 3, Item 7) to flowmeter (Figure 3, Item 11).

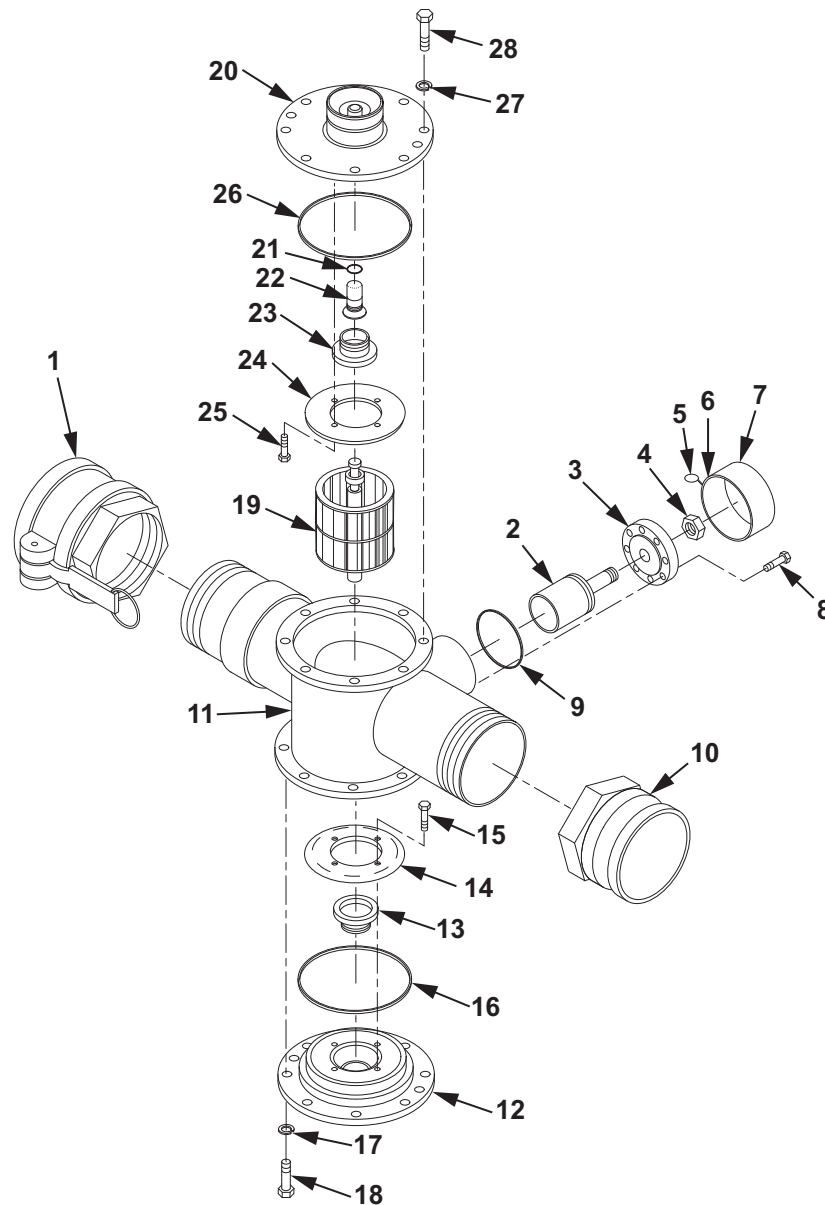


Figure 3. 4 In. Inline Flowmeter Assembly.

END OF TASK

REAR COVER ASSEMBLY

1. Assemble rear cover (Figure 4, Item 11).
 - a. Install bearing insert (Figure 4, Item 9) into rear cover (Figure 4, Item 11).
 - b. Position throttle plate (Figure 4, Item 8) on rear cover (Figure 4, Item 11).
 - c. Install four screws (Figure 4, Item 7) to secure throttle plate (Figure 4, Item 8) to rear cover (Figure 4, Item 11). Tighten screws (Figure 4, Item 7).
2. Install rear cover (Figure 4, Item 11) onto flowmeter (Figure 4, Item 14).
 - a. Apply a thin coat of petrolatum on new O-ring (Figure 4, Item 10) and install on rear cover (Figure 4, Item 11).
 - b. Position rear cover (Figure 4, Item 11) on flowmeter (Figure 4, Item 14).
 - c. Install four new lockwashers (Figure 4, Item 12) and screws (Figure 4, Item 13) to secure rear cover (Figure 4, Item 11) to flowmeter (Figure 4, Item 14).
 - d. Using torque wrench and adapter, torque four screws (Figure 4, Item 13) using standard torque table (WP 0208).

END OF TASK**ROTOR AND SHAFT ASSEMBLY AND INSTALLATION****CAUTION**

During installation of rotor and shaft assembly, carefully push the assembly into the rear cover and the flowmeter, taking care not to damage the bearings or the rotor cage. Damage to the rotor cage would be cause for replacement of the rotor and shaft assembly. The rotor and shaft assembly can only be replaced as a complete assembly.

1. Align the rotor and shaft assembly (Figure 4, Item 15) in the flowmeter (Figure 4, Item 14) housing.
2. While pushing inward on the rotor and shaft assembly (Figure 4, Item 15), install the rotor and shaft assembly (Figure 4, Item 15) into flowmeter (Figure 4, Item 14).

END OF TASK**TOP COVER ASSEMBLY AND INSTALLATION**

1. Assemble top cover (Figure 4, Item 1).
 - a. Apply a thin coat of petrolatum on new O-ring (Figure 4, Item 20) and install O-ring (Figure 4, Item 20) on flowmeter diaphragm (Figure 4, Item 19).
 - b. Position flowmeter diaphragm (Figure 4, Item 19) on top cover (Figure 4, Item 1).
 - c. Install bearing insert (Figure 4, Item 18) into top cover (Figure 4, Item 1).
 - d. Position throttle plate (Figure 4, Item 17) on top cover (Figure 4, Item 1).
 - e. Install four screws (Figure 4, Item 16) to secure throttle plate (Figure 4, Item 17) to top cover (Figure 4, Item 1). Tighten screws (Figure 4, Item 16).

NOTE

If it was necessary to remove lead seal from top cover, reinstall new lead seal.

2. Install top cover (Figure 4, Item 1) onto flowmeter (Figure 4, Item 14).
 - a. Apply a thin coat of petrolatum on new O-ring (Figure 4, Item 21) and install new O-ring (Figure 4, Item 21) on top cover (Figure 4, Item 1).
 - b. Position top cover (Figure 4, Item 1) on flowmeter (Figure 4, Item 14).
 - c. Install eight new lockwashers (Figure 4, Item 3) and screws (Figure 4, Item 2) to secure top cover (Figure 4, Item 1) to flowmeter (Figure 4, Item 14).
 - d. Using torque wrench and adapter, torque eight screws (Figure 4, Item 2) using standard torque table (WP 0208).

TOP COVER ASSEMBLY AND INSTALLATION - CONTINUED

- e. Using safety wire pliers, install new safety wire (Figure 4, Item 4) and lead seal (Figure 4, Item 5) on calibration plug cover (Figure 4, Item 6).

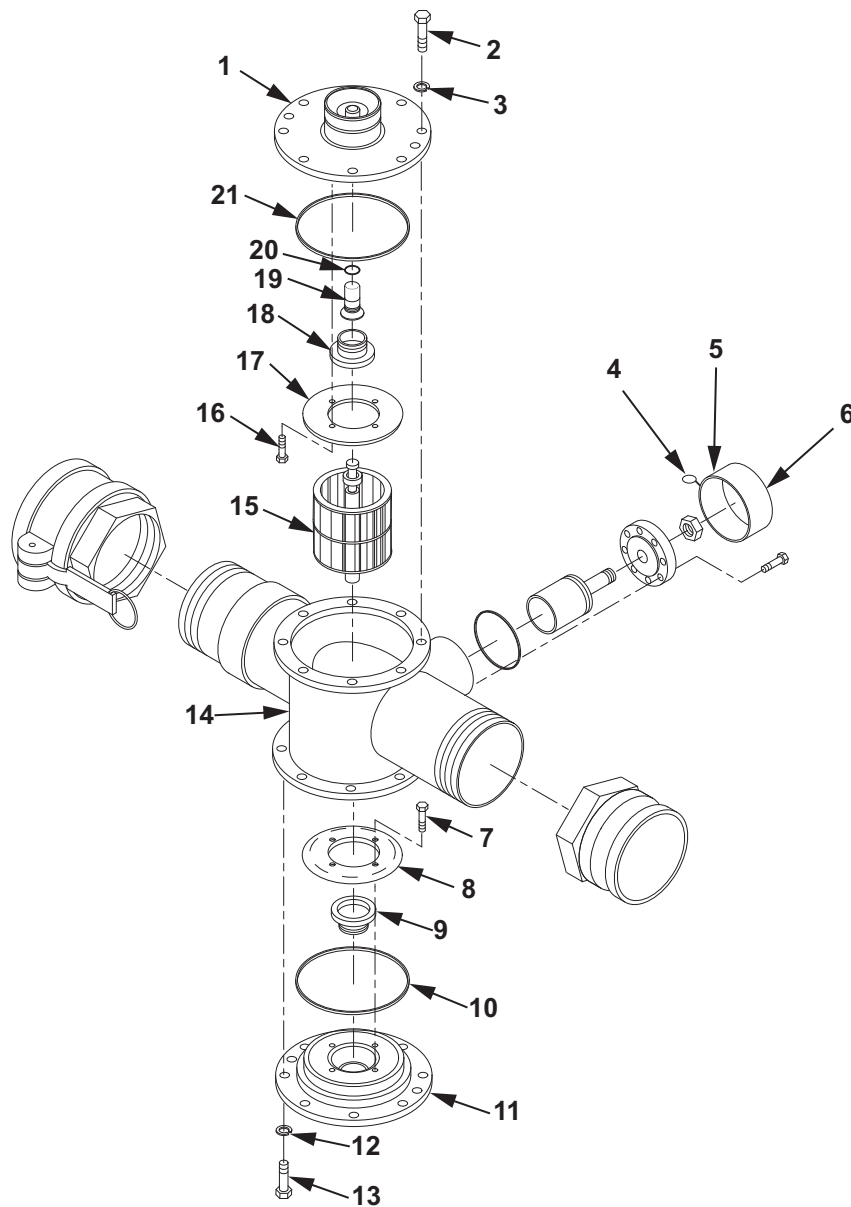


Figure 4. 4 In. Inline Flowmeter Assembly.

TOP COVER ASSEMBLY AND INSTALLATION - CONTINUED

3. Install register readout (WP 0154).

WARNING**CHEMICAL****EYE PROTECTION****POISON****VAPOR**

When working with fuel additives, avoid contact with eyes or skin. Wear protective rubber gloves or other impermeable gloves and chemical splash goggles. Avoid breathing of vapors. Use only with adequate ventilation. Use respirator as needed. Protective clothing should be worn when using fuel additives and an eye wash station and safety shower should be available. Can be toxic, harmful or fatal, if absorbed through skin or inhaled in large quantities. May irritate respiratory tract. Can affect central nervous system. Ingestion can cause pulmonary edema, hemorrhaging and/or be fatal.

4. Clean up spilled fluids with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.

END OF TASK**END OF WORK PACKAGE**

GENERAL SUPPORT MAINTENANCE
1 IN. FUEL AND OIL SERVICING NOZZLE ASSEMBLY, HOSE END CONTROL VALVE, PART NUMBER 47527,
MAINTENANCE
DISASSEMBLY, CLEANING, INSPECTION, ASSEMBLY

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
 Wrench, torque, 0–30 in. lb (Item 4, WP 0211)
 Bit, screwdriver (Item 2, WP 0211)
 Apron, utility (Item 2, WP 0211)
 Gloves, rubber, industrial (Item 2, WP 0211)
 Goggles, industrial (Item 2, WP 0211)
 Drill, electric, portable (Item 3, WP 0211)
 Rod, threaded, 10-24 thread size, 2 ft length (Item 7, WP 0211)
 Nut, hex (10-24 thread) (Item 8, WP 0211)

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
 Kit, fuel spill control (Item 8, WP 0214)
 Pan, drain (2) (Item 8, WP 0214)
 Cloth, cleaning (Item 5, WP 0214)
 Sealing compound, loctite 242 (Item 12, WP 0214)

Materials/Parts - Continued

Isopropyl alcohol, technical (Item 7, WP 0214)
 Screw (Item 42, WP 0215)
 Packing (Item 1, WP 0215)
 Seal, outer piston (Item 32, WP 0215)
 O-ring (Item 56, WP 0215)
 Quad ring (Item 26, WP 0215)
 O-ring (Item 59, WP 0215)
 Spring, helical, compression (Item 22, WP 0215)
 Gasket (2) (Item 33, WP 0215)
 O-ring (2) (Item 53, WP 0215)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Hose end control valve removed from nozzle (WP 0133).

DISASSEMBLY**WARNING****CHEMICAL****EYE PROTECTION****FIRE**

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

Repairs to fuel nozzles will be limited to simple parts replacement. Other than testing for leaks, all pressure testing and full repair of fuel nozzles will be limited to units with the proper testing equipment and maintenance level or at Depot level. Failure to observe this warning could result in personnel injury or death and equipment damage.

DISASSEMBLY - CONTINUED

1. Place drain pans under hose end control valve (Figure 1, Item 1).

WARNING**FLYING PARTICLES**

Do not point valve toward the body when removing retaining ring. The piston is under 65 in. lb (7.3 N•m) load and could cause serious injury to personnel and damage to equipment if load is improperly released.

2. Depress outer piston (Figure 1, Item 18) to relieve pressure on retaining ring (Figure 1, Item 17).
3. Remove retaining ring (Figure 1, Item 17) from hose end control valve housing (Figure 1, Item 16).
4. Slowly release pressure from the spring (Figure 1, Item 2) to force the piston assembly (Figure 1, Item 22) from the hose end control valve housing (Figure 1, Item 16).
5. Remove piston assembly (Figure 1, Item 22) from the hose end control valve housing (Figure 1, Item 16).
6. Disassemble piston assembly (Figure 1, Item 22).
7. Remove screw (Figure 1, Item 21) and packing (Figure 1, Item 20) to separate outer piston (Figure 1, Item 18) from inner piston (Figure 1, Item 19).
8. Discard screw (Figure 1, Item 21) and packing (Figure 1, Item 20).
9. Remove spring (Figure 1, Item 2).

NOTE

Screws (Figure 1, Item 6) are self-locking screws and are designed to be reused numerous times before replacement. If a torque wrench is not used to check running torque while removing screws (Figure 1, Item 6), then screws (Figure 1, Item 6) should be replaced.

Use caution when removing screws from seal retainer. There is a small ball and spring retained by this seal. Do not lose ball.

10. Remove four screws (Figure 1, Item 6) and four washers (Figure 1, Item 5) securing seal retainer (Figure 1, Item 4) to the hose end control valve housing (Figure 1, Item 16).
11. Using a torque wrench and screwdriver bit, check running torque while removing four screws (Figure 1, item 6). If running torque is less than 1.5 in. lb (0.16 N•m), discard screw (Figure 1, Item 6).
12. Remove and retain four washers (Figure 1, Item 5).
13. Remove seal retainer (Figure 1, Item 4), quad ring (Figure 1, Item 7), ball (Figure 1, Item 8) and spring (Figure 1, Item 9). Discard quad ring (Figure 1, Item 7) and spring (Figure 1, Item 9).
14. Remove and discard O-ring (Figure 1, Item 3).
15. Remove and discard gasket (Figure 1, Item 11) and O-ring (Figure 1, Item 10).
16. Remove seal spacer (Figure 1, Item 12).
17. Remove and discard gasket (Figure 1, Item 12) and O-ring (Figure 1, Item 13).
18. Remove and discard seal (Figure 1, Item 23) and O-ring (Figure 1, Item 24) from hose end control valve housing outlet (Figure 1, Item 15).
19. Remove breather assembly (Figure 1, Item 25).

DISASSEMBLY - CONTINUED

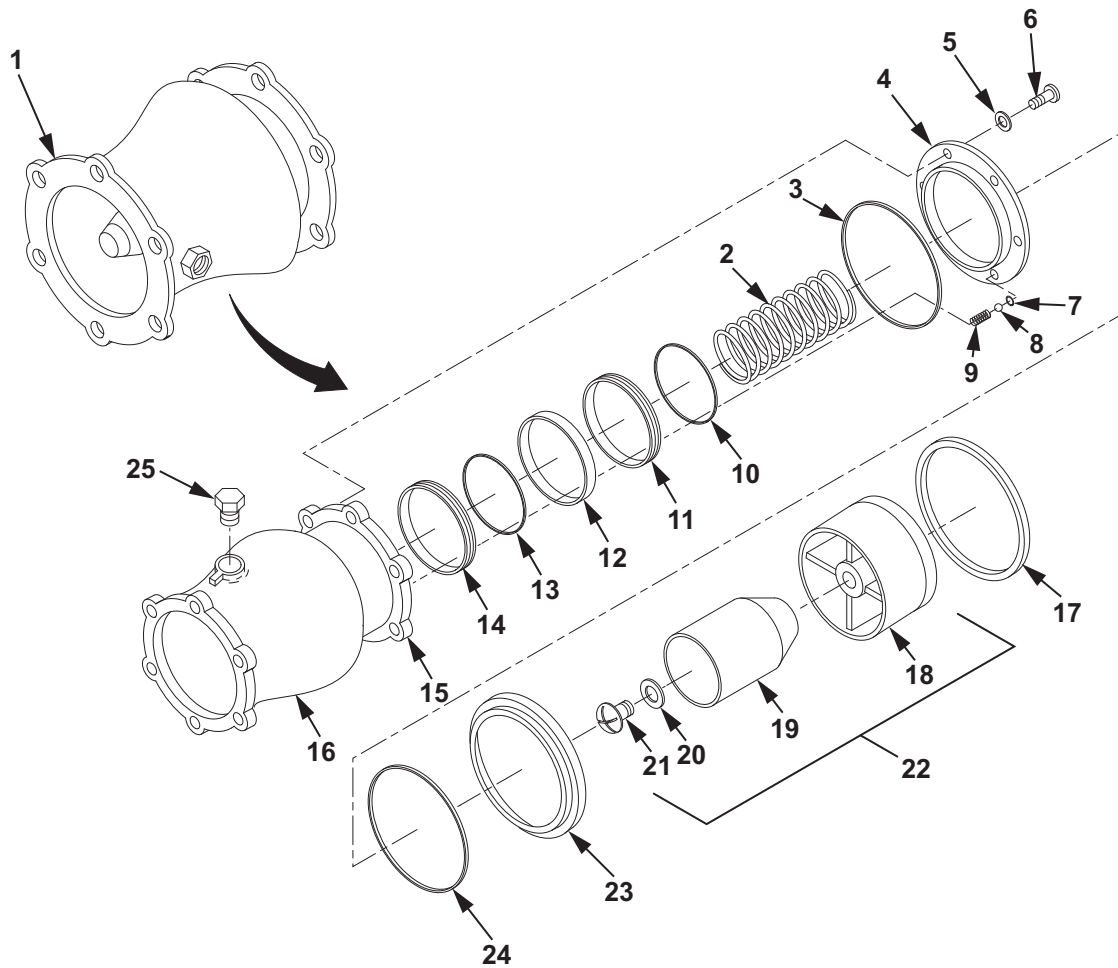


Figure 1. Hose End Control Valve Disassembly.

20. Remove drain pans and dispose of contents per local procedures.

END OF TASK

CLEANING**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

1. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
2. Clean breather assembly filter screen by flushing vigorously with solvent cleaning compound.
3. Allow parts to dry thoroughly.

END OF TASK**INSPECTION**

1. Inspect housing and housing mating surfaces for cracks, gouges, sharp edges or corrosion. If cracks, gouges, sharp edges or corrosion is found, replace with a serviceable like item.

NOTE

Pistons must be free of surface scratches and damage as it will cause excessive leakage during usage.

2. Inspect outer and inner pistons surfaces for scratches. If scratches are found, replace with a serviceable like item.
3. Inspect breather assembly filter screen for damage or clogged condition. If damaged or clogged, replace hose end control valve.

END OF TASK**ASSEMBLY****CAUTION**

Do not lubricate any seals and O-rings, with the exception of packing and breather plug prior to installation. Failure to comply may cause malfunction of hose end control valve.

1. Install breather assembly (Figure 2, Item 14) into hose end control valve housing (Figure 2, Item 13). Tighten breather assembly (Figure 2, Item 14).
2. Install new seal (Figure 2, Item 11) with new O-ring (Figure 2, Item 12) into hose end control valve housing outlet (Figure 2, Item 8).
3. Install new gasket (Figure 2, Item 7) with new O-ring (Figure 2, Item 6).
4. Install seal spacer (Figure 2, Item 5).
5. Install new gasket (Figure 2, Item 4) with new O-ring (Figure 2, Item 3).

ASSEMBLY - CONTINUED

6. Install new O-ring (Figure 2, Item 2) in groove of outer piston (Figure 2, Item 10).

WARNING

FLYING PARTICLES



EYE PROTECTION

Flying particles from lapping procedures could cause damage to eyes. Wear eye protection during lapping procedures. Failure to comply could cause serious injury or death.

7. Perform lapping of seal (Figure 2, Item 11).
8. Assemble lapping jig (Figure 3, Item 1).
9. Install a 10-24 UNC set screw (Figure 3, Item 4) (threaded rod may be used) into outer piston (Figure 3, Item 2).
10. Install hex nut (Figure 3, Item 3) onto set screw (Figure 3, Item 4). Tighten hex nut (Figure 3, Item 3).
11. Insert lapping jig (Figure 3, Item 1) into a variable speed hand drill.
12. Position hose end control valve housing (Figure 2, Item 13) into a bench vise. Hand tighten bench vise, being careful not to damage the hose end control valve housing (Figure 2, Item 13).

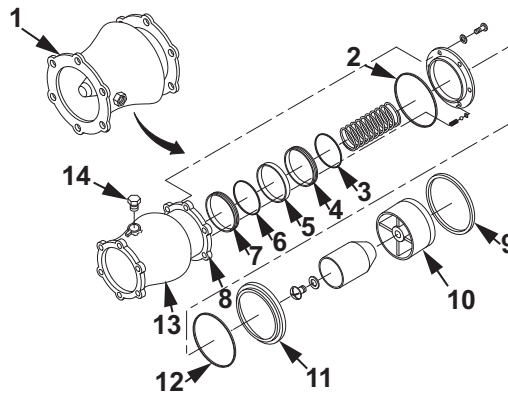


Figure 2. Hose End Control Valve Assembly.

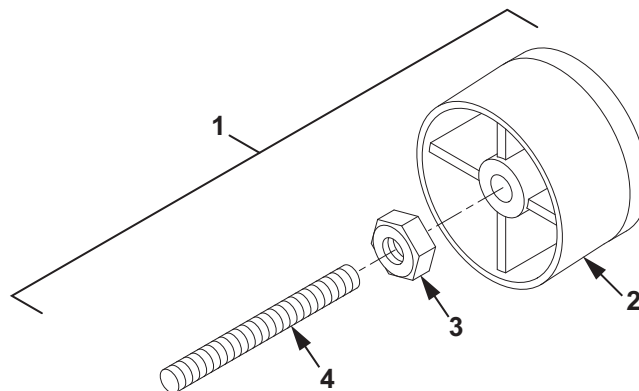


Figure 3. Lapping Jig Assembly.

ASSEMBLY - CONTINUED

WARNING

CHEMICAL



EYE PROTECTION



FIRE

When working with technical isopropyl alcohol, 2200200, avoid contact with eyes or skin. Wear protective rubber gloves, chemical splash goggles or faceshield and protective clothing. Use in a well ventilated area. An eye wash station should be available. Isopropyl alcohol is extremely flammable. Keep away from open flame, heat, sparks and hot surfaces. Overexposure may cause eye and respiratory irritation. Prolonged or repeated overexposure can cause nerve damage, digestive tract irritation, central nervous system problems, unconsciousness and even death.

13. Insert the lapping jig (Figure 5, Item 1) into seal (Figure 4, Item 5).
14. Lubricate seal (Figure 4, Item 5) and lapping jig (Figure 5, Item 1) with alcohol continuously during lapping operation to prevent the seal (Figure 4, Item 5) from turning.
15. With hand drill set at medium speed (approximately 1000 RPM), move lapping jig (Figure 5, Item 1) back and forth in seal (Figure 4, Item 5), maintaining contact with seal (Figure 4, Item 5) for 1 minute.
16. Remove lapping jig (Figure 5, Item 1) from seal (Figure 4, Item 5).

WARNING

CHEMICAL



EYE PROTECTION



FIRE

When working with technical isopropyl alcohol, 2200200, avoid contact with eyes or skin. Wear protective rubber gloves, chemical splash goggles or faceshield and protective clothing. Use in a well ventilated area. An eye wash station should be available. Isopropyl alcohol is extremely flammable. Keep away from open flame, heat, sparks and hot surfaces. Overexposure may cause eye and respiratory irritation. Prolonged or repeated overexposure can cause nerve damage, digestive tract irritation, central nervous system problems, unconsciousness and even death.

17. Using a cleaning cloth and alcohol, clean the lapping jig (Figure 5, Item 1) and seal (Figure 4, Item 5).
18. Assemble piston assembly (Figure 4, Item 4).
19. Align inner piston (Figure 4, Item 3) screw hole with outer piston (Figure 4, Item 2) screw hole.

0206-7

ASSEMBLY - CONTINUED

WARNING

CHEMICAL



EYE PROTECTION



VAPOR

When working with sealing compound, 24231, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use with adequate ventilation.

20. Apply two drops sealing compound to threads of new screw (Figure 6, Item 14).
21. Install new packing (Figure 6, Item 13) and screw (Figure 6, Item 14) in piston assembly (Figure 6, Item 12) to secure outer piston (Figure 6, Item 10) to inner piston (Figure 6, Item 11).
22. Using torque wrench and screwdriver bit, torque screw (Figure 6, Item 14) to 18–20 in. lb (2.0–2.25 N•m).
23. Install new spring (Figure 6, Item 8), ball (Figure 6, Item 7) and new quad ring (Figure 6, Item 6) into hose end control valve housing (Figure 6, Item 15).
24. Align bleed hole of seal retainer (Figure 6, Item 3) with ball (Figure 6, Item 7) and install seal retainer (Figure 6, Item 3) onto hose end control valve housing (Figure 6, Item 15).
25. Install four washers (Figure 6, Item 4) and screws (Figure 6, Item 5) to secure seal retainer (Figure 6, item 3) to the hose end control valve housing (Figure 6, Item 15).
26. Install spring (Figure 6, Item 2).
27. Install piston assembly (Figure 6, Item 12) into the hose end control valve housing (Figure 6, Item 15).
28. Depress piston assembly (Figure 6, Item 12) to compress spring (Figure 6, Item 2) below retaining ring (Figure 6, Item 9) groove in the hose end control valve housing (Figure 6, Item 15).
29. Install retaining ring (Figure 6, Item 9) and slowly release pressure on piston assembly (Figure 6, Item 12).
30. Clean up spilled fluid with fuel spill control kit and dispose of fuel spill control kit waste per local procedures.
31. Install hose end control valve on nozzle (WP 0133).

END OF TASK**TESTING****WARNING**

CHEMICAL



EYE PROTECTION



VAPOR



FIRE

When working with JP-8 fuel, avoid contact with eyes. Avoid prolonged or repeated contact with skin. Wear protective rubber gloves and chemical splash goggles. Avoid prolonged or repeated breathing of vapors. Use only with adequate ventilation. Overexposure can irritate digestive tract. Aspiration into lungs may cause hemorrhaging.

NOTE

Jet A, JP-4 or commercial solvent 140 may be used as test fluid. To test valve, a means of providing 300 PSI (2,068 kPa) fluid pressure to both sides of the valve for a period of 2 minutes must be used.

TESTING - CONTINUED

1. Place hose end control valve (Figure 6, Item 1) in test unit.
2. Pressure test hose end control valve (Figure 6, Item 1) for leaks and other damage for 2 minutes.
3. Using test fluid, purge hose end control valve (Figure 6, Item 1) of air.
4. Apply 300 PSI (2,068 kPa) to both sides of hose end control valve (Figure 6, Item 1) at the same time for 1 minute.
5. During the second minute, check hose end control valve (Figure 6, Item 1) for leakage and any other damage or distortion.
6. Reduce pressure to zero.
7. Reject any hose end control valve (Figure 6, Item 1) showing leakage, damage or distortion.
8. Remove hose end control valve (Figure 6, Item 1) from 300 PSI (2,068 kPa) fluid pressure source.
9. Remove hose end control valve (Figure 6, Item 1) from test unit.

NOTE

A source of flow at a rate of 500 cc/min. and 0–100 PSI (0–689 kPa) gages installed upstream and downstream of valve must be used to test output pressure.

10. Test hose end control valve (Figure 6, Item 1) output pressure.

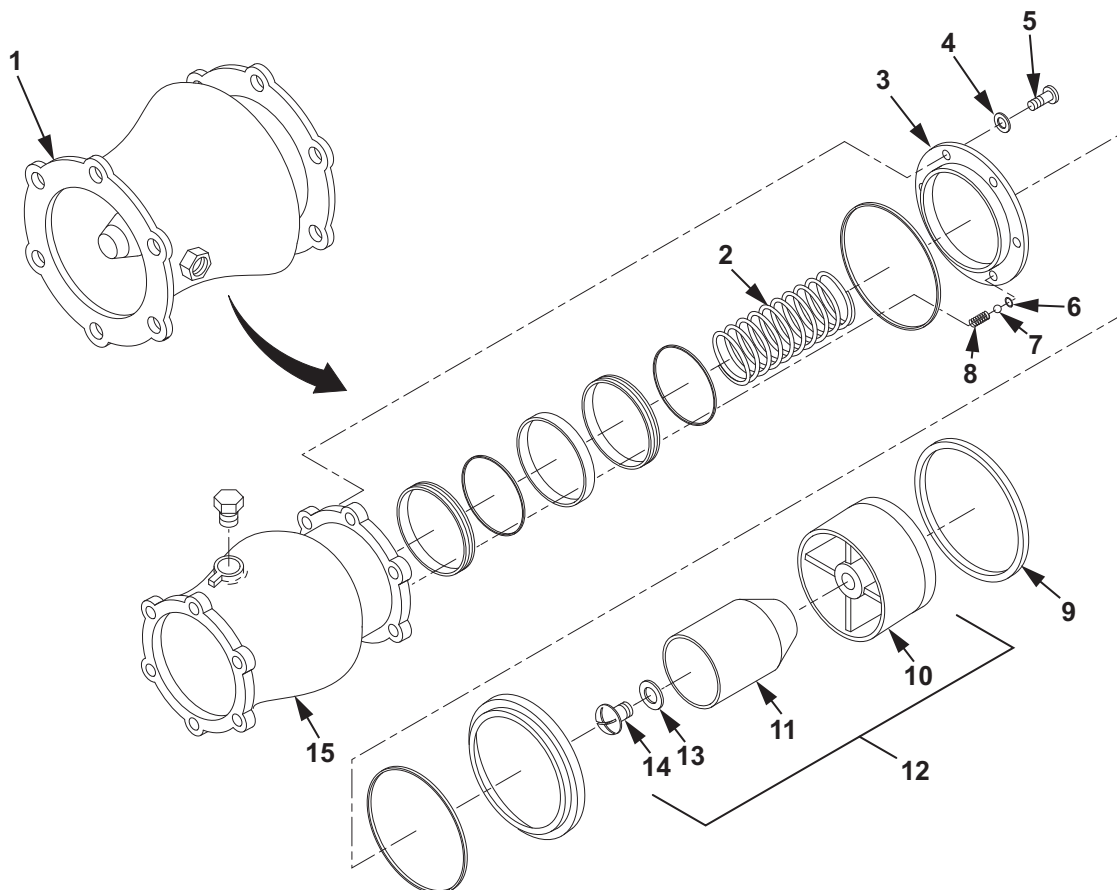


Figure 6. Hose End Control Valve Assembly.

TESTING - CONTINUED

11. Install valve on test unit with a flowmeter and 0–100 PSI (0–689 kPa) gages on both upstream and downstream sides of valve.
12. Using test fluid, purge valve of air.
13. Apply 65 PSI, ± 3 (448 $\pm$ 20.7 kPa) PSIG to valve inlet.
14. Begin flow of 500 $\pm$ 50 cc/min.

NOTE

If valve has an output rating of 15 PSIG (103.4 kPa), valve cannot exceed 20 PSIG (137.8 kPa) at output.

15. Read downstream pressure gage. Reject valves exceeding 5 PSIG (34.4 kPa) above valve rating.
16. Shut down test unit. When upstream and downstream pressure gages return to zero, test is completed.
17. Remove valve from test unit.

END OF TASK**END OF WORK PACKAGE**

CHAPTER 11

GENERAL MAINTENANCE INSTRUCTIONS FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
MISCELLANEOUS COMPONENTS
CLEANING AND INSPECTION**

INITIAL SETUP:**Tools and Special Tools**

Tool Kit, General Mechanic's (Item 1, WP 0211)
Apron, utility (Item 2, WP 0211)
Gloves, rubber, industrial (Item 2, WP 0211)
Goggles, industrial (Item 2, WP 0211)

Personnel Required

Quartermaster and Chemical Repairman 63J

Equipment Condition

Component removed from FSSP (WP 0066).

Materials/Parts

Cleaning compound, solvent (Item 4, WP 0214)
Cloth, cleaning (Item 5, WP 0214)

CLEANING**WARNING****EYE PROTECTION**

If foreign objects enter your eye, you may be injured. Always wear protective goggles when scraping items with a putty knife.

NOTE

In addition to the other components listed in previous work packages of this technical manual, there are a number of various miscellaneous fittings and components which are furnished with the FSSP. The following general maintenance procedures are to be used to verify that these additional miscellaneous components are in proper working order.

1. Remove all buildup of dirt, oil, and debris from all mating surfaces and clamping areas using a putty knife.

CLEANING - CONTINUED**WARNING****CHEMICAL****EYE PROTECTION****POISON**

When working with solvent cleaning compound, MIL-PRF-680, avoid contact with eyes and skin. Wear protective rubber gloves and chemical splash goggles or faceshield. Use in a well ventilated area. Use mechanical ventilation when product is used in a confined space. Accidental ingestion can cause irritation of digestive tract and respiratory tract, may cause lung and central nervous system damage. Can be fatal if swallowed. Inhalation of high/massive concentrations can cause coma or be fatal. First aid for ingestion: do not induce vomiting. Seek immediate medical attention. First aid for skin contact: remove contaminated clothing. Wash skin thoroughly with soap and water. If symptoms persist, seek medical attention. First aid for eye contact: flush with water for 15 minutes or until irritation subsides. If symptoms persist, seek medical attention. First aid for inhalation: move to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

2. Clean all metallic parts with a cleaning cloth or a parts cleaning brush and solvent cleaning compound.
3. Allow parts to thoroughly dry.

END OF TASK**INSPECTION**

1. Inspect all metallic parts for cracks, corrosion, or broken fittings. If cracks, corrosion, or broken fittings are found, replace with a serviceable like item.
2. Check that assemblies function as required. If assemblies do not function as required, replace with a serviceable like item.
3. Inspect ground wire assemblies for frayed ground wire and for bent or inoperative grounding clamps. If ground wires are frayed or grounding clamps are bent or inoperative, replace with a serviceable ground wire assembly.

END OF TASK**END OF WORK PACKAGE**

OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE TORQUE LIMITS

TORQUE TABLES WHEN TO USE TORQUE LIMITS

When a torque is not specified in an individual work package, use the procedures in this work package to determine proper torque limits and use of adapters with torque wrenches.

When To Use Adapters With Torque Wrenches

When an adapter is necessary due to space or type of fitting being torqued, it must be determined how the adapter changes the amount of force applied. If the adapter increases or decreases the distance from the drive of the torque wrench to the fitting being torqued, an equation must be used to compensate for the difference.

HOW TO USE ADAPTERS WITH TORQUE WRENCHES

NOTE

The following abbreviations apply to the below procedures:

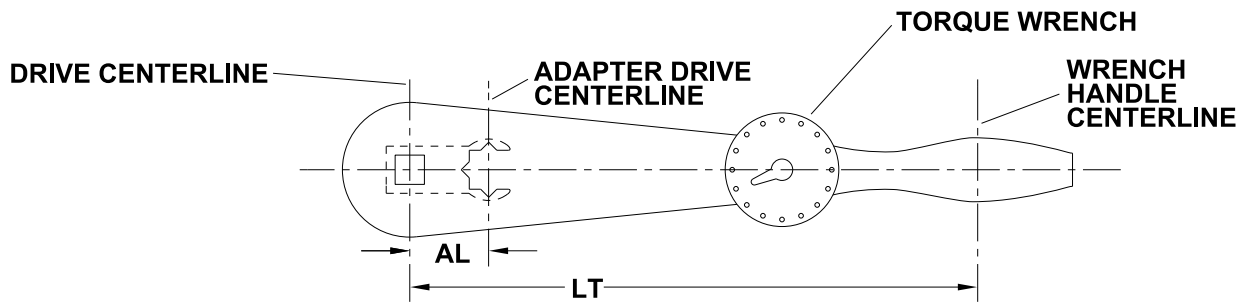
DT = Desired Torque

LT = Length of Torque Wrench

AL = Adapter Length

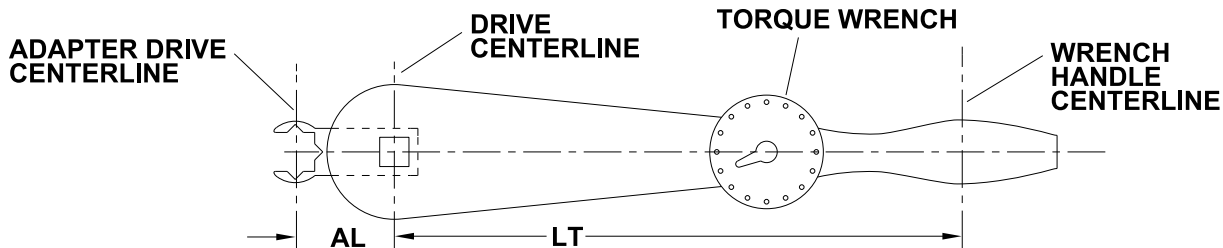
AT = Applied Torque

1. If the adapter used decreases the distance between the center of the torque wrench handle and the center of the drive, first find the desired torque for the fitting, then calculate as follows:
 - a. Multiply DT by LT.
 - b. Subtract AL from LT.
 - c. Divide the first answer by the second answer to find AT.



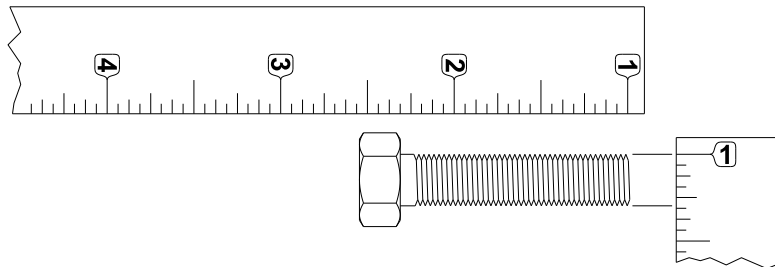
HOW TO USE ADAPTERS WITH TORQUE WRENCHES - CONTINUED

2. If the adapter used increases the distance between the center of the torque wrench handle and the center of the drive, first find the desired torque for the fitting, then calculate as follows:
 - a. Multiply DT by LT.
 - b. Add AL and LT.
 - c. Divide the first answer by the second answer to find AT.

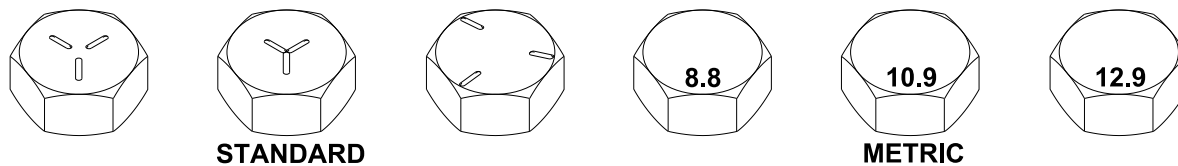


HOW TO USE TORQUE TABLES

1. Measure the diameter of the bolt to be torqued.



2. For Society of Automotive Engineers (SAE) fasteners, determine the threads per inch by counting the threads. For metric fasteners, determine the thread pitch using a thread pitch gage.
3. Determine the type of markings on the bolt you are torquing by comparing the markings on the head of the bolt with the chart below.



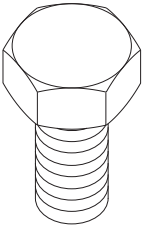
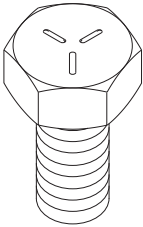
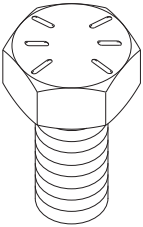
4. Determine if this will be a wet or dry torque.
 - a. Wet torque is any bolt that is lubricated or coated with an antiseize compound.
 - b. Dry torque is any bolt that is not lubricated or coated with an antiseize compound.
5. On the table below, locate the bolt to be torqued.
 - a. Locate the diameter of the bolt.
 - b. Determine the threads per inch for the SAE fastener or the thread pitch for the metric fastener.

HOW TO USE TORQUE TABLES - CONTINUED

- c. Slide across the table to the proper grade.
- d. Choose wet or dry.
- e. Slide down the proper column and across the proper row until they intersect, this is the proper torque value.

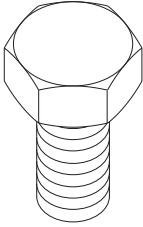
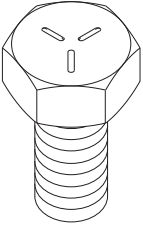
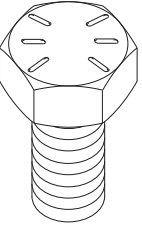
HOW TO USE TORQUE TABLES - CONTINUED

SAE Standard Torque Table.

DIA IN.	THREADS PER IN.	SAE GRADE NO. 2				SAE GRADE NO. 5				SAE GRADE NO. 8			
													
		DRY		WET		DRY		WET		DRY		WET	
		IN. LB	N·M	IN. LB	N·M	IN. LB	N·M	IN. LB	N·M	IN. LB	N·M	IN. LB	N·M
1/4	20	66	7.46	49	5.54	101	11.41	76	8.58	143	16.15	107	12.09
1/4	28	75	8.47	56	6.33	116	13.10	87	9.83	164	18.53	123	13.89
5/16	18	135	15.25	101	11.41	209	23.61	157	17.73	295	33.32	221	24.96
5/16	24	150	17.17	112	12.65	230	25.98	173	19.54	327	36.94	245	27.68
3/8	16	240	27.11	180	20.33	370	41.80	278	31.40	523	59.08	392	44.28
3/8	24	272	30.73	204	23.04	420	47.44	315	35.58	593	66.99	445	50.27
7/16	14	384	43.38	288	32.53	593	66.99	445	50.27	837	94.55	628	70.94
7/16	20	428	48.35	321	36.26	662	74.78	496	56.03	935	105.62	700	79.07
1/2	13	585	66.08	439	49.59	904	102.12	678	76.59	1277	144.25	958	108.22
1/2	20	660	74.55	495	55.92	1020	115.22	764	86.30	1440	162.66	1080	122.00

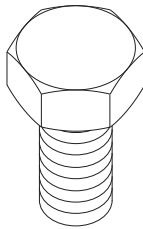
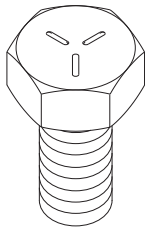
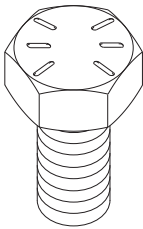
HOW TO USE TORQUE TABLES - CONTINUED

SAE Standard Torque Table.

DIA IN.	THREADS PER IN.	SAE GRADE NO. 2				SAE GRADE NO. 5				SAE GRADE NO. 8			
													
		DRY		WET		DRY		WET		DRY		WET	
		FT LB	N·M	FT LB	N·M	FT LB	N·M	FT LB	N·M	FT LB	N·M	FT LB	N·M
9/16	12	70	94.92	53	71.87	109	147.80	82	111.19	154	208.82	115	155.94
9/16	18	78	105.77	59	80.00	121	164.08	91	123.40	171	231.88	128	173.57
5/8	11	97	131.53	73	98.99	150	203.40	113	153.23	212	287.47	159	215.60
5/8	18	110	149.16	82	111.19	170	230.52	127	172.21	240	325.44	180	244.08
3/4	10	172	233.23	129	174.92	269	364.76	201	272.56	376	509.86	282	382.39
3/4	16	192	260.35	144	195.26	297	402.73	223	302.29	420	569.52	315	427.14
1	8	-	-	-	-	644	873.26	483	654.95	909	1232.60	683	926.15
1	12	-	-	-	-	704	954.62	528	715.97	995	1349.22	746	1011.58

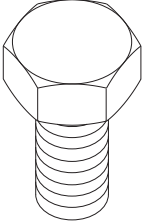
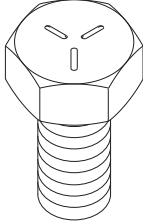
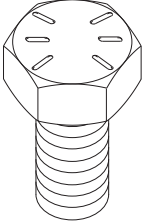
HOW TO USE TORQUE TABLES - CONTINUED

Metric Standard Torque Table.

		SAE GRADE NO. 2				SAE GRADE NO. 5				SAE GRADE NO. 8			
													
		DRY		WET		DRY		WET		DRY		WET	
DIA MM	THREAD PITCH	N-M	IN. LB	N-M	IN. LB	N-M	IN. LB	N-M	IN. LB	N-M	IN. LB	N-M	IN. LB
3.0	0.5	.50	4	.40	4	.70	6	.50	4	-	-	-	-
3.5	0.6	.80	7	.60	5	1.10	10	.80	7	-	-	-	-
4.0	0.7	1.20	11	.90	8	1.60	14	1.20	11	-	-	-	-
5.0	0.8	2.40	21	1.80	16	3.30	29	2.50	22	4.00	35	3.00	27
6.0	1.0	4.00	35	3.00	27	5.66	50	4.20	37	6.90	61	5.20	46
8.0	1.25	9.90	88	7.40	66	13.60	120	10.20	90	16.70	148	12.50	111
10.0	1.50	19.60	174	14.70	130	27.00	239	20.00	177	33.10	293	24.80	220
12.0	1.75	34.10	302	25.60	227	47.00	416	35.00	310	58.00	513	43.00	381
14.0	2.0	54.30	481	40.80	361	75.00	664	56.00	496	92.00	814	69.00	611

HOW TO USE TORQUE TABLES - CONTINUED

Metric Standard Torque Table.

DIA MM	THREAD PITCH	SAE GRADE NO. 2				SAE GRADE NO. 5				SAE GRADE NO. 8			
													
		DRY		WET		DRY		WET		DRY		WET	
		N·M	FT LB	N·M	FT LB	N·M	FT LB	N·M	FT LB	N·M	FT LB	N·M	FT LB
8.0	1.25	26.40	19	19.80	15	28.50	21	21.40	16	36.50	27	27.30	20
10.0	1.50	52.20	38	39.20	29	56.60	42	42.40	31	72.20	53	54.20	40
12.0	1.75	91.00	67	68.00	50	99.00	73	74.00	55	126.00	93	94.00	69
14.0	2.00	145.00	107	109.00	80	157.00	116	118.00	87	200.00	147	150.00	111
16.0	2.00	226.00	167	170.00	125	245.00	181	184.00	136	313.00	231	235.00	173
20.0	2.50	441.00	325	331.00	244	478.00	353	358.00	264	610.00	450	458.00	338
24.0	3.00	762.00	562	572.00	422	826.00	609	620.00	457	1055.00	778	791.00	583
30.0	3.50	1515.00	1117	1136.00	838	1641.00	1210	1231.00	908	2095.00	1545	1572.00	1159
36.0	4.00	2647.00	1952	1985.00	1464	2868.00	2115	2151.00	1586	3662.00	2701	2746.00	2025

END OF WORK PACKAGE

CHAPTER 12

SUPPORTING INFORMATION FOR FUEL SYSTEM SUPPLY POINT (FSSP)

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
REFERENCES**

SCOPE

This work package lists all field manuals, forms, technical manuals and miscellaneous publications referenced in this manual.

ARMY REGULATIONS

AR 200-1	Environmental Protection and Enhancement
AR 700-138	Army Logistics Readiness and Sustainability

DA PAMPHLETS

DA PAM 750-8	The Army Maintenance Management System (TAMMS) Users Manual

FIELD MANUAL

FM 3-5	NBC Decontamination
FM 3-11.4	Multiservice Tactics, Techniques and Procedures for Nuclear, Biological and Chemical (NBC) Protection
FM 4-25.11	First Aid
FM 10-67-1	Concepts and Equipment of Petroleum Operations

FORMS

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2404	Equipment Inspection and Maintenance Worksheet
SF 361	Transportation Discrepancy Report
SF 368	Product Quality Deficiency Report

MISCELLANEOUS

ASME Y14.38-1999	The American Society of Mechanical Engineers Abbreviations and Acronyms
CTA 8-100	Common Table of Allowances, Army Medical Department Expendable/Durable Items
CTA 50-970	Common Table of Allowances, Expendable/Durable Items (Except Medical, Class V Repair Parts, and Heraldic Items)

SUPPLY CATALOGS

SC 4910-95-A72	Shop Equipment, Automotive Maintenance and Repair Organizational Maintenance, Common No. 2
SC 4910-95-A74	Shop Equipment, Automotive Maintenance and Repair Organizational Maintenance, Common No. 1
SC 5180-95-N26	Tool Kit, General Mechanic's Automotive

TECHNICAL MANUALS

TM 5-5430-219-13	Operator's, Unit and Intermediate Direct Support Maintenance Manual for Tank, Fabric, Collapsible, Fuel Storage 5,000 BBL (NSN 5430-01-160-3528) 50,000 Gallon (5430-01-455-5676/5430-00-182-8181) 20,000 Gallon, Model BA92-162/BA91-140/BA91-140A (5430-01-215-7525/5430-01-359-4943/5430-01-414-9252) 10,000 Gallon, Model BA91-141/RBA91-141A (5430-01-358-6157/5430-01-414-9251) 3,000 Gallon, Model WTM3KF (NSN 5430-01-433-8528)
TM 10-4320-372-14	Operator's, Unit, Direct Support and General Support Maintenance Manual for Fuel Pumping Assembly, Diesel Engine Driven, Wheel Mounted 350 Gallons Per Minute

TECHNICAL MANUALS - CONTINUED

TM 10-4330-235-13&P	Operator's, Unit and Direct Support Maintenance Manual Including Repair Parts and Special Tools List for Filter-Separator, Liquid Fuel, Frame Mounted 350 GPM Capacity
TM 10-4930-248-13&P	Operators, Unit, and Direct Support Maintenance Manual Including Repair Parts and Special Tools List for D1 Nozzle Assembly Model 64017B (NSN: 4930-01-383-9467)
TM 10-4930-361-24P	Operators, Unit, Direct Support and General Support Repair Parts and Special Tools List for Fuel System Supply Point (FSSP) Model LAB 6891-6 (NSN: 4930-01-481-8221). 120,000 Gallon System Model 12479196-2 (NSN: 4930-01-504-2951) and Model M106 (NSN: 4930-01-517-6981). 300,000 Gallon System Model 12479196-3 (NSN: 4930-01-504-2949) and Model M107 (NSN: 4930-01-517-7009)
TM 10-5430-242-12&P	Operator and Unit Maintenance Manual, Including Repair Parts and Special Tools List (RPSTL) for Tank, Fabric, Collapsible, Fuel Storage 3,000 Gallon, Model GTA-3KF/RCF-3-K-OB/MPC-F-03K-13114 (NSN 5430-01-485-8340/5430-01-486-8209/5430-01-487-0635) 10,000 Gallon, Model GTA-10KF/RCF-10-K-OB/MPC-F-10K-22175 (5430-01-486-0221/5430-01-485-8336/5430-01-487-0632) 20,000 Gallon, Model GTA-20KF/RCF-20-K-F-OB (5430-01-485-8338/5430-01-486-1034/5430-01-487-0634) 50,000 Gallon, Model GTA-50KF/RCF-50-K-F-OB/MPC-F-50K-22636 (5430-01-485-8337/5430-01-485-8340/5430-01-487-0638)
TM 10-6630-240-12&P	Operator's and Unit Maintenance Manual, Including Repair Parts and Special Tools List, for Test Kit Petroleum, Aviation Fuel Contaminant, Model PTK-100 (NSN: 6630-01-347-9670)
TM 55-8145-203-13&P	Operators, Unit and Direct Support Maintenance Manual Including Repair Parts and Special Tools List (RPSTL) for TRICON Container, Model ESETC-1
TM 750-244-6	Procedures for Destruction of Tank-Automotive Equipment To Prevent Enemy Use

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION**

MAINTENANCE ALLOCATION CHART (MAC) INTRODUCTION**THE ARMY MAINTENANCE SYSTEM MAC**

This introduction provides a general explanation of all maintenance and repair functions authorized at the two maintenance levels under the Two-Level Army Maintenance System concept.

The MAC (immediately following the introduction) 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 shall be consistent with the capacities and capabilities of the designated maintenance levels, which are shown on the MAC in column (4) as:

Field — includes two subcolumns, Unit (C (operator/crew) and O (unit) maintenance) and Direct Support (F) maintenance.

Sustainment — includes two subcolumns, general support (H) and depot (D).

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

MAINTENANCE FUNCTIONS

Maintenance functions are limited to and defined as follows:

Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g., by sight, sound, or feel). This includes scheduled inspection and gagings and evaluation of cannon tubes.

Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

Service. Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms.

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

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

Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of 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.

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.

Replace. To remove an unserviceable item and install a serviceable counterpart in its place. "Replace" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

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

MAINTENANCE FUNCTIONS - CONTINUED

NOTE

The following definitions are applicable to the “repair” maintenance function:

Services. Inspect, test, service, adjust, align, calibrate and/or replace.

Fault 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).

Disassembly/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 an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).

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

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. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

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

EXPLANATION OF COLUMNS IN THE MAC

Column (1) Group Number. Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

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

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions refer to “Maintenance Functions” outlined above.)

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. This work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. 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 time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

Field:

C-Operator or crew maintenance

O-Unit Maintenance

F-Direct support maintenance

Sustainment:

H-General support maintenance

D-Depot maintenance

EXPLANATION OF COLUMNS IN THE MAC - CONTINUED**NOTE**

The "L" maintenance level is not included in column (4) of the MAC. Functions to this level of maintenance are identified by a work time figure in the "H" column of column (4), and an associated reference code is used in the REMARKS column (6). This code is keyed to the remarks and the SRA complete repair application is explained there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

EXPLANATION OF COLUMNS IN THE TOOLS AND TEST EQUIPMENT REQUIREMENTS

Column (1) Tool or Test Equipment Reference Code. The tool or test equipment reference code correlates with a code used in column (5) of the MAC.

Column (2) Maintenance Level. The lowest level of maintenance authorized to use the tool or test equipment.

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

Column (4) National Stock Number (NSN). The NSN of the tool or test equipment.

Column (5) Tool Number. The manufacturer's part number, model number, or type number.

EXPLANATION OF THE COLUMNS IN THE REMARKS

Column (1) Remarks Code. The code recorded in column (6) of the MAC.

Column (2) Remarks. This column lists information pertinent to the maintenance function being performed as indicated in the MAC.

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
MAINTENANCE ALLOCATION CHART (MAC)**

Table 1. Maintenance Allocation Chart (MAC).

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE
			FIELD		SUSTAINMENT				
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	FUEL SYSTEM SUPPLY POINT (FSSP)								
01	HOSE ASSEMBLY, 4 IN. X 10 FT (SUCTION)	Inspect Replace Repair	0.2					1, 2, 10	A
			0.3	1.0					
02	HOSE ASSEMBLY, 2 IN. X 25 FT (DISCHARGE)	Inspect Replace Repair	0.2					1, 10	A
			0.3	1.0					
03	FILTER- SEPARATOR, LIQUID								B
04	PUMPING ASSEMBLY, 350 GPM								C
05	TEE ASSEMBLY 4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE	Inspect Replace Repair	0.2					1, 2, 11, 12	A
			0.3	1.0					
06	VALVE ASSEMBLY, BUTTERFLY 4 IN. X 4 IN.	Inspect Replace Repair	0.2					1, 2, 11, 12	A
			0.3	1.0					
07	GATE VALVE ASSEMBLY, 4 IN. FEMALE X 4 IN. MALE	Inspect Replace Repair	0.2					1, 2, 11, 12	A
			0.3	1.0					
08	TEE ASSEMBLY 4 IN. FEMALE X 4 IN. MALE X 4 IN. MALE	Inspect Replace Repair	0.2					1, 2, 12, 12	A
			0.3	1.0					
09	NOZZLE ASSEMBLY, D1, 64017B								D, G, H
10	TEE ASSEMBLY 4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE	Inspect Replace Repair	0.2					1, 2, 11, 12	A
			0.3	1.0					

Table 1. Maintenance Allocation Chart (MAC). - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
11	TEE ASSEMBLY 4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE	Inspect Replace Repair	0.2 0.3	 1.0	 <				

Table 1. Maintenance Allocation Chart (MAC). - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE	
			FIELD			SUSTAINMENT				
			UNIT		DS	GS	DEPOT			
			C	O	F	H	D			
19	TEE ASSEMBLY, 2 IN.	Inspect Replace Repair	0.2						A	
1901	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair	0.3	0.5	2.0			1, 2, 4		
			0.2	0.5	2.0			1, 2, 4		
				1.0						
20	ADAPTER, 2 IN. FEMALE	Inspect Replace Repair	0.2						A	
			0.3	1.0				1, 2, 4		
			0.3							
			0.2	0.5	2.0			1, 2, 4		
2001	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair		0.5	2.0			1, 2, 4		
				1.0						
21	ADAPTER, 2 IN. MALE	Inspect Replace Repair	0.2						A	
			0.3	1.0				1, 2, 4		
			0.3							
			0.2	0.5	2.0			1, 2, 4		
2101	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair		0.5	2.0			1, 2, 4		
				1.0						
22	HOSE ASSEMBLY, 2 IN. X 50 FT (DISCHARGE)	Inspect Replace Repair	0.2						A	
			0.3	1.0				1, 2, 10		
			0.2	0.5	2.0			1, 2, 4		
				1.0						
2201	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair		0.5	2.0			1, 2, 4		
				1.0						
23	NOZZLE ASSEMBLY, FUEL AND OIL SERVICING, 1.5 IN.	Inspect Replace Repair	0.2						A	
			0.3	1.0				1, 2, 3		

Table 1. Maintenance Allocation Chart (MAC). - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
2301	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair	0.2	0.5 1.0	2.0			1, 2, 4	
24	BALL VALVE ASSEMBLY, 2 IN.	Inspect Replace Repair	0.2						A
			0.3	1.0				1, 2, 3	
25	REDUCER ASSEMBLY, 2 IN. FEMALE X 1.5 IN. MALE	Inspect Replace Repair	0.2						A
			0.2						
			0.2						
26	STAND ASSEMBLY, NOZZLE AND VALVE	Inspect Replace Repair	0.2						A
			0.3	1.0				1, 2	
27	NOZZLE ASSEMBLY, D1, 64201CGH5	Inspect Replace Repair	0.2						A, G, H
			0.2	1.0		5.0		1, 2, 4	
2701	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair	0.2	0.3 0.5	2.0			1, 2, 4	A
2702	BODY ASSEMBLY	Inspect Replace Repair	0.2	0.5 0.3		5.0		1, 2, 4	A H
28	NOZZLE ASSEMBLY, D1, 64201CGH2MQ	Inspect Replace Repair	0.2						A
			0.2	1.0		5.0		1, 2, 4	G, H
2801	BODY ASSEMBLY	Inspect Replace Repair	0.2	0.5 0.3		5.0		1, 2, 4	H
29	ADAPTER, 3 IN. DOUBLE, MALE X MALE	Inspect Replace Repair	0.2						A
			0.3						
			0.3						
30	GROUND ROD ASSEMBLY	Inspect Replace Repair	0.2						A
			0.3	1.0				1, 2, 3	

Table 1. Maintenance Allocation Chart (MAC). - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
31	NOZZLE ASSEMBLY, CLOSED CIRCUIT REFUELING (CCR), 64201CGH2KQ	Inspect Replace Repair	0.2						A
			0.2	1.0		5.0		1, 2, 4	G, H
3101	BODY ASSEMBLY	Inspect Replace Repair	0.2						A
				0.5		5.0		1, 2, 4	G, H
				0.3					
32	CONTAINERS, TRICON								F
33	HOSE Repair KIT	Inspect Replace Repair	0.2						A
			0.2						
			0.1						
34	FUEL ADDITIVE INJECTION ASSEMBLY	Inspect Replace Repair	0.2					1, 2, 6, 9	A
			0.2	1.0	3.0	4.0			
3401	SKID ASSEMBLY	Inspect Replace Repair	0.2						A
				0.5				1	
				0.3					
3402	INJECTOR	Inspect Replace Repair	0.2						A
					3.0			1, 2 1, 2	
						5.0			
3403	CONTROL PANEL	Inspect Replace Repair	0.2						A
					0.3			1, 2	
3404	TANKS	Inspect Replace Repair	0.2						A
					0.3			1, 2	
3405	SAMPLE PROBE	Inspect Replace Repair	0.2						A
				0.2					
				0.2					
3406	GEAR REDUCER	Inspect Replace Repair	0.2						A
						3.0		1, 2 1, 2	
						5.0			

Table 1. Maintenance Allocation Chart (MAC). - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
3407	CI AND SDA PUMPS	Inspect Replace Repair	0.2	0.3	2.0 3.0	4.0		1, 2, 6 1, 2, 6	A
3408	FSII PUMP	Inspect Replace Repair	0.2		2.0 3.0			1, 2, 6 1, 2, 6	A
3409	FSII TEST KIT	Inspect Replace Repair	0.2 0.2 0.2						A
35	FLOWMETER ASSEMBLY, INLINE 4 IN.	Inspect Replace Repair	0.2 0.2	1.0				1, 2, 5, 6, 12, 13	A
36	WET WING DEFUELING ASSEMBLY	Inspect	0.2						A
3601	HOSE ASSEMBLY 3 IN. X 50 FT. (DISCHARGE)	Inspect Replace Repair	0.2 0.3	1.0				1, 2, 3, 10	A
360101	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair	0.2	0.3 0.5	2.0			1, 2, 4, 6 1, 2, 4, 6	A
3602	ADAPTER 4 IN. MALE CAMLOCK X 3 IN. VALVED DRY-BREAK	Inspect Replace Repair	0.2 0.3	1.0	2.0			1, 2, 4, 6	A
360201	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair	0.2	0.3 0.5	2.0			1, 2, 4, 6 1, 2, 4, 6	A
3603	ADAPTER 4 IN. FEMALE CAMLOCK X 3 IN. VALVED DRY-BREAK	Inspect Replace Repair	0.2 0.3	1.0	2.0			1, 2, 4, 6	A

Table 1. Maintenance Allocation Chart (MAC). - Continued.

(1) GROUP NUMBER	(2) COMPONENT/ ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT Ref Code	(6) REMARKS CODE
			FIELD		SUSTAINMENT				
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
360301	QUICK DISCONNECT COUPLING HALF (VALVED DRY-BREAK)	Inspect Replace Repair	0.2	0.3 0.5	2.0			1, 2, 4, 6 1, 2, 4, 6	A
37	TANK VOLUME METER	Inspect Replace Repair	0.2					1, 2, 5, 12	A
38	TANK COLLAPSIBLE, 50,000 GALLON		0.2	3.0					E
39	DISPLACEMENT AND EVACUATION KIT, 4 IN. HOSE LINE	Inspect Replace Repair	0.2						A
40	WATER DETECTOR AND PROBE ASSEMBLY ADAPTER	Inspect Replace Repair	0.2						A
			0.2	1.0				1, 2	

MAINTENANCE ALLOCATION CHART, TOOLS, AND TEST EQUIPMENT

Table 2. Tools and Test Equipment for Fuel System Supply Point (FSSP).

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
1	O	Tool kit, general mechanic's	5180-00-177-7033	SC 5180-95-N26
2	O	Tool kit, organizational maintenance common #1	4910-00-754-0654	SC 4910-95-A74
3	O	Tool kit, organizational maintenance common #2	4910-00-754-0650	SC 4910-95-A72
4	O	Wrench, torque, 0–30 in. lb	5120-00-117-4832	B107.14M
5	O	Wrench, torque, 0–175 ft lb	5120-01-396-5751	1753LDF
6	O	Wrench, torque, 0–150 in. lb	5120-01-374-1931	GGG-W-2843
7	H	Rod, threaded, 10-24 thread size, 2 ft length		90034A011
8	H	Nut, hex (10-24 thread)	5310-01-251-7570	9048A011
9	O	Lubricating gun, hand	4930-00-965-0288	30415
10	O	Multimeter	6625-01-265-6000	27 W/ACCE

Table 2. Tools and Test Equipment for Fuel System Supply Point (FSSP). - Continued.

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
11	O	Wrench, torque, 3/8 sqdr 5–75 ft lb	5120-01-355-1734	QD2FR75
12	O	Adapter, socket wrench, 3/8 in. female square end, 1/2 in. male square end	5120-00-240-8703	B107.10M
13	H	Wrench, pipe 48 in.	5120-01-399-8982	848HD
14	H	Press, arbor, hand operated	3444-00-449-7295	A-A-51194

MAINTENANCE ALLOCATION CHART, REMARKS

Table 3. Remarks for Fuel Pumping Assembly 350 GPM.

REMARKS CODE	REMARKS
A	Crew/operator inspection limited to preventive maintenance checks and services (PMCS).
B	Refer to TM 10-4330-235-13&P.
C	Refer to TM 10-4320-372-14.
D	Refer to TM 10-4930-248-13&P.
E	Refer to TM 10-5430-242-12&P.
F	Refer to TM 55-8145-203-13&P.
G	Repair to consist of Replacement of exterior components only at unit level maintenance.
H	Complete Repair at Specialized Repair Activity (SRA).

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
COMPONENTS OF END ITEM (COEI) AND BASIC ISSUE ITEMS (BII) LISTS**

INTRODUCTION**SCOPE**

This work package lists COEI and BII for the Fuel System Supply Point (FSSP) to help you inventory items for safe and efficient operation of the equipment.

GENERAL

The COEI and BII information is divided into the following lists:

COMPONENTS OF END ITEM (COEI)

This list is for information purposes only and is not authority to requisition replacements. These items are part of the Fuel System Supply Point (FSSP). As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

BASIC ISSUE ITEMS (BII)

These essential items are required to place the Fuel System Supply Point (FSSP) in operation, operate it, and to do emergency repairs. Although shipped separately packaged, BII must be with the Fuel System Supply Point (FSSP) during operation and when it is transferred between property accounts. Listing these items is your authority to request/requisition them for replacement based on authorization of the end item by the TOE/MTOE. Illustrations are furnished to help you find and identify the items.

EXPLANATION OF COLUMNS IN THE COEI LIST AND BII LIST

Column (1) Illus Number. Gives you the number of the item illustrated.

Column (2) National Stock Number (NSN) and Illustration. Identifies the stock number of the item to be used for requisitioning purposes and provides an illustration of the item.

Column (3) Description, Part Number/(CAGEC). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI and BII is also included in this entry. The last line below the description is the part number and the Commercial and Government Entity Code (CAGEC).

Column (4) Usable on Code. When applicable, gives you a code if the item you need is not the same for different models of equipment. These codes identified below:

Code	Used on
FSP	Part Number 78000-100
FSS	Part Number 78000-101

Column (5) U/I. Unit of Issue (U/I) indicates the physical measurement or count of the item as issued per the National Stock Number shown in Column (2).

Column (6) Qty Rqr. Indicates the quantity required.

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

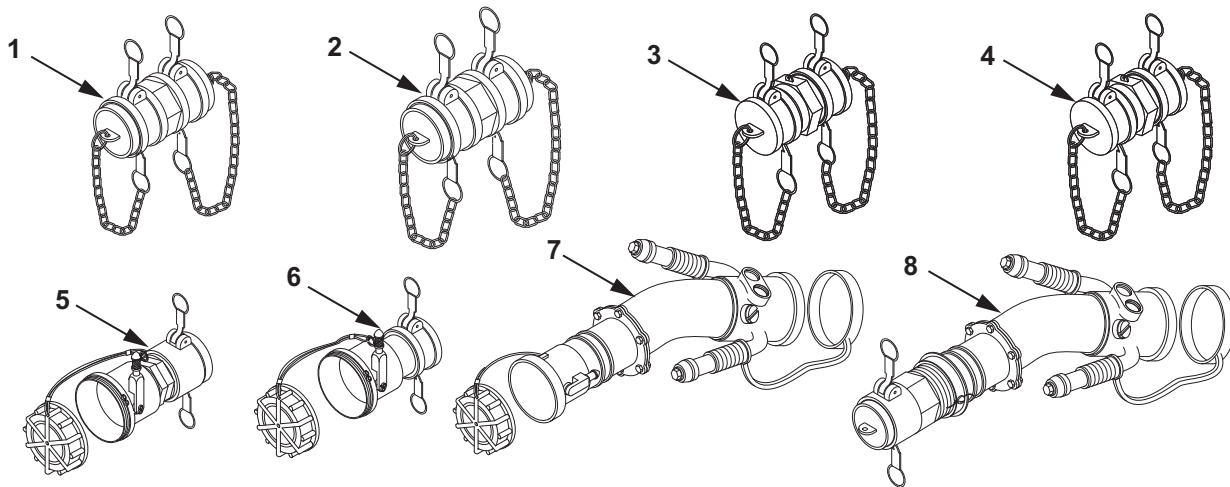


Table 1. Components of End Item (COEI).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
1	4730-01-543-3986	ADAPTER, DOUBLE, FEMALE X FEMALE, 3 IN. NOMINAL SIZE W/GASKET AND LOCKING CAM ARMS (33813) 602730301	FSP FSS	EA EA	6 6
2	4730-01-543-7882	ADAPTER, DOUBLE, FEMALE X FEMALE, 4 IN. NOMINAL SIZE W/GASKET AND LOCKING CAM ARMS (33813) 602740401	FSP FSS	EA EA	6 6
3	4730-01-543-5408	ADAPTER, DOUBLE, MALE X MALE, 3 IN. NOMINAL SIZE (33813) 602830301	FSP FSS	EA EA	3 3
4	4730-01-543-5987	ADAPTER, DOUBLE, MALE X MALE, 4 IN. NOMINAL SIZE (33813) 602840401	FSP FSS	EA EA	3 3
5	4730-01-298-0151	ADAPTER, FEMALE 2 IN. QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK (0DT23) 64020GQ	FSP FSS	EA EA	1 1
6	4730-01-298-0150	ADAPTER, MALE 2 IN. QUICK DISCONNECT X 2 IN. VALVED DRY-BREAK (0DT23) 64020FQ	FSP FSS	EA EA	2 2
7	4930-01-543-8689	AIRCRAFT PRESSURE REFUELING NOZZLE, D1, W/2 IN. NON-VALVED DRY-BREAK (0DT23) 64201CGH5	FSP FSS	EA EA	1 1
8	64201CGH2MQ	AIRCRAFT PRESSURE REFUELING NOZZLE, D1 W/4 IN. CAMLOCK (0DT23) 64201CGH2MQ	FSP FSS	EA EA	3 3

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

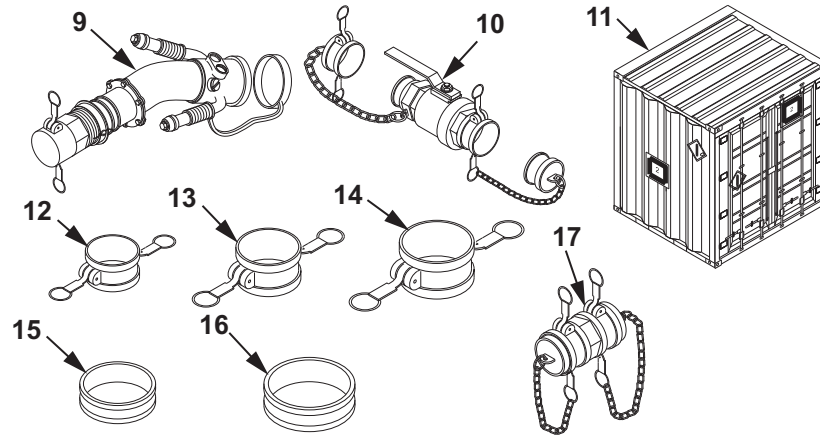


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
9	4930-01-548-5462	AIRCRAFT PRESSURE REFUELING NOZZLE, D1 W/4 IN. MALE CAMLOCK (0DT23) 64201CGH2KQ	FSP FSS	EA EA	3 3
10	4730-01-543-3975	BALL VALVE ASSEMBLY, 2 IN., CAMLOCK (90598) 78048-100	FSP FSS	EA EA	2 2
11		CONTAINERS, TRICON (09PD1) BXTBCTATPD0003	FSP FSS	EA EA	12 15
12		COUPLING HALF, CAP, DUST, 1.5 IN. W/LANYARD, GASKET, AND LOCKING CAM ARMS (33813) 1001115S1G	FSP FSS	EA EA	1 1
13		COUPLING HALF, CAP, DUST, 3 IN. W/LANYARD, GASKET, AND LOCKING CAM ARMS (33813) 1001130S1G	FSP FSS	EA EA	9 9
14		COUPLING HALF, CAP, DUST, 4 IN. W/LANYARD, GASKET, AND LOCKING CAM ARMS (33813) 1001140SG	FSP FSS	EA EA	4 4
15	5340-01-544-1356	COUPLING HALF, CAP, DUST, 3 IN. W/LANYARD (33813) 1001230S1G	FSP FSS	EA EA	9 9
16		COUPLING HALF, CAP, DUST, 4 IN. W/LANYARD (33813) 1001240SG	FSP FSS	EA EA	7 7
17	4730-01-540-4264	COUPLING HALF, 4 IN. SCREEN ASSEMBLY, QUICK DISCONNECT (41592) 735SBA4000 ASAJ	FSP FSS	EA EA	3 3

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

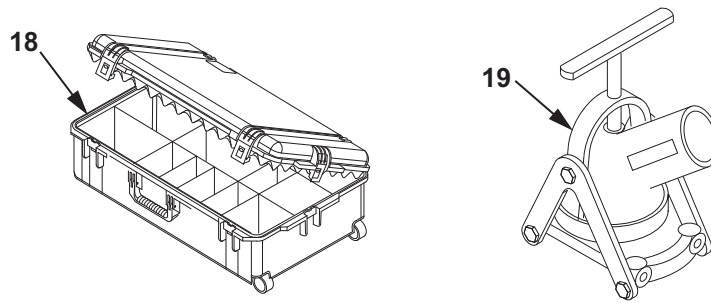


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usable On Code	(5) U/I	(6) Qty Req.
18		COUPLING SET, TANK TRUCK, NATO (90598) 78051-100 CONSISTING OF:	FSP FSS	EA	2
	4730-12-370-1766	COUPLING HALF, CAMLOCKING, FEMALE, NATO, 3 IN. (D2274) 853.300300.130		EA	1
	4730-12-370-1764	COUPLING HALF, CAMLOCKING, MALE, NATO, 3 IN. (D2274) 850.300300.130		EA	1
	4730-12-370-1759	ADAPTER HOSE COUPLING, NATO, ISO 228 1 G3A (D2274) 410.300300.130		EA	
		ADAPTER, NATO, ISO 228 1 G3A, X3-8 NPSH (D2274) RN300/3-8NPSH		EA	1
	4730-01-543-4019	ADAPTER, NATO, ISO 228 1 G3A, X3-8 NPT (33813) 90007		EA	1
	4730-12-151-1119	COUPLING FEMALE, TANK TRUCK, NATO, ISO 228 1 63 (D2274) 832.300300.133		EA	1
	4730-12-151-1069	COUPLING MALE, TANK TRUCK, NATO, ISO 228 1 63 (D2274) 833.300300.130		EA	1
	8145-01-543-6030	REUSABLE CONTAINER (11214) IM2700		EA	2
19	3835-01-414-0464	COUPLING, RAIL TANKER, NATO (D1097) UK-3	FSP FSS	EA EA	2 2

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

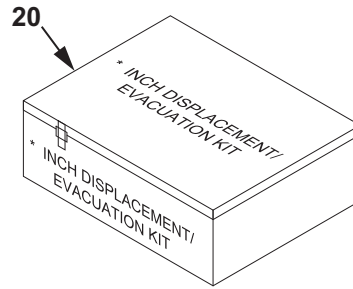


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
20		DISPLACEMENT AND EVACUATION KIT, 4 IN. HOSE LINE (90598) 78050-100 CONSISTING OF:	FSP FSS	EA EA	1
	8145-01-544-1056	CHEST, EVACUATION KIT ASSEMBLY, 4 IN. HOSE LINE (90598) 78128-100		EA	1
	4820-01-543-6955	BALL, DISPLACEMENT, 4.00 (63853) 08E004.12E		EA	1
		BALL, DISPLACEMENT, 6.00 (63853) 08E006.12E		EA	1
	4320-01-544-1035	EJECTOR ASSEMBLY (90598) 78126-100		EA	1
	4730-01-543-6961	BALL INLET, 4.00 (33813) 90003		EA	1
		BALL INLET, 6.00 (33813) 90005		EA	1
	4730-01-543-6970	BALL RECEIVER, 4.00 (33813) 90004		EA	1
		BALL RECEIVER, 6.00 (33813) 90006		EA	1
		CLAMP, HOSE (90598) 78059-9		EA EA	2
		PLATE, LOAD PLAN, EVACUATION KIT (90598) 78136-1		EA	1

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

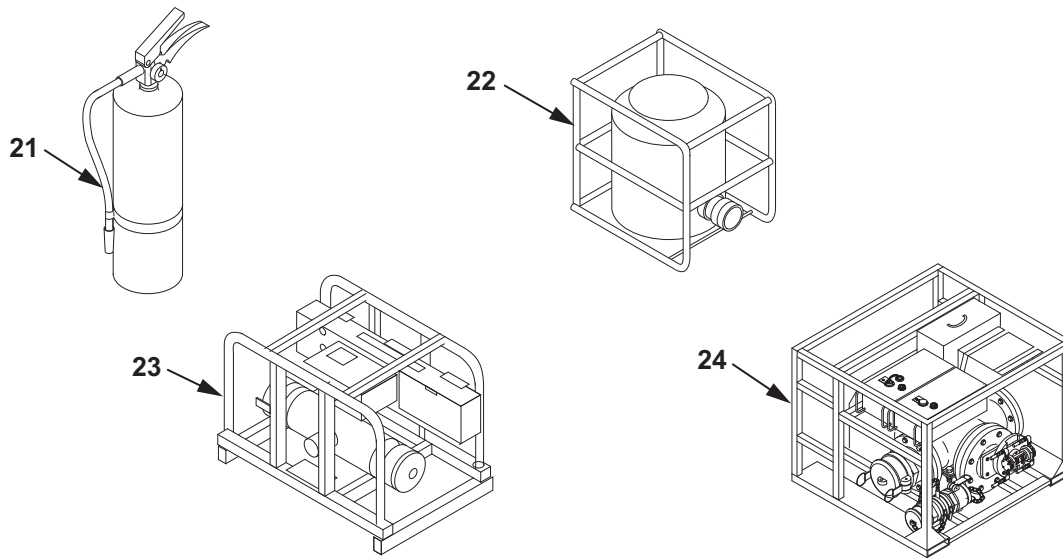


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
21		EXTINGUISHER, FIRE, DRY-CHEMICAL (HAND PORTABLE) (5N316) 28W-3820	FSP FSS	EA EA	25 25
22	4930-01-522-6800	FILTER-SEPARATOR, LIQUID FUEL, FRAME MOUNTED, 350 GPM CAPACITY (0BUN9) MEFS18V350M	FSP FSS	EA	2 2
23	6680-01-535-1025	FLOWMETER ASSEMBLY, INLINE, 4 IN. FRAME MOUNTED (90598) 78017-100	FSP FSS	EA	2 2
24	4930-01-547-6265	FUEL ADDITIVE INJECTION ASSEMBLY (90598) TPI-4T-4A-1 CONSISTING OF:	FSP FSS	EA	1 1
	5120-01-543-8602	SCREW DRIVER, MULTI-BLADE, 7 1/2 IN. (47186) 162121		EA	1
		HEX KEY SET, FOLDABLE (47186) 162122		EA	1
		WRENCH, ADJUSTABLE, 10 IN. (47186) 162123		EA	1
		PLIER, ADJUSTABLE, 10 IN. (47186) 162124		EA	1
		WRENCH, ADJUSTABLE, 8 IN. (47186) 162125		EA	1
		PLIER, SNAP RING, .038 IN., SMALL (47186) 162126		EA EA	1

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

Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
		PLIER, SNAP RING, .070 IN., SMALL (47186) 162127		EA	1
		HAMMER, SLEDGE, 4 LB (47186) 162128		EA	1
	3835-01-543-7977	FSII SAMPLE TEST KIT (47186) 882378 CONSISTING OF:		EA	1
	6680-01-544-1301	CASE, CARRYING (47186) HB-P-CA		EA	1
	6650-01-229-5751	REFRACTOMETER (47186) HB-R-1		EA	1
	6640-01-237-6125	FUNNEL SEPARATORY (62935) HB-F-1		EA	1
	6640-01-238-0357	CYLINDER, GRADUATED, 250 ML (62935) HB-G-1		EA	1
	5340-01-543-5740	SUPPORT STAND ASSEMBLY (47186) HB-S-1		EA	1
	6640-01-236-6956	DISHES, ALUMINUM FOIL, 100 CT. (62935) HB-D-1		EA	1
	6640-01-532-0303	PIPET, PISTON STYLE, 3 ML (62935) HB-P-1		EA	5
	6640-01-379-2178	BOTTLE, 60 ML, WITH SCREW CAP (62935) HB-B-1		EA	1

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

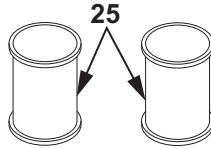


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
25		FUEL SPILL CONTROL KIT (0N5W4) 59359TY11 CONSISTING OF:	FSP FSS	EA	2
				EA	2
	8110-01-542-8184	DRUM, 55 GALLON POLY (0N5W4) POLY55		EA	2
	4235-01-542-8185	PADS, OIL ONLY, 17 IN. X 19 IN. (0N5W4) EP100		EA	60
	4235-01-542-8191	PARTICULATE, OIL ONLY 25 LB BAG (0N5W4) EPLP25		EA	3
		SOCK, OIL ONLY 3 IN. X 10 FT (0N5W4) PS10		EA	12
	4235-01-542-8189	PILLOW, ONLY 10 IN. X 10 IN. (0N5W4) PIL10		EA	48
		BAG, DISPOSABLE 6 MIL (0N5W4) DB6		EA	24
		TIE, CABLE (0N5W4) TYB		EA	48
		GLOVES, OIL RESISTANT #9 (0N5W4) GLO		EA	4
		GLOVES, OIL RESISTANT #11 (0N5W4) GLO		EA EA	2
	4240-01-542-8193	GOGGLES, SPLASH RESISTANT (0N5W4) GOG		EA	2
		PAIL, 5 GAL. W/BAIL & LID (0N5W4) BUK5		EA	4
	7690-01-542-8297	HAZ-MAT LABEL, 8 IN. X 12 IN. (0N5W4) LABC		EA	2
	7240-01-543-4422	DRIP PAN, RECTANGULAR, PLASTIC NESTABLE (0N5W4) ODP12		EA	48
	5120-01-543-8302	SHOVEL, COLLAPSIBLE, 41 IN. X 11. IN. (0N5W4) PUSHOV		EA	2

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

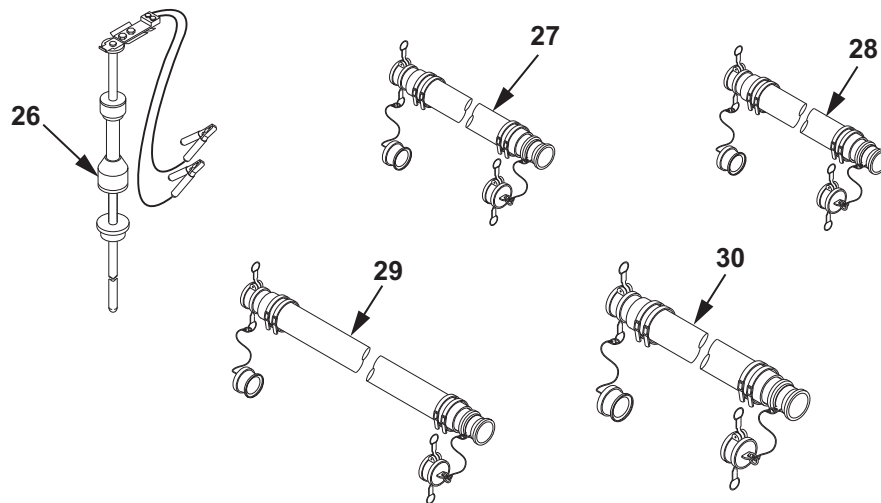


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
26	5975-01-548-5214	GROUND ROD ASSEMBLY, SELF-DRIVING (90598) 78043-100	FSP FSS	EA EA	14 14
27	4720-01-543-6000	HOSE ASSEMBLY, DISCHARGE, 2 IN. X 50 FT, VALVED DRY-BREAK (90598) 78009-100	FSP FSS	EA	6 6
28		HOSE ASSEMBLY, DISCHARGE, 4 IN. X 10 FT, VALVED DRY-BREAK (90598) 78007-100	FSP FSS	EA	57 57
29	4720-01-542-6906	HOSE ASSEMBLY, DISCHARGE, 4 IN. X 25 FT, VALVED DRY-BREAK (90598) 78007-102	FSP FSS	EA	43 43
30		HOSE ASSEMBLY, SUCTION, 4 IN. X 10 FT, VALVED DRY-BREAK (90598) 78003-100	FSP FSS	EA	68 68

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

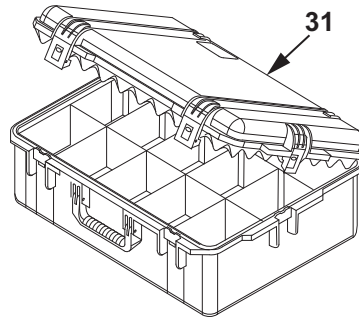


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
31		HOSE REPAIR KIT (90598) 78046-100 CONSISTING OF:	FSP FSS	EA	1
				EA	1
	4730-01-543-4950	HOSE SPLICE KIT, 2 IN. (33813) 85660200SK		EA	3
	4730-01-543-7128	HOSE SPLICE KIT, 3 IN. (33813) 85660300SK		EA	2
	4730-01-543-6580	HOSE SPLICE KIT, 4 IN. (33813) 85660400SK		EA	20
	6145-01-543-4958	GROUND WIRE, 20 FT (39428) 8873K11		EA	1
	5110-01-456-7801	KNIFE, HEAVY DUTY (55719) YA581A		EA	1
	5110-01-335-1366	FRAME, HACKSAW, 12 IN. (55719) HS18A		EA	1
	5110-01-199-8598	BLADE, HACKSAW, 12 IN. (55719) HSBM1218B		EA	10
	5120-01-367-4641	PLIERS, NEEDLE NOSE (55719) 95BCP		EA	1
	5120-01-545-6622	SCREW DRIVER, FLAT (53800) 00947195000		EA	1
	5120-01-335-1469	HAMMER, HAND (55719) BH232A		EA	1
		TOOL, CLAMPING (77414) P-1000		EA	1
	8145-01-543-4998	CONTAINER, REUSABLE (11214) 092704-200		EA	4

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

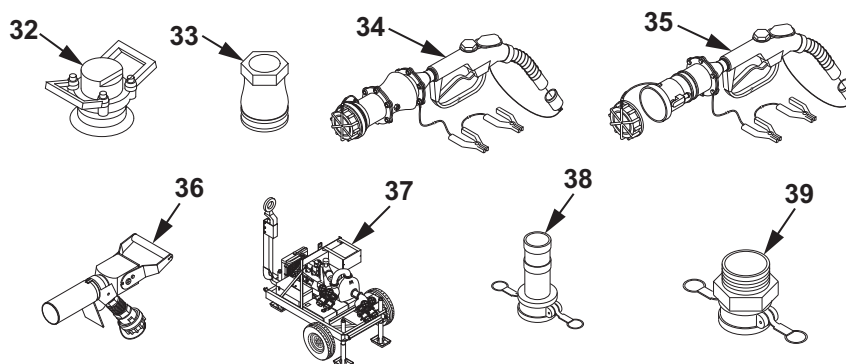


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
32	4730-01-543-4937	NATO STANDARD ADAPTER OR TANK UNIT, MALE HALF (IKL62) 7475C-1307	FSP FSS	EA EA	2 2
33	4730-01-543-6052	NATO STANDARD CONNECTOR OR HOSE UNIT, FEMALE HALF (IKL62) 7474C-1107	FSP FSS	EA EA	2 2
34	4930-01-543-4269	NOZZLE ASSEMBLY, FUEL AND OIL SERVICING, 1 IN. W/2 IN. NON-VALVED DRY-BREAK (ODT23) 64210	FSP FSS	EA EA	2 2
35	4930-01-544-2307	NOZZLE ASSEMBLY, FUEL AND OIL SERVICING, 1.5 IN. W/2 IN. NON-VALVED DRY-BREAK (ODT23) 64199	FSP FSS	EA EA	2 2
36	4930-01-383-9467	NOZZLE ASSEMBLY, D1, STANDARD, W/2 IN. NON-VALVED DRY-BREAK (ODT23) 64017-B	FSP FSS	EA EA	2 2
37	4320-01-524-4467	PUMPING ASSEMBLY, 350 GPM (90598) 78100-100	FSP FSS	EA EA	2 2
38	4730-01-543-8429	REDUCER, 2 IN. FEMALE X 1.5 IN. MALE W/GASKETS AND LOCKING CAM ARMS (33813) 602620151	FSP FSS	EA EA	2 2
39	4730-01-548-0899	REDUCER, 4 IN. FEMALE X 3 IN. MALE W/GASKET AND LOCKING CAM ARMS (33813) 602640301	FSP FSS	EA EA	6 6

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

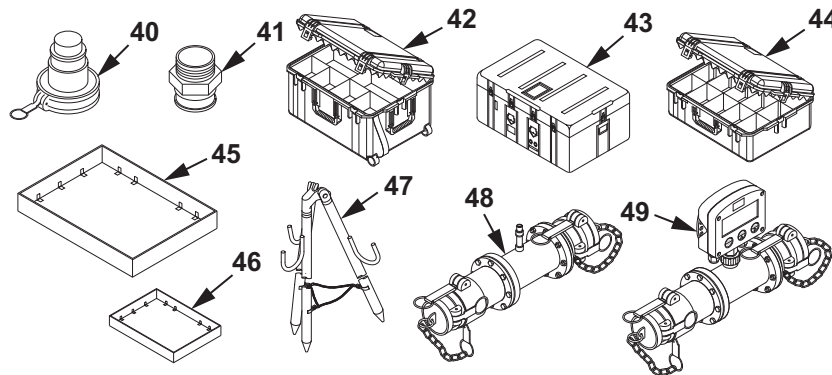


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
40	4730-01-548-2611	REDUCER, 4 IN. FEMALE X 2 IN. MALE W/GASKET AND LOCKING CAM ARMS (33813) 602640201	FSP FSS	EA EA	1 1
41		REDUCER, 4 IN. MALE X 3 IN. FEMALE W/GASKET AND LOCKING CAM ARMS (33813) 602630201	FSP FSS	EA EA	3 3
42	8145-01-543-4987	REUSABLE CONTAINER, 32.75 IN. LONG X 20.87 IN. WIDE X 19.31 IN. HIGH (11214) AL3018-1502	FSP FSS	EA EA	1 1
43	5820-01-539-3388	REUSABLE CONTAINER, 24.6 IN. LONG X 19.7 IN. WIDE X 14.4 IN. HIGH (11214) IM2750	FSP FSS	EA EA	7 7
44	8145-01-543-6044	REUSABLE CONTAINER, 31.3 IN. LONG X 20.4 IN. WIDE X 12.2 IN. HIGH (11214) IM2950	FSP FSS	EA EA	13 13
45	4235-01-542-8169	SPILL CONTAINMENT BERM, 4 X 4 X 1 FT (0N5W4) 4804-TN-SU	FSP FSS	EA EA	2 2
46		SPILL CONTAINMENT BERM, 6 X 8 X 1 FT (0N5W4) 48XX-TN-SU	FSP FSS	EA EA	5 5
47		STAND ASSEMBLY, NOZZLE AND VALVE (90598) 78047-100	FSP FSS	EA EA	11 11
48	4820-01-543-6704	TANK INPUT VOLUME METER (1URS0) EAS-0400-IN	FSP FSS	EA EA	6 6
49	6680-01-543-7005	TANK OUTPUT VOLUME METER (1URS0) EAS-0400-OUT	FSP FSS	EA EA	6 6

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

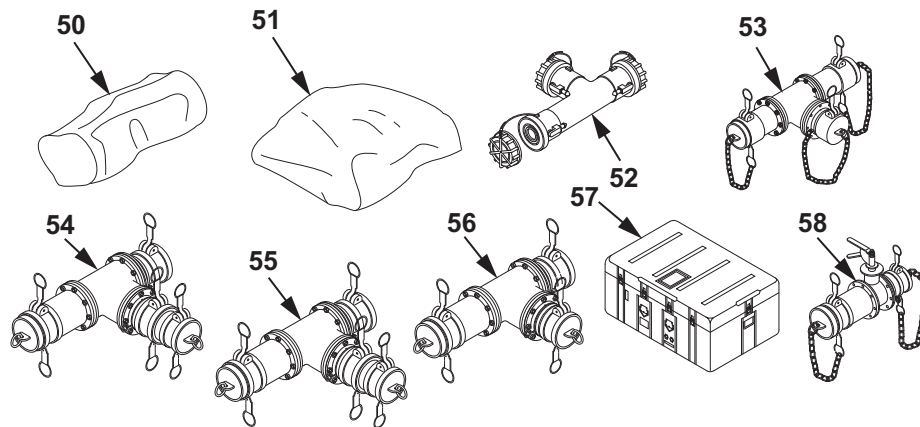


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
50	4730-01-297-6812	TANK, COLLAPSIBLE, FUEL, 20,000 GALLON (IEMJ6) MPC-F-20K-22278/CL	FSP	EA	6
51		TANK, COLLAPSIBLE, FUEL, 50,000 GALLON (IEMJ6) MPC-F-50K-22636/CL	FSS	EA	6
52		TEE ASSEMBLY, 2 IN. VALVED DRY-BREAK (ODT23) 64022D	FSP FSS	EA EA	2 2
53	4730-01-543-2041	TEE ASSEMBLY, 4 IN. FEMALE X 4 IN. FEMALE X 4 IN. MALE (33813) 78025-100	FSP FSS	EA EA	9 9
54		TEE ASSEMBLY, 4 IN. FEMALE X 4 IN. MALE X 4 IN. FEMALE (90598) 78021-100	FSP FSS	EA EA	2 2
55		TEE ASSEMBLY, 4 IN. FEMALE X 4 IN. MALE X 4 IN. MALE (90598) 78022-100	FSP FSS	EA EA	14 14
56	4730-01-543-1733	TEE ASSEMBLY, 4 IN. MALE X 4 IN. MALE X 4 IN. FEMALE (90598) 78024-100	FSP FSS	EA EA	1 1
57	6630-01-347-9670	TESTING KIT, PETROLEUM, AVIATION FUEL CONTAMINATION (90598) T-MIL-T-52849	FSP FSS	EA EA	1 1
58	4820-01-542-8299	VALVE ASSEMBLY, BUTTERFLY, 4 IN. X 4 IN. (90598) 78042-100	FSP FSS	EA EA	9 9

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

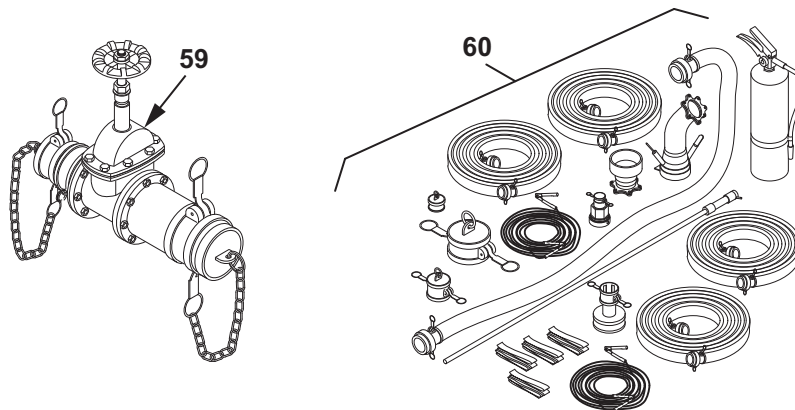


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
59		GATE VALVE ASSEMBLY, 4 IN. FEMALE X 4 IN. MALE (90598) 78011-100	FSP FSS	EA EA	34 34
60		WET WING DEFUELING ASSEMBLY (90598) 78029-100 CONSISTING OF:	FSP FSS	EA EA	1 1
	4720-01-543-9664	HOSE ASSEMBLY, DISCHARGE, 3 IN. X 50 FT, VALVED DRY-BREAK (90598) 78010-100		EA	4
	4730-01-543-5141	ADAPTER, 4 IN. MALE CAMLOCK X 3 IN. VALVED DRY-BREAK (0DT23) 64031PQ		EA	1
	4730-01-474-2853	ADAPTER, 4 IN FEMALE CAMLOCK X 3 IN. VALVED DRY-BREAK (0DT23) 64031MQ		EA	1
	5975-01-548-5214	GROUND ROD ASSEMBLY, SELF-DRIVING (90598) 78043-100		EA	1
		EXTINGUISHER, FIRE, DRY CHEMICAL (5N346) 429011		EA	1

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

BASIC ISSUE ITEMS (BII) LISTS

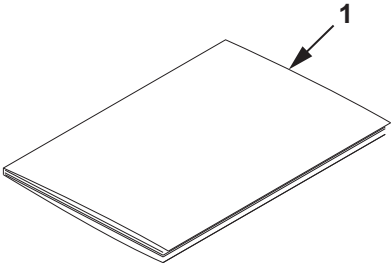


Table 1. Components of End Item (COEI) (Continued).

(1) Illus No.	(2) National Stock Number (NSN)	(3) Description, CAGEC, Part Number	(4) Usuable On Code	(5) U/I	(6) Qty Req.
1		TECHNICAL MANUAL, TM 10-4930-361-14		EA	1

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
ADDITIONAL AUTHORIZATION LIST (AAL)**

INTRODUCTION**SCOPE**

This work package lists additional items you are authorized for the support of the FSSP.

GENERAL

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

EXPLANATION OF COLUMNS IN THE AAL

Column (1) - National Stock Number (NSN). Identifies the stock number of the item to be used for requisitioning purposes.

Column (2) - Description, Commercial and Government Entity Code (CAGEC) and Part Number (P/N). Identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (3) - Usable On Code. When applicable, gives you a code if an item you need is not the same for different models of equipment. These codes are identified below:

CODE**USED ON**

FSP Part Number 78000-100

FSS Part Number 78000-101

Column (4) - Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the National Stock Number shown in column (1).

Column (5) - Qty Rec. Indicates the quantity recommended.

Table 1. Additional Authorized List (AAL).

(1) National Stock Number (NSN)	(2) Description, CAGEC, Part Number	(3) Usable On Code	(4) U/I	(5) Qty Rec.
4310-01-158-3262	COMPRESSOR UNIT, ROTARY (33968) 35083880	FSP FSS	EA	1

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
EXPENDABLE AND DURABLE ITEMS LIST (EDIL)**

SCOPE

This work package lists expendable and durable items that you will need to operate and maintain the Fuel System Supply Point (FSSP). This list is for information 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, Heraldic Items, or CTA 8-100, Army Medical Department Expendable/Durable Items).

EXPLANATION OF COLUMNS IN THE EXPENDABLE/DURABLE ITEMS LIST

Column (1) - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the item (e.g., "Antiseize compound (Item 1, WP 0214)") in the initial setup section of maintenance work packages.

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

(C = Operator, O = Unit, F = Direct Support, H = General Support, D = Depot)

Column (3) - National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) - Item Name, Description, (CAGEC), and Part Number. This column provides the other information you need to identify the item.

Column (5) - Unit of Issue (U/I). Indicates the physical measurement or count of the item as issued per the NSN shown in column (3).

Table 1. Expendable and Durable Items List (EDIL).

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, (CAGEC), AND PART NUMBER	(5) U/I
1	F	8030-01-044-5034	Antiseize compound, graphite, and petroleum, one pound can for use on threaded fasteners and fittings (80348) MIL-T-5544	CAN
2	C	8415-00-634-5023	Apron, utility, 45 in. long X 35 in. wide, rubber chloroprene, black (64067) 8415-00-634-5023	EA
3	O		Clamp, preformed P-16-S	EA
4	C	6850-01-474-2302	Cleaning compound, solvent (81349) MIL-PRF-680	GL
5	C	7920-00-044-9281	Cloth, cleaning (51200) MIRACLEWIPEL001	BX
6	O	9150-01-117-2928	Grease, ball and roller bearing (81349) DOD-G-24508	CN
7	H	6810-00-753-4993	Isopropyl alcohol, technical, 8 fl oz can, grade A, liquid (89264) 2200200	OZ
8	O		Kit, fuel spill control (0N5W4) 59359TYII	EA
9	O	9150-00-250-0926	Petrolatum, technical (81348) V-V-P-236	LB
10	H	5340-01-543-3963	Seal, lead (44674) A01135-000	EA
11	O	8030-01-431-3582	Sealing compound, PST (05972) 567	EA

Table 1. Expendable and Durable Items List (EDIL). - Continued.

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER (NSN)	(4) ITEM NAME, DESCRIPTION, (CAGEC), AND PART NUMBER	(5) U/I
12	H	8030-01-014-5869	Sealing compound, loctite 242 (05972) 24231	EA
13	O		Tape, teflon, 0.5 in. wide X 36 yards long (0DT23) 547teflon-3m	RL
14	C		Tape, teflon, 0.75 in. wide, 0.003 in. thick (39428) 6802K44	RL
15	H	9505-01-544-1307	Wire, 20 gauge (44674) 403796-020	EA
16	O	9505-00-293-4208	Wire, non-electrical, steel, passivated surface treat, 0.032 in. thick, 381 ft per roll (80205) MS20995C32	RL

END OF WORK PACKAGE

**OPERATOR, UNIT, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE
MANDATORY REPLACEMENT PARTS LIST (MRPL)**

MANDATORY REPLACEMENT PARTS LIST

This work package includes a list of all mandatory replacement parts referenced in the task initial setups and procedures. These are items that must be replaced during maintenance whether they have failed or not. This includes items based on usage intervals such as miles, time, rounds fired, etc.

Table 1. Mandatory Replacement Parts List (MRPL).

ITEM NUMBER	PART NUMBER/ CAGEC	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
1	600-001-10 (83259)	5330-00-603-0195	Packing	1
2	101038 (47186)	5310-01-543-5734	Washer, lock	8
3	101490 (47186)	5331-01-543-7885	O-ring	1
4	102460 (47186)	5330-01-543-4621	Gasket	2
5	102480 (47186)	5331-01-543-9637	O-ring	4
6	102482 (47186)	5330-01-543-5712	Gasket	1
7	103409 (47186)	5331-01-543-7984	O-ring	2
8	151002 (47186)	5331-01-395-7686	O-ring	2
9	151010 (47186)	5331-01-395-7687	O-ring	2
10	220464 (ODT23)	4730-01-544-3265	Bushing, hose	3
11	220466 (ODT23)	3120-01-456-3926	Bearing, sleeve	1
12	881083 (47186)	5310-01-543-4580	Washer, lock	8
13	881765 (47186)	5330-01-543-7947	Seal, plain, encased	2
14	882076 (47186)	5310-01-543-8339	Washer, lock	32
15	882352 (47186)	5310-01-543-7927	Washer, lock	4
16	882949 (47186)	5310-01-543-7939	Washer, lock	40
17	220465 (ODT23)	5330-01-458-5461	Seal, plain	1
18	220467 (ODT23)	5330-01-460-8998	Seal, plain	1

Table 1. Mandatory Replacement Parts List (MRPL). - Continued.

ITEM NUMBER	PART NUMBER/ CAGEC	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
19	220893 (0DT23)	4320-01-543-5581	Ring, wearing	1
20	201201-151 (0DT23)	5330-01-053-0217	Packing, preformed	2
21	207807 (0DT23)	5330-01-247-1080	Seal, plain	1
22	210189 (0DT23)	5360-01-338-0240	Spring, helical, compression	1
23	220146 (0DT23)	5330-01-433-9203	Seal, plain	2
24	220157 (0DT23)	5330-01-456-9662	Seal, plain	1
25	220158 (0DT23)	5330-01-456-9663	Seal, plain	1
26	220724-007 (0DT23)	5331-01-543-5080	O-ring	1
27	221284 (0DT23)	5330-01-543-5609	Seal, plain	1
28	235RF-020621 (41592)	5330-01-262-1363	Retainer, packing	1
29	235RF-02082P (41592)	5365-01-262-1339	Ring, packing	3
30	235RF-02092G (41592)	5330-01-262-1340	Gasket, valve bonnet	1
31	235RF-02212W (41592)	5310-01-265-5044	Washer, lock	8
32	23893 (0DT23)	4930-01-053-0187	Ring, outer piston	1
33	24085 (0DT23)	5330-01-053-0221	Gasket	1
34	4 INCH TTMA/C4401 (2P653)	5330-01-543-1161	Gasket	6
35	5500215F (33813)		Gasket	1
36	5500220 (33813)	5330-01-454-2848	Gasket	1
37	5500230F (33813)		Gasket	1
38	5500240F (33813)		Gasket	1
39	A01544-048 (47674)	5310-01-543-6560	Washer, lock	1

Table 1. Mandatory Replacement Parts List (MRPL). - Continued.

ITEM NUMBER	PART NUMBER/ CAGEC	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
40	KB01324-007 (47674)	3120-01-544-2526	Parts kit, bearing replacement, mechanical equipment	1
41	LA01527-104 (47674)	5330-01-544-6735	Seal, plain	1
42	LP526C1024R8 (0DT23)	5305-01-543-2394	Screw, machine	1
43	M25988/1-235 (81349)	5331-01-007-4899	O-ring	1
44	M29512-03 (81343)	5331-01-263-8011	O-ring	1
45	MS27030-6 (96906)	5330-00-612-2414	Gasket	1
46	MS27030-8 (96906)	5330-00-088-9166	Gasket	1
47	MS27194-40 (81343)	5330-01-197-8407	Gasket	1
48	MS29513-03 (81343)	5331-00-263-8011	O-ring	1
49	MS29513-009 (81343)	5331-00-248-3834	O-ring	2
50	MS29513-010 (81343)	5331-00-248-3835	O-ring	1
51	MS29513-014 (81343)	5331-00-248-3840	O-ring	2
52	MS29513-016 (81343)	5331-00-248-3845	O-ring	2
53	MS29513-126 (81343)	5331-00-265-1076	O-ring	1
54	MS29513-133 (81343)	5331-00-291-7384	O-ring	1
55	MS29513-134 (81343)	5331-00-641-0119	O-ring	1
56	MS29513-147 (81343)	5331-00-531-4588	O-ring	1
57	MS29513-227 (96906)	5331-00-260-9338	O-ring	1
58	MS29513-228 (81343)	5331-00-291-7337	O-ring	1
59	MS29513-229 (81343)	5331-00-291-3273	O-ring	1
60	MS29513-234 (81343)	5331-00-251-9367	O-ring	1

Table 1. Mandatory Replacement Parts List (MRPL). - Continued.

ITEM NUMBER	PART NUMBER/ CAGEC	NATIONAL STOCK NUMBER (NSN)	NOMENCLATURE	QTY
61	MS35338-046 (96906)	5310-01-389-4257	Washer, lock	150
62	MS21083C5 (80205)	5310-00-020-3260	Nut, self-locking	18

END OF WORK PACKAGE

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RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.				Use Part II (reverse) for Repair Parts and Special Tools Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).		DATE: 30 August 2007	
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ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON <i>(Provide exact wording of recommended changes, if possible).</i>	
	0141-1					Disassembly, Step 3, reference to Air Filter Canister (Figure 1, Item 7) should read (Figure 1, Item 8).	
SAMPLE							
<i>*Reference to line numbers within the paragraph or subparagraph.</i>							
TYPED NAME, GRADE, OR TITLE Pat Smith				TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION AV272-4162		SIGNATURE <i>Pat Smith</i>	

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PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION	
								SAMPLE	
PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>									
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<i>*Reference to line numbers within the paragraph or subparagraph.</i>						
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PART III - REMARKS <i>(Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)</i>									
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By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

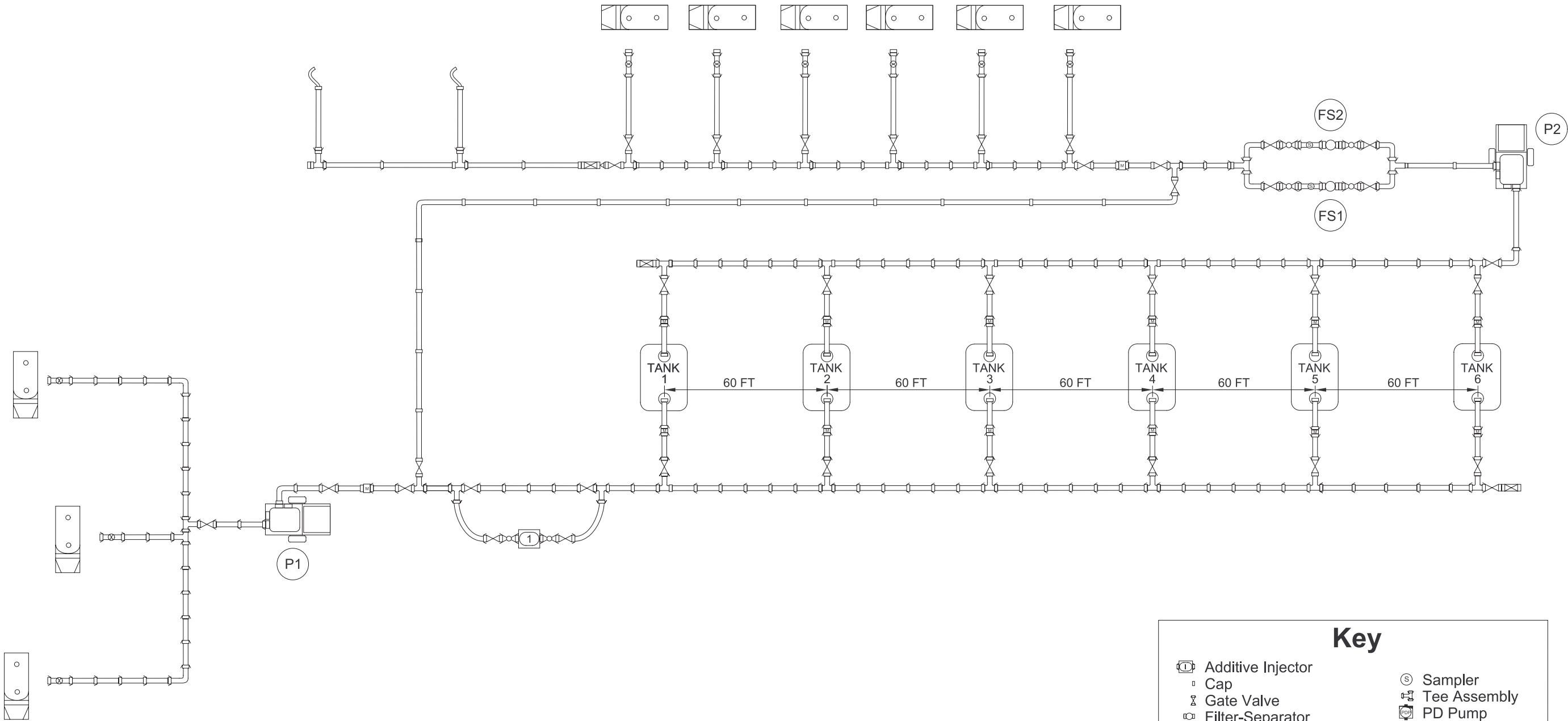
A handwritten signature in black ink, reading "Joyce E. Morrow". The signature is written in a cursive, flowing style.

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0807308

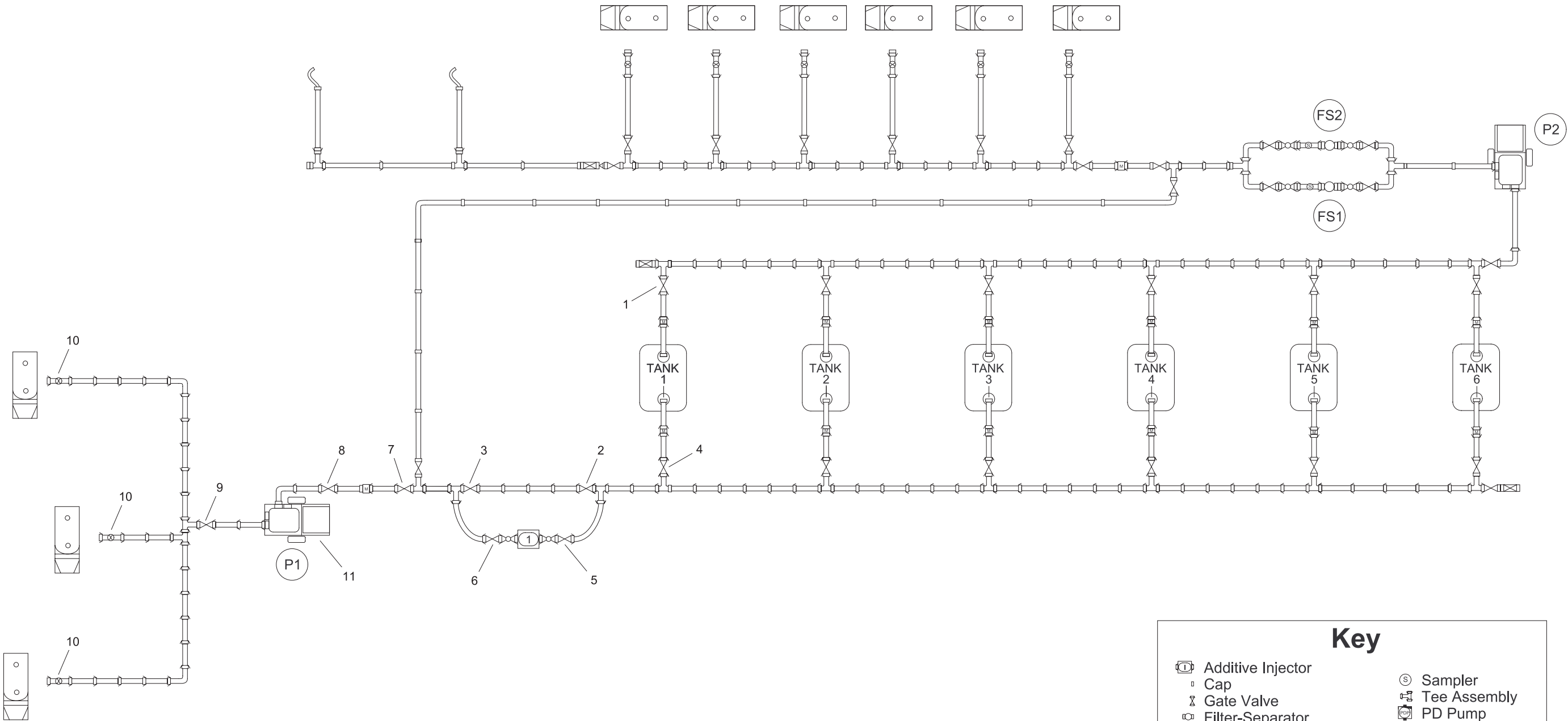
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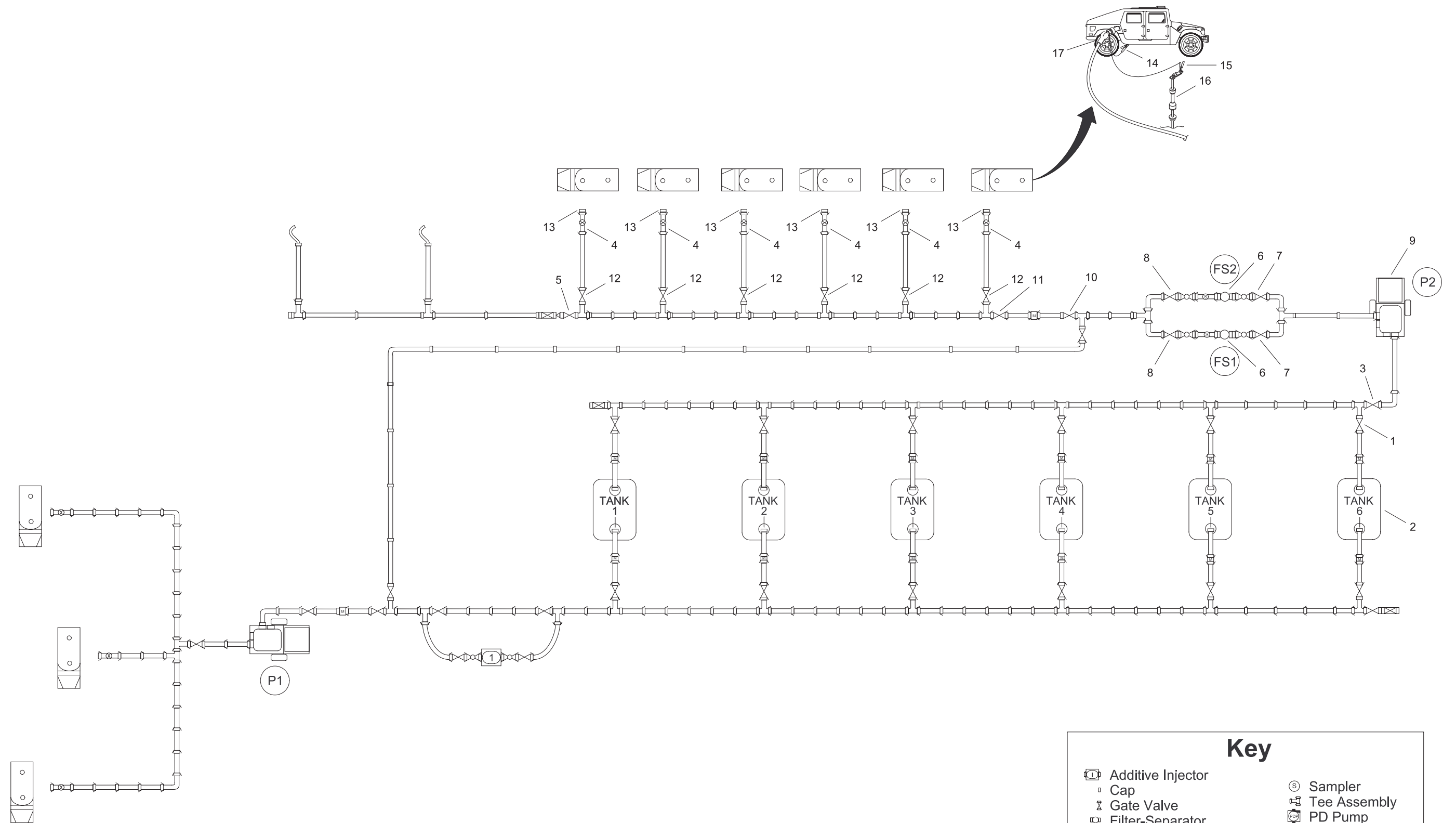
Key

Additive Injector	Sampler
Cap	Tee Assembly
Gate Valve	PD Pump
Filter-Separator	Butterfly Valve
Hose Assembly	Reducer
Nozzle	Adapter
Meter	Ball Valve
Pump	



Key

Additive Injector	Sampler
Cap	Tee Assembly
Gate Valve	PD Pump
Filter-Separator	Butterfly Valve
Hose Assembly	Reducer
Nozzle	Adapter
Meter	Ball Valve
Pump	



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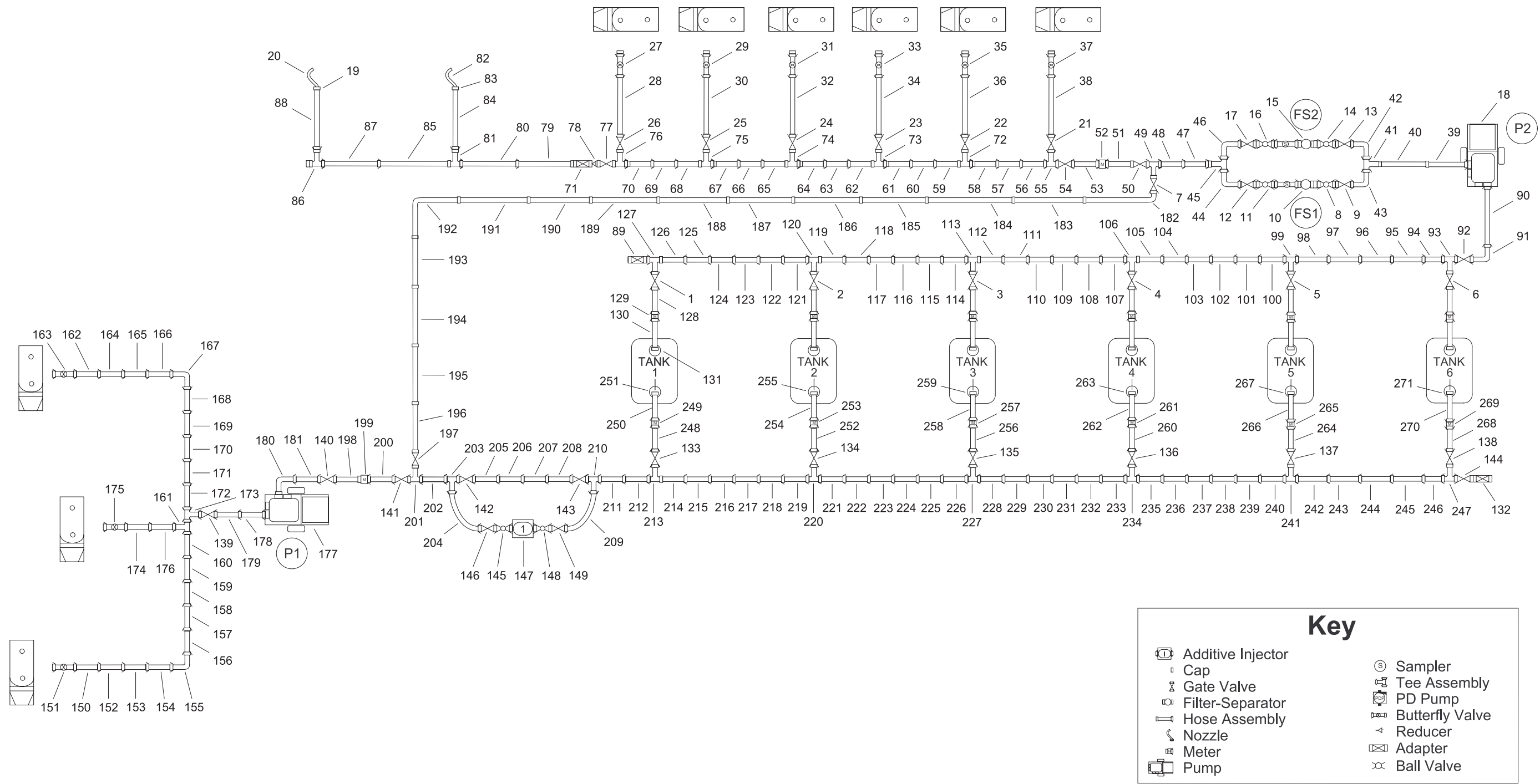


Figure FO-4. FSSP, Part Numbers 78000-100 and 78000-101, Evacuation of the Hoseline

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
 1 Meter = 100 Centimeters = 1,000 Millimeters = 39.37 Inches
 1 Kilometer = 1,000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
 1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
 1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1,000 Cu Millimeters = 0.06 Cu Inches
 1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
 1 Liter = 1,000 Milliliters = 33.82 Fluid Ounces

TEMPERATURE

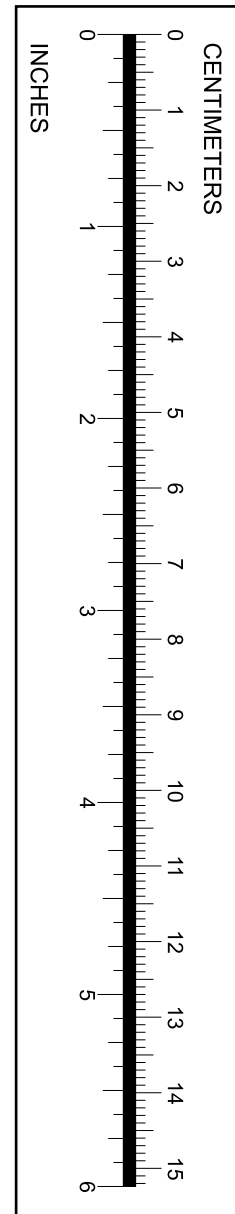
Degrees Fahrenheit (F) = $^{\circ}\text{C} \cdot 9 \div 5 + 32$
 Degrees Celsius (C) = $F^{\circ} - 32 \cdot 5 \div 9$
 212° Fahrenheit is equivalent to 100° Celsius
 90° Fahrenheit is equivalent to 32.2° Celsius
 32° Fahrenheit is equivalent to 0° Celsius

WEIGHTS

1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces
 1 Kilogram = 1,000 Grams = 2.2 Lb
 1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Millimeters	25.4
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.4536
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds Per Square Inch	Kilopascals	6.895
Miles Per Gallon	Kilometers Per Liter	0.425
Miles Per Hour	Kilometers Per Hour	1.609
TO CHANGE	TO	MULTIPLY BY
Millimeters	Inches	0.03937
Centimeters	Inches	0.3937
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.2046
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds Per Square Inch	0.145
Kilometers Per Liter	Miles Per Gallon	2.354
Kilometers Per Hour	Miles Per Hour	0.621



PIN: 083371-000