TECHNICAL MANUAL

OPERATION INSTRUCTIONS

BITUMINOUS DISTRIBUTOR

M918, MODEL D-63

NSN 3895-01-028-4390

E. D. ETNYRE & CO

(MANUAL PREPARED BY AM GENERAL CORPORATION)

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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OCTOBER 1979

CHANGE

No 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington D C, *30 April 1990*

OPERATOR'S MANUAL

BITUMINOUS DISTRIBUTOR BODY
M918 (MODEL D-63)
NSN 3895-01-028-4390

TM 5-3895-371-10, 5 October 1979, is changed as follows:

1. *Cover* The manual title is changed to read as shown above.
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A-1 and A-2	*A-1 and A-2*
B-3 and B-4	*B-3 and B-4*

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CHANGE

No 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *2 December 1980*

Operation Instructions

BITUMINOUS DISTRIBUTOR, M-918, MODEL D-63
(NSN 3895-01-028-4390)

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WARNING

When operating the Bituminous Distributor, be sure to observe all warning identified in the TM 9-2320-273-10, Operator's Manual for the M918 Truck Chassis. The warning conditions most likely to be encountered during distributor operations are repeated here.

CARBON MONOXIDE POISONING CAN BE DEADLY

Carbon monoxide is a colorless, odorless, poisonous gas, which, when breathed, deprives the body of oxygen and causes suffocation. Exposure to air contaminated with carbon monoxide produces symptoms of headache, dizziness, loss of muscular control, apparent drowsiness, or coma. Permanent brain damage can result from severe exposure.

Carbon monoxide occurs in the exhaust fumes of fuel-burning internal combustion engines and can become dangerous under conditions of inadequate ventilation. The following precautions must be observed to insure the safety of personnel:

A. Do not operate the engine of a vehicle in an enclosed area unless it is adequately ventilated.

B. Do not idle the engine for long periods without maintaining adequate ventilation in the personnel compartments and immediate area.

C. Do not operate any vehicle with inspection plates, cover plates, or engine compartment doors removed unless it is necessary for maintenance purposes.

a WARNING

WARNING

D. Be alert at all times during vehicle operation for exhaust odors, and exposure symptoms. If either is present, IMMEDIATELY VENTILATE the area. If symptoms persist, remove affected personnel from the area and treat as follows.

(1) Expose to fresh air.

(2) Keep warm.

(3) DO NOT PERMIT EXERCISE.

(4) If necessary, administer artificial respiration.

The best defense against carbon monoxide poisoning is adequate ventilation.

EXHAUST SYSTEM COMPONENTS CAN CAUSE SEVERE BURNS

During normal operation the exhaust pipe and muffler can become very hot. Be careful not to touch these components with your bare hands. Do not allow your body to come in contact with the pipe or muffler. Exhaust system components may be hot enough to cause serious burns.

Do not smoke or permit an open flame within 50 ft of the equipment when handling or storing fuel.

Open the stack cover and close the flue doors before operating the burners.

Do not open the fuel oil valves before the blower is in operation and the air valves open.

Close the burner fuel valves before shutting off the blower air. If a burner goes out, shut off the fuel valve and allow the blower air to thoroughly clear all unburned vapors from the combustion chambers and flues before relighting.

Never attempt to relight a burner by use of the hot fire brick in the combustion chamber.

b

WARNING

Do not operate the burners while the unit is in motion, when loading or unloading, or when the content of the tank is less than 6 in above the top of the burner flues

Do not leave lighted burners unattended

Do not heat the material above the maximum recommended spraying temperature When the burners are not in use, turn off the fuel oil valves

Do not operate burners if there is evidence of leakage in the heating flues Allow room for expansion of bituminous material in the tank, when the burners are used to heat the material

Do not operate the engine or burners while filling the fuel tanks Provide a metallic contact between the filling device and the fuel tank, to prevent a static spark which would ignite the vapors or the fuel

Reduce danger of explosion by removing all flushing oil from the tank and distribution lines after each flushing operation

Raise the Bitumeter wheel when driving the distributor in reverse or forward at speeds over 1, 500 fpm (feet per minute)

Do not use gasoline to fuel the burners

Compressed air used for cleaning purposes will not exceed 30 psi Use only with effective chip guarding and personal protective equipment (goggles/shield, gloves, etc.)

Dry cleaning solvent, SD-2, used to clean parts is potentially dangerous to personnel and property Do not use near open flame or excessive heat Flash point of solvent is 138°F (59°C)

TECHNICAL MANUAL

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D. C.
5 October 1979

OPERATOR'S MANUAL

BITUMINOUS DISTRIBUTOR BODY
M918 (MODEL D-63)
NSN 3895-01-028-4390

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes **or i**f you know of a way to improve the procedures, please let us know Mall your letter or DA Form 2028 *(Recommended Changes to Publications and Blank Forms)* direct to: Commander, U.S Army Tank-Automotive Command, ATTN- AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

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CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope.

This manual is for your use in operating and maintaining the Etnyre Bituminous Distributor, Model D-63, which is mounted on a M918 truck chassis instructions for operating and maintaining the vehicle chassis are contained in TM 9-2320-273-10 Equipment description herein is nonmetric and does not require metric conversion or special tools Tactical instructions will include metric units in addition to U S Standard units Clarity of instructions is not impaired.

1-2. Maintenance Forms and Records.

Equipment maintenance forms and procedures for their use are contained in DA Pam 738-750, *The Army Maintenance Management System (TAMMS).*

1-3. Reporting Equipment Improvement Recommendations (EIRs).

If your Bituminous Distributor 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 *(Quality Deficiency Report).* Mail it to us at Commander, U S Army Tank-Automotive Command, ATTN AMSTA-MP, Warren, MI 48397-5000. We'll send you a reply.

Section II. DESCRIPTION AND DATA

1-4. Description

a. Component Locations Figure 1-1 identifies major components and their locations

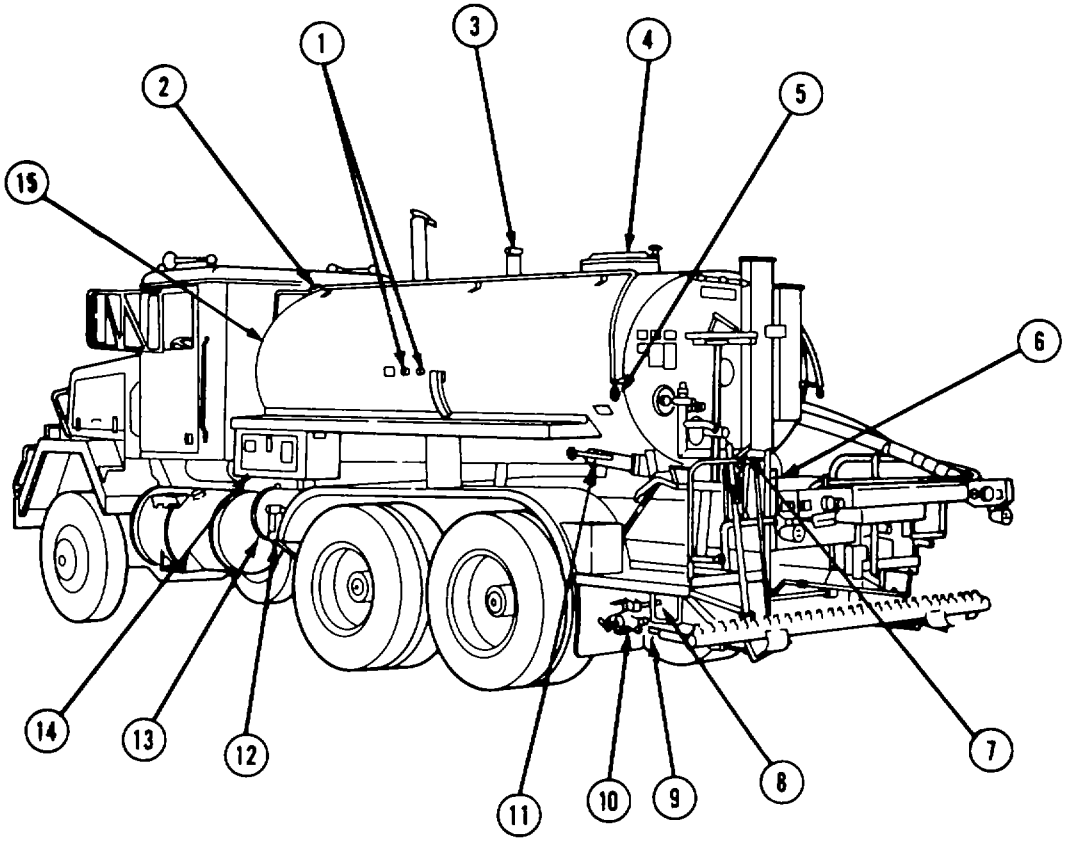
b. General The E. D. Etnyre & Company Bituminous Distributor, Model D 63, consists of a storage tank with a low pressure heating system, hydraulic powered pumping unit, and an adjustable spray bar for distributing bituminous material The equipment is mounted on an M918 truck chassis (see TM 9-2320-273-10 for truck operating procedures).

c. Major Components (Fig 1-1)

(1) Thermometer and Well (Dry) - Thermometer is inserted in well to check the temperature of the bitumen in the tank.

(2) Signal Bell - Used by the operator on the rear control platform to signal the driver to start and stop the truck.

(3) Overflow and Vent Cover - Permits overflow of bitumen should overfill occur.

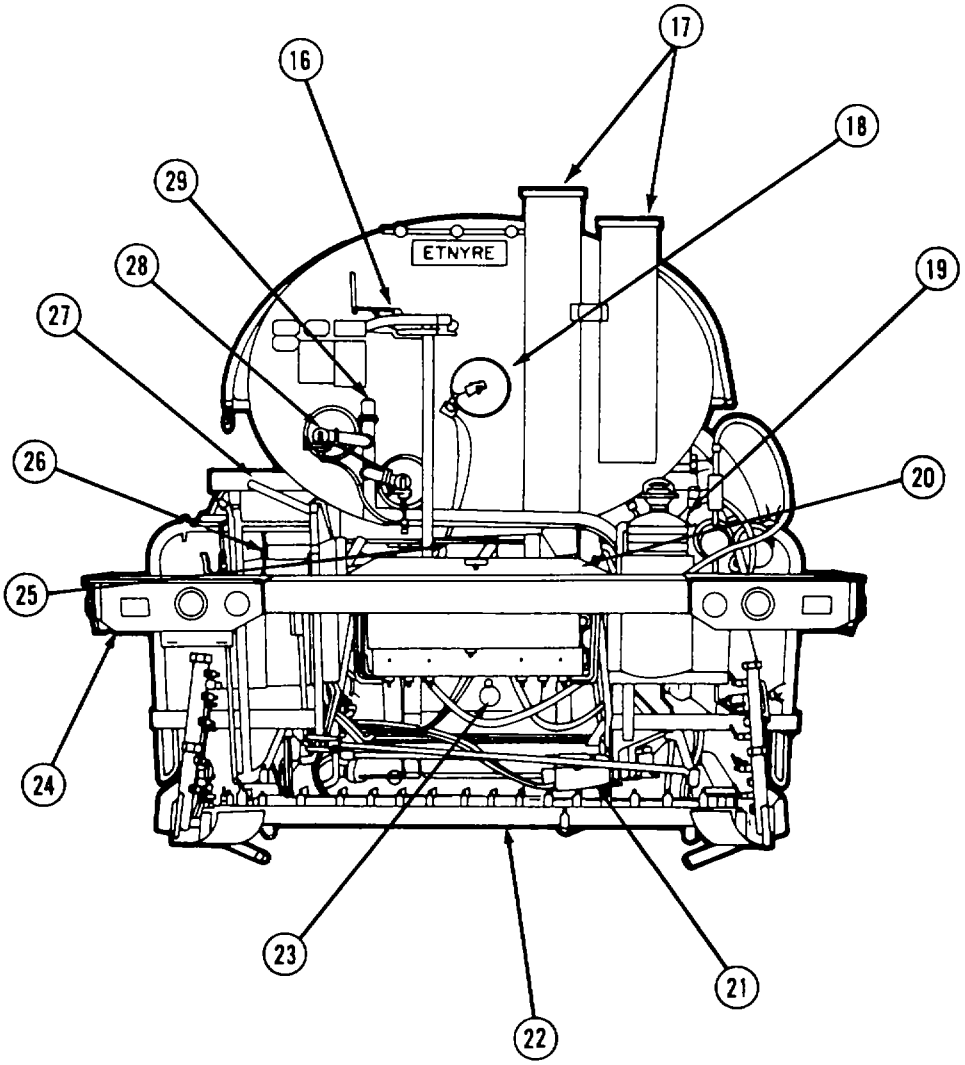


LEGEND.

1	THERMOMETER AND WELL (DRY)	9	HANDSPRAY CONNECTOR
2	SIGNAL BELL	10	TRANSFER VALVE COVER
3	OVERFLOW AND VENT COVER	11	FILL LINE CAP
4	MANHOLE	12	HYDRAULIC FILTER
5	SIGNAL BELL PULL RING	13	HYDRAULIC RESERVOIR
6	AIR CONTROL BOX	14	TOOL BOX
7	BAR TURN UP LEVER	15	MATERIAL STORAGE TANK
8.	TRANSFER VALVE LEVER		

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Figure 1-1. Major Components and their locations (sheet 1 of 3)

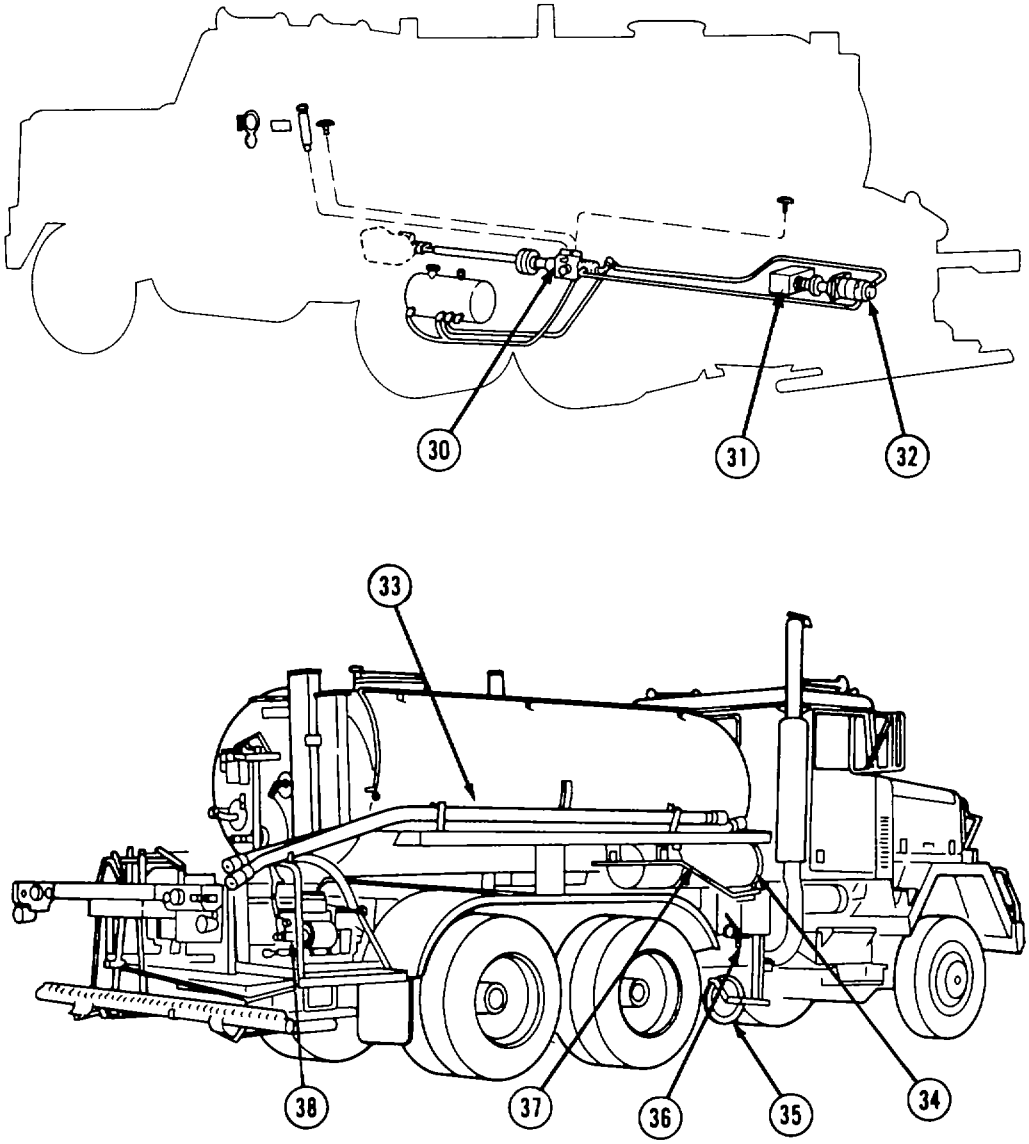


LEGEND

16 QUADRANT CONTROL LEVER
17 EXHAUST STACKS
18 TANK GAGE
19 PORTABLE BURNER
20 EXTENSION BAR STOWAGE BOX
21 AIR CYLINDER
22 SPRAY BAR
23 DISCHARGE HEADER STRAINER
24 LOOM BUMPER
25 VACU-FLO VALVE LEVER
26 BUTTERFLY VALVE LEVER
27 INTAKE VALVE LEVER
28 LOW PRESSURE ATOMIZING BURNERS
29 AIR RELIEF VALVE

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Figure 1-1. Major Components and Their Location (Sheet 2 of 3)



LEGEND

30	HYDRAULIC PUMP	35	BITUMETER WHEEL
31	BITUMEN PUMP	36	AIR LINE LUBRICATOR
32	HYDRAULIC MOTOR	37	HAND SPRAY GUN
33	AUXILIARY HOSE (2)	38	BURNER FUEL PUMP
34	BURNER FUEL TANK		

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Figure 1-1. Major Components and Their Locations (Sheet 3 of 3).

(4) Manhole - Provides access to the tank for cleaning the interior and may be used for filling the tank

(5) Signal Bell Pull Ring - Enables the signal bell to be operated from the control platform at the rear of the unit

(6) Air Control Box - Air control valves, solenoids and electrical switches are located in the air control box The electrical switches duplicate the functions of those on the cab control panel so that the operator at the control platform can control air to raise, lower, or shift the spray bar

(7) Bar Turn Up Lever - A mechanical lever used to turn up the spray bar after spraying operations are complete

(8) Transfer Valve Lever - A mechanical lever used to position the transfer valve for either filling through the transfer valve ra**il** car connection or operating the hand spray bar

(9) Handspray Connection - Quick action connection on the transfer valve rail car connection for connecting the handspray bar line

(10) Transfer Valve Cover - Cover provides access to the transfer valve for filling the system through the transfer valve

(11) Fill Line Cap - Cap provides access for filling the system through the fill line

(12) Hydraulic Filter - Filters the hydraulic fluid to prevent contamination of hydraulic motor and pump

(13) Hydraulic Reservoir - Stores 20 gallons of hydraulic fluid to operate the hydraulic system

(14) Tool Box - Provides a stowage location for Basic Issue Item Tools and Integral Components of End Item

(15) Material Storage Tank - The 1500 gallon capacity storage tank is elliptical in shape and is made of welded steel it contains a surge plate which prevents sudden shifting of contents and also supports the heating flues The flues are securely supported by the surge plate to eliminate vibration and allow for expansion and contraction insulation, consisting of 2 in fiberglass material, reduces heat loss

(16) Quadrant Control Lever - Positions the control valves for controlling flow of the bitumen from the bituminous pump

(17) Exhaust Stacks - Exhaust fumes from the low pressure atomizing burners

(18) Tank Gage - Indicates the number of gallons of bitumen in the storage tank

(19) Portable Burner - The portable burner is used to heat components containing bitumen other than the storage tank, e g, bituminous pump, spray bar, plumbing, etc.

(20) Extension Bar Stowage Box - The stowage box is used to stow the extension bars when not in use

(21) Air Cylinder - There are a total of five air cylinders that provide directional force to shift, raise, lower, and tilt the spray bar.

(22) Spray Bar - The spray bar can be adjusted from eight to twenty-four feet with one and two foot sections. The end sections are tapered to aid in draining and may be folded for traveling The bar can be shifted fourteen inches laterally (seven inches each side of center) to follow a given line Normal operation requires an eight foot spread The height of the spray bar is adjustable

(23) Discharge Header Strainer - Strains the bitumen after it leaves the pump and before it is distributed through the control valves. Removes contaminants from the bitumen

(24) Loom Bumper - Protects the equipment mounted on the rear of the distributor from being hit accidentally Also houses the rear side marker, backup, turn and clearance, blackout, and tall and stop lights and the wire harness for the lights.

(25) Vacu-Flo Valve Lever - The vacu-flo works in conjunction with the quadrant control to route bitumen from the spray bar and fill system back into the storage tank for filling and cleaning operations Vacu-flo valve positions are

(a) Vacuum off for filling

(b) Cleaning left half bar only

(c) Cleaning right half bar only

(d) Cleaning entire bar

(26) Butterfly Valve Lever - Regulates pressure in the right side return line to tank. Butterfly valve is left open for all operations except it is partially closed during hand spray operations to regulate pressure

(27) Intake Valve Lever - The intake valve shuts off the system at the pump (when operations are complete) to prevent leakage from the tank through the system.

(28) Low Pressure Atomizing Burners - The low pressure burners operate on diesel fuel from a storage tank. The burners are mounted at the rear of the tank with ignition tiles located in the heating flues. The burners are supplied with a combination of air and fuel by a combination burner blower and burner fuel pump.

(29) Air Relief Valve - The air relief valve vents excess air pressure from the burner blower.

(30) Hydraulic Pump - The pump is an axial piston type with an infinitely variable displacement. Minimum displacement is 4 5 cubic inches per revolution. The pump operates off the truck chassis PTO and supplies hydraulic pressure to operate the hydraulic motor.

(31) Bitumen Pump - This heavy-duty gear-type pump is driven by the hydraulic motor through a double universal joint and sealed bearing, with overload protection. The pump has a delivery capacity of 400 gallons per minute and supplies material to a 24 foot spray bar with sufficient pressure to produce an even fan-like spray from all nozzles, at any specified rate between 0 10-1 0 gallons per square yard.

(32) Hydraulic Motor - The motor is an axial piston type with a fixed displacement of 4 88 cubic inches. The motor powers the bitumen pump.

(33) Auxiliary Hoses - Auxiliary hoses are used for filling the distributor or transferring the bitumen.

(34) Burner Fuel Tank - The tank stores diesel fuel for the low pressure atomizing burners used to heat the bitumen.

(35) Bitumeter Wheel - With the wheel lowered and the distributor in motion, the wheel measures ground speed in terms of feet per minute.

(36) Air Line Lubricator - Lubricates air in the system to prevent corrosion of plumbing valves, air cylinders, etc.

(37) Hand Spray Gun - This gun is connected to the transfer valve and is used to spray areas not accessible using the regular spray bar on the distributor.

(38) Burner Fuel Pump - The pump is driven by a direct drive coupling to the blower assembly which is powered by a hydraulic motor The pump supplies diesel fuel to the burners from the burner fuel tank.

d. Truck Chassis Operation - You will need to become familiar with the truck chassis components Refer to TM 9 2320-273-10 for operating instructions.

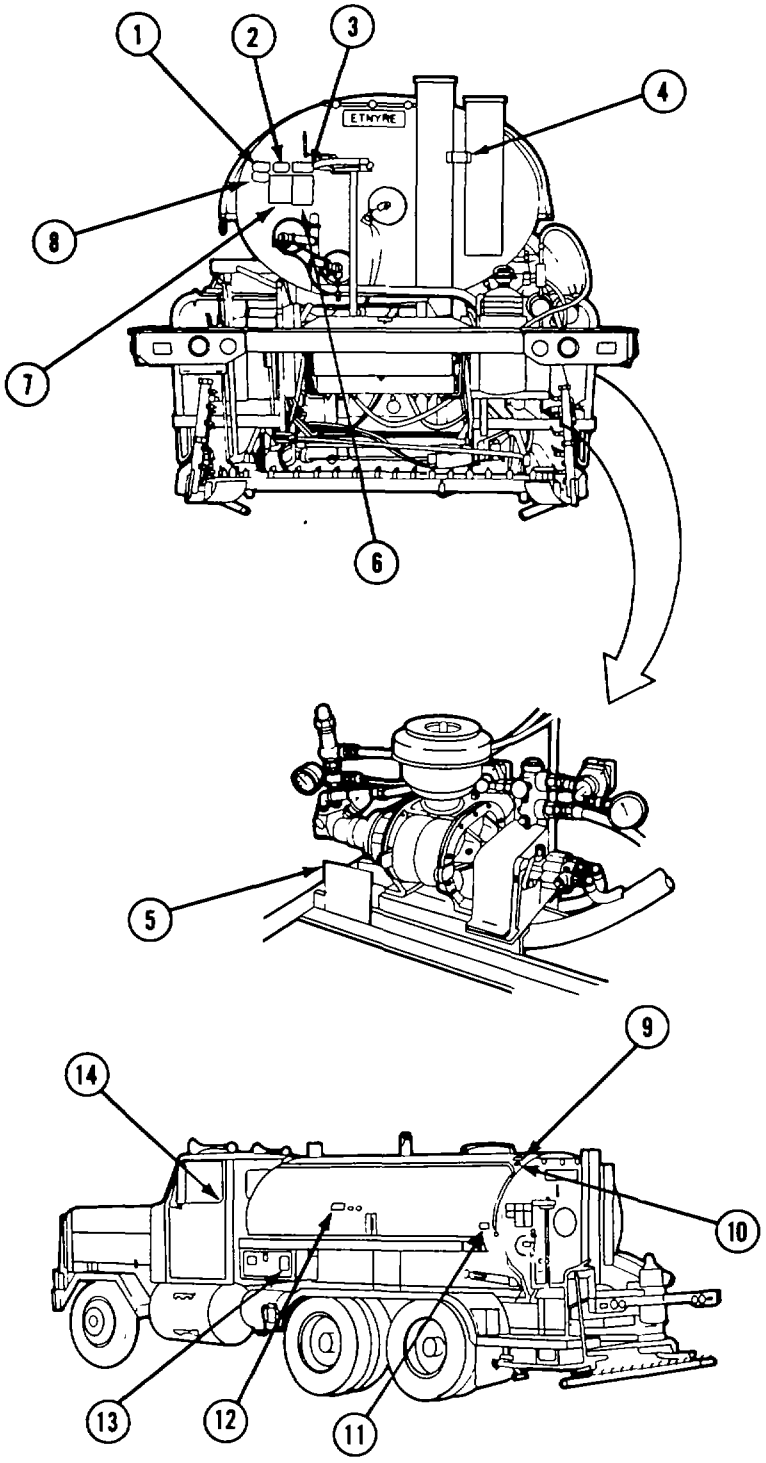
1-5. Tabulated Data

a. Capacities, Weights, and Dimensions. - Table 1-1 lists data on the Bituminous Distributor capacities, weights, and dimensions, which you may need when you are operating the equipment.

b. Instructions,- Data Plates Figure 1-2 identifies the bituminous body instruction and data plates.

Table 1-1. Bituminous Distributor Body Capacities, Weights, and Dimensions

Burners	
Manufacturers	Hauck Manufacturing Co.
Model No	580A
Type	Low Pressure Atomizing Type
Material Storage Tank	
Capacity (Nominal)	1500 gal (5678 l)
Overage for Expansion	85 gal (322 l)
Manhole	20 in dia
Overflow	3 in pipe
Tank Gage	Mechanical Float Type
Thermometer	Armored Pencil 600°F
Spray Bar	
Length of Center Section	8 ft. (2.44 m.)
Length of Extension	1 ft. and 2 ft.
Total	24 ft.
Nozzles	
Type	Fan
Thread	1/2 in. npt
Slot	1/8 in.
Spacing	4 min.
Bituminous Pump Data	
Make	E D Etnyre & Co.
Model	D-63
Operating Pressure	20 psi
Output Capacity	400 gpm
Burner System	
Fuel Consumption (Maximum Operation)	12 gal per hr
Fuel Consumption (Minimum Operation) (3/4 gal per hr each Burner)	1-1/2 gal per hr
Capacities	
Fuel Tank Burner	36 gal (136.3 l)
Portable Burner Tank	4 gal (15.1 l)
Hydraulic Reservoir	20 gal (75.7 1)
Military Load Class (MLC) Filled	21"
Dimensions & Weights (Including Truck Chassis)	
Overall Length	350.6 in (8.9 m)
Overall Width	96 in (2.44 m)
Overall Height (Over horns - empty)	127.93 in (3.25 m)
Net Weight Empty	31,340 lbs (14,228 Kg)
Net Weight Filled	43,280 lbs (19,649 Kg)
Shipping Volume	2544 cu ft (72 cu. m.)
Shipping Tonnage	15.6 tons (14.1 metric tons)



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Figure 1-2. Instruction and Data Plates (Sheet 1 of 6)

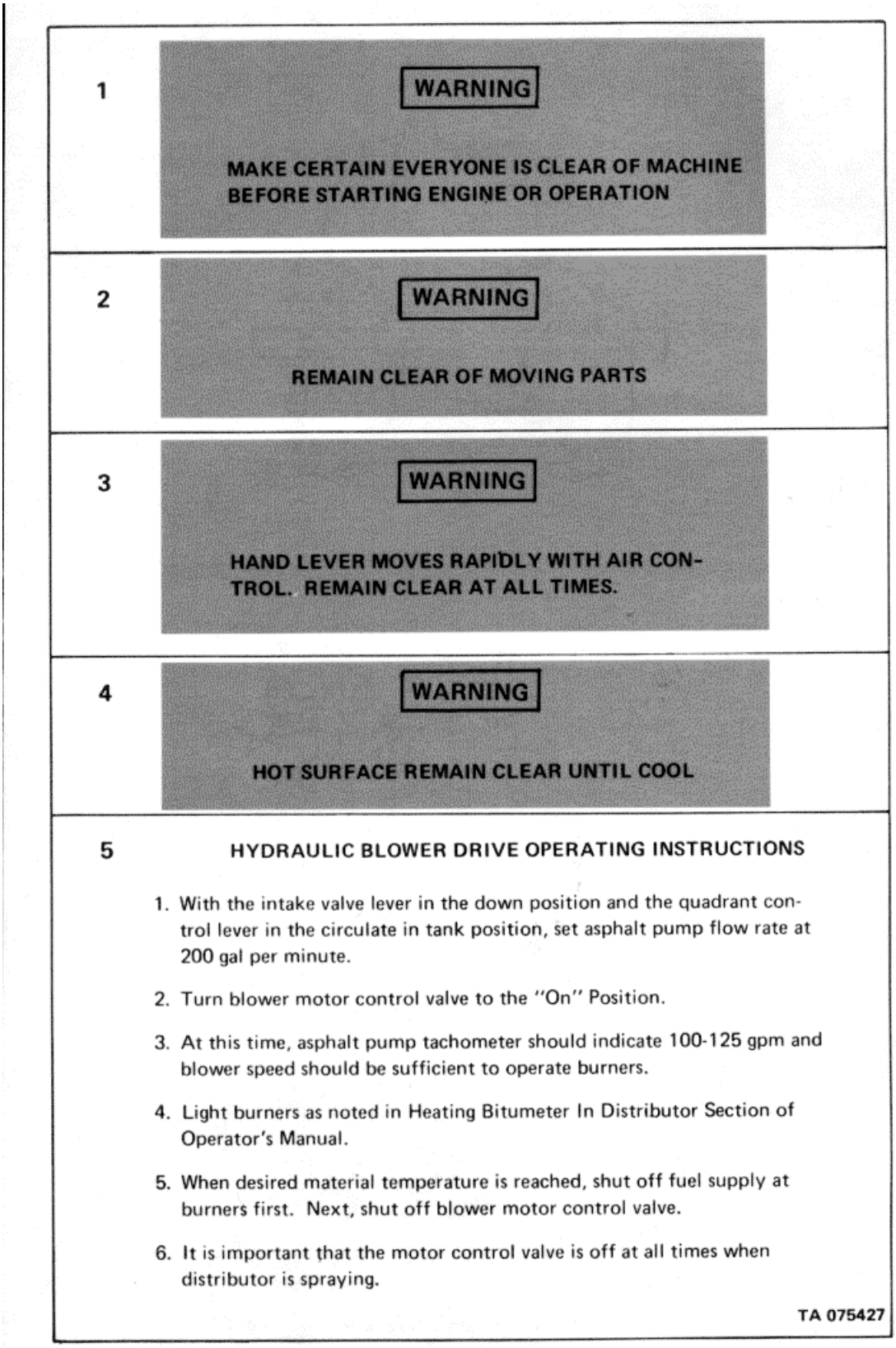


Figure 1-2. Instruction and Data Plates (Sheet 2 of 6)

7 Only under very bad conditions is it acceptable to operate the burners without circulating material in the tank. However, if it is absolutely necessary to operate burners before the asphalt pump is free, take the following precautions.

a. Check as usual to insure flues are covered by a minimum of 6 in of material for the full length.

b Do not operate hydraulic system at more than 1500 psi except when attempting to free asphalt pump.

c. Turn blower motor control valve on before engaging PTO and increasing hydraulic system pressure.

d Free asphalt pump by applying heat to the housing and start circulating tank as soon as possible.

6 DIRECTIONS FOR LOW PRESSURE BURNERS

1. Open stack cover.

2 Set controls for Circulate in Tank.

3 Suspend thermometer from manhole if material does not cover thermometer well.

4 Read detailed instructions in manual.

5 Use kerosene or fuel oil only

6 Engage blower

7. Circulate material approximately 1.50 gal per minute

8. Set air pressure 1-1/2 to 2 psi Set fuel pressure 15-20 psi

9 Turn air valve to Start position

10. Hold ignited burner lighter under burner tip

11. If burner does not ignite immediately or if flame goes out, close fuel valve, wait until gas is exhausted from the flues, then re-light

12 Adjust fuel valve until stack smoke is slightly dark

13 For full flame, open air and fuel valves alternately and slowly, keeping exhaust slightly dark

14 Always close fuel valve first when shutting down

15 After shutting down burners, close stack covers to prevent heat loss

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Figure 1-2. Instruction and Data Plates (Sheet 3 of 6)

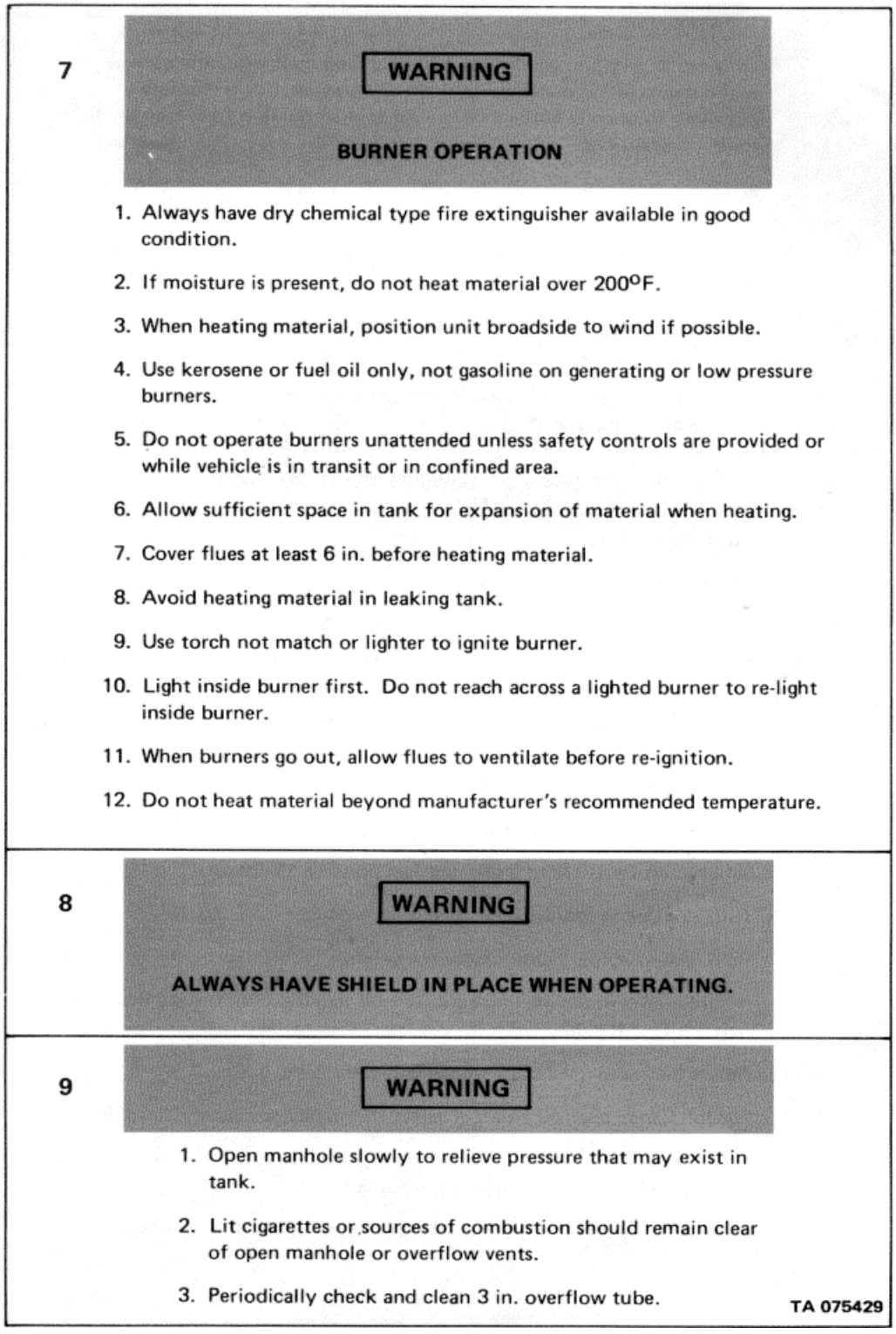


Figure 1-2. Instruction and Data Plates (Sheet 4 of 6)

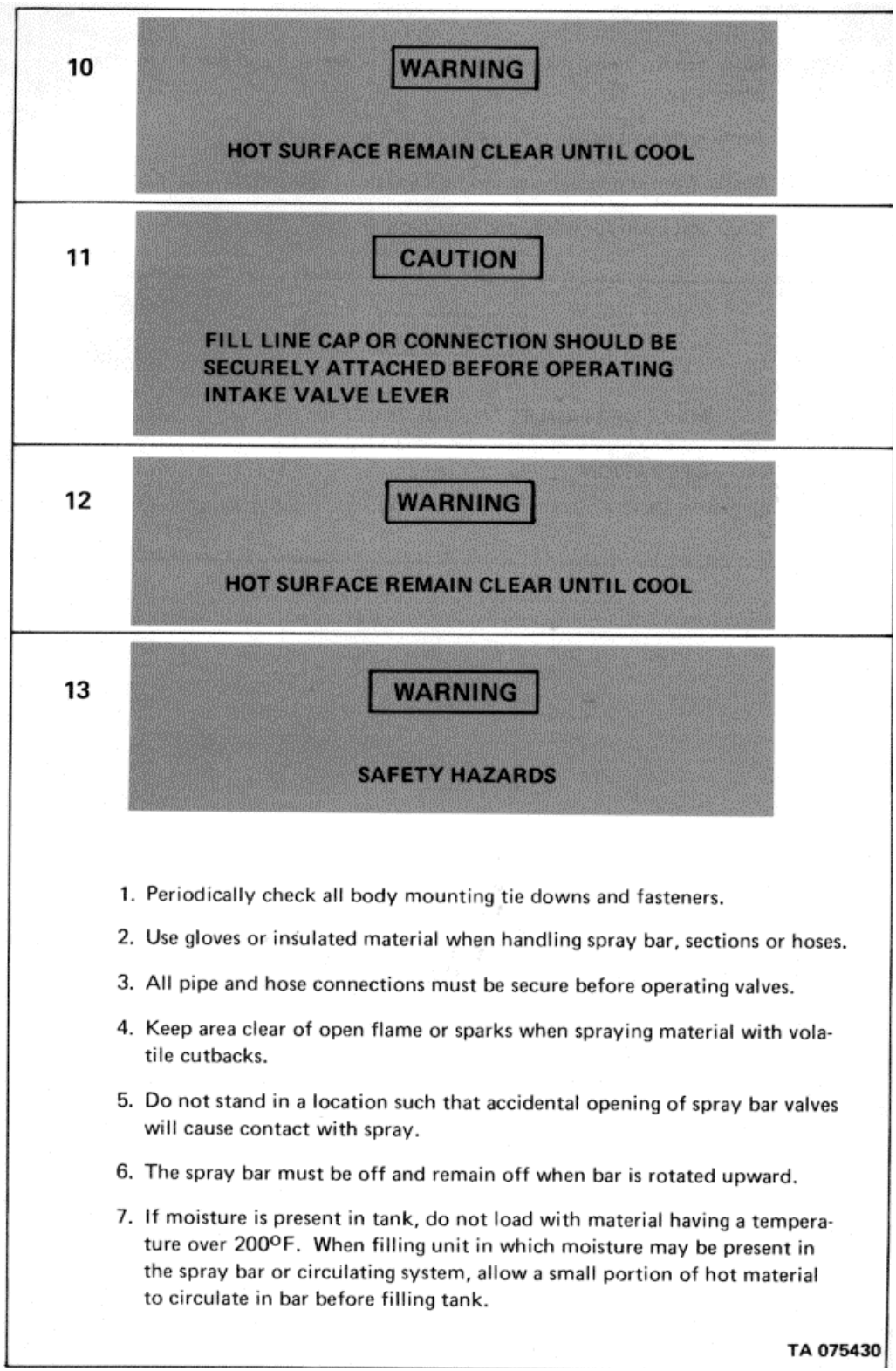


Figure 1-2. Instruction and Data Plates (Sheet 5 of 6)

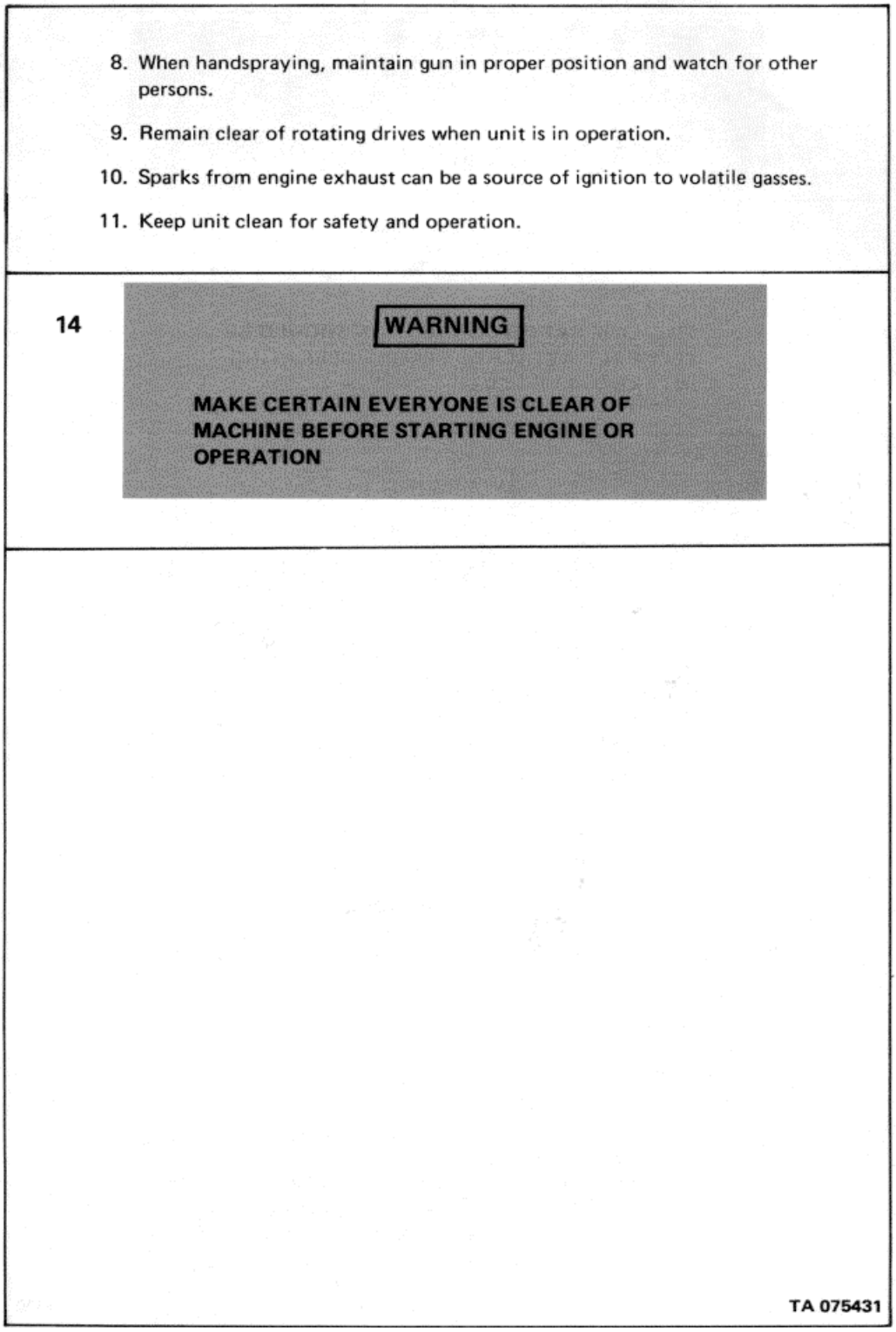


Figure 1-2. Instruction and Data Plates (Sheet 6 of 6)

CHAPTER 2
OPERATING INSTRUCTIONS

Section I. OPERATING PROCEDURES

2-1. Introduction.

This section will tell you how to fill, circulate, operate, and shutdown the Bituminous Distributor under ordinary operating conditions. It identifies controls and tells you how to use them.

NOTE

See TM 9-2320-273-10 for M918 truck chassis operating instructions.

2-2. Initial Guidelines

Before you operate the distributor, you should:

a. Perform your before (B) PMCS. If necessary, notify Organizational Maintenance of problems.

b. Read all safety rules and be aware of hazardous conditions.

2-3. Controls and Indicators.

a. Hydraulic Controls. The hydraulic controls (fig 2-1) provide control of the air and hydraulic systems. The controls and their functions are:

(1) Pump Tachometer (GPM) - Accurately registers asphalt pump discharge in gallons per minute

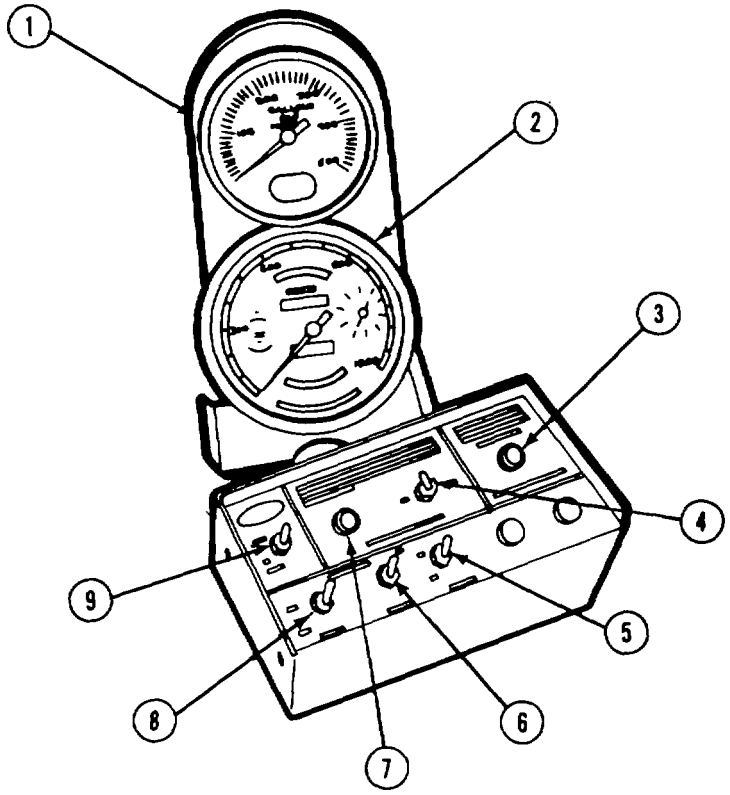
(2) Recording Bitumeter - With the bitumeter wheel lowered and distributor in motion, provides operator with the exact speed in feet per minute, also the number of feet traveled Bitumeter indicates from 0-1500 ft per minute

(3) Hydraulic Oil High Temperature Warning Indicator - Light comes on when hydraulic oil reaches a temperature above 185 degrees F.

(4) Material Low Level On/Off Switch - Energizes the tank gage circuit to provide a visual indication to the operator by the Material Low Level Indicator

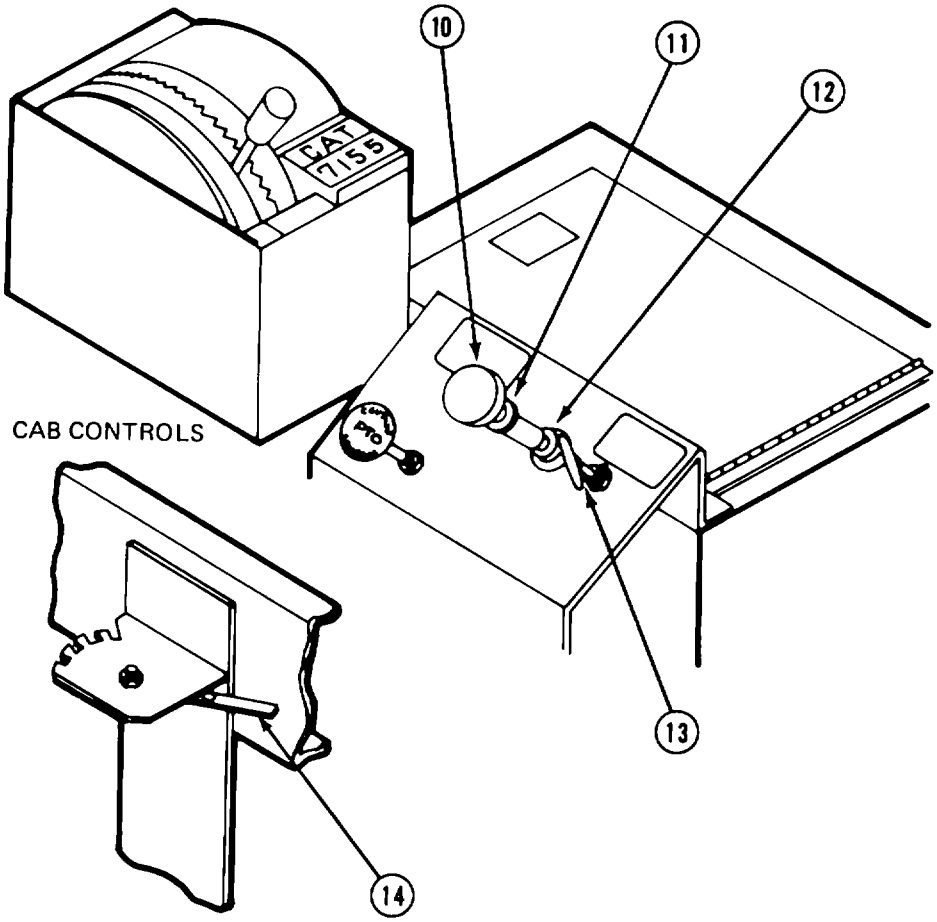
(5) Spray Bar Control Turn Up/Dn Switch - Activates the air cylinders to raise or lower the Spray Bar

(6) Spray Bar Control Shift L/R Switch -- Activates the air cylinders which shift the spray bar left or right



LEGEND

1 PUMP TACHOMETER (GPM)
2 RECORDING BITUMETER
3 HYDRAULIC OIL HIGH TEMPERATURE WARNING INDICATOR
4 MATERIAL LOW LEVEL ON/OFF SWITCH
5 SPRAY BAR CONTROL TURN-UP/DN SWITCH
6 SPRAY BAR CONTROL SHIFT L/R SWITCH
7 MATERIAL LOW LEVEL INDICATOR
8 SPRAY BAR CONTROL ON/OFF SWITCH
9 BITUMETER UP/DN SWITCH



LEGEND

10 MAIN HYDRAULIC CONTROL KNOB
11 FINE CONTROL KNOB
12 LOCK RING
13 AB OVERRIDE CONTROL
14 REAR PLATFORM OVERRIDE CONTROL

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Figure 2-1. Hydraulic Control (Sheet 2 of 2)

(7) Material Low Level Indicator - With the Material Low Level switch ON, and material in the tank gets low, the indicator comes ON to warn the operator

(8) Spray Bar Control On/Off Switch - Activates the air cylinder which controls the opening and closing of the spray bar nozzles

(9) Bitumeter Wheel UP/DN Switch - Activates the air cylinder which raises and lowers the bltumeter wheel

(10) Hydraulic Control Knob - Controls the speed of the hydraulic pump which develops the pressure of the hydraulic fluid to the hydraulic motor

(11) Fine Control Knob - After the hydraulic control knob is set to the required pump speed setting, the fine control knob is adjusted up against the control knob to maintain accurate setting

(12) Lock Ring - The lock ring is adjusted against the fine control knob to lock in desired position

(13) Cab Override Control - This control, when pulled up, releases the hydraulic pump and removes pressure from the system

(14) Rear Platform Override Control - Provides control from rear of distributor to release system hydraulic pressure

b. Hydraulic Reservoir and Filter The hydraulic reservoir and filter (fig. 2-2) contains the hydraulic fluid and filtration for the hydraulic system

(1) Fill Cap - Provides opening to fill hydraulic reservoir tank

(2) Temperature Gage - Provides visual indication of temperature of hydraulic fluid. Reads 0-500. Normal reading is below 185°F.

(3) Breather - Provides vent for tank.

(4) Filter - Contains filter element that strains any foreign matter out of hydraulic fluid.

(5) Filter Vacuum Gage - Indicates when filter element requires replacing. Element must be replaced when gage indicates 17 in. Hg maximum

(6) Drain Plugs - Two drain plugs, one at each end of tank, used to drain hydraulic fluid when changing filter element or maintenance is performed

(7) Temperature Switch - The temperature switch closes when the hydraulic fluid reaches 185°F and provides a visual indicator to the operator in the cab.

(8) Sight Gage - Provides a visual indication of the hydraulic fluid level in the tank

(9) Hydraulic Reservoir Tank - The hydraulic reservoir tank contains 20 gal of hydraulic fluid used to operate the hydraulic pump and motor.

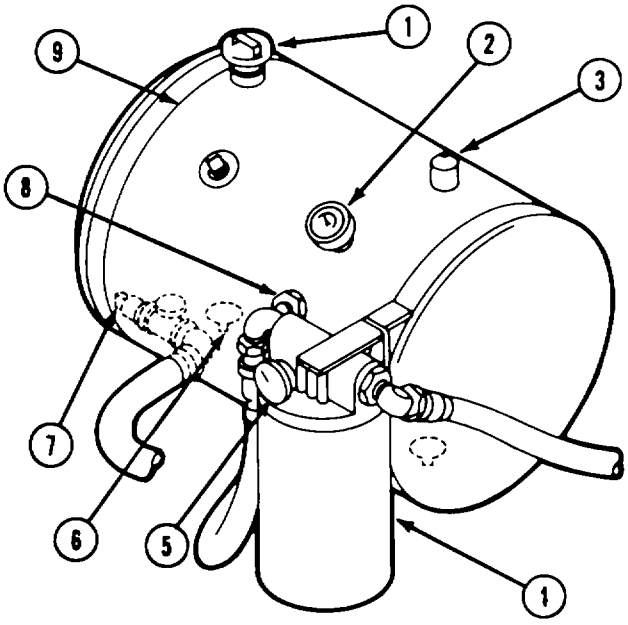


Figure 2-2. Hydraulic Reservoir and Filter

c. Control Valve and Quadrant Control Lever. Figure 2-3 illustrates the different positions of the quadrant control lever and the valve positions for the various operations

d Operating Controls and Components. Figure 2-4 illustrates the operating controls and components for the distributor

(1) Vacu-flo Lever - Allows operator to set vacu-flo to one of four positions

(a) Vacuum off for filling.

(b) Cleaning left half of spray bar only

(c) Cleaning right half of spray bar only

(d) Cleaning entire spray bar

(2) Intake Valve - Bolted to under side of tank at rear end, immediately below the tank. Operated by lever below control valve levers. Two positions: one for filling tank and one for circulating or distributing material.

(3) Control Valves - Control flow to spray bar (4) and transfer valve (6).

(4) Spray Bar - Turn-up, folding extension type End sections tapered. Quickly adjustable in increments of 1 and 2 feet to any length up to 24 feet Bar height adjustable by adjusting stops under operator's platform. Spray bar can be shifted 14 inches (7 inches each side of center) laterally, making it easy to follow a given line. End section may be folded for traveling.

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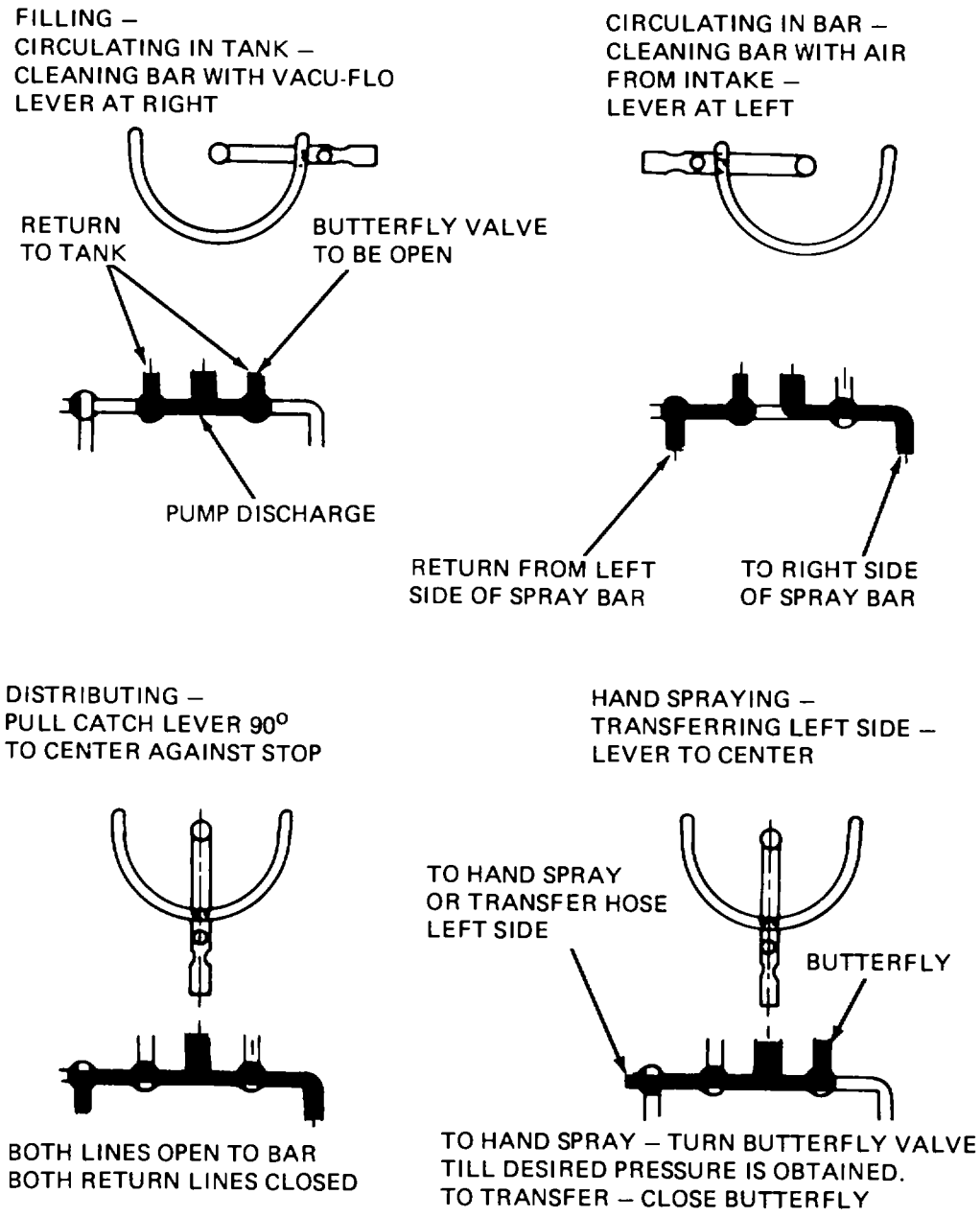


Figure 2-3. Control Value and Quadrant Control Lever Positions.

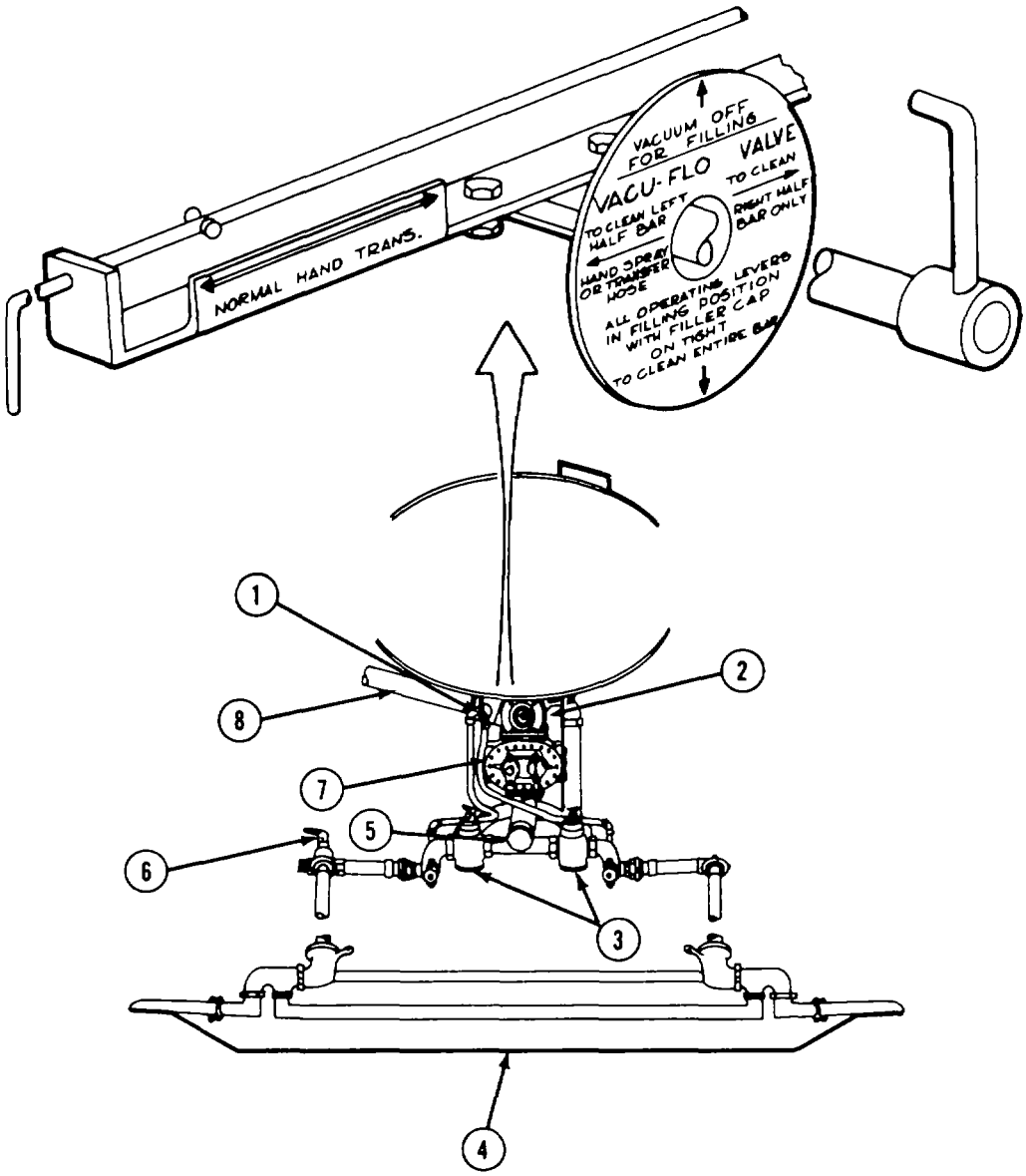


Figure 2-4. Operating Controls and Levers.

LEGEND:

1	VACU-FLO VALVE	5	DISCHARGE HEADER AND STRAINER
2	INTAKE VALVE	6	TRANSFER VALVE
3	CONTROL VALVE (2)	7	PUMP
4	SPRAY BAR	8	FILL LINE

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(5) Strainers - One is provided in the filling line (fig. 3-8), one in the discharge header (fig. 24) between the pump and control valves, one in the manhole (fig. 3-5), one in the fuel lines (fig. 3-4), and one at each burner control valve (fig. 3-7).

(6) Transfer Valve - "Leakless" type Quick-action union connections for transferring material at full pump capacity. Complete with Morrison Couplings for attaching filling hose or hand spray hose.

(7) Pump - Heavy-duty, rotary gear type Capable of supplying bitumen to the 24-foot spray bar with sufficient pressure to produce an even, fanlike spray from all nozzles at any rate of application within the distribution range of 1/10 to 1 gallon per square yard. Capacity, 400 gpm

(8) Filling Line - Quick-acting, screw-clamp, hinged-type connection with Morrison Couplings, for connecting filling hose Located in front of left operator's platform

e Pressure Gages and Control Valves. The gages and valve (fig. 2-5) provide the operator visual indications and control of hydraulic oil pressure

(1) Air Pressure Gage - Provides visual indication of the air pressure in the distributor system Indicates 0-160 psi Normal reading is 120 psi.

(2) Motor Control Valve - The valve has an On/Off position to control the flow of hydraulic fluid to operate the burner blower

(3) Hydraulic Pressure Gage - (Fig. 2-5) provides visual indication of the hydraulic pressure developed in the distributor system. Indicates 0-5000 psi. Maximum pressure is 4000 psi

(4) Fuel Pressure Gage - Indicates the amount of fuel pressure applied to the burners to mix air for ignition. Indicates 0-100 psi. Normal reading is between 10-15 psi.

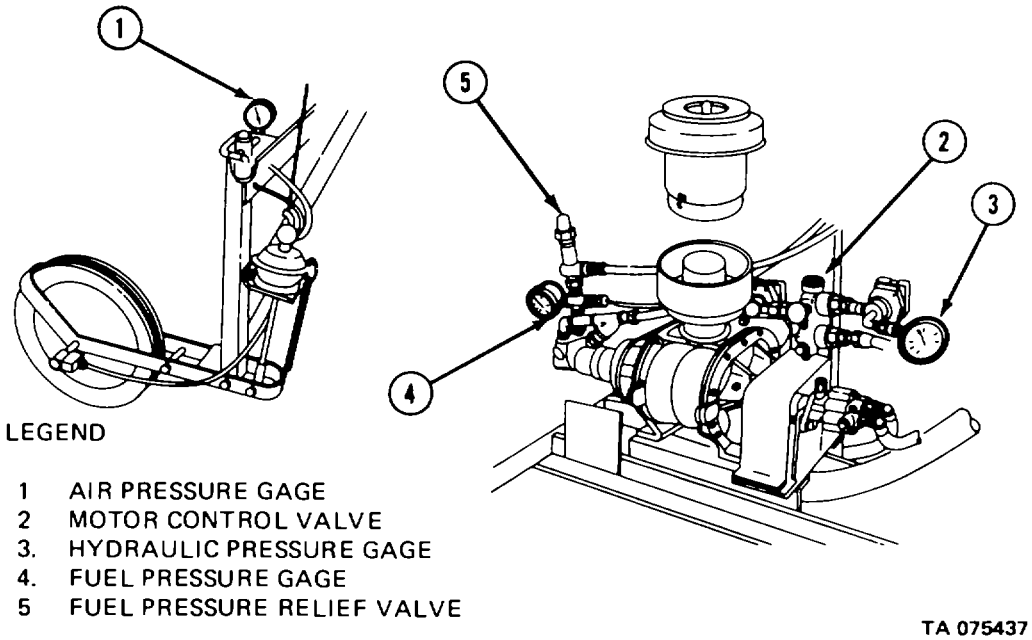


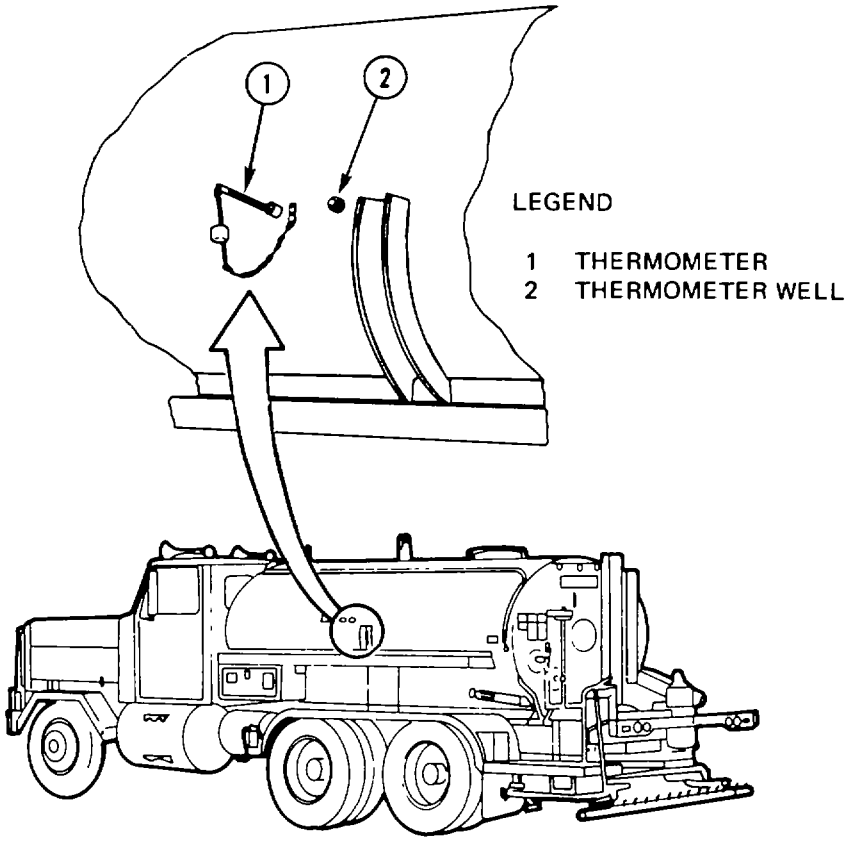
Figure 2-5. Pressure Gages and Control Value.

(5) Fuel Pressure Relief Valve - Controls the pressure of the fuel being pumped to the burners

2-4. Preparing for Operation.

a. Remove thermometer (1, fig. 2-6) from tool box and install in the thermometer well (2).

b. Raise spray bar (22, fig. 1-1) by pulling back bar turn-up lever (7) and locking.



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Figure 2-6. Thermometer and Thermometer Well.

c. Remove nozzles (2, fig. 2-7) from tool box and Install in spray bar (1) Adjust nozzles so that the angle between slot and bar centerline is approximately 30 degrees. This is accomplished with nozzle wrench (3) by turning the adjustment screw until the wrench touches adjacent nozzle.

d. Fold down the extension, then unlock bar turn-up lever and lower spray bar to operating position (see fig. 2-8).

e. Set spray bar height (3, fig. 2-8) by loosening locknut (1), then set adjusting screw (2) until the nozzles are about 12 in. from road surface when tank is empty. Adjust both sides equally so that spray bar is level. After adjustment tighten locknut (1). At this height, spray fans will properly overlap for triple lap coverage Under heavy wind conditions it may be necessary to lower bar further.

f. Perform complete lubrication service (see LO 5-3895-371-12).

g. Make complete inspection of the distributor, looking for loose nuts and bolts or any damage that may have occurred in transit Verify that all parts are securely mounted.

h. Check fluid level in hydraulic reservoir tank (9, fig. 2-2) and verify that fluid is above sight gage level (8).

CAUTION

If hydraulic oil becomes too hot, red light on control pedestal (3,fig.2-1 will go on. Fluid temperature should not exceed 180 degrees. If light remains on for more than 60 seconds, discontinue pumping and check for plugged bitumen lines and /or frozen bitumen pump. Report to Organizational Maintenance.

i. Check pump discharge strainer (para 3-13) and fill line strainer (para 3-15) for dirt or contamination

CAUTION

Do not operate pumps for long periods without bitumen material to supply lubrication.

j. Pull up main hydraulic control knob (10, fig. 2-1). Turn fine control knob (11) counterclockwise up against the main hydraulic control knob. Push in the rear platform override control (14).

k. Start engine and engage PTO (see TM 9-2320-273-10 for M918 truck chassis operating instructions)

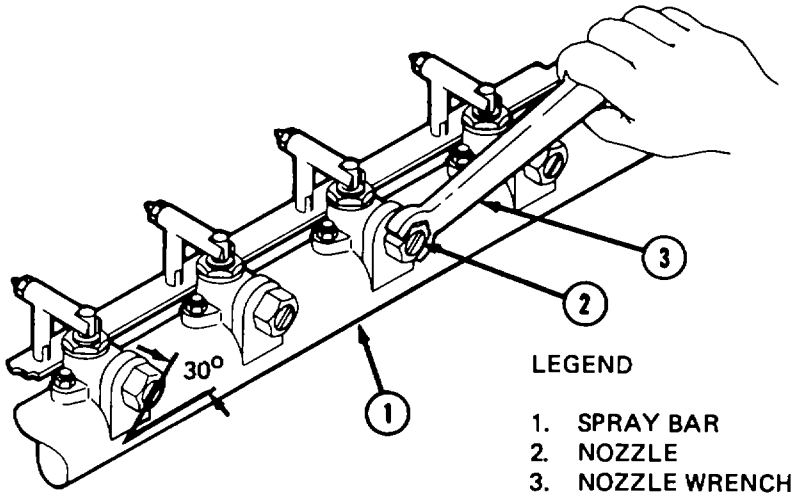


Figure 2-7. Adjusting Nozzle Slots

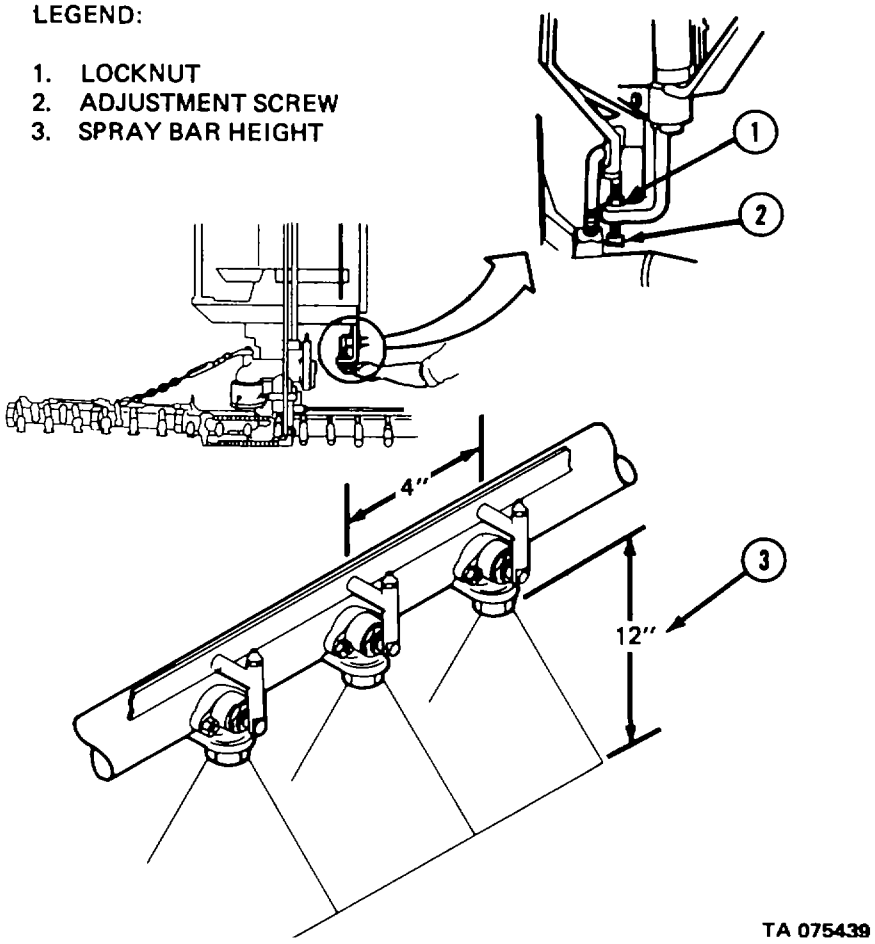


Figure 2-7. (Top) Adjusting Nozzle Slots.

Figure 2-8. (Bottom) Spray Bar Height Adjustment.

l. Carefully pull out the rear platform override control (14, fig. 2-1) halfway and check pump tachometer (GPM) (1) to verify that pressure is building up. Push rear platform override all the way in. Verify that pump tachometer goes to zero

m. Pull up on cab override control (13). Pressure should build up on pump tachometer. Release cab override control and verify that pump tachometer registers zero

n. Turn fine control knob (11) clockwise as far as it will go. Push down on hydraulic control knob. Verify that pump tachometer registers pressure. Pull up hydraulic control knob and verify that pump tachometer registers zero.

o. Disengage PTO and shut down engine when finished with this check.

2-5. Filing Through Fill Line (fig. 2-9).

Distributor tank may be filled either through the manhole (1) or by pumping through filling line (7) with power supplied by distributor. To fill tank with distributor pump, proceed as follows:

a Place strainer in filling line.

b When filling distributor from railroad tank car, place tank car coupling on tank car connection, screw three-way valve onto tank car coupling, and connect filling hose to three-way valve with Morrison couplings. Connect filling hose to connector shown in lower view of figure 2-9

c. Place the control levers to the following positions

(1) Quadrant Control Lever (2) - Circulate and Fill

(2) Intake Valve Lever (4) - Up

(3) Butterfly Valve Lever (10) -Out (normal)

(4) Bar Raising Lever (5) - Up

(5) Drain Valve Lever (6) - Forward

(6) Transfer Valve Lever (8) - Distribute

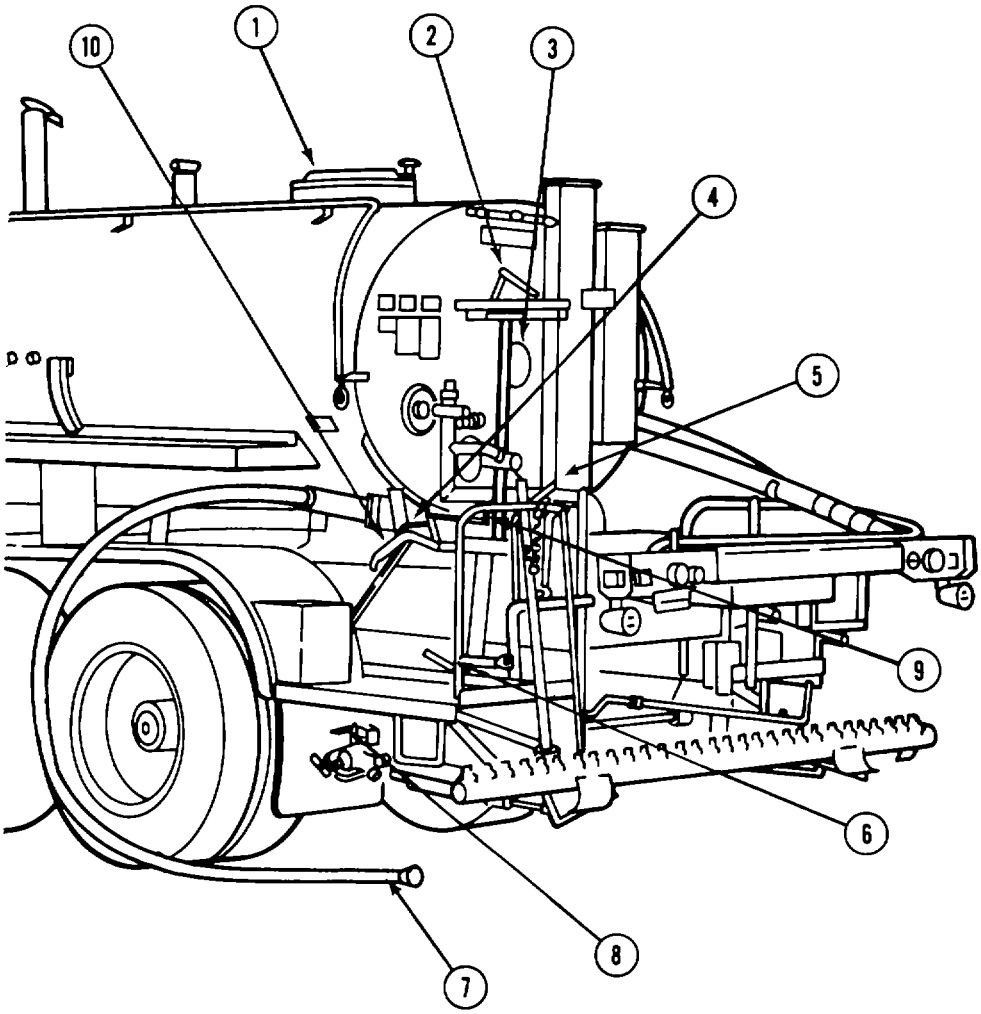
(7) Vacu-flo Valve Lever (9) - Up

d. Start engine (see TM 9-2320-273-10) and engage PTO

e. Adjust main hydraulic control knob (10, fig. 2-1) for a 130-150 gpm reading on pump tachometer (GPM) (1)

f. Observe tank gage (3, fig. 2-9), or look into manhole (1) to determine when tank is full

g. When tank is full, (85 gallon allowance should be made for expansion if material is to be heated in distributor tank) shut valve at supply tank leaving the distributor running

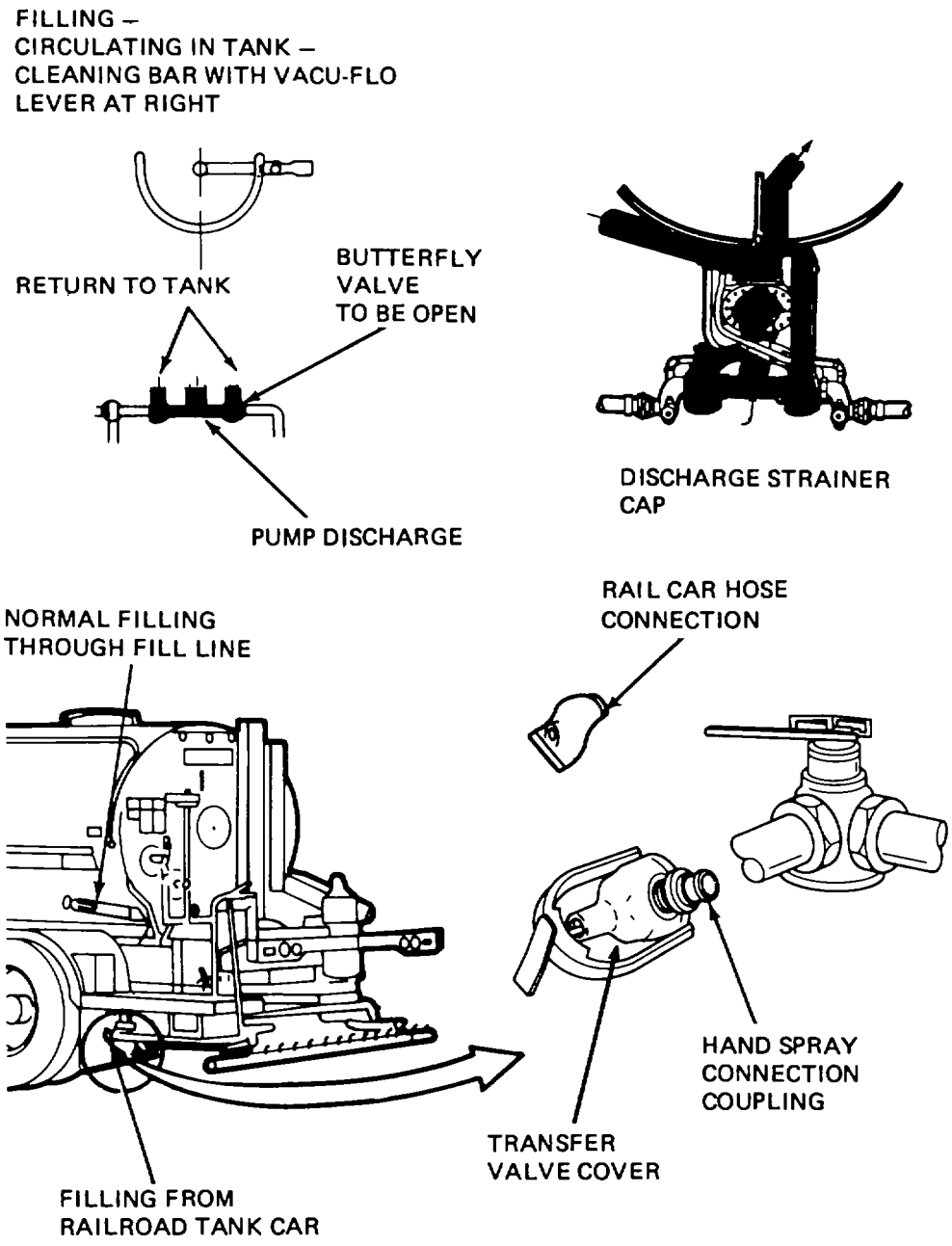


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Figure 2-9. Filling Through Fill Line (1 of 2).

LEGEND:

1	MANHOLE
2	QUADRANT CONTROL LEVER
3	TANK GAGE
4.	BUTTERFLY VALVE LEVER
5.	BAR RAISING LEVER
6.	DRAIN VALVE LEVER
7	FILL HOSE
8	TRANSFER VALVE LEVER
9.	VACU-FLO VALVE LEVER
10.	INTAKE VALVE LEVER



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Figure 2-9. Filling Through Fill Line (2 of 2).

h. Vent 3-way valve at supply tank end, so that pump can draw the material out of the filling hose.

i. After draining filling hose, place intake valve lever (4) down for circulation of material in tank.

2-6. Filling Through Manhole.

a. Always use manhole strainer (3, fig. 3-5)

NOTE

Should pump fail to function properly, check, clean, and reinstall discharge strainer (para 3-13).

b. If you do not want material to enter pump and circulating system, have intake valve lever (27, fig. 1-1) in extreme up position

c. If you expect to heat material further in distributor, allow sufficient space for expansion

d. If distributor is to be filled with hot bitumen, proceed cautiously if there is any moisture in tank, or if emulsion was used in the previous load VV-D-1078A may be used to prevent foaming

NOTE

The discharge filter often becomes clogged when the manhole strainer is not used, or when rags and debris are allowed to enter the tank through the manhole (para 3-12).

2-7. Circulating in Tank (fig. 2-10).

a. Place the control levers (see fig. 2-9 for location) in the following positions

(1) Quadrant Control Lever - Circulate and fill

(2) Intake Valve Lever - Down

(3) Butterfly Valve Lever - Out (normal)

(4) Drain Valve Lever - Forward

(5) Transfer Valve Lever - Distribute

(6) Vacu-flo Valve Lever - Up

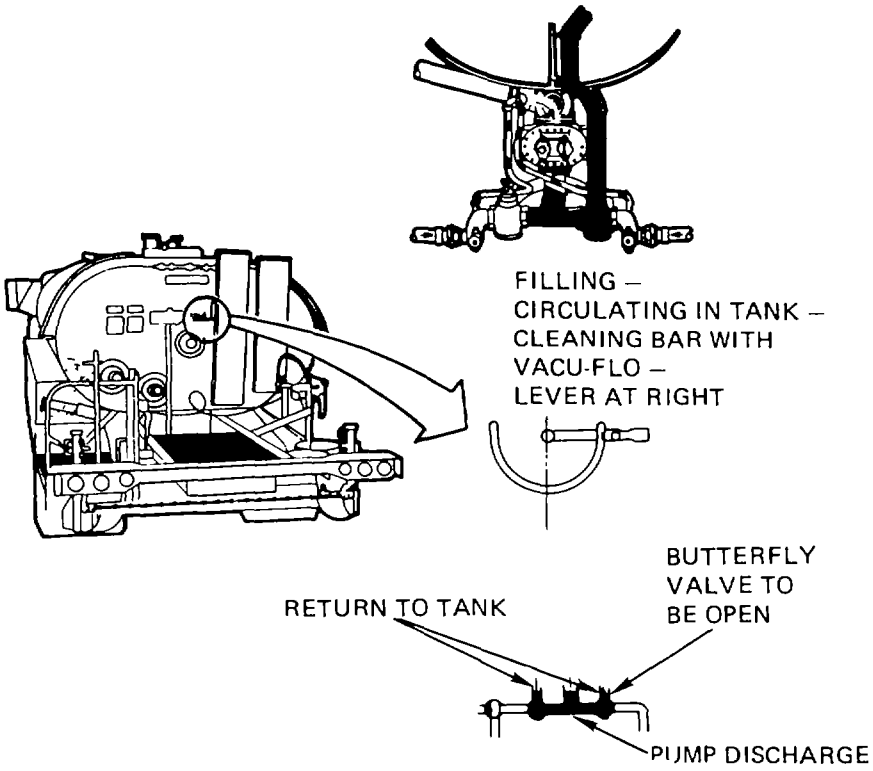


Figure 2-10. Circulating in Tank.

WARNING

Do not drive truck while burners are in operation.

b. Material will heat more rapidly if circulated in tank when burners are operating. Circulate at 100-160 gpm.

c. You can circulate bitumen in tank or not, however, you will heat faster and with less carbon formation on flues if you circulate while heating.

d. Clean, moisture-free fuel is important. Use diesel fuel. Do not use gasoline.

e. The blower and fuel pump are an integral unit and engaging the blower will also engage the fuel pump

f. The blower is driven off the hydrostatic pump drive line and is engaged by operating the motor control valve (2, fig. 2-5) to ON, on the blower

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g. Air pressure should be sufficient to slightly raise air relief valve. Excess engine speed will raise relief valve too much, causing excessive pressure. Do not Increase weights on air relief valve (29, fig. 1-1, sheet 2) or wire weights down.

h. Fuel pressure should not be excessive. High fuel pressure will make needle valve adjustment more sensitive. Recommended pressure is 10-15 psi. Pressure is determined by pressure relief valve located in return line (5, fig. 2-5). An adjusting screw and locknut are inside dome-shaped cap. Unscrew cap, loosen locknut, and turn adjusting screw to change the fuel pressure. Turning clockwise increases pressure, turning counterclockwise decreases pressure. Tighten locknut and replace cap after making adjustment.

i. Do not light burners unless you are sure flues are covered at least 6 in the full length of tank. A visual inspection through manhole cover is recommended. With this design of "High-Low" flues, it is necessary to cover only the lower flue with 6 in of material when using the lower (o, inside) burner only.

j. Open covers on heat exhaust stacks

WARNING

If burner goes out, turn off fuel valve immediately and do not attempt to relight until gas is exhausted from flues.

k. To light burners, first turn air butterfly valves to No. 1 or No. 2 open position, light torch and hold under burner tip. Quickly open needle valve about one-half turn. Burner should ignite immediately. If it does not, turn off needle valve and wait until gas is exhausted from flues, then try again. The correct opening of the needle valve is determined by fuel pressure. Experience is the only way of determining the amount for your particular unit. Flame at first will be yellow and smoky. Adjust the fuel valve so that flame is bright orange with slight smoke in exhaust. More fuel will be needed as flues and tank contents heat up. Keep opening fuel adjustments for slight smoke in exhaust

l. For larger flame, increase air butterfly valve opening and fuel valve in equal increments, always keeping mix that will give slight smoke to exhaust.

m. Nozzle of burner is adjustable for amount of secondary air desired. Normally the secondary air is in the full open position. Light burner and turn this nozzle until you secure the type of flame you desire

WARNING

Do not leave burners unattended. Do not heat bitumen over maximum spraying temperature recommended by supplier.

n. To shut off burners, turn fuel off before stopping blower or turning off air

o. When burners are not in use, close heat exhaust stack cover to prevent loss of heat and to keep water from entering stack opening.

2-8. Setting Hydrostatic Controls.

To set hydrostatic controls for spraying requirements when circulating in tank, pump speed should be: 10-15 gpm per ft of bar length with 1/8 in. Nozzles. Example: 160-240 gpm for 16 ft spray bar length.

2-9. Circulating in Bar (fig. 2-11).

a. Prior to circulating in bar, pull main hydraulic control knob (10, fig. 2-1) if distributor pump tachometer (GPM) (1) reads over 160 gpm to reduce pressure in spray bar.

NOTE

Do not change control knob stop setting.

b. Place the control levers (see fig. 2-9 for location) in the following positions:

(1) Quadrant Control Lever - Circulate in bar

(2) Intake Valve Lever - Down

(3) Butterfly Valve Lever - Out (normal)

(4) Drain Valve Lever - Forward

(5) Bar Raising Lever - Up or down (release lock assembly)

(6) Transfer Valve Lever - Distribute

(7) Vacu-flo Valve Lever - Up

c. Circulate long enough to insure removal of all air from bar and to heat valves. Pump speed should not exceed 160 gpm. Material will circulate in ends with extensions folded or in spraying position

2-10. Spraying (fig. 2-12).

a. Place the control levers in the following positions

(1) Quadrant Control Lever - To distribute position (fig. 2-3). When in "Circulate in Bar" position, raise handle of catch lever to enter dog into slot of outer shaft. Raise handle to close micro switch.

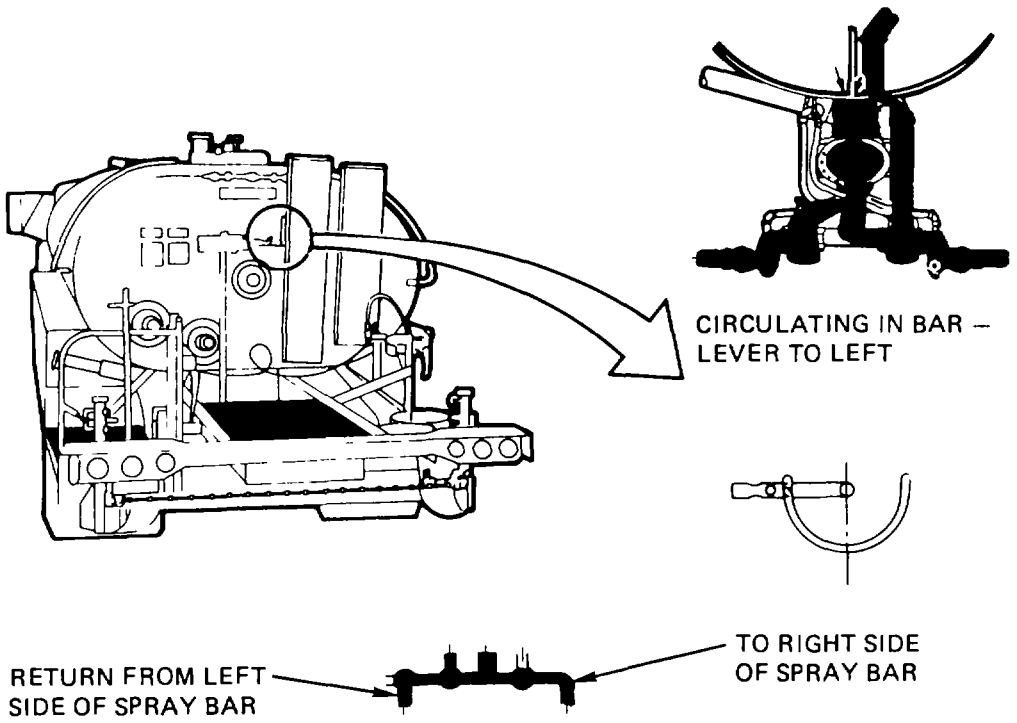


Figure 2-11. Circulating in Bar.

(2) Lower spray bar extension to operating position (4, fig. 2-8)

(3) Unlock bar raising lever (5, fig. 2-9)

(4) Bar Raising Switch - Down (with control switch in cab or on rear)

(5) All other controls as in Circulate in Bar (fig. 2-11)

b. Correct spray cannot be obtained unless bitumen is heated to proper spraying temperature. Cold bitumen will not give sharp spray edges and will cause streaking.

c. See paragraph 2-19 and table 2-1 for setting proper pump speeds. Higher pump speeds will cause excessive fogging of spray. If higher pump and truck speeds are desired, use larger nozzles. Lower pump speeds will cause fan spray to sag, with heavy edge

d. Nozzle slot should make an angle of approximately 30 degrees with bar centerline and every nozzle should be at the same angle, as shown in figure 2-7.

e Nozzle height of 12 in. above road will give triple lap coverage.

f Drain and flush out pump, bar, and circulating system after each day's use, unless oil that will not set up when cold is used.

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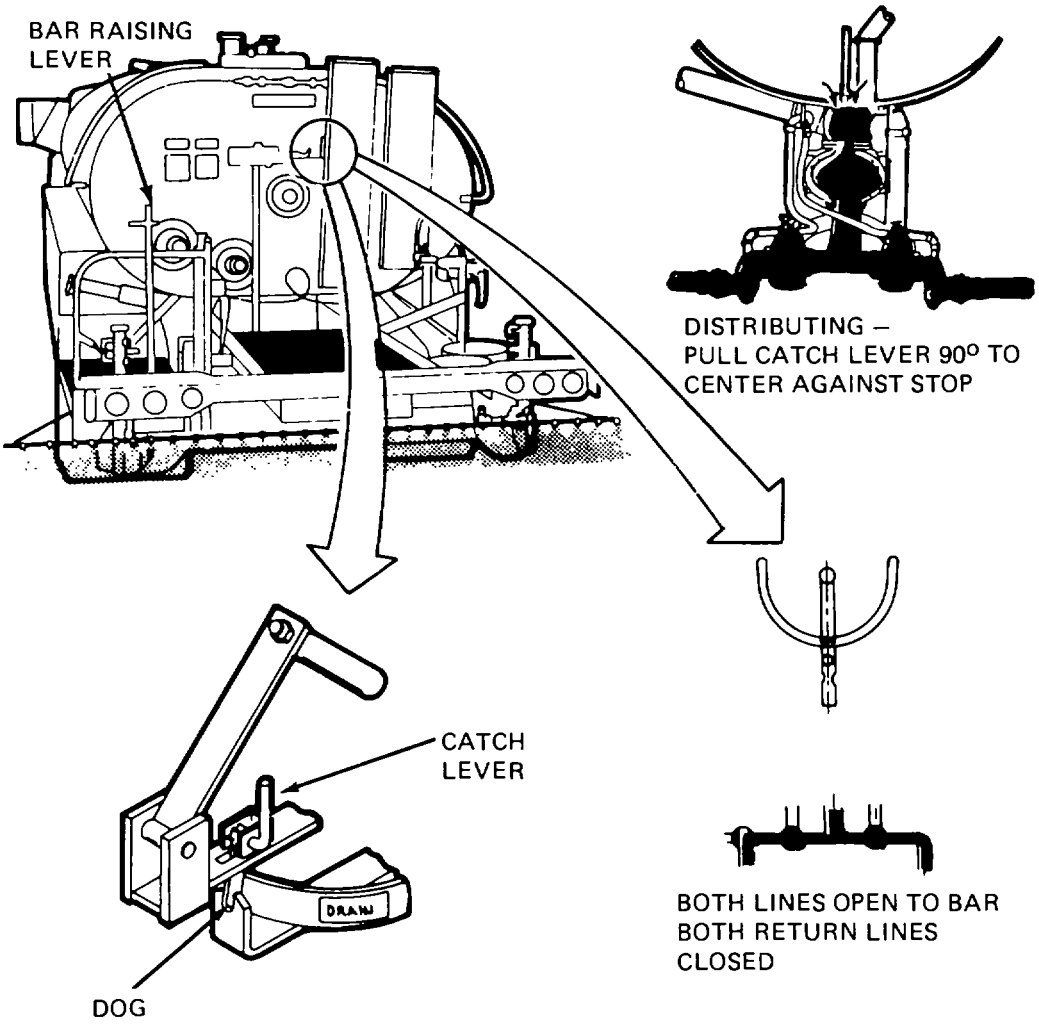


Figure 2-12. Spraying

NOTE

Clean discharge head strainer weekly (para 3-13).

g. Engage truck transmission in gears previously determined for proper application speeds.

h. Push hydraulic cab control down against stop (If it was pulled up to reduce pump speed to 160 gpm for circulating in bar). Immediately put truck in motion.

i. To spray, move spray control switch in cab or on rear to "ON" position.

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j. While spraying, momentarily drive at dry run speed to check that bitumeter and pump tachometer readings are still at the predetermined ratio. You will apply the desired rate per square yard regardless of variation in road speed

k. To stop spraying, return control switch to OFF position. Release catch lever if spraying operation is completed. Pull up hydraulic cab control if pump speed exceeds 160 gpm

2-11. Shoulder Spraying (fig. 2-13).

a. Place the control levers in the following positions

(1) Quadrant Control Lever -When in "Circulate in Bar" position, pull catch lever up. (The catch lever is shown in figure 2-12)

(2) Bar Raising Switch - Down (with control switch in cab or on rear)

(3) Other Controls - Place all other controls as in "Circulate in Bar" (Fig. 2-11)

b. Disengage all flip valves not used, as shown in figure 2-13

c. Follow normal spraying procedure.

d. Disengage flip levers out to the control toggle on hook section before installing the shoulder spray linkage.

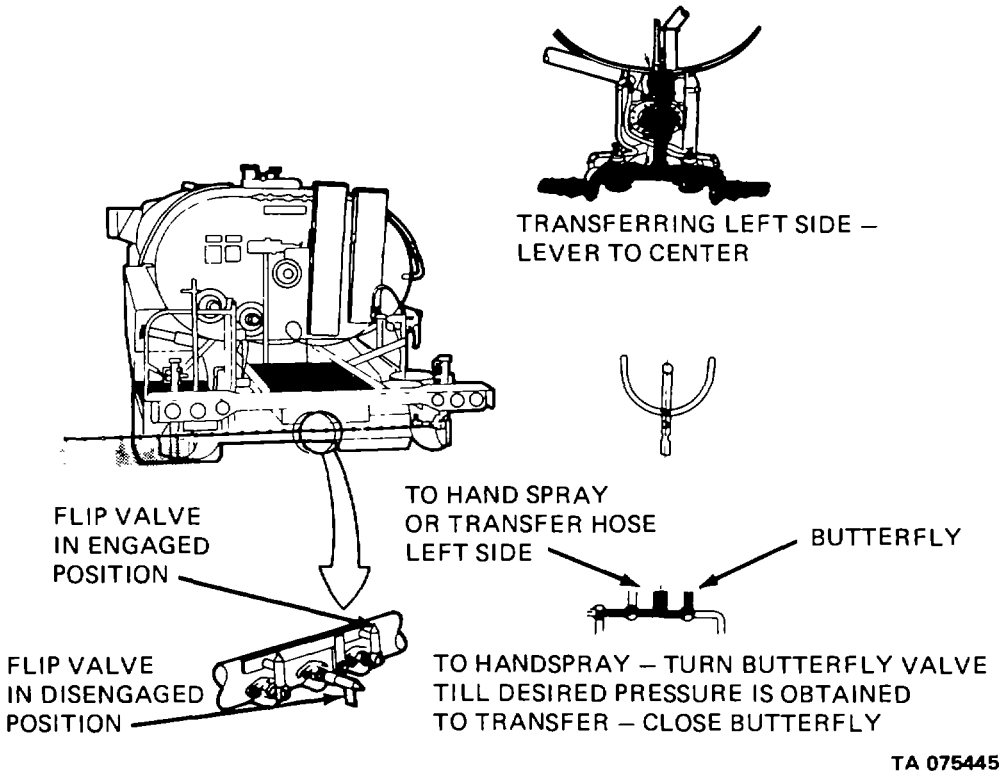


Figure 2-13. Shoulder Spraying

2-12. Drawing Material In Bar Back to Tank (fig. 2-14).

a. Place the control levers (see fig. 2-9 for location) in the following positions.

(1) Quadrant Control Lever - Circulate and fill. Move control handle down to move dog from outer shaft to fully engage dog into inner shaft (see fig. 2-12)

(2) Intake Valve Lever - Up

(3) Butterfly Valve Lever - Out

(4) Bar Raising Lever - Up (switch) hook safety lock in travel position

(5) Drain Valve Lever - Forward

(6) Transfer Valve Lever - Distribute

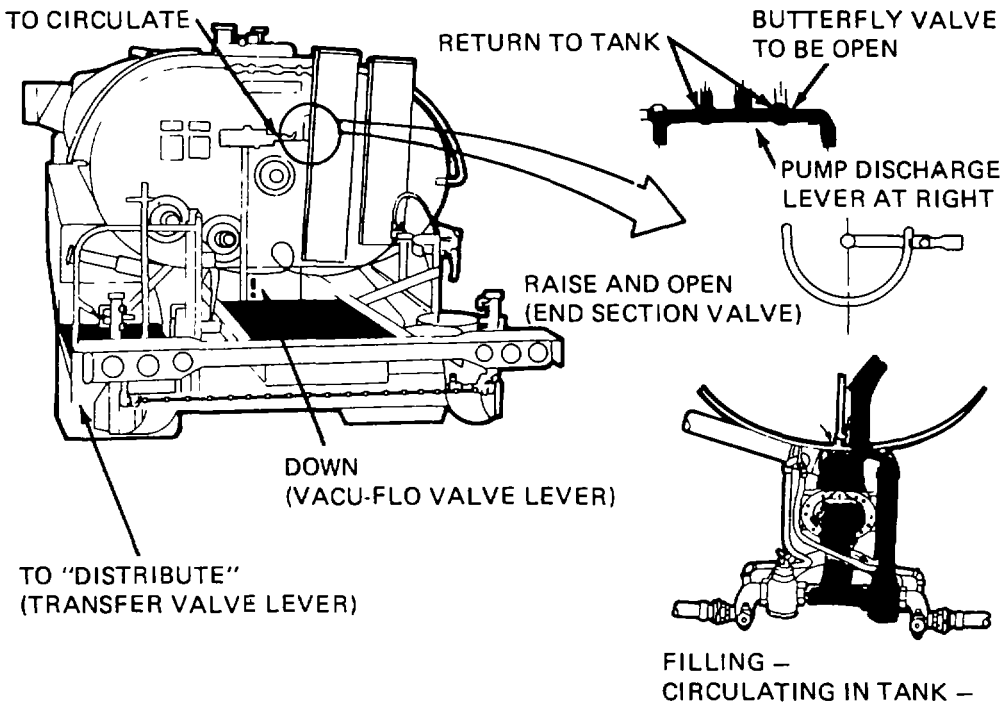
(7) Vacu-flo Valve Lever - Down

(8) End Section Flip Valve - Raise and open one (see fig. 2-13)

b. Run pump at 10 gpm per ft at bar (Monitor pump tachometer in cab. See fig. 2-1)

c. After drawing material back for approximately 2 minutes, open end valves, allowing air to enter system. For maximum cleaning, turn vacu-flow valve to left and to right when sound of pump indicates bar is empty.

d. When draw back is completed, turn vacu-flow valve lever up to close.



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Figure 2-14. Drawing Material in Bar Back to Tank.

2-13. Hand Spraying and Pump Off (fig. 2-15).

a. Place the control levers in the following positions.

(1) Quadrant Control Lever - Hand Spray

(2) Butterfly Valve Lever - Move to Hand Spray to start and then select desired pressure to spray as needed

(3) Intake Valve Lever - Down

(4) Bar Raising Lever - Up

(5) Drain Valve Lever - Forward

(6) Vacu-flo Valve Lever - Up

b Connect hand spray hose or pump off line to transfer valve

c Move transfer valve lever from Distribute to Hand Spray position (IN)

d Run pump at 80-100 gpm (Monitor pump tachometer in cab. See fig. 2-1)

e For hand spraying move butterfly valve to Hand Spray position. For pump off move butterfly valve to Transfer position.

f Move quadrant lever to Hand Spray position.

g Open intake valve by moving intake lever down. When pumping off, check to insure all valves in pump off line between distributor and storage tank are open before moving intake lever down

h. Turn hand spray valve 90 degrees on hand spray gun for spraying

i. Adjust hand spray pressure with butterfly valve. Push in lever to increase, pull out to decrease

2-14. After Hand Spraying or Pumping Off (fig. 2-16).

a Pull butterfly valve lever out

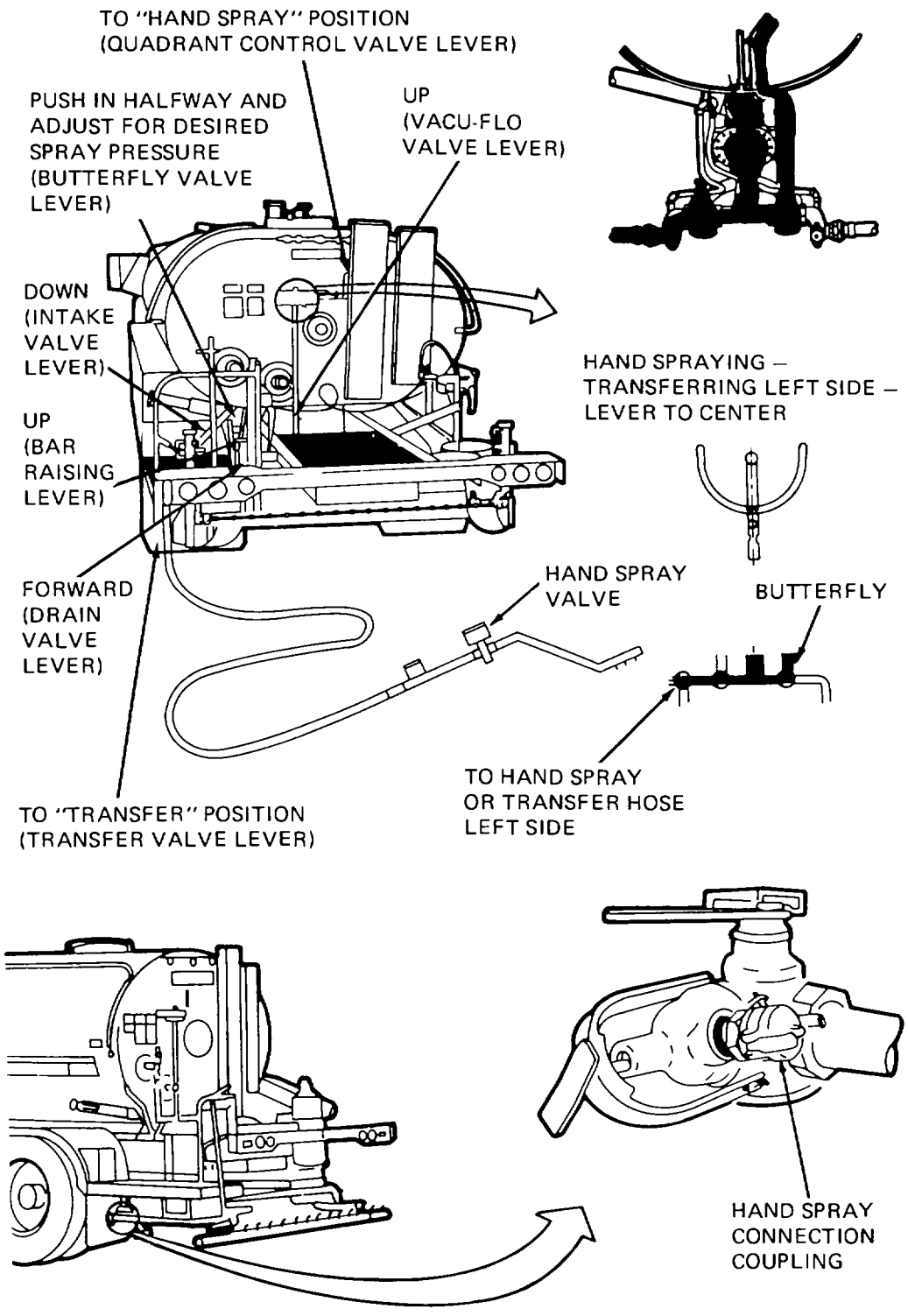
b For pump off, close valve at storage tank soon after pulling butterfly valve out. This will prevent material from being pulled back Into distributor

c Shut intake valve by moving lever up

d Move quadrant lever to Circulate and Fill position

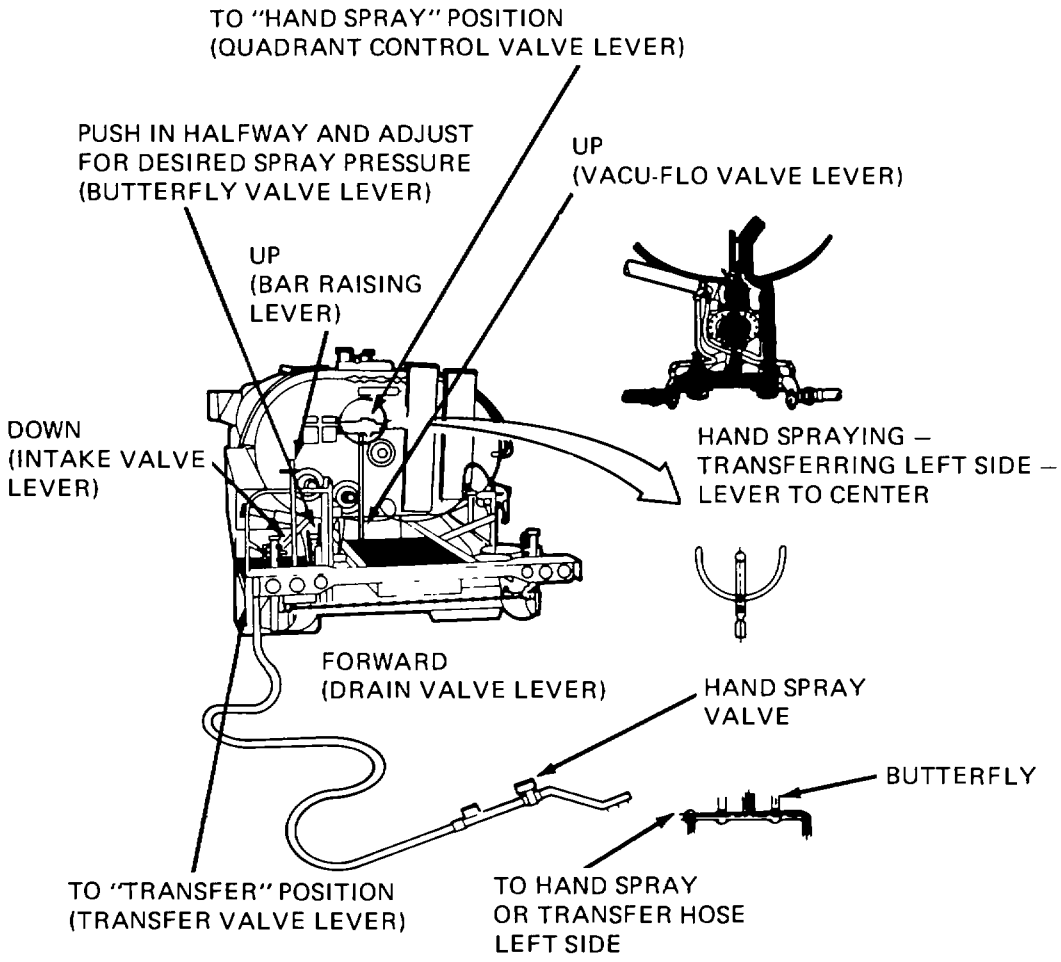
e Suck back hand spray hose and gun or rail car pump off line by turning vacu-flow lever to the left position. After approximately one minute, crack hand spray valve or open pump off line. If finished hand spraying for the day, crack hand spray valve with nozzles submerged in flushing oil (3 qt can supplied).

f. Turn transfer valve lever back to Distribute position



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Figure 2-15. Hand Spraying and Pump Off.



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Figure 2-16. After Hand Spraying or Pumping Off.

g Disconnect pump off line.

h Turn vacu-flo lever straight up to normal position

i. To blow out hand spray, if desired after spraying, raise intake valve lever, remove filling cap, open hand spraying valve and push butterfly valve lever in against stop. Add flushing oil if desired.

j. Reinstall filling cap.

2-15. Transferring from Supply Source to Storage (fig. 2-17).

a. Place the control levers (see fig. 2-9 for location) in the following positions

(1) Quadrant Control Lever - Hand spray

(2) Butterfly Valve Lever - In

(3) Intake Valve Lever - Up

(4) Bar Raising Lever - Up

(5) Transfer Valve Lever - Hand spray

(6) Drain Valve Lever - Forward

(7) Vacu-flo Valve Lever - Up

b. Hook up hose from supply source to the filling connection using filling line adapter from tool box. Be sure connections are tight.

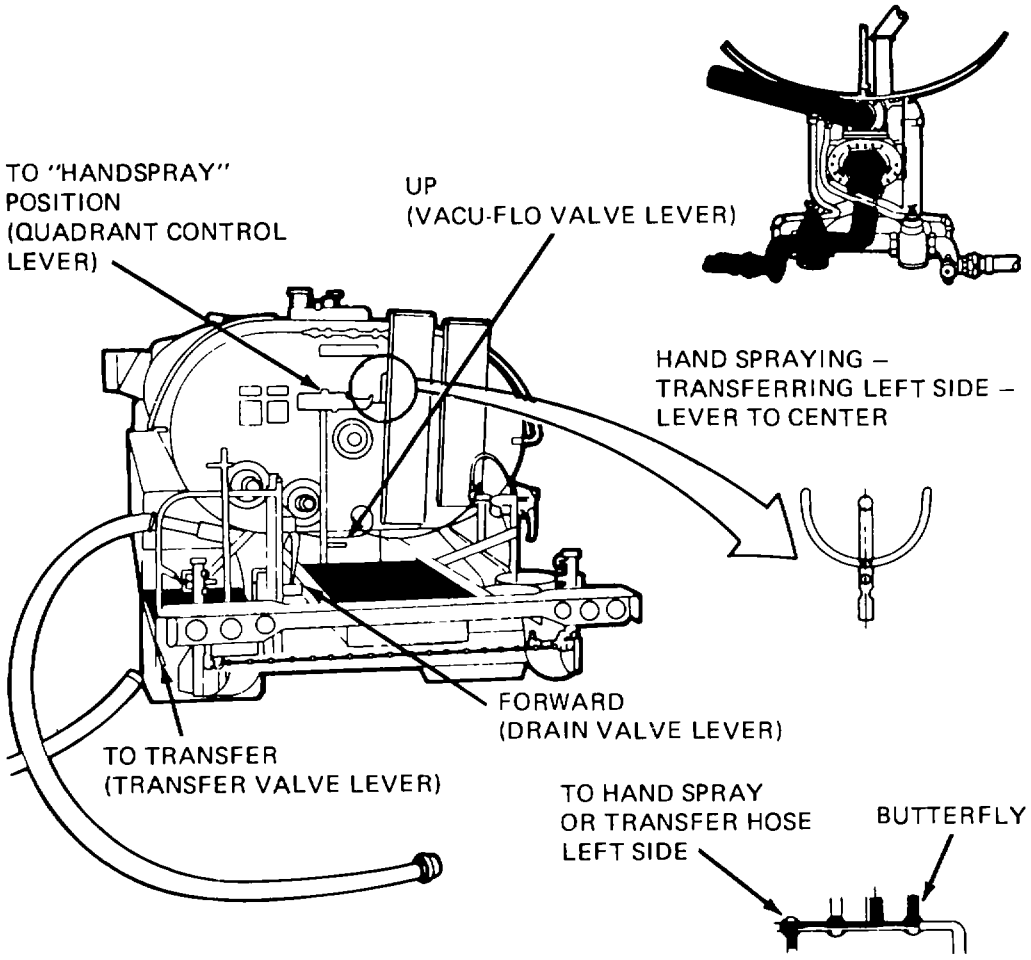
c. Hook up hose from storage to transfer connection using adapter from tool box. Be sure connections are tight.

d. Run pump at maximum speed where it will run quietly Normally 150 gpm is best transfer speed.

e. When through transferring, turn transfer valve lever to Distribute position. Pull butterfly valve lever back out against stop.

CAUTION

If oil enters distributor tank when transferring, butterfly value is not closed tight.



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Figure 2-17. Transferring from Supply Source to Storage.

2-16. Draining Circulating System and Spray Bar (fig. 2-18).

a. Place the control levers in the following positions

(1) Quadrant Control Lever - Drain

(2) Intake Valve Lever - Up

(3) Butterfly Valve Lever - Out

(4) Drain Valve Lever - Drain

(5) Transfer Valve Lever - Distribute

b. Raise spray bar and lock up end sections, turn up bar before folding end sections

(1) Bar Ends Raised

(2) Vacu-flo Lever - Up

c If tank is also to be drained, pull intake lever down

d It is necessary to run the pump for complete drainage of circulating system. Normal draining speed is 1200 rpm (Monitor pump tachometer in cab, as shown in fig. 2-1)

e. When draining operation is completed, push forward drain valve lever and turn quadrant control lever to Circulate in Bar position

2-17. Flushing Bar, Circulating System and Tank (fig. 2-19).

a. Place the control levers in the following positions

(1) Quadrant Control Lever - Circulate in Bar

(2) Intake Valve Lever - Up

(3) Transfer Valve Lever - Distribute

(4) Butterfly Valve Lever - Out

(5) Bar Raising Lever - Up

(6) Drain Valve Lever - Forward

(7) Vacu-flo Valve Lever - Up

b Valve lever should be in Up position.

c Run pump at 1200 rpm (Monitor pump tachometer in cab, as shown in fig. 2-1

d Put 3 qts of flushing oil in filling line, using can provided. If tank is to be flushed, leave intake valve closed (lever up) and pour 5 or more gals of flushing oil into filling line, then push lever down, opening intake valve.

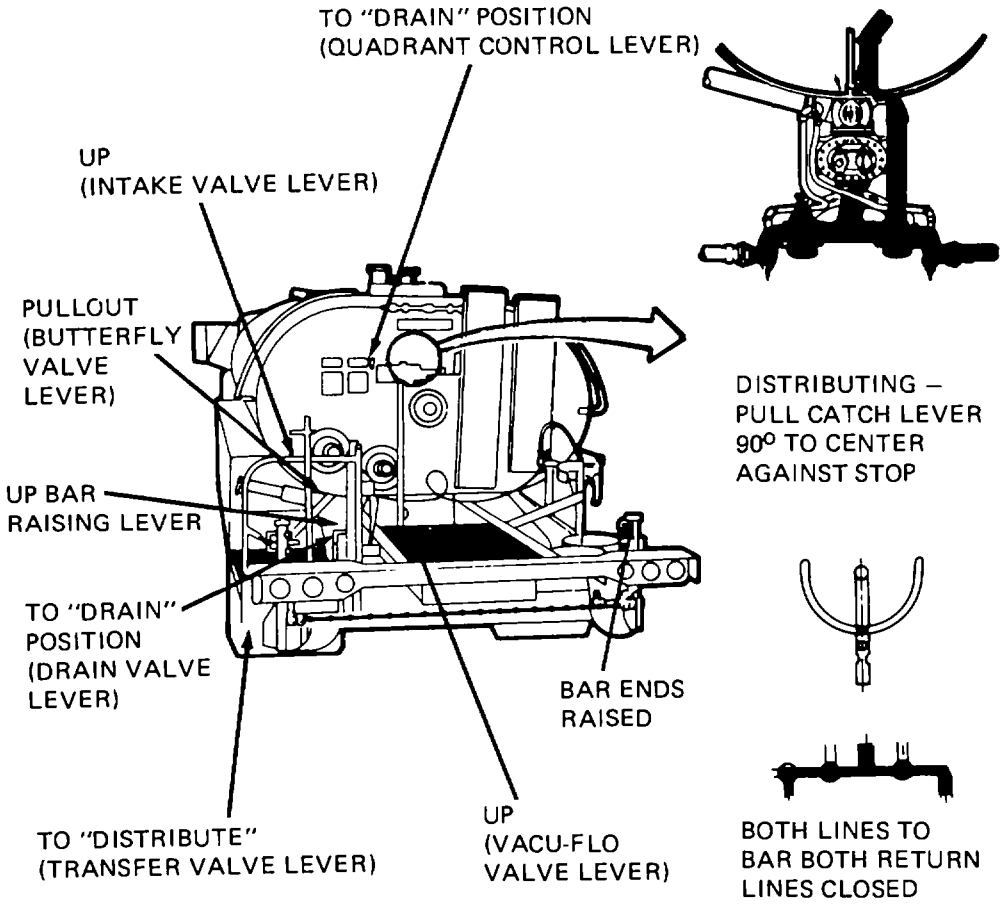
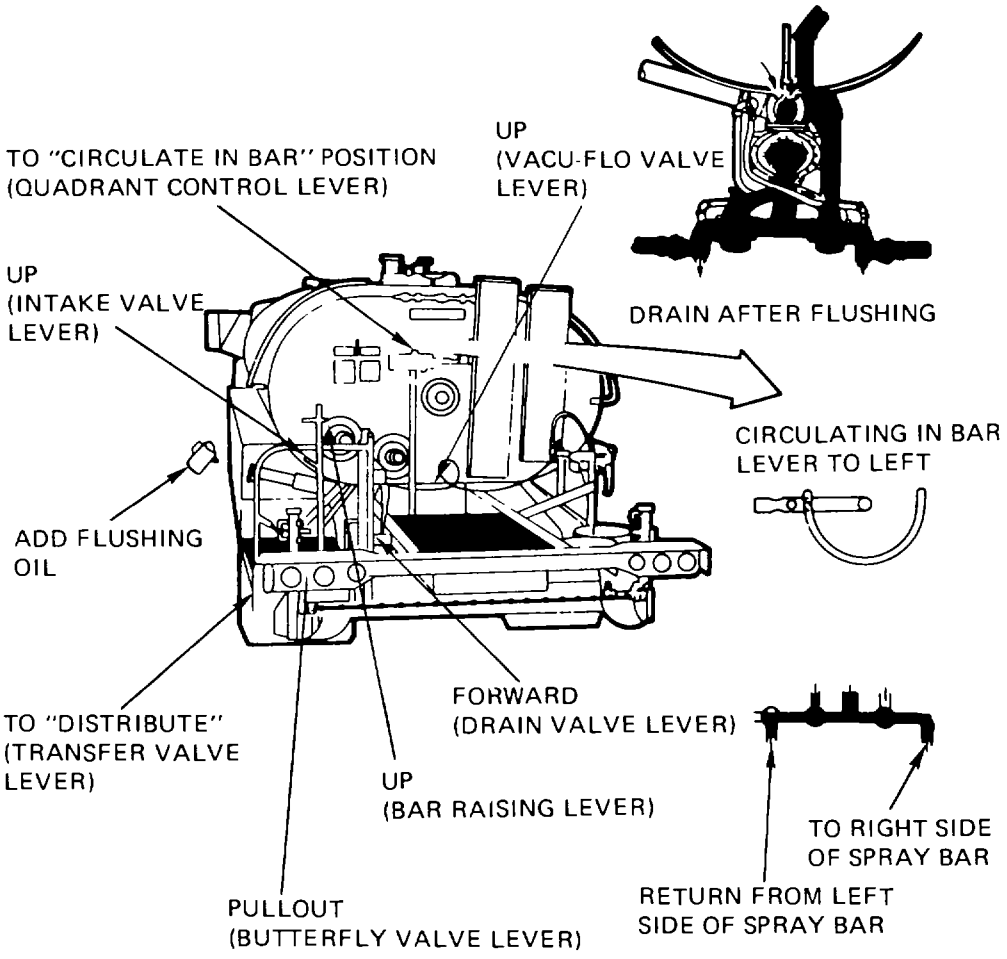


Figure 2-18. Draining Circulating System and Spray Bar.



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Figure 2-19. Flushing Bar, Circulating System and Tank.

2-18. Hydrostatic Drive Operation.

The hydrostatic drive consists of a variable output pump driven by the truck PTO which in turn drives the distributor bitumen pump with a hydrostatic motor. Thus, once the correct ratio between ground speed and pump flow rate is established for a given transmission setting, the truck ground speed may be varied without affecting the application rate.

2-19. Dry Run Establishment of Correct Ratio Between Pump Flow Rate and Ground Speed.

a. Determine from the computator the correct ground speed (fpm) and pump flow rate (gpm) for the desired spray bar length (ft) and application rate (gal/sq yd) (table 2-1).

b Place quadrant control lever in Circulate in Tank position.

c. Pull hydraulic control knob to uppermost position.

d Lower ground speed tachometer drive wheel (5th wheel).

e. Engage truck PTO

f. Select truck transmission and if required, auxiliary and rear axle setting, to give adequate ground speed and power for the desired application rate. More than one attempt may be necessary before the proper gear setting is determined which will prevent jerky forward truck motion and still supply adequate power and speed for the terrain.

g. Now, while driving the distributor forward at the speed (feet per minute) previously determined from table 2-1, push the hydraulic control knob down until the asphalt pump flow rate (gpm) is equal to the gallonage determined.

h. The control knob should be held in this position by turning the fine control tube up until it is against the bottom of the hydraulic control knob. Then lock the tube in place with the brass lock ring

i. Now that a dry run has been completed, you may wish to record the truck gear setting, spray bar length, application rate and engine tachometer rpm, so the application rate can be duplicated in the future by merely using the truck engine tachometer to establish the proper pump flow rate

NOTE

Prior to placing quadrant control in Circulate in Bar position decrease pump flow rate, if necessary, to a maximum of 160 gpm by raising the hydraulic control knob.

2-20. To Spray (fig. 2-20).

a Lower spray bar to spraying position

b Adjust spray bar length to previously determined length

c Engage truck power takeoff

d Place quadrant control in Circulate in Bar position ready to spray

Table 2-1. Application Chart.

Gal. Per Sq.Yd.	Nozzle Size	Bitumeter Counter Reading	Pump Rate of Flow Indicator Readings in GPM							
			8 Ft. Bar	9 Ft. Bar	10 Ft. Bar	11 Ft. Bar	12 Ft. Bar	13 Ft. Bar	14 Ft. Bar	15 Ft. Bar
10	1/8	900	80	90	100	110	120	130	140	150
.20	1/8	450	80	90	100	110	120	130	140	150
25	1/8	360	80	90	100	110	120	130	140	150
.30	1/8	300	80	90	100	110	120	130	140	150
.40	1/8	225	80	90	100	110	120	130	140	150
.50	1/8	180	80	90	100	110	120	130	140	150
60	1/8	150	80	90	100	110	120	130	140	150
70	1/8	135	82	95	105	117	127	127	142	158
75	1/8	135	90	101	112	123	135	146	158	170
.80	1/8	135	98	109	122	133	145	157	169	181
90	1/8	135	108	122	136	148	163	175	170	203
1.00	1/8	135	120	135	150	165	180	195	210	225

Gal. Per Sq.Yd.	Nozzle Size	Bitumeter Counter Reading	Pump Rate of Flow Indicator Readings in GPM							
			16 Ft. Bar	17 Ft. Bar	18 Ft. Bar	19 Ft. Bar	20 Ft. Bar	21 Ft. Bar	22 Ft. Bar	24 Ft. Bar
10	1/8	900	160	170	180	190	200	210	220	240
.20	1/8	450	160	170	180	190	200	210	220	240
25	1/8	360	160	170	180	190	200	210	220	240
.30	1/8	300	160	170	180	190	200	210	220	240
.40	1/8	225	160	170	180	190	200	210	220	240
.50	1/8	180	160	170	180	190	200	210	220	240
.60	1/8	150	160	170	180	190	200	210	220	240
.70	1/8	135	164	179	189	199	210	121	232	252
.75	1/8	135	182	193	204	114	225	237	249	270
.80	1/8	135	193	205	217	230	242	253	265	299
.90	1/8	135	217	230	243	257	270	285	297	325
1 00	1/8	135	240	255	270	285	300	315	330	360

e Engage truck transmission in gear previously determined for proper application speed

f Bring truck speed up until pump flow rate is at least three-fourths of the original determined flow rate. Upon reaching starting point, if necessary push hydraulic control knob down against stop and turn on spray bar.

g. Once spraying is started, the operator may drive up to a speed at which the pump flow rate (gpm) is one and one half times greater or down to a speed at which the flow rate (gpm) is three-fourths of the original determined flow (gpm). Above the high limit, excessive fogging starts to occur and below the low limit, insufficient flow results in a fan which is less than full width

h. Upon completion of shot, turn off spray bar and if necessary decrease pump flow rate to a maximum of 160 gpm. This is done to prevent excessive pressure in the spray bar when not spraying

2-21. Recording Settings with Hydrostatic Drive.

a Enter distribution rate in space at lower left in table 2-2.

b Enter corresponding distributor speed in space at lower center of table

c. Enter bar length in left column of table

d Enter pump discharge rate in second column of table

e Make a dry run at indicated distributor speed, noting the truck rpm, transmission, gear, and rear axle setting that provides best operation at the required speed

f. Whenever a repeat of the distribution rate is called for with a previously recorded bar length, it is only necessary to reset the pump discharge rate to the corresponding engine rpm with unit stationary (All other settings must also correspond)

g. Use a different table for each distribution rate. In time, all necessary settings will be recorded

2-22. Portable Burner.

The portable burner is used to heat components containing bitumen other than the storage tank, e g, bituminious pump, spray bar, plumbing, etc.

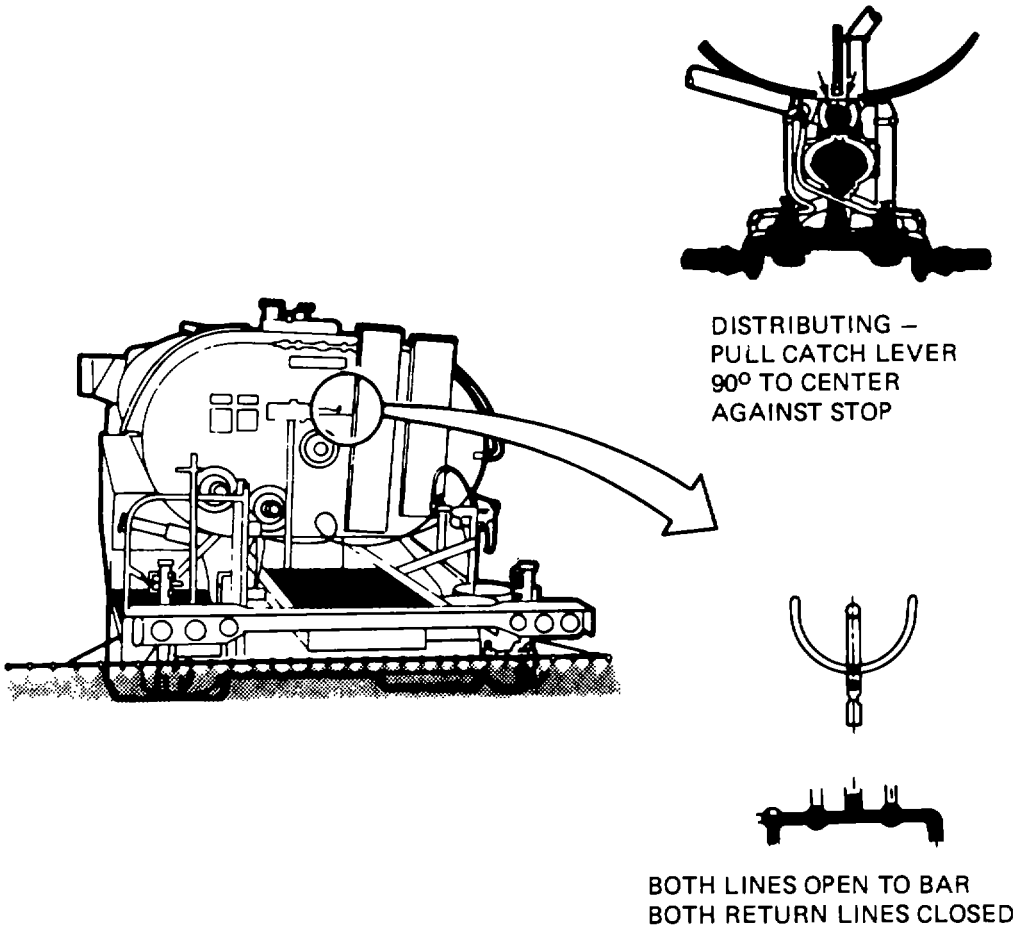
2-23. Portable Burner Controls and Instruments.

a. Portable Burner Pressure Gage The portable burner pressure gage (4, fig. 2-21) is located on the top of the portable burner fuel tank (6). This gage is graduated in 5 psi divisions from 0 to 60 psi. The normal operating pressure is 45 psi.

Table 2-2. Hydrostatic Drive Recordings.

Bar Length	Pump Discharge	Truck Eng. RPM	Tran. Gear	PTO Gear	Rear Axle Gear	Aux. Tran. Gear

Dist. Rate_____ Dist. Sp. _____



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Figure 2-20. To Spray.

2-24. Portable Burner Control Valve and Pump Handle.

a. The portable burner control valve (7, fig. 2-21) is located at the end of the hose (1). This valve controls the flow of fuel to the burner (8).

b. The portable burner pump handle (2) is located in the filling funnel (3). This handle is used to pump air into the portable burner fuel tank (6)

2-25. Operating the Portable Burner.

a. Remove portable burner (19, fig. 1-1, sheet 2) from its stowed position on the platform on the right side of the distributor.

b. Unscrew pump handle (2, fig. 2-21) and remove cap (11) and barrel (12) Fill burner fuel tank (6) to three-fourths full with clean diesel fuel. Reinstall barrel (12), cap (11), and pump handle (2).

c. Pump air into the burner fuel tank by pulling and pushing the pump handle until the pressure gage registers 45 psi.

d. Hold the burner in a horizontal position. Open the burner control valve three-quarters of a turn. Fill the preheating pan with fuel, then close the burner control valve

WARNING

Do not light burner in a confined area.

e. Light the fuel by dropping a small piece of lighted rag or waste into the preheating pan.

f. Allow the fuel to burn until it is almost consumed, then open the burner control valve one-third of a complete turn. This should produce a steady blue flame after it has been operating for at least 1 minute. When the burner shoots liquid or burns with a sluggish yellow, and smoky flame, shut the burner control valve off and repeat operations in d and e above

g. Maintain pressure of 45 psi in the burner fuel tank during operation by pumping. See c above.

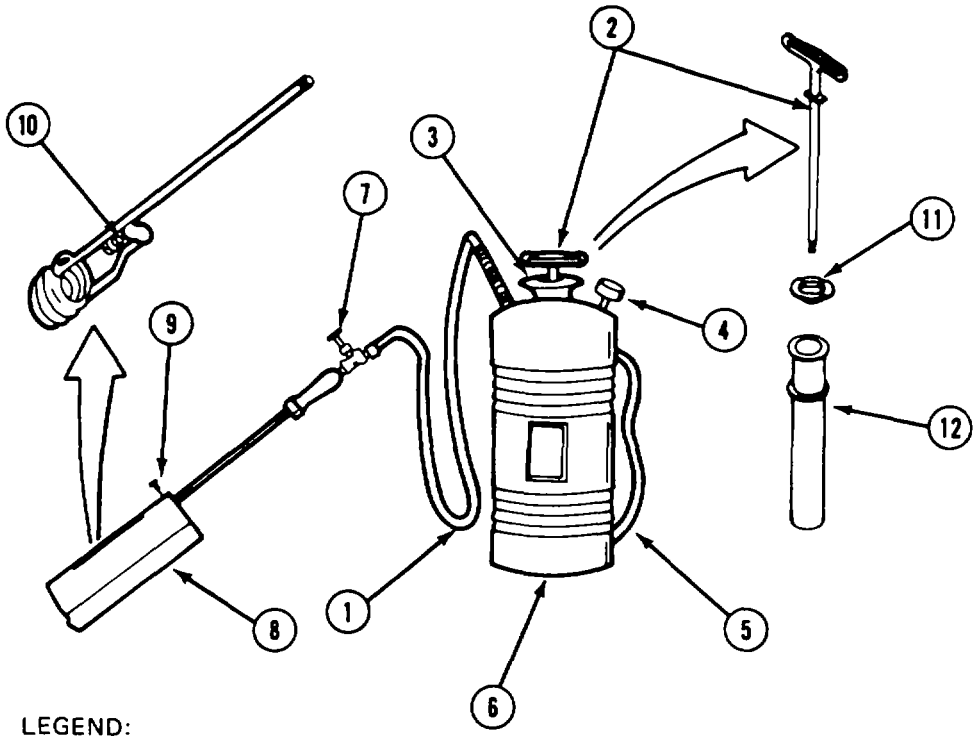
h. When the flame burns with spasmodic roars or pulsates, turn the burner control valve slowly toward "close" until the flame is even.

i. Shut off burner with control valve.

j Allow the burner to cool before stowing it on the platform

k. Periodically clean the burner Remove two screws (9) and slide the shell off the burner coil. Remove nozzle jet (10) and open the burner control valve to permit raw diesel fuel to flush the burner. Close the burner control valve and wipe the burner coil with a clean cloth. Replace the nozzle jet and slide the shell over the burner coil. Install and tighten the machine screws.

l. A few drops of lubricating oil applied to the air vent hole in the pump barrel cap will keep the pump lubricated.



LEGEND:

1. HOSE
2. PUMP HANDLE
3. FILLING FUNNEL
4. PRESSURE GAGE
5. SHOULDER STRAP
6. BURNER FUEL TANK
7. BURNER CONTROL VALVE
8. BURNER
9. SCREW
10. NOZZLE JET
11. CAP
12. BARREL

Figure 2-21. Portable Burner Assembly.

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Section II. OPERATION OF AUXILIARY EQUIPMENT

There is no auxiliary equipment for the Bituminous Distributor.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

2-26. Operation in Extreme Cold.

The distributor is not intended for operation in temperatures below 40°F (4°C)

2-27. Operation Under Dusty or Sandy Conditions.

a. Air Cleaners. When operating under dusty or sandy conditions, service the air cleaner twice daily, or as necessary. When the oil becomes dirty, replace with new oil. Thoroughly clean and lubricate the air cleaner as soon as possible after exposure to dusty or sandy conditions. The unit should be washed thoroughly or steam cleaned, if possible.

b. Lubrication. Lubricate more frequently than specified in LO 5-3895-371-12. Keep all covers on lubrication points closed

2-28. Operation in High Humidity and Salt Water Areas.

a. General. Salt water corrodes metal. Avoid contact with salt water as much as possible, but after any necessary contact, clean the complete unit with fresh water.

b. Cleaning. Wash the unit with fresh water under pressure as soon as possible after exposure to salt water.

c. Protection. If the distributor is stored in an area where salt water spray is in the air, use a tarpaulin or portable shed for protection.

CHAPTER 3
MAINTENANCE INSTRUCTIONS

Section I. LUBRICATION INSTRUCTIONS

CAUTION

Lubrication in accordance with LO 5-3895-371-12 and the instructions contained in the PMCS table, (section II), is extremely important. Failure to lubricate the Bituminous Distributor properly will result in unscheduled maintenance and increased downtime.

3-1. General.

LO 5-3895-371-12 explains your responsibilities for lubricating the Bituminous Distributor. It tells you what lubricants to use, and illustrates the lubrication points and how often to service them

3-2. Detailed Lubrication Information.

a. Care of Lubricants. When lubricating the Bituminous Distributor, handle and apply the various lubricants carefully. Keep the containers clean and free of dust and water. After lubrication is completed, cover all containers tightly and store so the contents will be kept usable

b. Points of Application. Lubrication fittings and oil holes are readily located by reference to LO 5-3895-371-12.

c. Cleaning. Use an approved cleaning solvent to clean all fittings and surrounding surfaces before lubrication. After cleaning, dry parts thoroughly

Section II PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-3. General.

a. Maintenance Forms and Records. Every mission begins and ends with the paperwork. There isn't much of it, but you have to keep it up. The forms and records you fill out have several uses. They are a permanent record of the services, repairs, and modifications made on your distributor; they are reports to Organizational Maintenance and to your Commander, and they are a checklist for you when you want to know what is wrong with the distributor after its last use and whether those faults have been fixed. For the information you need on forms and records, see DA Pam 738-750.

b. Preventive Maintenance Checks and Services (see Table 3-1).

(1) Do your (B) PREVENTIVE MAINTENANCE just before you operate the distributor. Pay attention to the CAUTIONS and WARNINGS

(2) Do your during (D) PREVENTIVE MAINTENANCE while the vehicle and/or its component systems are in operation

(3) Do your after (A) PREVENTIVE MAINTENANCE right after operating the distributor. Pay attention to the CAUTIONS and WARNINGS

(4) Do your (W) PREVENTIVE MAINTENANCE weekly

(5) Do your (M) PREVENTIVE MAINTENANCE once a month

(6) If something doesn't work, troubleshoot it with the instructions in this manual and notify your supervisor.

(7) Always do your PREVENTIVE MAINTENANCE in the same order until it gets to be a habit. Once you've had some practice, you'll spot anything wrong in a hurry.

(8) If anything looks wrong and you can't fix it, write it on your DA Form 2404. If you find something seriously wrong, report it to Organizational Maintenance RIGHT NOW

(9) When you do your PREVENTIVE MAINTENANCE, take along the tools you need to make all the checks. You always need a rag or two, also.

3-4. General Maintenance Procedures.

WARNING

Dry cleaning solvent, SD-2, used to clean parts is potentially dangerous to personnel and property. Do not use near open flame or excessive heat Flash point of solvent is 138°F (59°C).

a. Cleanliness - Dirt, grease, oil, and debris only get in the way and may cover up a serious problem. Clean as you work and as needed Use dry cleaning solvent (SD-2) on all metal surfaces

b. Bolts, nuts and screws - Check them all for obvious looseness, missing, bent or broken condition. You can't try them all with a tool, of course, but look for chipped paint, bare metal, or rust around bolt heads. If you find one you think is loose, tighten It, or report it to Organizational Maintenance

c. Welds - Look for loose or chipped paint, rust, or gaps where parts are welded together. If you find a bad weld, report it to Organizational Maintenance

d. Electric wires and connectors - Look for cracked or broken insulation, bare wires, and loose or broken connectors. Tighten loose connectors and make sure the wires are in good shape

e. Hydraulic lines and fittings - Look for wear, damage, leaks, and make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out, report it to Organizational Maintenance.

3-5. Fluid Leakage.

It is necessary for you to know how fluid leakage affects the status of the hydraulic system. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of the distributor. Learn, then be familiar with them and REMEMBER - WHEN IN DOUBT, NOTIFY YOUR SUPERVISORI

Leakage Definitions for Crew/Operator PMCS

CAUTION

Equipment operations is allowable with minor leakage (Class I or II). Of course, consideration must be given to the fluid capacity in the item/ system being checked/inspected. When in doubt, notify 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 to your supervisor or to Organizational Maintenance

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/inspected
CLASS III	Leakage of fluid great enough to form drops that fall from the item being checked/inspected

Table 3-1 Operator/Crew Preventive Maintenance Checks and Services

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

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired, Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
						NOTE Item number of column shall be used as a source of item numbers for the "TM Number" column on DA Form 2404, Equipment Inspection and Maintenanance Worksheet, in recording results of PMCS. Within designated interval, these checks are to be performed in the order listed. Perform weekly as well as before PMC's if you are the assigned driver but have not operated the vehicle since the last weekly, or you are operating the vehicle for the first time.	
						Electrical System	
1				●		Visually inspect wiring and connectors for obvious damage, breaks or fraying.	
2		●				Make sure all clearance lamps are working; pull out headlamp switch on truck instrument panel and check marker lamps.	
						Distributor Body	
3	●					Visually inspect material storage tank and subframe for obvious damage, weld breaks.	Cracked, broken welds.
4					●	Check all mounting tie downs and fasteners.	
5	●					Check for evidence of leakage (fuel, oil, bitumen and hydraulic fluid) on or under vehicle.	Class III leaks are evident, or any fuel leakage.

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Continued

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

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired, Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
						WARNING Manhole should be open when heating material.	
6				●		Visually inspect manhole strainer. If clogged, clean it.	
7	●					Check tank gage (Low Material).	
						WARNING When heating material, exposed flues can cause an explosion.	
						(1) When using lower flue to heat material, tank gage should show a minimum of 525 gallons.	
						(2) When using upper flue to heat material, tank gage should show a minimum of 825 gallons.	
8		●				Material low level indicator will come on in cab to warn operator of low material.	
						WARNING If tank is overfull, heating material will expand and overflow. This can cause a fire.	
9	●					Check that tank is not overfull. Allow sufficient space for expansion of material when heating. Do not put in over 1500 gallons.	
10				●		Check overflow pipe. Make sure that it is without any solid material buildup. If there is a buildup, clean pipe.	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Continued

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

Item No.	Interval B	D	A	W	M	ITEM TO BE INSPECTED Procedure: Check For And Have Repaired, Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment is Not Ready/ Available If:
11				●		Check filling line strainer. If it is clogged, clean it.	
12					●	Check discharge header strainer. If it is clogged, clean it.	
						Hydraulic System	
13	●					Check hydraulic reservoir tank for leaks.	Class III leaks are evident.
14		●				Hydraulic oil high temperature warning indicator in cab comes on when hydraulic oil reaches temperature above 185°F.	Indicator is inoperative, or hyd oil temp is above 185°F.
15		●				Check filter vacuum gage. If gage indicates 17 in. Hg. maximum, change filter.	Indicator is inoperative, or shows above 17 in. Hg. maximum.
16	●					Check all hydraulic lines for evidence of leaking.	Class III leaks are evident.
						Burner Fuel System	
17	●					Check burner fuel lines for evidence of leaking.	Class III leaks are evident.
18		●				Check air pressure gage for 10-15 psi.	Indicator is inoperative or gage does not show press.
19		●				Check fuel pressure gage for 10-15 psi.	Indicator is inoperative or gage does not show press.
						WARNING Do not use gasoline as a fuel. Using gasoline will result in an extreme fire hazard.	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Continued

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

Item No.	Interval					Procedure: ITEM TO BE INSPECTED Check For And Have Repaired, Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment Is Not Ready/ Available If:
	B	D	A	W	M		
20	•					Check fuel tank for leaks	Class III leaks are evident
21				•		Check blower burner fuel line strainer. If clogged, clean it.	
22				•		Check blower air cleaner. If oil is dirty, change oil.	
23				•		Check burner valve strainer. If clogged, clean it.	
24				•		Check heater burners and flues for insecure mounting.	
						Portable Burner	
25					•	Check burner coil and vaporizing jet. If dirty, clean it.	
26		•				Check portable burner gage. Best operation at 45 psi.	Indicator is inoperative
						Bitumeter Wheel Assembly	
27	•					Check bitumeter wheel for secure mounting and proper operation.	
28	•					Check bitumeter wheel air-gage (at wheel) activated In cab and 120 psi is minimum pressure.	Indicator is inoperative or gage does not show pressure.
29		•				Check recording bitumeter. Records in ft per minute and feet traveled.	
30	•					Check air lines for leaks.	
						Spray Bar	
31				•		Check nozzle slots for correct angle (30 degrees) and correct height above road (12 inches above road).	

Table 3-1. Operator/Crew Preventive Maintenance Checks and Services - Continued

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

Item No.	Interval B	D	A	W	M	Procedure: ITEM TO BE INSPECTED Check For And Have Repaired, Filled Or Adjusted As Needed	FOR READINESS REPORTING Equipment Is Not Ready/ Available If
32		•				Check that spray bar positions itself wherever control switches in cab are activated.	
33			•			Check that spray bar is flushed with flushing oil.	
						Hand Spray Gun	
34		•				Check hand spray gun for leaks	Class III leaks are evident.
35				•		Check that hand spray gun is flushed with flushing oil	
36	•					Check fire extinguisher for broken seal, low charge and proper mounting. The normal charge pressure is 175 psi.	Indicator is in recharge position

Section III - TROUBLESHOOTING

3-6. Introduction.

a. This section contains information for locating and correcting most of the operating troubles which may develop in the Bituminous Distributor. Each malfunction for an individual component, unit, or subsystem is followed by a list of tests or inspections which will help you to determine corrective action to take. You should perform the tests/inspections and corrective actions in the order listed.

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

c. Table 3-2 lists the common malfunctions which you may find during the operation or maintenance of the Bituminous Distributor or its components. They are listed in the following order

Malfunction No

1 Pump will not turn or turns slowly

2 Burners inoperative or operating improperly

3 Quadrant lever slows or stops pump when moving from circulating in tank to circulating in bar

4. Spray streaks

5 Spray fogs

6 Spray lacks pressure

7. Application rate varies

8 Spray bar does not circulate

9 Spray bar does not turn up properly

10 Spray bar inoperable/clogged

11 Circulating system inoperable/clogged

Table 3-2. Troubleshooting

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
1. PUMP WILL NOT TURN OR TURNS SLOWLY. Step 1. Asphalt material below pumping temperature Reheat to pumping temperature (para 2-7) Step 2. Air leak in suction line from hydraulic reservoir to filter to inlet of charge pump on back of hydraulic pump Tighten all connections Step 3. Low oil level in reservoir Replenish oil (see LO 5-3895-371-12) Step 4. Spray bar control valves set Improperly Reset control (para 2-3C) Step 5. If pump still does not operate, notify Organizational Maintenance
2. BURNERS INOPERATIVE OR OPERATING IMPROPERLY. Step 1. Clogged fuel lines Drain and clean the lines (para 3-11 and 3-14) Step 2. If above step does not correct the problem, notify Organizational Maintenance
3. QUADRANT LEVER SLOWS OR STOPS PUMP WHEN MOVING FROM "CIRCULATE IN TANK" TO "CIRCULATE IN BAR" Step 1. Butterfly valve partially closed Open butterfly valve by pulling on control linkage Step 2. Transfer valve in hand spray position Set transfer valve in DISTRIBUTE position Step 3. Linkage out of adjustment Notify Organizational Maintenance.

Table 3-2 Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
4. SPRAY FOGS Step 1. Pump speed too fast for size of nozzle Check CIRCULATING IN TANK (para 2-7) for proper relation
5. SPRAY STREAKS. Step 1. Pump speed too slow Check paragraph 2-19 and table 2-1 for correct pump speed Step 2. Nozzles not at proper angle Adjust with nozzle wrench (para 2-4c) Step 3. Spray bar at improper height above ground Adjust spray bar to give nozzle height of 12 in. above ground (para 2-4e) Step 4. Material temperature too low Heat material to highest temperature recommended for spraying material
6. SPRAY LACKS PRESSURE. Step 1. Pump speed too slow Check paragraph 2-19 and table 2-1 for correct pump speed. Step 2. One of the control valves in incorrect position Lift quadrant and turn valve plugs to position corresponding to levers (para 2-10). Step 3. Discharge strainer plugged Remove and clean (para 3-13)
7. APPLICATION RATE VARIES. Step 1. Improper reading of tank contents Using measuring stick (11, fig B-1) for accurate readings

Table 3-2. Troubleshooting - Continued

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION
NOTE Tank must be level when using measuring stick.
Step 2. Catch lever on quadrant control not pulled. Pull catch lever out. Step 3. Hydrostatic control (10, fig. 2-1) not firmly positioned. Adjust and tighten. Step 4. Hydrostatic override (14, fig. 2-1) control partially engaged. Return override control to neutral position. Step 5. If problem still exists, notify Organizational Maintenance.
8. SPRAY BAR DOES NOT CIRCULATE.
Step 1. Spray bar full of cold material. Heat spray bar with portable burner (para 2-25). Step 2. Quadrant control valve lever in wrong position. Adjust quadrant control valve lever (para 2–12). Step 3. Inner circulating tubes out of round. Check inner circulating tubes, particularly where they join at sections. Step 4. If problem still exists, notify Organizational Maintenance.
9. SPRAY BAR DOES NOT TURN UP PROPERLY.
Step 1. Loose air connections. Tighten connections. Step 2. Defective wiring. Check electrical connections and tighten. Step 3. If problem still exists, notify Organizational Maintenance.
10. SPRAY BAR INOPERABLE/STOPPED UP.
Step 1. Check operation. Use portable burner and heat distributing lines and bar (para 2-25). Step 2. If problem still exists, notify Organizational Maintenance.
11. CIRCULATING SYSTEM INOPERABLE/STOPPED UP.
Refer to malfunction 10 for test and corrective action.

Section IV. MAINTENANCE PROCEDURES

3-7. Cleaning and Servicing.

Cleaning and servicing the distributor is extremely important. A buildup of bituminous material will cause major problems in operation, equipment failures, and the need for frequent maintenance. Always use an approved cleaning solvent and replace any broken or damaged components. Follow the procedures in this section and you can keep your distributor in good operating condition.

3-8. Fuel Tank and Cap (fig. 3-1).

The fuel tank is mounted on the right side of the distributor and has a 36 gal capacity.

a Inspect tank cap (1) for a tight fit and see that gasket (2) is clean and in place.

b Inspect vent holes in the center of tank cap (1) for any obstructions that would prevent air from replacing fuel used.

3-9. Blower Air Cleaner (fig. 3-2).

a. Removal.

(1) Loosen wing nut (2) and remove cap assembly (1) from air cleaner body (4)

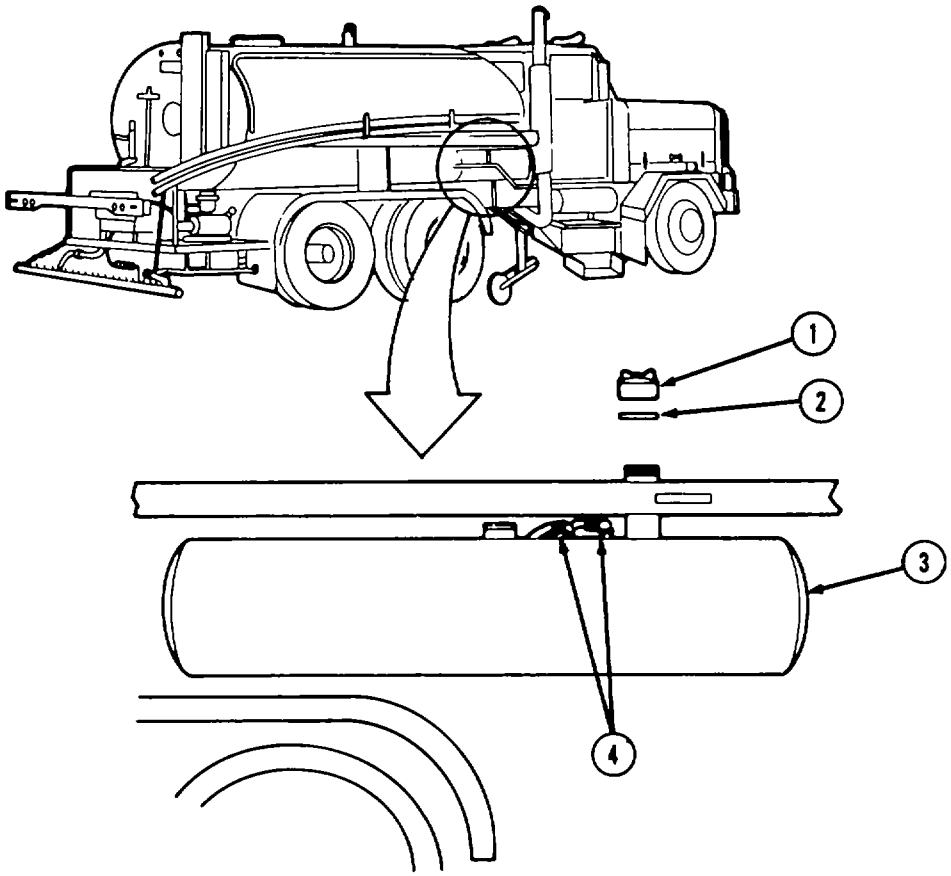
(2) Remove filter screen (3) from cap assembly (1)

(3) Remove air cleaner body (4) from blower body (6)

(4) Remove gasket (5)

b. Cleaning

(1) Remove oil from air cleaner body (4)



1 TANK CAP
2 GASKET
3 TANK
4 FUEL LINES

Figure 3-1. Fuel Tank and Cap.

(2) Wash filter screen (3), air cleaner body (4), and cap assembly (1) in an approved cleaning solvent

(3) Clean blower body (6)

(4) Clean gasket (5) and dry thoroughly. Replace with new gasket if unserviceable

C. Installation.

(1) Replace gasket (5) and air cleaner body (4) on blower body (6)

(2) Refer to LO 5-3895-371-12 and replace oil in air cleaner body (4)

(3) Replace filter screen (3) in cap assembly (1)

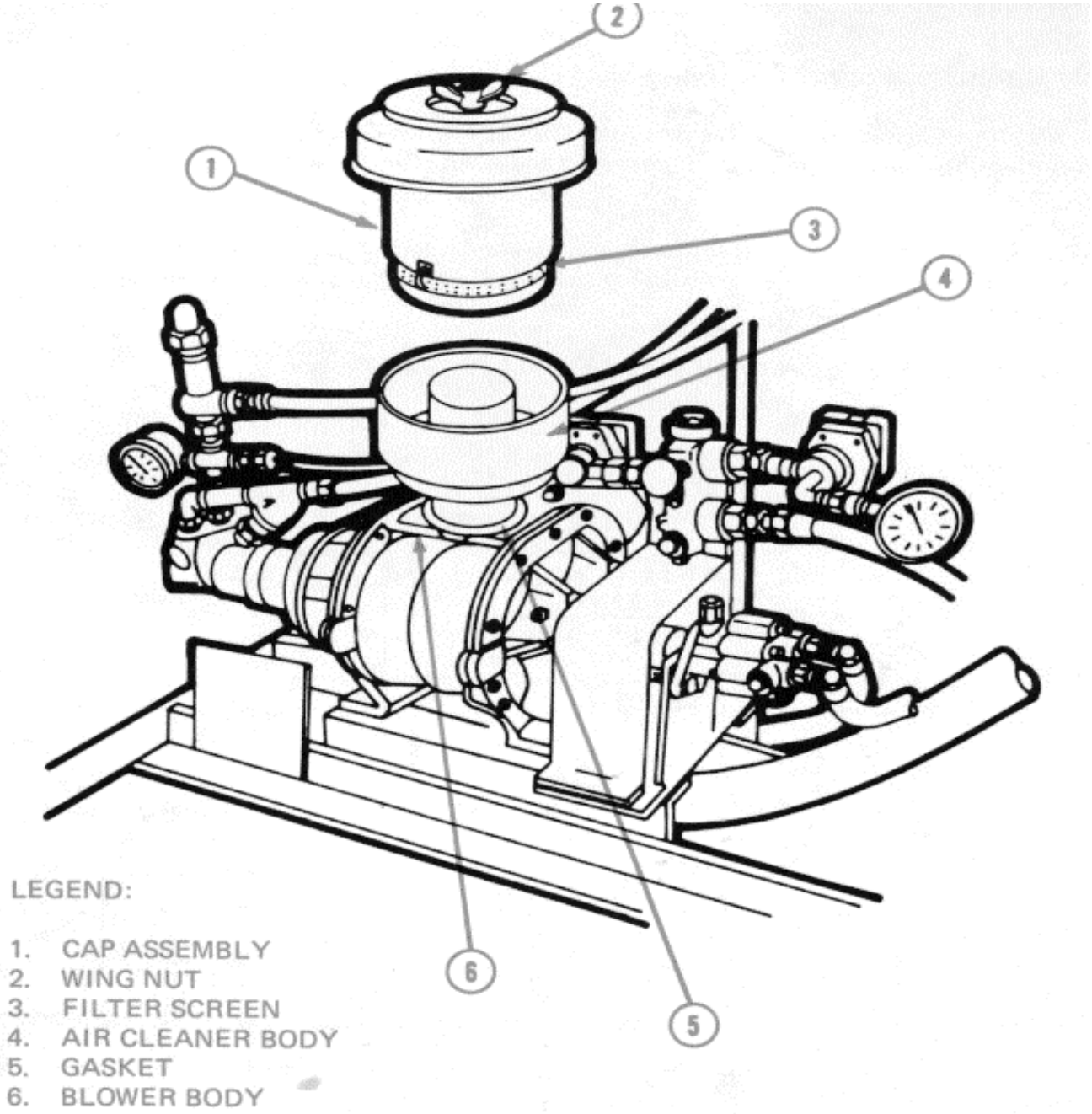


Figure 3-2. Blower Air Cleaner.

CAUTION

Make sure that air cleaner body (4) is correctly seated on blower body (6) before performing step 4.

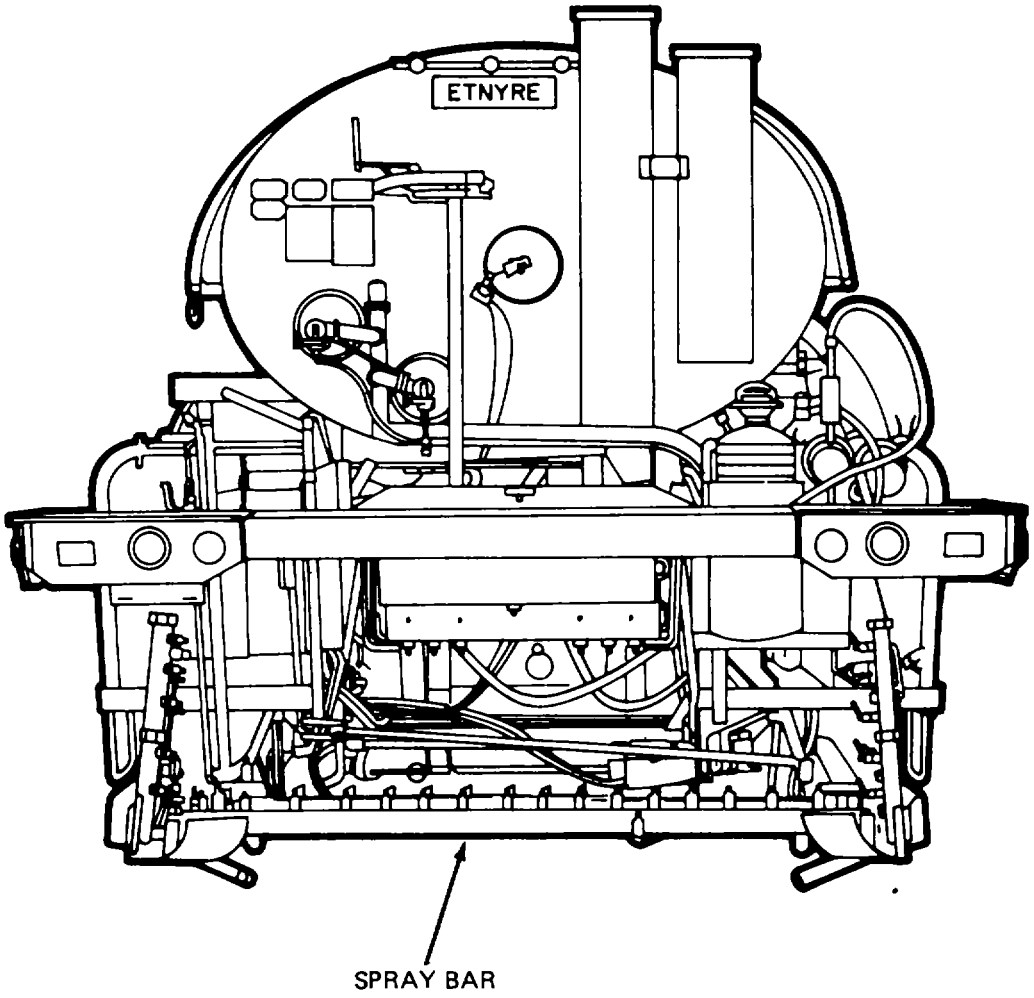
(4) Replace cap assembly (1) in air cleaner body (4) and tighten wing nut (2)

3-10. Bituminous Spray Bar (fig. 3-3).

a. Cleaning. Clean all parts of the spray bar assembly, using an approved cleaning solvent, and dry thoroughly. Make sure all flanges, swing and pivot points, and threaded parts are clean.

b. Inspection. Inspect all parts for wear, cracks, and broken or otherwise damaged parts. Pay particular attention to threaded surfaces and gaskets. See that all spray nozzles are clean and free from obstructions.

c. Lubrication Requirements. See LO 5-3895-371-12 for lubrication.



TA 075456

Figure 3-3. Bituminous Spray Bar.

3-11. Blower Burner Fuel Line Strainer (fig. 3-4).

a. Removal.

(1) Disconnect fuel lines (4, fig 3-1) at fuel tank.

(2) Remove the pipe plug (1, fig 3-4) and drain the fuel from the burner fuel tank line (4)

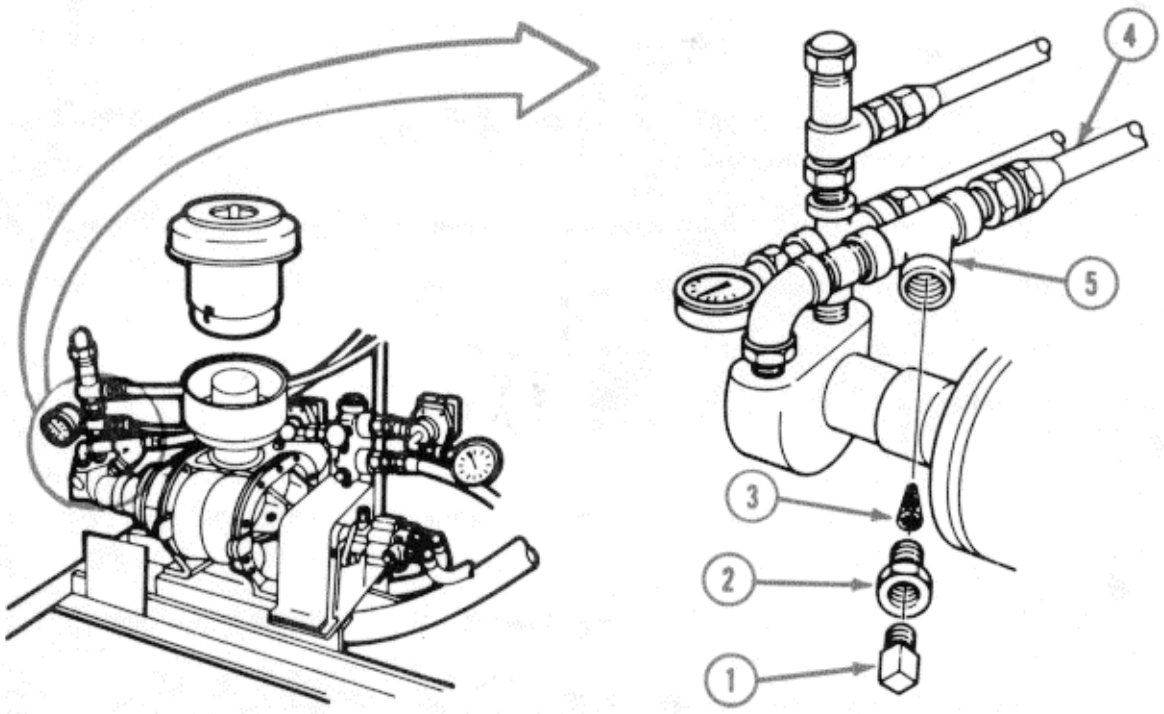
(3) Remove the reducer bushing (2) securing the strainer screen (3) inside the strainer body (5). Remove the screen from the strainer body.

b. Cleaning, Inspection, and Repair.

WARNING

Compressed air used for cleaning purposes will not exceed 30 psi. Use only with effective chip guarding and personal protective equipment (goggles/ shield, gloves, etc.).

(1) Clean all parts in an approved cleaning solvent. Dry thoroughly with clean, dry, compressed air.



LEGEND:

1. PIPE PLUG
2. REDUCER BUSHING
3. STRAINER SCREEN
4. BURNER FUEL TANK LINE
5. STRAINER BODY

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Figure 3-4. Blower Burner Fuel Line Strainer.

(2) Inspect all parts for corrosion, distortion, bends, damaged threads, cracks, breaks, or other damage. Inspect the strainer screen for holes or tears in the mesh

(3) Straighten a bent screen. Replace a defective screen.

c. Installation

(1) Place strainer screen (3) inside strainer reducer bushing (2)

(2) Install and tighten reducer bushing (2)

(3) Install pipe plug (1) in reducer bushing and tighten

(4) Reconnect fuel lines (4, fig 3-1) and tighten

3-12. Manhole Strainer (fig. 3-5).

a. Removal

(1) Unscrew handwheel (5) and remove from latch (1)

(2) Raise manhole cover (2) from manhole (4)

(3) Remove strainer (3) from manhole (4)

b. Cleaning, Inspection, and Repair

(1) Clean strainer (3) with an approved cleaning solvent. Dry thoroughly with clean, dry, compressed air

(2) Inspect strainer (3) for bends, cracks, tears, holes in mesh, or other damage

(3) Straighten bends. Replace screen, if damaged, and any other defective parts

c. Installation

(1) Place the strainer (3) in position in the manhole (4), making sure that the strainer is not tilted to one side or binding on any of the bolts inside the manhole

(2) Close the manhole cover (2) and secure tightly with the handwheel (5)

3-13. Discharge Header Strainer (fig. 3-6).

a. Drainage. Drain circulating system and spray bar (para 2-16)

b. Removal.

(1) Remove the header end cap (3) and gasket (2)

(2) Remove the strainer (1)

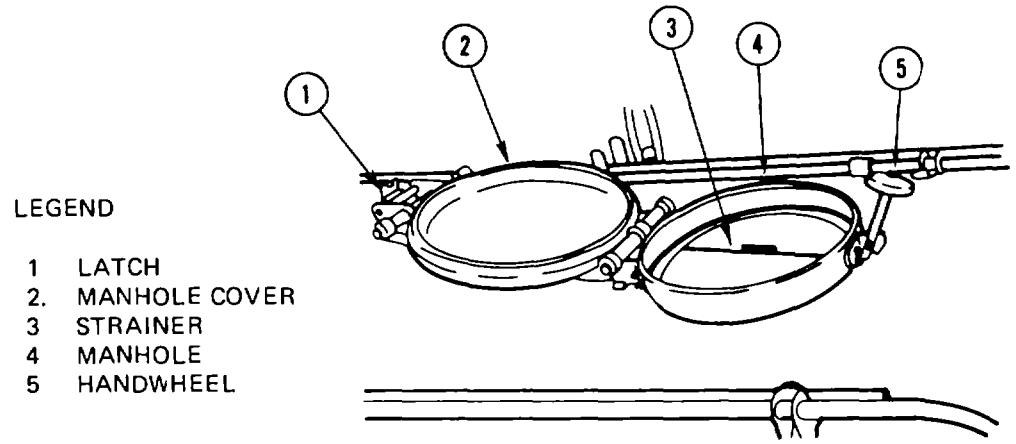


Figure 3-5. Manhole Strainer

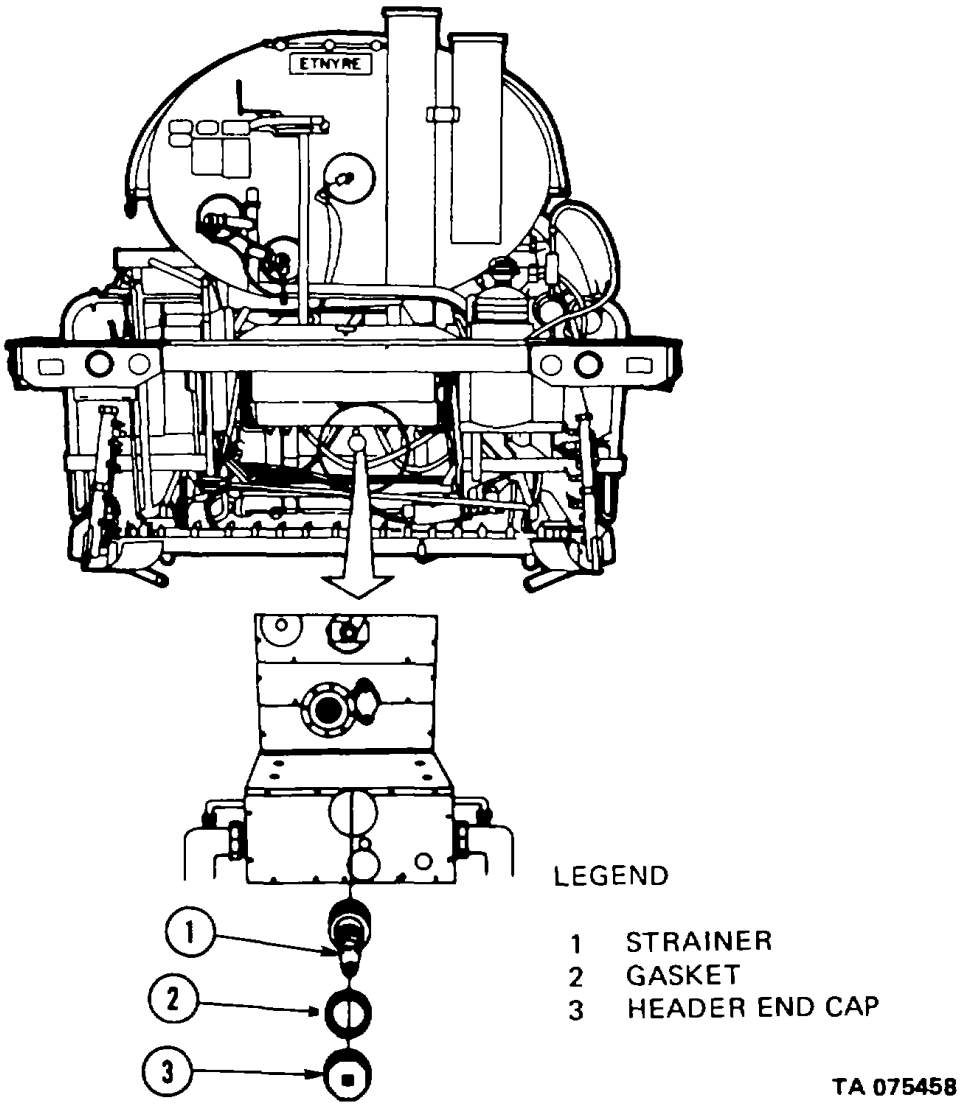


Figure 3-6. Discharge Header Strainer.

c. Cleaning, Inspection, and Repair.

(1) Clean all parts in an approved cleaning solvent. Dry thoroughly with clean, dry, compressed air

(2) Inspect the cap for cracks, breaks, damaged threads, corrosion, distortion, or other damage. Inspect the strainer for bends, breaks, tears, cracks, corrosion, or other damage.

(3) Straighten bends or dents on the strainer. Replace the gasket. Replace strainer, if damaged.

d. Installation

(1) Place strainer (1) in position inside the discharge header. Make sure the large end of strainer is properly seated.

(2) Install new gasket (2).

(3) Install and tighten header end cap (3).

3-14. Burner Valve Strainer (fig. 3-7).

a. Removal.

(1) Remove the cap (3), gasket (4), and strainer (2) assembly from the burner fuel valve (1).

b. Cleaning, Inspection, and Repair.

(1) Clean the strainer and cap assembly in an approved cleaning solvent. Dry thoroughly with clean, dry, compressed air.

(2) Inspect the strainer and cap assembly for damaged threads, bends, cracks, breaks, holes, or tears in the strainer, corrosion, distortion, or other damage.

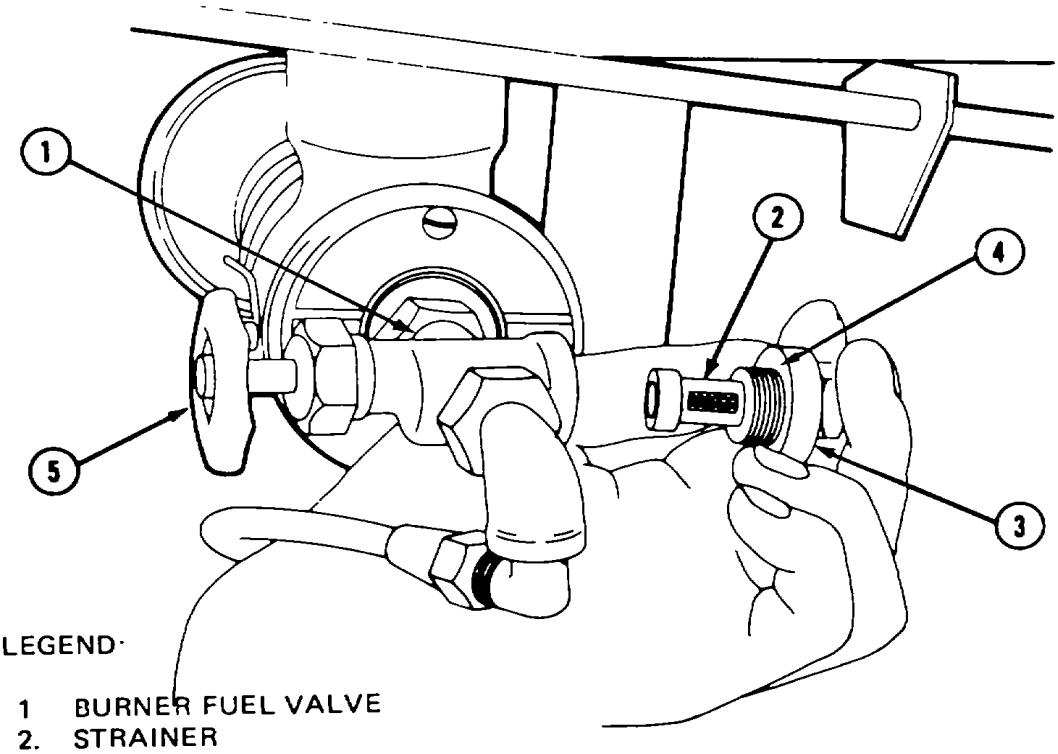
(3) Straighten bends. Replace a damaged cap and strainer assembly. Replace the gasket (4).

c. Installation. Install the cap (3), gasket (4), and strainer (2) assembly into burner fuel valve (1) and tighten.

3-15. Filling Line Strainer (fig. 3-8).

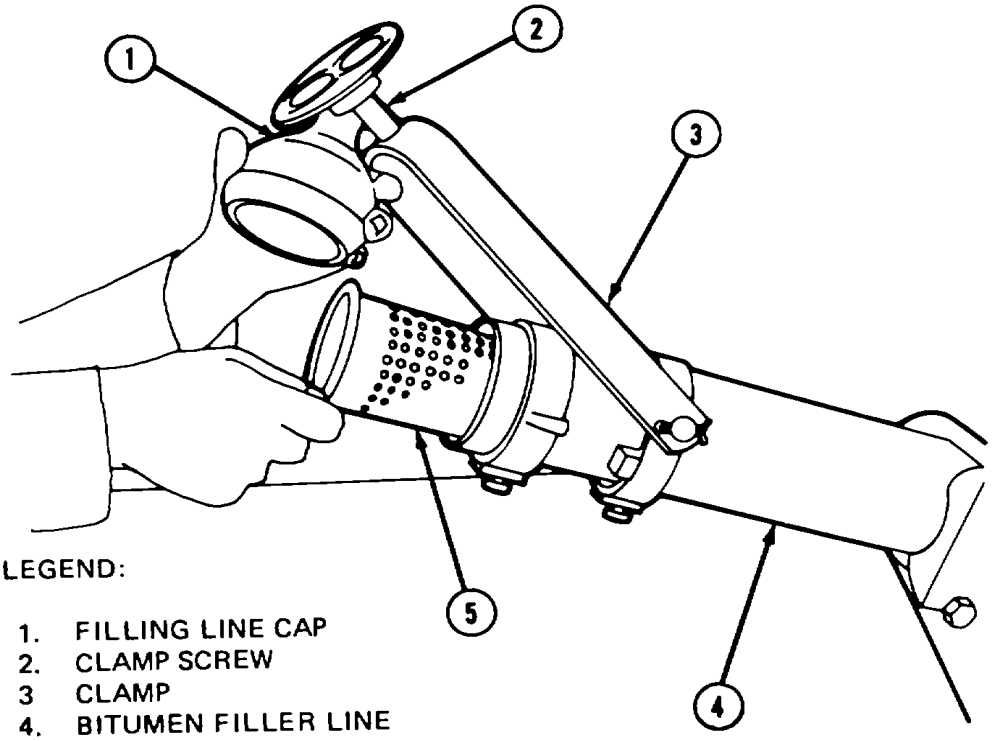
NOTE

Place intake valve lever (27, fig. 1-1) in UP position.



LEGEND:

1 BURNER FUEL VALVE
2. STRAINER
3. CAP
4 GASKET
5. BURNER FUEL VALVE HANDLE



LEGEND:

1. FILLING LINE CAP
2. CLAMP SCREW
3 CLAMP
4. BITUMEN FILLER LINE
5 STRAINER

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Figure 3-7. (Top) Burner Valve Strainer.
Figure 3-8. (Bottom) Filling Line Strainer.

a. Removal.

(1) Loosen clamp screw (2) and lift clamp (3)

(2) Remove filling line cap (1)

(3) Remove strainer (5) from asphalt filler line (4)

b. Cleaning, Inspection, and Repair.

(1) Clean the strainer in an approved cleaning solvent

(2) Dry thoroughly with clean, dry compressed air

(3) Inspect the strainer for bends, breaks, cracks, tears, corrosion, distortion, or other damage

(4) Straighten bends

(5) Replace a damaged strainer

c. Installation.

(1) Place strainer (5) in position in asphalt filler line (4) making sure strainer is properly seated

(2) Install filling line cap (1)

(3) Lower clamp (3) into position and tighten clamp screw (2)

3-16. Hydraulic Filter (fig. 3-9).

The filter element must be replaced when the indicator shows 17 in. restriction or higher.

a. Removal

(1) Unscrew center post (8) to remove the filter housing and internal parts from the head

(2) Remove O-ring (1) from the groove in the head

(3) Remove top seal (2) from the center post (8)

(4) Remove and discard the filter element (3)

(5) Remove bottom seal (2) from center post (8)

(6) Remove spring (4) and washer (5) from center post (8)

(7) Remove center post (8) from housing (6)

(8) Remove gasket (7) from center post (8)

(1) Inspect O-ring (1), seals (2), and gasket (7) for deterioration or other damage

(2) Inspect remaining parts for obvious damage

(3) Discard damaged parts and obtain new replacements

c. Installation

(1) Place gasket (7) on center post (8) and insert center post (8) into housing (6)

(2) Install washer (5) on center post (8)

(3) Install spring (4) on center post (8) with the large coil end down

(4) Install bottom seal (2) on center post (8)

(5) Install a new filter element (3) on top seal (2) on center post (8)

(6) Install O-ring (1) in groove on the filter head

(7) Position housing (6) and screw center post (8) into the filter head

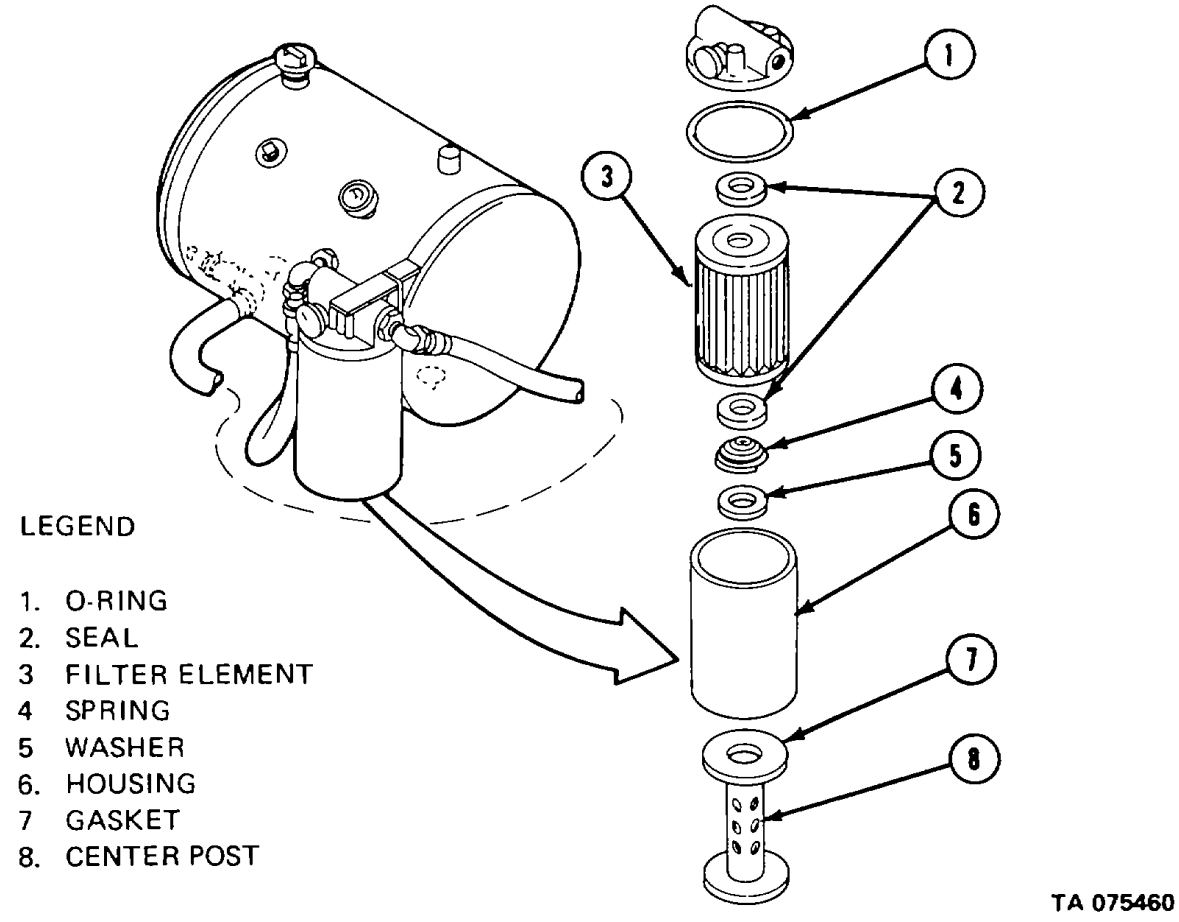


Figure 3-9. Hydraulic Filter.

APPENDIX A

REFERENCES

A-1. Department of the Army Pamphlets.

Consolidated Index of Army Publications and Blank Forms ..... DA Pam 25-30
Index of Graphic Training Aids and Devices ..... DA Pam 310-5
The Army Maintenance Management System (TAMMS) ..... DA Pam 738-750

A-2. Forms.

U.S. Government Motor Vehicle Operator's Identification Card ..... SF 46
Operator's Report of Motor Vehicle Accident ..... SF 91
Recommended Changes to Publications and Blank Forms ..... DA Form 2028
Recommended Changes to Equipment Technical Publications ..... DA Form 2028-2

A-3. Other Publications.

The following publications contain information pertinent to the major item of material and associated equipment

a. Operating Vehicle.

Operator's Manual for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919 ..... TM 9-2320-273-10

Army Motor Transport Units and Operations ..... FM 55-30

Manual for the Wheeled Vehicle Driver ..... FM 21-305

b. Maintenance and Repair.

Lubrication Order for M918 Bituminous Distributor Truck Body ..... LO 5-3895-371-12

Organizational Maintenance for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919 ..... TM 9-2320-273-20

Organizational Maintenance Repair Parts and Special Tools Lists for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919 ..... TM 9-2320-273-20P

Organizational, Direct Support and General Support Maintenance Manual with Repair Parts and Special Tools Lists for M918 Bituminous Distributor Truck Body ..... TM 5-3895-371-24 & P

Direct and General Support Repair Parts and Special Tools Lists for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919 ..... TM 9-2320-273-34P

Direct and General Support Maintenance Manual (including Repair Parts and Special Tools Lists) for Engine, Diesel 6 Cylinder, In-line, Turbocharger, Cummins Model NTC-400 ..... TM 9-2815-222-34 & P

Lubrication Order for M915, M916, M920 Truck Tractor and Chassis for M917, M918, and M919 ..... LO 9-2320-273-12

Metal Body Repair and Related Operations ..... FM 43-2

Welding Theory and Application ..... TM 9-237

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

c. Cold Weather Operation and Maintenance.

Basic Cold Weather Manual.....FM 31-70

Northern Operations.....FM 31-71

Operation and Maintenance of Ordnance Materiel in Extreme Cold Weather (0° to -65°F).....FM 9-207

d. Decontamination.

Nuclear, Biological and Chemical (NBC) Decontamination.....FM 3-5

e. General.

Principles of Automotive Vehicles.....TM 9-8000

Camouflage.....FM 5-20

Procedures for Destruction of Tank-Automotive Equipment to Prevent Enemy Use.....TM 750-244-6

Administrative Storage of Equipment.....TM 740-90-1

f. Warranty.

Chassis and Body.....TB 9-2300-295-15/17

APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope.

This appendix lists integral components of and basic Issue items for the M918 Trucks to help you inventory items required for safe and efficient operation

B-2. General.

This Components of End Item List is divided into the following sections

a. Section II. Integral Components of the End Item These items, when assembled, comprise the Bituminous Distributor and must accompany it whenever it is transferred or turned in The illustrations will help you identify these items

b. Section III. Basic Issue Items. These are the minimum essential Items required to place the Bituminous Distributor in operation, to operate it, and to perform emergency repairs. Although shipped separately packed, they must accompany the Bituminous Distributor during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based

on TOE/MTOE authorization of the end Item

B-3. Explanation of Columns.

a. Illustration. This column is divided as follows

(1) Figure Number Indicates the figure number of the Illustration on which the Item is shown.

(2) Item Number The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National Stock Number assigned to the Item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items

d. Description. Indicates the Federal Item name and, if required, a minimum description to identify the Item

e. Location. The physical location of each Item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. Not Applicable

g. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcv'd column, list the quantity you actually receive on your major Item. The Date columns are for your use when you inventory the major Item at a later date, such as for shipment to another site.

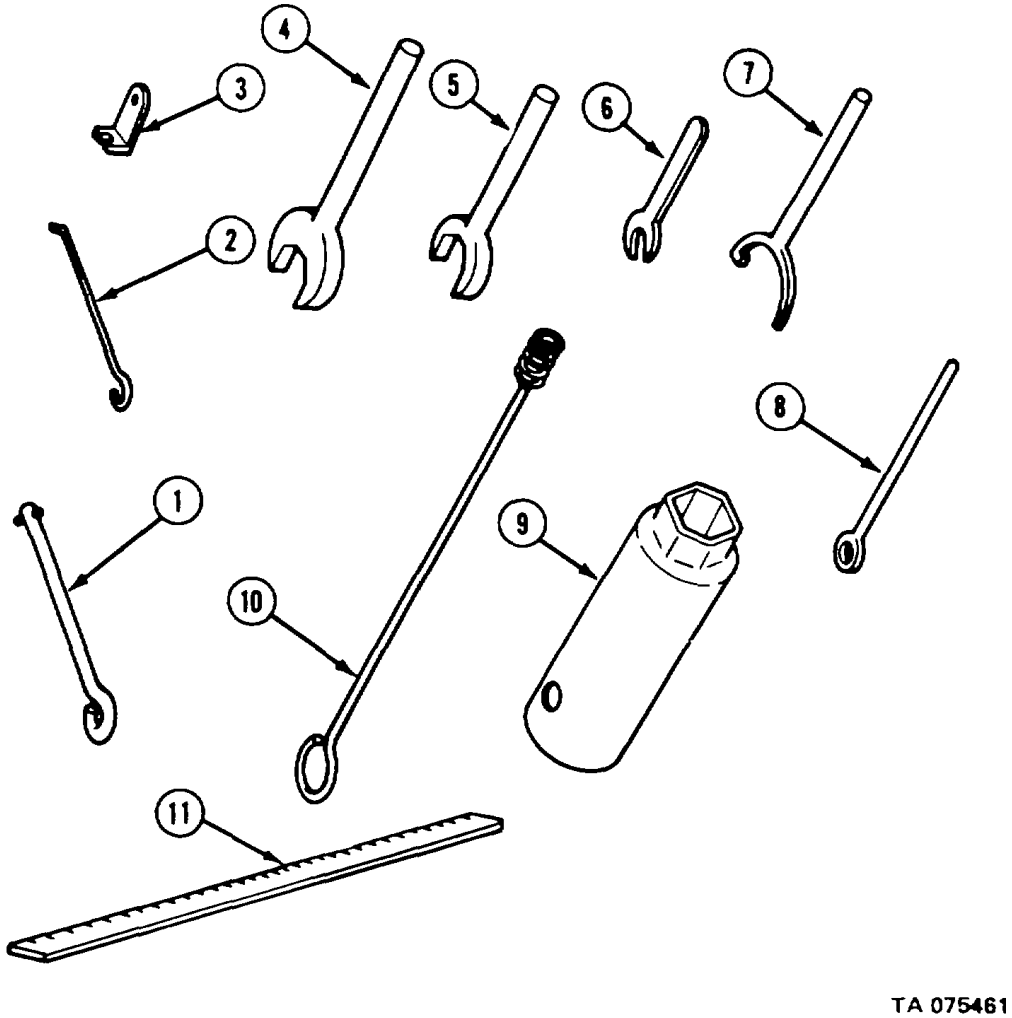


Figure B-1. Basic Issue Items.

Section II. INTEGRAL COMPONENTS OF END ITEM

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No.	Description	Location	Usable On Code	Qty Reqd	Rev'd	Date	Date	Date
1-1	33	3895-00-425-6895	6600252	Aux. Hose, Asphalt			1				
1-1	33	4720-01-082-7289	6600273	Aux. Hose, Asphalt			1				
1-1	19	3825-00-970-0021	FG4-B	Portable Burner			1				
1-1	37	3895-00-160-3198	3380017	Hand Spray Gun			1				

Section III. BASIC ISSUE ITEMS

(1) Illustration		(2)	(3)	(4)	(5)	(6)	(7)	(8) Quantity			
(a) Figure No.	(b) Item No.	National Stock Number	Part No.	Description	Location	Usable On Code	Qty Reqd	Rcv'd	Date	Date	Date
B-1	1	5315-01-079-6367	6500048	Needle, Portable Burner			1				
B-1	2	5120-00-425-6920	3390030	Hook, Strainer			1				
B-1	3	5120-01-090-7734	3330030	Wrench			1				
B-1	4	5120-01-090-7921	3380079	Wrench, Union Nut			1				
B-1	5	5120-01-090-7922	3380092	Wrench, Union			1				
B-1	6	5120-01-090-7923	6000376	Wrench, Nozzle			1				
B-1	7	5120-01-090-7735	3380081	Wrench, Spanner			1				
B-1	8	5120-01-090-7656	3380090	Pin Assembly			1				
B-1	9	5120-01-090-7655	3380080	Wrench			1				
B-1	10	4530-00-160-5729	3330077	Lighter, Burner			1				
B-1	11	3895-00-160-5646	3390434	Stick, Measuring			1				

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. Scope.

This appendix lists additional items you are authorized for the support of the distributor.

C-2. General.

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

C-3. Explanation of Listing.

National Stock Numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION		(3)	(4)
	PART NUMBER & FSCM	USABLE ON CODE	U/M	QTY AUTH
8415-00-261-7015	HH-G-450 (81348)	Gloves Asbestos	PR	1

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

D-1. Scope.

This appendix lists expendable supplies and materials you will need to operate and maintain the Bituminous Distributor. These items are authorized to you by CTA 5-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. Explanation of Columns.

a. Column 1 - Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. D").

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

C - Operator/Crew

c. Column 3 - National Stock Number. This is the National Stock Number assigned to the item; use it to request or requisition the item.

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

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

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C		Grease, Automotive Artillery, GAA (MIL-G-10924C)	
		9150-00-015-0029	2-1/4-oz tube	OZ
		9150-00-935-1017	14-oz cartridge	OZ
		9150-00-190-0904	1-lb can	LB
		9150-00-190-0905	5-lb can	LB
		9150-00-190-0907	35-lb can	LB
2	C		Oil, Lubricating, Exposed Gear, CW (VV-L-751)	
		9150-00-234-5197	5-lb can	LB
		9150-00-261-7891	35-lb pail	LB
3	C		Oil, Lubricating, OE/HDO-10 (MIL-L-2104C)	
		9150-00-265-9425	1-qt can	QT
		9150-00-265-9428	5-gal drum	GAL
		9150-00-265-9429	55-gal drum, 16 ga.	GAL
		9150-00-265-9430	55-Gal drum, 18 ga.	GAL
4	C		Oil, Lubricating, OE/HDO-30 (MIL-L-2104C)	
		9150-00-265-9433	1-qt can	QT
		9150-00-265-9435	5-gal drum	GAL
		9150-00-265-9436	55-gal drum, 16 ga.	GAL
		9150-00-265-9437	55-gal drum, 18 ga.	GAL
5	C		Oil, Lubricating, OE/HDO-50 (MIL-L-2104C)	
		9150-00-265-9440	1-qt can	QT
		9150-00-265-9442	5-gal drum	GAL
		9150-00-265-9441	55-gal drum, 16 ga.	GAL
6	C	9150-00-6574959	Fluid, Hydraulic Type A, Dexron Automatic Transmission	
		9150-00-698-2382	1-qt Can	QT
		9150-00-657-4959	5-gal Drum	GAL
7	C		Oil, Lubricating, Sub-Zero OEA (MIL-L-46167)	
		9150-00-402-4478	1-qt can	QT
		9150-00-402-2372	5-gal can	GAL
		9150-00-491-7197	55-pal drum	GAL
8	C		Lubricant, Gear, Universal (MIL-L-2105C)	

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST--CONTINUED

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
8	C		Lubricant, Gear. Universal, 75W (MIL-L-2105C)	
		9150-01-035-5390	1-qt Can	QT
		9150-01-035-5391	1-gal Can	GAL
		9150-01-048-4594	55-gal Drum	GAL
9	C		Lubricant, Gear, Universal 80/90W (MIL-L-2105C)	
		9150-01-035-5392	1-qt Can	QT
		9150-01-035-5393	5-gal Drum	GAL
		9150-01-035-5394	55-gal Drum	GAL
10	C		Lubricant, Gear, Universal 85/140W (MIL-L-2105C)	
		9150-01-048-4591	1-qt Can	QT
		9150-01-035-5395	5-gal Drum	GAL
		9150-01-035-5396	55-gal Drum	GAL
11	C		Solvent, Dry Cleaning, SD-2 (P-D 680)	
		6850-00-664-5685	1-qt can	QT
		6850-00-281-1985	1-gal can	GAL
		6850-00-264-9038	5-gal drum	GAL
		6850-00-285-8012	55-gal drum	GAL

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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

5/9 (°F -32) = °C

212° Fahrenheit is equivalent to 100° Celsius

90° Fahrenheit is equivalent to 32.2° Celsius

32° Fahrenheit is equivalent to 0° Celsius

9/5 C° +32 = F°

WEIGHTS

1 Gram = 0.001 Kilograms = 1,000 Milligrams = 0.035 Ounces

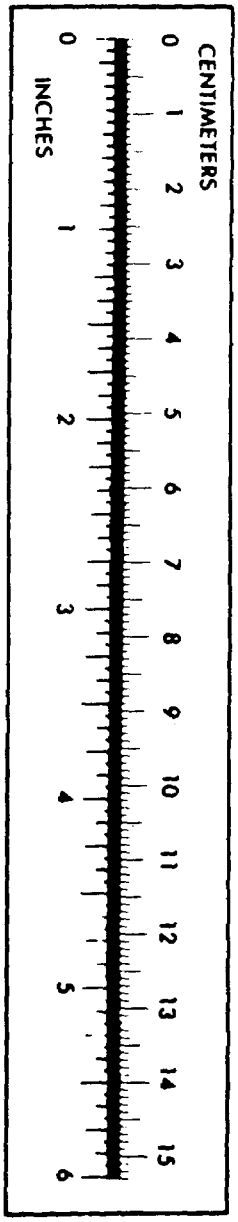
1 Kilogram = 1,000 Grams = 2.2 Lb.

1 Metric Ton = 1,000 Kilograms = 1 Megagram = 1.1 Short Tons

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	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	0.454
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
Centimeters	Inches	0.394
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	2.205
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



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